



Report and Recommendation of the President to the Board of Directors

Project Number: 50236-002
August 2019

Proposed Loan, Grant, and Administration of Grant Lao People's Democratic Republic: Sustainable Rural Infrastructure and Watershed Management Sector Project

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 1 August 2019)

Currency unit	–	kip (KN)
KN1.00	=	\$0.000115
\$1.00	=	KN8,695

ABBREVIATIONS

ADB	–	Asian Development Bank
DOI	–	Department of Irrigation
DSIA	–	dry season irrigated agriculture
EU	–	European Union
FNP	–	four northern provinces
GDP	–	gross domestic product
ha	–	hectare
HVC	–	high-value crop
Lao PDR	–	Lao People's Democratic Republic
MAF	–	Ministry of Agriculture and Forestry
NNSPA	–	National Nutrition Strategy to 2025 and Plan of Action, 2016–2020
PAFO	–	provincial agriculture and forestry office
PAM	–	project administration manual
PLUP	–	participatory land use plan
PRI	–	productive rural infrastructure
RSP	–	representative subproject
WASH	–	water, sanitation, and hygiene
WCS	–	water control system
WSIA	–	wet season irrigated agriculture
WUA	–	water users association
WUG	–	water users group

NOTE

In this report, "\$" refers to United States dollars.

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PROJECT AT A GLANCE

1. Basic Data		Project Number: 50236-002	
Project Name	Sustainable Rural Infrastructure and Watershed Management Sector Project	Department /Division	SERD/SEER
Country Borrower	Lao People's Democratic Republic Lao People's Democratic Republic	Executing Agency	Ministry of Agriculture and Forestry (MAF)
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Agriculture, natural resources and rural development	Agricultural production		7.00
	Irrigation		23.00
	Water-based natural resources management		15.00
	Total		45.00
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Climate Change impact on the Project	High
Environmentally sustainable growth (ESG)	Disaster risk management	ADB Financing	
	Environmental policy and legislation	Adaptation (\$ million)	11.90
	Global and regional transboundary environmental concerns	Mitigation (\$ million)	4.10
	Natural resources conservation		
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Civil society participation	Gender equity (GEN)	✓
	Institutional development		
Knowledge solutions (KNS)	Organizational development		
	Application and use of new knowledge solutions in key operational areas		
	Knowledge sharing activities		
Partnerships (PAR)	Pilot-testing innovation and learning		
	Civil society organizations		
	Implementation		
	International finance institutions (IFI)		
	Official cofinancing		
5. Poverty and SDG Targeting		Location Impact	
Geographic Targeting	Yes	Rural	High
Household Targeting	No		
General Intervention on Poverty	No		
SDG Targeting	Yes		
SDG Goals	SDG1, SDG2, SDG5, SDG6, SDG10, SDG12, SDG13		
6. Risk Categorization:	Low		
7. Safeguard Categorization	Environment: B Involuntary Resettlement: B Indigenous Peoples: B		
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		45.00	
Sovereign Project grant: Asian Development Fund		5.00	
Sovereign Project (Concessional Loan): Ordinary capital resources		40.00	
Cofinancing		4.46	
European Union - Project grant (Full ADB Administration)		4.46	
Counterpart		2.00	
Government		2.00	
Total		51.46	
Currency of ADB Financing: USD			

LAO PEOPLE'S DEMOCRATIC REPUBLIC SUSTAINABLE RURAL INFRASTRUCTURE AND WATERSHED MANAGEMENT SECTOR PROJECT



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I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan and a proposed grant, both to the Lao People's Democratic Republic (Lao PDR) for the Sustainable Rural Infrastructure and Watershed Management Sector Project. The report also describes the proposed administration of a grant to be provided by the European Union (EU) for the Sustainable Rural Infrastructure and Watershed Management Sector Project, and if the Board approves the proposed loan and grant, I, acting under the authority delegated to me by the Board, approve the administration of the EU grant.

2. The project will improve rural incomes from market-driven diversified farm output, watershed health, and community nutrition in the four northern provinces (FNP) of Houaphan, Louangphabang, Xaignabouli, and Xiangkhouang. It will (i) promote diversification into dry season high-value crops (HVCs), improve the yields of wet season rice by providing irrigation and access; (ii) protect watershed ecological services; and (iii) improve nutrition. The project contributes to government policy goals for food security, economic growth, and natural resource conservation.¹

II. THE PROJECT

A. Rationale

3. The Lao PDR's gross domestic product (GDP) growth averaged 7.7% during 2010–2017, but its Human Development Index ranking (139th out of 189 countries) remains low.² The benefits of growth are distributed unevenly, with the poorest quintile sharing only 7.6% of the gross national income. Rapid urbanization, with 40% of the population living in urban areas, is leading to a “feminization” of rural areas as males seek work in urban areas. During 2005–2015, the populations of Houaphan and Xiangkhouang fell by 10%, the highest decline in the Lao PDR. The poverty incidence was 23% nationwide in 2012, but 29% for rural areas.³ Headcount poverty in the northern region is three times higher in rural areas than urban areas. Poverty in the FNP ranges from 20% in Xiangkhouang to 37% in Houaphan, and is due to low returns from rice farming, limited skills, and lack of investment resources. It creates vulnerability to commodity price volatility, loss of land through concessions, and ill health from poor diets and sanitation. Lao PDR remains an agrarian economy. Agriculture contributes 16% of GDP and engages more than 65% of the population, more than half of whom are women.⁴ Rice accounts for 70% of agricultural output, reaching 4 million tons in 2014.⁵ Only 10% of the land is arable because the terrain is mountainous. Agriculture in the FNP is typified by fragmented production systems, high input costs, and weak aggregate surplus production.

4. Rural development is a government priority. The Five-Year National Socioeconomic Development Plan VIII, 2016–2020; the Agriculture Development Strategy to 2025 and Vision to

¹ The Asian Development Bank (ADB) provided transaction technical assistance. ADB. 2017. *Technical Assistance to the Lao People's Democratic Republic for the Sustainable Rural Infrastructure and Watershed Management Sector Project*. Manila.

² United Nations Development Programme. 2018. *Human Development Indices and Indicators: 2018 Statistical Update: Lao People's Democratic Republic*. New York.

³ Government of the Lao PDR. 2015. *4th Population and Housing Census 2015*. Vientiane; Government of the Lao PDR. 2016. *Lao PDR 2015 Census-Based Poverty Map*. Vientiane; and World Bank. 2017. *Lao Poverty Policy Brief: Taxonomy of the Poor and its Usefulness in Policy Design*. Washington, DC.

⁴ Bank of Lao PDR. 2017. *Annual Economic Report*. Vientiane.

⁵ The main crops planted from 2005 to 2014, with the percentage increase in output (tons), are (i) maize: 280%; (ii) cassava: 3,100%; (iii) coffee: 350%; (iv) banana: 250%; and (v) vegetables: 108%.

the Year 2030; the Central Party's Resolution on Land (2017); and the Forestry Strategy to the Year 2020 prioritize and implement through sector action plans at the national and provincial levels: (i) improving productive rural infrastructure (PRI) as it (a) reduces the risks of rain-fed agriculture, (b) enhances productivity, (c) provides options for diversifying into market-based HVCs, and (d) promotes the mainstreaming of gender equality;⁶ (ii) mainstreaming good land use practices;⁷ and (iii) strengthening the National Nutrition Strategy to 2025 and Plan of Action 2016–2020 (NNSPA).⁸

5. Irrigation has increased rice output. From 1994 to 2014, the area cultivated by wet season irrigated agriculture (WSIA) doubled from 136,000 hectares (ha) to 274,000 ha, providing supplementary water during periods of low rainfall and improving household food security, but providing low returns. Dry season irrigated agriculture (DSIA) increased from 16,000 ha to 182,000 ha, with more than 18,000 irrigation schemes, of which (i) 20% involved dams or reservoirs; (ii) 10% used pump lift systems; and (iii) 70% used diversion weirs, 80% with small command areas of less than 100 ha. The FNP have 37,600 ha of WSIA and 13,438 ha of DSIA registered. Dry season HVCs offer high returns. HVCs can increase farm incomes by (i) 180% if a farmer changes from growing rice during both the wet and dry seasons to a wet season rice crop and a dry season HVC; and (ii) 500% if a farmer grows a wet season rice crop and an irrigated dry season HVC. However, most farmers are unable to diversify into DSIA HVC because of the lack of water control systems (WCSs). Improving the capacities of water users groups (WUGs) and water users associations (WUAs) is crucial for managing WCSs. The increasing feminization of agriculture demands women's full involvement in the decision making of WUGs and WUAs.

6. Upland forest cover has declined from 70% in the 1960s to 58% in 2015, and agriculture accounts for nearly 50% of upland conversion in the FNP. With climate change impacts, the FNP are vulnerable to a range of natural disasters, including wet season high-intensity storms causing flooding from monsoonal rainfall, and drought related upper catchment loss of vegetative cover and fires. Intensified cropping on fragile and steep uplands further aggravates flash flooding, loss of biodiversity, soil instability, causing degraded watersheds. These events are high risks for human life and property, agricultural production, and the destruction of PRI.

7. The annual economic cost of malnutrition is estimated to be 2.4% of GDP (2013). The NNSPA prioritizes nutrition-sensitive agriculture, which requires irrigation, and recognizes that higher incomes lead to improved diets. In 2017, stunting was present in 33% of all children under 5 years of age in the country and more than 40% of those in Houaphan and Xiangkhouang.⁹

8. **ADB value addition.** Most of the Asian Development Bank (ADB) investment in the Lao PDR's rural development targets PRI, where ADB's scale of investment exceeds the capacity of most development partners. Lessons from ADB's experience include the following:

⁶ In this context, PRI comprises irrigation and rural access infrastructure.

⁷ World Bank. 2018. *Emission Reduction Program Document: Promoting REDD+ through Governance, Forest Landscape & Livelihoods in Northern Lao PDR*. Forest Carbon Partnership Fund. Washington, DC.

⁸ Government of the Lao PDR, Ministry of Planning and Investment. 2016. *8th Five-Year National Socio-Economic Development Plan VIII (2016–2020)*. Vientiane; Government of the Lao PDR, Ministry of Agriculture and Forestry. 2015. *Agriculture Development Strategy to 2025 and Vision to the Year 2030*. Vientiane; Government of the Lao PDR. 2017. *Central Party's Resolution on Land*. Vientiane; Government of the Lao PDR. 2014. *Forestry Strategy to the Year 2020*. Vientiane; and Government of the Lao PDR. 2015. *National Nutrition Strategy to 2025 and Plan of Action, 2016–2020*. Vientiane.

⁹ Government of the Lao PDR. 2018. *Laos Social Indicator Survey, 2017*. Vientiane.

- (i) ADB-financed PRI projects have been consistently successful, demonstrating increased agricultural production with improved market orientation;
- (ii) well-targeted PRI investments are important to (a) provide quick and inclusive benefits to poorer areas, (b) complement ADB's support in other sectors, and (c) support the smaller-scale investments of other development partners;
- (iii) strong community involvement in the design and implementation of PRI investments, particularly in irrigation, increases sustainability; and
- (iv) investments that integrate market linkages for HVCs have a substantial impact on rural incomes and nutritional diversity, and reward agriculture labor.¹⁰

9. **Strategic context.** The project supports the government's goal of inclusive sustainable economic growth. It aligns with the operational priorities of ADB's Strategy 2030 (Table 1); Lao PDR country partnership strategy, 2017–2020; Water Operational Plan, 2011–2020; Operational Plan for Agriculture and Natural Resources, 2015–2020; Climate Change Operational Framework, 2017–2030; Gender Equality and Women's Empowerment Operational Plan, 2013–2020; and Strategy for Promoting Safe and Environment-Friendly Agro-based Value Chains in the Greater Mekong Subregion and Siem Reap Action Plan, 2018–2022.¹¹

Table 1: Alignment with Strategy 2030

Strategy 2030 Priority	Project Interventions
Addressing remaining poverty and reducing inequalities	PRI stimulates the production of rice and dry season irrigated HVCs, increasing rural incomes.
Accelerating progress in gender equality	Women and girls will benefit from better socioeconomic opportunities and nutrition.
Tackling climate change and building climate and disaster resilience, and enhancing environmental sustainability	Reliable irrigation enables production adaptation measures. Improved irrigation WCS and watershed conservation increase flood and drought resilience.
Promoting rural development and food security	Increased agricultural production and diversification, nutrition diversification and awareness raising.

HVC = high-value crop, PRI = productive rural infrastructure, WCS = water control system.

B. Impacts and Outcome

10. The project is aligned with the following impacts: market-driven and safe agricultural products developed, and rural areas integrated into the national economy (footnote 8). The project will have the following outcome: high-value agricultural production, natural resources management, status of women, and community nutrition improved.¹²

¹⁰ Sector Assessment (Summary): Agriculture, Natural Resources, and Rural Development (accessible from the list of linked documents in Appendix 2).

¹¹ ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila; ADB. 2017. *Country Partnership Strategy: Lao People's Democratic Republic, 2017–2020—More Inclusive and Sustainable Economic Growth*. Manila; (The country partnership strategy prioritizes productive infrastructure, commercialized agriculture, and sustainable natural resource management and climate resilience.) ADB. 2011. *Water Operational Plan, 2011–2020*. Manila; ADB. 2015. *Operational Plan for Agriculture and Natural Resources: Promoting Sustainable Food Security in Asia and the Pacific in 2015–2020*. Manila; ADB. 2017. *Climate Change Operational Framework, 2017–2030: Enhanced Actions for Low Greenhouse Gas Emissions and Climate-Resilient Development*. Manila; ADB. 2013. *Gender Equality and Women's Empowerment Operational Plan, 2013–2020*. Manila; and ADB. 2018. *Strategy for Promoting Safe and Environment-Friendly Agro-Based Value Chains in the Greater Mekong Subregion and Siem Reap Action Plan, 2018–2022*. Manila.

¹² The design and monitoring framework is in Appendix 1.

C. Outputs

11. **Output 1: Market-oriented agricultural production increased.** For each of the 18 subprojects,¹³ the project will: (i) prepare market assessments for dry season and upland crops leading to market linkages for demand-driven cropping; (ii) provide up to 200 matching grants for producers and entrepreneurs, with at least 50 grants to women, and support for farmer-to-farmer extension (para. 20); (iii) provide awareness and access to new climate-resilient technologies, along with training in good agricultural practice, including 3,200 female members of WUGs, to produce dry season HVCs on 4,200 ha; and (iv) prepare forest tea production plans for Xiangkhouang.

12. **Output 2: Watershed ecological services protected.** The project will prepare 18 participatory land use plans (PLUPs), one for each of the subproject catchments. In Houaphan and Xiangkhouang provinces, ADB resources will be used to implement nine PLUPs, covering 37 villages and 223,000 ha and increasing the area under perennial land use by 10%.¹⁴ The PLUPs will be prepared in consultation with the relevant communities, with input from women, and include investment plans for land use, measures for flooding and landslides, and rural connectivity.

13. **Output 3: Command area irrigation reliability improved.** The project will: (i) modernize and make climate-resilient 18 subprojects (footnote 13) to support WSIA and DSIA on about 4,200 ha, supported by 100 kilometers of year-round access infrastructure; (ii) train 120 WUGs to carry out operation and WCS management of the subprojects; and (iii) form 18 WUAs from the 120 WUGs, with women taking leadership positions in 25% of the WUAs.

14. **Output 4: Nutrition awareness and facilities improved.** The NNSPA has prioritized Houaphan and Xiangkhouang provinces to (i) promote nutrition-sensitive agriculture in six districts; (ii) meet the nutritional needs of 9,400 adolescent girls and women of reproductive age through the establishment of 100 nutrition schools; and (iii) improve water, sanitation, and hygiene (WASH) facilities for women and men in the communities of eight subprojects.

15. The EU will provide an ADB-administered grant of €4 million to support output 4. Parallel cofinancing will be provided by (i) the International Fund for Agricultural Development (Partnerships for Irrigation and Commercialization of Smallholders' Agriculture Project), aligning its support with outputs 1 and 3; and (ii) German development cooperation through Deutsche Gesellschaft für Internationale Zusammenarbeit (Lao PDR Emission Reductions Programme through Improved Governance and Sustainable Forest Landscape Management), aligning its support with output 2.¹⁵

D. Summary Cost Estimates and Financing Plan

16. The project is estimated to cost \$51.46 million (Table 2). Detailed cost estimates by expenditure category and by financier are included in the project administration manual (PAM).¹⁶

¹³ By subproject implementation sequence: batch 1 (four), batch 2 (eight), and batch 3 (six). By province: Houaphan (four), Louangphabang (four), Xaignabouli (five), and Xiangkhouang (five). Houaphan's Nam Pua Representative Subproject Design Document, Xiangkhouang's Nam Tong Representative Subproject Design Document, Louangphabang's Nam Seng Representative Subproject Design Document, and Xaignabouli's Nam Phieng 1 and 2 Representative Subproject Design Document (accessible from the list of linked documents in Appendix 2).

¹⁴ PLUPs will be implemented in Louangphabang and Xaignabouli through Deutsche Gesellschaft für Internationale Zusammenarbeit (Lao PDR Emission Reductions Programme through Improved Governance and Sustainable Forest Landscape Management), but these outputs are excluded from the ADB-financed project's targets.

¹⁵ Development Coordination (accessible from the list of linked documents in Appendix 2).

¹⁶ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

Table 2: Summary Cost Estimates
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Output 1: Market-oriented agricultural production increased	3.96
2. Output 2: Watershed ecological services protected	9.12
3. Output 3: Command area irrigation reliability improved	18.81
4. Output 4: Nutrition awareness and facilities improved	5.66
5. Project management	10.32
Subtotal (A)	47.87
B. Contingencies^c	2.07
C. Financial Charges During Implementation^d	1.52
Total (A+B+C)	51.46

^a Includes taxes and duties of \$3.88 million to be financed by the Asian Development Bank and the European Union.

^b In March 2019 prices.

^c Physical contingencies computed at 10% for civil works, vehicles and equipment, land acquisition, and environmental mitigation; 7.5% for design and supervision consultants and project management unit operating costs; and 5% for project management unit staff. Price contingencies for foreign currency costs were computed at 1.5% from 2019 to 2020, and 1.6% thereafter; and for local currency costs, at 2.0% from 2019 to 2020, and 3.0% thereafter; conversion between currencies assumes purchasing power parity.

^d Interest during construction for the concessional loan has been computed at 1% per annum during the grace period. Source: Asian Development Bank estimates.

17. The government has requested a concessional loan of \$40 million from ADB's ordinary capital resources and a grant not exceeding \$5 million from ADB's Special Funds resources to help finance the project. The loan will have a 32-year term, including grace period of 8 years; an interest rate of 1.0% per year during the grace period and 1.5% per year thereafter; and such other terms and conditions set forth in the draft loan agreement. ADB will finance the expenditures in relation to civil works for PRI modernization, PLUPs, farm-to-farm and market links, consulting services, project management costs and eligible government allowances, taxes and duties, and interest during construction. The EU will provide a grant of €4 million, equivalent to \$4.46 million, to be administered by ADB, to finance output 4, including taxes and duties. The government will finance the equivalent of \$2 million for staff costs and unexploded ordinance certification prior to subproject approval. The summary financing plan is in Table 3. Sector lending is proposed to provide flexibility and adequate subproject preparation; and the project meets the sector lending criteria. The FNP proposed subprojects, from their agriculture development plans, which were screened against agreed criteria, leading to a list of subprojects eligible for ADB financing and are presented in the PAM (footnote 16). The FNP, with the support of the Department of Irrigation (DOI) and consultants, are assessed to have the capacity to implement the project.

Table 3: Summary Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank		
Ordinary capital resources (concessional loan)	40.00	77.7
Special Funds resources (grant)	5.00	9.7
European Union (grant) ^a	4.46	8.7
Government (in kind)	2.00	3.9
Total	51.46	100.0

^a Administered by the Asian Development Bank (ADB). Includes ADB's administration fee, audit costs, bank charges, taxes, duties, and provision for foreign exchange fluctuations (if any), to the extent these items are not covered by the interest and investment income earned on this grant from the European Union. Any interest, investment income, and gains from foreign exchange transactions generated from the grant will be used for the project or to partially or fully cover ADB's administration fee.

Source: Asian Development Bank estimates.

18. Climate mitigation is estimated to cost \$4.1 million and climate adaptation is estimated to cost \$11.9 million. ADB will finance 100% of each of the mitigation and adaptation costs. The climate change scenarios indicate a high risk to the project outcome. Project design measures mitigate the risk level to *medium*.¹⁷ Details are in the PAM (footnote 16).

E. Implementation Arrangements

19. The Ministry of Agriculture and Forestry (MAF) will be the executing agency, with MAF's DOI as the central implementing agency. To support the devolution of project implementation responsibility, a program governance team of government staff will be established within DOI and will be responsible for project supervision and mentoring of provincial staff. Cloud-based information systems for project performance, procurement, and financial management will provide transparency to ensure the integrity of systems and procedures. The governor's offices of the FNP will be the implementing agencies and will assign their provincial agricultural and forestry offices (PAFOs) for implementation responsibilities using staff resources for procurement, finances, and subproject design and approvals. The subprojects will be implemented in three batches (footnote 13). The implementation arrangements are summarized in Table 4 and described in detail in the PAM.

Table 4: Implementation Arrangements

Aspects		Arrangements	
Implementation period	January 2020 to March 2027		
Estimated completion date	31 March 2027		
Estimated loan and grant closing date	30 September 2027		
Management			
(i) Oversight body	National steering committee: Minister of the Ministry of Agriculture and Forestry (chair) Provincial governor's offices and MONRE (members) Provincial steering committees: FNP governor's offices (chair) and representatives of PAFOs, POF, PONRE, and PWTD (members)		
(ii) Executing agency	Ministry of Agriculture and Forestry		
(iii) Key implementing agencies	Department of Irrigation and provincial governor's offices		
(iv) Implementation unit	Program governance team, Department of Irrigation; and PAFOs		
Procurement	Open competitive bidding	25 contracts	\$17.570 million
	Request for quotation	33 contracts	\$0.046 million
Consulting services	QCBS (LIC)	591 person-months	\$5.975 million
	Direct contracting (nutrition)	1 contract	\$2.727 million
	CQS (safeguards)	20 person-months	\$0.276 million
	CQS (surveys)	80 person-months	\$0.281 million
	Individual (start-up)	4 person-months	\$0.337 million
	CQS (audit)	Not applicable	\$0.170 million
Advance contracting	Consultants: Negotiations of draft contracts for start-up consultants completed and technical and financial proposals evaluated for LIC Works: Four representative subprojects works bids advertised and evaluated		
Disbursement	The loan and grant proceeds, including ADB-administered cofinancing funds, will be disbursed following ADB's <i>Loan Disbursement Handbook</i> (2017, as amended from time to time) and arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, CQS = consultants' qualifications selection, FNP = four northern provinces, LIC = loan implementation consultant, MONRE = Ministry of Natural Resources and Environment, PAFO = provincial agriculture and forestry office, POF = provincial office of finance, PONRE = provincial office of natural resources and environment, PWTD = Public Works and Transport Department, QCBS = quality- and cost-based selection.

Source: Asian Development Bank estimates.

¹⁷ Climate Change Assessment (accessible from the list of linked documents in Appendix 2).

III. DUE DILIGENCE

A. Technical

20. Feasibility studies and engineering designs have been prepared for the four representative subprojects (RSPs) (footnote 13). The project will prepare market plans for each subproject to link production to markets. Based on these plans, matching grants for producers and entrepreneurs will be competitively awarded to provide resources for productive assets as described in the PAM. The disaster risk profiles indicate the need for stream flow measurements and assessments of historical weather events that caused damage to PRI and inadequate dry season stream flows. Engineering designs have been adjusted to ensure that (i) the PRI can withstand flood events, (ii) WCSs enable efficient water scheduling within the command area, and (iii) road designs are able to withstand high-intensity and lengthy rain events. Key features are:

- (i) Houaphan's Nam Pua RSP will upgrade a main canal and introduce piped distribution systems for the 70 ha command area to enable DSIA HVCs. WCSs, such as gravity-pressured sprinkler systems, will enable intensified production and reduce women's workload.
- (ii) Xiangkhouang's Nam Tong RSP will (a) improve two headworks with supporting fish passages, (b) improve distribution canals for producing HVC vegetables, (c) put in place community agreements to shift upland cultivation to irrigated areas and fodder production, (d) cultivate forest tea to increase economic opportunities with the objective of lowering destructive forest cultivation and grazing practices, and (e) connect upland communities to the RSP command area for job opportunities.
- (iii) Louangphabang's Nam Seng RSP will extend the scheme to an additional 265 ha for DSIA green soya and rehabilitate the main canal with slope stabilization.
- (iv) Xaignabouli's Nam Phieng 1 and 2 RSP will install WCSs and canal lining for green soybean production. All additional subprojects will undergo technical reviews to be eligible for ADB financing.

B. Economic and Financial

21. The economic analysis followed ADB's Guidelines for the Economic Analysis of Projects, comparing scenarios with and without the project, at a discount rate of 9%.¹⁸ The economic internal rates of return for the RSPs range from 9% to 43%. For irrigation, financial returns per day increased by 30% to 80%, reflecting the high value of dry season crops and increased returns that are above the nonagricultural market rate for casual labor. As the RSPs are nonrevenue-generating and the participating farmers are not contributing any capital or equity, a calculation of the financial internal rates of return is not meaningful. The four RSPs will generate about 160,000 days of paid labor per year. The incremental increases in household incomes provide the resources for an irrigation service fee that is affordable and able to sustain operation and maintenance costs. Switching values for the RSPs are robust, exceeding a 20% change in the main parameters, except for Houaphan's Nam Pua RSP, which has a base case economic internal rate of return of 9%, and has a switching value of 3% on projected benefits.¹⁹

¹⁸ ADB. 2017. *Guidelines for Economic Analysis of Projects*. Manila.

¹⁹ Economic and Financial Analysis (accessible from the list of linked documents in Appendix 2).

C. Governance

22. A financial management assessment was conducted on MAF, DOI, the FNP governments, and PAFOs. The financial management risk is *high*.²⁰ A financial management action plan was prepared taking into consideration the devolved implementation arrangements and which will mitigate risk, with consultant support. The risks will be further managed by adopting financial management systems and procedures, based on double-entry accounting systems, including provincial accounting modules linked via cloud-based internet capabilities. The financial management system will support the introduction of public sector double-entry accounting that will interface with MAF's accounting system, along with capacity building for staff, with oversight from the program governance team.²¹ Government staff were trained in financial management during the project design stage, and training continues during project start-up and implementation.

23. Procurement risks were assessed as *medium-high*, but have been mitigated to *low-medium* as (i) the executing agency (MAF) and the central implementing agency (DOI) have procurement experience in ADB projects, (ii) procurement staff have been trained, and (iii) loan implementation consultants will provide procurement support. The number of procurement packages has been minimized. The provincial implementing agencies have minimal experience recruiting consultants following ADB procedures, so DOI will recruit consultants with ADB support before loan effectiveness. All procurement will be carried out in accordance with the ADB Procurement Policy (2017, as amended from time to time) and the associated project administration instructions and staff instructions.

24. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government, MAF, DOI, and each PAFO. The specific policy requirements and supplementary measures are described in the PAM.

D. Poverty, Social, and Gender

25. FNP households derive 30%–50% of income from wet season rice. Most food-secure households allocate labor to off-farm employment, usually by men, which aggravates women's time poverty.²² The project seeks to develop and enable the cultivation of HVCs through the provision of DSIA, yielding returns three to four times those of wet season rice, and higher than local nonfarm wage rates. HVCs are labor-intensive and generate jobs, which can draw labor out of inappropriate land uses in the upper watershed catchments. The four RSPs are estimated to create paid jobs, equivalent to about \$1 million income per annum. The project will support the government policy for nutrition-sensitive agriculture and hygiene support for adolescent girls and women to address high levels of wasting and stunting by providing WASH infrastructure in homes, schools, and markets in 100 villages.

26. **Gender.** The project is classified *gender equity as a theme*. Gender analysis reveals that women have fewer opportunities to participate in public decision making; and less access to information, training, employment, and voice. Improved PRI will enable women to benefit from expanded economic opportunities and access to social services. The project's gender action plan promotes (i) equal project benefits among women and men, including to job opportunities and control over resources; (ii) a reduction in gender inequalities and social risks; (iii) increased

²⁰ Financial Management Assessment (accessible from the list of linked documents in Appendix 2).

²¹ Including the double-entry accounting packages and project financial management manuals.

²² Summary Poverty Reduction and Social Strategy (accessible from the list of linked documents in Appendix 2).

representation of women in decision making; and (iv) the use of sex-disaggregated data. Women are central to DSIA and WASH and will have increased access to water, improved command areas, labor-saving technologies, and funds for matching grants.²³

E. Safeguards

27. In compliance with ADB's Safeguard Policy Statement (2009), the project's safeguard categories are as follows.

28. **Environment (category B).** MAF and ADB have agreed on an environmental assessment and review framework.²⁴ The subprojects will not infringe on protected or environmentally sensitive areas and will only require simple mitigation measures such as proper management of construction camps or storage of building materials. All subprojects are sited on existing irrigation schemes and have enough water during the dry season to support irrigation without adverse stream flow impacts. The project will provide training in Lao PDR good agricultural practice and will improve the safety of produce and mitigate the risks associated with increased agrichemical application. Each initial environmental examination for the four RSPs includes an environmental management plan with publicly disclosed mitigation measures.

29. **Involuntary resettlement (category B).** MAF and ADB have agreed on a combined resettlement and ethnic group development framework. Due diligence carried out on the RSPs (i) revealed no social safeguards impacts on Xaignabouli's Nam Phieng 1 and 2 RSP and consequently a due diligence plan was prepared; (ii) found social safeguard impacts for the other three RSPs, leading to the preparation of land acquisition and resettlement plans; and (iii) publicly disclosed all the plans.²⁵ The land acquisition and resettlement plans are supported by public consultation and disclosure, with minor impacts of land acquisition and compensation for roadside trees, crops, or small structures within the right-of-way for which compensation, allowances, surveys, monitoring, and reporting will be financed from ADB loan proceeds.²⁶ MAF will monitor, evaluate, and report the impacts semiannually to ADB.

30. **Indigenous peoples (category B).** Impacts on indigenous peoples, referred to as ethnic groups in the Lao PDR, are overwhelmingly positive as they are fully integrated into the subproject communities and will share in the project benefits. The project will not cause physical displacement from traditional or customary lands, nor will it negatively impact the identity, culture, or customary livelihood systems of the ethnic groups. The combined resettlement and ethnic group development framework will be used to prepare resettlement and ethnic group development plans for each subproject. These plans will include mitigation measures to address impacts, institutional capacity development programs, a grievance redress mechanism, and compliance with ADB's information disclosure and consultation requirements.

²³ Gender Action Plan (accessible from the list of linked documents in Appendix 2).

²⁴ Environmental Assessment and Review Framework (accessible from list of linked documents in Appendix 2).

²⁵ Resettlement and Ethnic Group Development Framework (accessible from the list of linked documents in Appendix 2).

²⁶ In the case of loss of land there are two compensation scenarios for a household as detailed in the Resettlement and Ethnic Group Development Framework: (i) 9% or less loss - the household is eligible to make a voluntary land donation or reach a negotiated settlement in accordance with the community participation framework; or (ii) 10% or more loss - the household shall be compensated in cash, or in kind, as determined through consultation.

F. Summary of Risk Assessment and Risk Management Plan

31. Significant risks and mitigating measures are summarized in Table 5 and described in detail in the risk assessment and risk management plan.²⁷

Table 5: Summary of Risks and Mitigating Measures

Risks	Mitigation Measures
Extreme weather events	Soil and water conservation in the watersheds, conservative engineering design assumptions, water conserved by efficient irrigation practices
Governance and integrity	Training on procurement and the financial management system for the Department of Irrigation and the provincial agriculture and forestry offices during project preparation, to be continued during implementation with consultant support.
Government imposes crop and production targets	Subproject market plans will provide a counter to top-down government targets. A loan covenant is included, such that government targets will apply to only wet season rice production in the subprojects.
Price incentives lead to upland cropping	Improved irrigation water control systems will allow cropping diversification in line with market opportunities.

Source: Asian Development Bank.

IV. ASSURANCES AND CONDITIONS

32. The government and FNP governments have assured ADB that implementation of the project shall conform to all applicable ADB requirements, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, financial management and disbursement as described in detail in the PAM and loan documents. The government and FNP governments have agreed with ADB on certain covenants for the project, which are set forth in the draft loan, grant, and project agreements. Disbursement of the loan is conditional upon the issuance of guidelines for the use of the matching grants.

V. RECOMMENDATION

33. I am satisfied that the proposed loan and grant would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve

- (i) the loan of \$40,000,000 to the Lao People's Democratic Republic for the Sustainable Rural Infrastructure and Watershed Management Sector Project from ADB's ordinary capital resources, in concessional terms, with an interest charge at the rate of 1.0% per year during the grace period and 1.5% per year thereafter; for a term of 32 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan agreement presented to the Board; and
- (ii) the grant not exceeding \$5,000,000 to the Lao People's Democratic Republic from ADB's Special Funds resources for the Sustainable Rural Infrastructure and Watershed Management Sector Project, on terms and conditions that are substantially in accordance with those set forth in the draft grant agreement presented to the Board.

Takehiko Nakao
President

30 August 2019

²⁷ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

DESIGN AND MONITORING FRAMEWORK

Impacts the Project is Aligned with			
Market-driven and safe agricultural products developed, and rural areas integrated into the national economy (8th Five-Year National Socio-Economic Development Plan, 2016–2020; Agriculture Development Strategy to 2025 and Vision to the Year 2030; Central Party's Resolution on Land; Forestry Strategy to the Year 2020; and National Nutrition Strategy and Plan of Action, 2016–2020) ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome High-value agricultural production, natural resources management, status of women, and community nutrition improved	By 2028: a. In modernized subproject areas: (i) average agriculture profitability increased to \$1,060/ha (2018 baseline: \$494/ha); and (ii) 50% increase in average household income levels from HVC and livestock production (2018 baseline: \$5,070/year) b. 3,200 women producing HVC and livestock (2018 baseline: 570 women) c. Land area of 223,000 ha rehabilitated (2018 baseline: 0) d. In target areas, 60% of women of reproductive age meet minimum dietary diversity (2018 baseline: 40%)	a.–b. Provincial and district reports on key commercial crop production and PPMS c. PPMS d. Social surveys results	Government-specified production targets override farmers' cropping choices.
Outputs 1. Market-oriented agricultural production increased 2. Watershed ecological services protected	By 2027: 1a. Implementation of 18 market plans, one for each subproject, with at least 45% women's participation in the market plan consultations and implementation (2018 baseline: 0) 1b. Up to 200 matching grants for producers and entrepreneurs awarded, including at least 50 grants to women (2018 baseline: 0) 1c. Irrigated dry season HVC produced on 4,200 ha (2018 baseline: 1,623 ha) 2a. 9 PLUPs implemented (2018 baseline: 0) ^b 2b. 100% of new household land titles issued in both wife and husband's names (2018 baseline: 0)	1a.–1c. PPMS 2a.–2b. PPMS	Extreme weather (droughts) limits agricultural production and cropping options. Commodity price shocks incentivize upland cropping, overriding PLUPs.

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
3. Command area irrigation reliability improved	<p>3a. 18 subprojects modernized with (i) dry season irrigated agriculture on 4,200 ha (2018 baseline: 2,242 ha); (ii) 4,200 ha of wet season irrigated agriculture (2018 baseline: 3,646 ha); and (iii) 100 km of year-round access roads (2018 baseline: 30 km)</p> <p>3b. Plans implemented for water control system involving 120 WUGs, with WUGs comprising both husband and wife (2018 baseline: 2 WUGs)</p> <p>3c. 18 WUAs, with 25% of management consisting of females, established (2018 baseline: 0)</p>	3a.–3c. PPMS	Extreme weather events (floods) disrupt implementation.
4. Nutrition awareness and facilities improved	<p>4. NNSPA program implemented: (i) six district nutrition committees with at least 25% women's participation; (ii) 100 village nutrition schools operational and targeted to adolescent girls and women; and (iii) water, sanitation, and hygiene program operational for women and men in eight subproject communities (2018 baseline: 0)</p>	4. PPMS	

Key Activities with Milestones

1. Market-oriented agricultural production increased

- 1.1 Update and confirm market demand assessments for the Batch 1 subprojects (Q3 2021).
- 1.2 Prepare market demand assessments for Batch 2 (Q1 2022) and Batch 3 subprojects (Q4 2022).
- 1.3 Start market connectivity forums and meetings in Batch 1 subprojects (Q3 2021), Batch 2 subprojects (Q1 2022) and Batch 3 subprojects (Q4 2022).
- 1.4 Confirm enterprise grant procedures and implementation arrangements (Q4 2021) and complete awards (Q4 2023).
- 1.5 Make operational market produce quality assurances systems (Q4 2022).

2. Watershed ecological services protected

- 2.1 Prepare PLUPs for catchments in Houaphan and Xiangkhouang subprojects (Q4 2023).
- 2.2 Prepare PLUP-associated behavioral change with supporting community agreements, including 45% female participation (Q4 2022).
- 2.3 Implement PLUPs (Q1 2026).

3. Command area irrigation reliability improved

- 3.1 Batch 1: Contract four RSP^c works (Q1 2021) and complete with handover (Q1 2022).
- 3.2 Batch 2: Design and contract eight additional subprojects (Q2 2022) and complete with handover (Q4 2024).
- 3.3 Batch 3: Design and contract six additional subprojects (Q2 2023) and complete with handover (Q4 2026).
- 3.4 Form WUGs and WUAs with 50% participation by women, and with women in positions of management in 25% of the WUGs and WUAs (Q3 2020).

<p>Key Activities with Milestones</p> <p>3.5 Organize four RSP subproject WUGs into four WUAs (Q3 2021). 3.6 Implement four RSP farm-to-farm extensions (Q3 2022). 4. Nutrition awareness and facilities improved 4.1 Form and make operational district nutrition committees (Q4 2022). 4.2 Implement village nutrition schools (Q4 2024). 4.3 Implement water, sanitation, and hygiene facilities in targeted villages (Q1 2024).</p> <p>Project Management Activities Loan implementation consultants in place (Q3 2020) Program governance team staffed (Q2 2020) Provincial project implementation team staffed (Q2 2020) Project performance monitoring systems operational (Q4 2020) Financial systems operational (Q2 2020) Midterm evaluation and report (Q2 2023) Project completion report completed (Q1 2027)</p> <p>Inputs Asian Development Bank: \$40,000,000 (concessional loan) \$5,000,000 Special Funds resources (grant) European Union: €4,000,000 (\$4,460,000 equivalent) (grant) Government of the Lao People's Democratic Republic: \$2,000,000 (in kind)</p> <p>Assumptions for Partner Financing Parallel collaborative cofinancing: (i) International Fund for Agricultural Development (indicative amount of \$12,000,000, aligned with outputs 1 and 3); and (ii) German development cooperation through Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) (indicative amount of 16 million Euros, aligned with output 2).</p>
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ha = hectare, HVC = high-value crop, km = kilometer, NNSPA = National Nutrition Strategy to 2025 and Plan of Action 2016–2020, PPMS = project performance management system, PLUP = participatory land use plan, Q = quarter, RSP = representative subproject, WUA = water users association, WUG = water users group.

^a Government of the Lao People's Democratic Republic (Lao PDR), Ministry of Planning and Investment. 2015. *8th Five-Year National Socio-Economic Development Plan (2016–2020)*. Vientiane; Government of the Lao PDR, Ministry of Agriculture and Forestry. 2015. *Agriculture Development Strategy to 2025 and Vision to the Year 2030*. Vientiane; Government of the Lao PDR. 2017. *Central Party's Resolution on Land*. Vientiane; Government of the Lao PDR. 2014. *Forestry Strategy to the Year 2020*. Vientiane; and Government of the Lao PDR. 2015. *National Nutrition Strategy and Plan of Action, 2016–2020*. Vientiane.

^b Deutsche Gesellschaft für Internationale Zusammenarbeit will invest in nine PLUPs.

^c The RSPs are Nam Pua (Houaphan), Nam Tong (Xiangkhouang), Nam Seng (Louangphabang), and Nam Phieng 1 and 2 (Xaignabouli).

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=50236-002-3>

1. Loan Agreement
2. Grant Agreement: Special Operations
3. Project Agreement
4. Sector Assessment (Summary): Agriculture, Natural Resources, and Rural Development
5. Project Administration Manual
6. Contribution to the ADB Results Framework
7. Development Coordination
8. Economic and Financial Analysis
9. Country Economic Indicators
10. Summary Poverty Reduction and Social Strategy
11. Risk Assessment and Risk Management Plan
12. Climate Change Assessment
13. Gender Action Plan
14. Environmental Assessment and Review Framework
15. Initial Environmental Examination: Nam Phieng 1 and 2 Representative Subprojects
16. Initial Environmental Examination: Nam Pua Representative Subproject
17. Initial Environmental Examination: Nam Seng Representative Subproject
18. Initial Environmental Examination: Nam Tong Representative Subproject
19. Resettlement Framework: Resettlement and Ethnic Group Development Framework
20. Land Acquisition and Resettlement Plan: Nam Pua Representative Subproject
21. Land Acquisition and Resettlement Plan: Nam Seng Representative Subproject
22. Land Acquisition and Resettlement Plan: Nam Tong Representative Subproject

Supplementary Documents

23. Disaster Risk Assessment
24. Output 1 Design Document
25. Market Chain Assessments
26. Agriculture Extension Review
27. Houaphan's Nam Pua Representative Subproject Design Document
28. Louangphabang's Nam Seng Representative Subproject Design Document
29. Xaignabouli's Nam Phieng 1 and 2 Representative Subproject Design Document
30. Xiangkhouang's Nam Tong Representative Subproject Design Document
31. Nam Tong Fish Passage Design
32. Detailed Economic and Financial Analysis
33. Financial Management Assessment
34. Financial Management Manual
35. Procurement Risk Assessment and Management Plan
36. Due Diligence Report for Nam Phieng 1 and 2 Representative Subprojects
37. Bioengineering Guidelines