Project Administration Manual

Project Number: 49404-002
Loan No.: XXXX and Grant Nos. XXXX and XXXX
October 2018

Socialist Republic of Viet Nam: Water Efficiency Improvement in Drought-Affected Provinces Project

ABBREVIATIONS

ADB	-	Asian Development Bank
CPO	-	Central Project Office
CPMU	-	central project management unit
CQS	-	consultant quality selection
DARD	-	Department of Agriculture and Rural Development
DED	-	detailed engineering design
EA	-	executing agency
EMP	-	environmental management plan
ENSO	-	El Niño Southern Oscillation
GAP	-	gender action plan
HVC	-	high-value crops
IA	-	implementing agency
ICB	-	international competitive bidding
IEE	-	initial environmental examination
IMC	-	irrigation management company
M&E	-	monitoring and evaluation
MARD	-	Ministry of Agriculture and Rural Development
MOF	-	Ministry of Finance
NCB	-	national competitive bidding
O&M	-	operation and maintenance
PPC	-	provincial people's committee
PPMU	-	provincial project management unit
PPP	-	public private partnerships
PPTA	-	project preparation technical assistance
QCBS	-	quality-and cost-based selection
REMDP	-	resettlement and ethnic minority development plan
SCADA	-	supervisory control and data acquisition
WEIDAP	-	Water Efficiency Improvement in Drought-Affected Provinces Project

TABLE OF CONTENTS

APPENDIXES

Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with the policies and procedures of the government and Asian Development Bank (ADB). The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Ministry of Agriculture and Rural Development (MARD) and the five participating provincial people's committees (PPC), as executing agencies and the five participating Department of Agriculture and Rural Development (DARD), as implementing agencies are wholly responsible for the implementation of ADB-financed projects, as agreed jointly between the borrower and ADB, and in accordance with the policies and procedures of the government and ADB. ADB staff is responsible for supporting implementation including compliance by MARD, the five participating PPCs and the five DARDs, as implementing agencies, of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At loan negotiations, the borrower and ADB shall agree to the PAM and ensure consistency with the loan and grant agreements. Such agreement shall be reflected in the minutes of the loan negotiations. In the event of any discrepancy or contradiction between the PAM and the loan and grant agreements, the provisions of the loan and grant agreements shall prevail.

After ADB Board approval of the project's report and recommendations of the President (RRP), changes in implementation arrangements are subject to agreement and approval pursuant to relevant government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval, they will be subsequently incorporated in the PAM.

I. PROJECT DESCRIPTION

1. The project will modernize eight irrigation systems in five drought-affected provinces, namely Binh Thuan, Dak Lak Dak Nong, Khanh Hoa and Ninh Thuan.[1] The modernized systems will enhance the provinces' ability to manage climate variability, improve water productivity of agriculture, and increase incomes by supporting farmers to grow high-value crops (HVC) such as coffee, pepper, grapes, apples, dragon fruit and mango.[2] The project was predicated by the El Niño Southern Oscillation (ENSO) induced drought in 2014−2016 which affected the south central coastal and central highland regions of Viet Nam. The project integrates climate resilient agricultural practices through a conceptual shift in irrigation modernization including: (i) strengthening irrigation management to improve climate resilience; (ii) modernized irrigation infrastructure; and (iii) supporting efficient on-farm water management practices.

A. Impact and Outcome

2. The project is aligned with the following impact: climate resilience and water productivity in agriculture improved. The project will have the following outcome: climate resilient and modernized irrigation systems in five provinces established.[3]

B. Outputs

3. **Output 1: Irrigation management services strengthened** will support policy and institutional development measures to improve climate resilience of agriculture by strengthening irrigation management taking into consideration social and gender dimensions in all relevant activities. Specifically, the project will support the following interventions:

(i) **Irrigation water allocation and delivery services**. Activities will include: (a) updating surface and ground water assessments; (b) an irrigation water sharing and allocation framework; and (c) provision of a real-time decision support system for farmers on optimizing crop water application.

(ii) **Maintenance of irrigation systems.** Includes (a) development of asset inventory and management database for each irrigation system supported by the project; (b) development of a systematic asset maintenance schedule with a rigorous approach to maintenance funding based on asset condition assessments; (c) development of a pricing framework for water charges; and (d) assessment of options for engaging third parties in the operation and maintenance (O&M) of irrigation systems.

4. **Output 2: Modernized irrigation infrastructures developed**. This output will modernize eight irrigation subprojects in five provinces to provide water on-demand to farmers cultivating HVCs and reduce vulnerability to climate change.[4] The modernization falls into three groups.

(i) **Group 1**: New pipe systems taking water from canals or reservoirs, and supplying

[1] Modernization is defined as the process of upgrading infrastructure, operations and management of irrigation systems to sustain the water delivery service requirements of farmers and optimize production and water productivity. ADB. 2017. *Irrigation Subsector Guidance Note*. Manila.

[2] Water Productivity (commonly termed as crop per drop) involves the dual objectives of increasing crop yields and/or reducing crop water use. It does not replace irrigation efficiency; instead it brings together the two essential outcomes of irrigation water management into one single expression: crop production and crop water consumption. It is a relative indicator measured in terms of crop yield (kilogram) or value ($) per unit of water consumed (cubic meter).

[3] The design and monitoring framework is in Appendix 1.

[4] Two each in Binh Thuan, Dak Nong, and Ninh Thuan provinces and one each in Dak Lak and Khanh Hoa provinces.

hydrants located at a reasonable distance from a farmer's field, such that the farmer can connect directly using a hose.[5] Several farmers would connect to each hydrant taking water in turns and as per their requirements. Sufficient flexibility is provided so that, generally, all farmers can irrigate within daylight hours. Basic supervisory control and data acquisition (SCADA) systems will facilitate operations such as remote monitoring of flows at hydrants, pressures at key points in pipelines, and linking pump operation to water levels in a controlling header tank. Consultation with male and female farmers will be conducted and its outputs will be incorporated in the design and implementation. This group is further subdivided into: gravity pipe systems, and pumped pipe systems.

(ii) **Group 2**: Existing canal systems rehabilitated and upgraded including canal lining, control structure, balancing storage and installation of flow control and measurement devices with remote monitoring.[6] Direct pumping into pumped-pipe systems will be supported. The canal systems together with pumped pipe abstractions, will support efficient irrigation of HVCs.

(iii) **Group 3**: New and improved weirs, and other works. New weir structures will replace farmer's constructed temporary weirs and provide permanent ponds/storage from which farmers can pump to irrigate HVCs such as pepper and coffee on hill slopes. Other works include upgrading of upstream storage and supply systems including reservoirs, culverts, roads, and control / monitoring systems to facilitate improved management.

(iv) Other works include upgrading culverts and roads, to facilitate improved management of irrigation systems.

5. The project will finance on a sliding scale, the viability gap associated with the operator's breakeven financial return over the course of the project period. It will also finance an evaluation study upon completion to assess effectiveness and commercial viability of the arrangement.

6. **Output 3: Efficient on farm water management practices adopted** will focus on improving on-farm water productivity in the subproject command areas, to improve resilience to climate change. Water productivity assessments conducted under output 1 will help determine suitable norms for different crops under different agro-ecological conditions. Based on this information, farmers will receive training and advisory services to improve on-farm water management to cope with climate variability. The service providers will consult with and provide technical advice to male and female farmers regarding identifying and developing appropriate micro-irrigation systems that meets their individual requirements. Farmers will also be linked up with private sector suppliers and be provided training in O&M of micro-irrigation systems.

7. Detailed implementation procedure per output is in appendix 1 of this project administration manual (PAM).

[5] Typically, 63 mm in diameter, with flows of about 5 l/s and within a range of 500 to 1,000 m from a field.
[6] Balancing storage at the tail is suggested where tail ends supplies HVC, but not where systems have rice in the tail area.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Table 1: Project Readiness Activities

	2018					2019			
Activity	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Responsible Agency**
Loan and grant negotiations	X								ADB, & MOF
Establishment of CPMU & PPMUs			X						CPO & DARDs
ADB Board approval				X					ADB
REOIs for (i) water assessment; & (ii) CESC				X					CPMU
Initiate recruitment for DED					X				CPO & DARDs
Project signing					X				ADB & MOF
Legal opinion provided						X			GOV
Government budget inclusion								X	MARD & PPCs
Project effectiveness								X	ADB & GOV

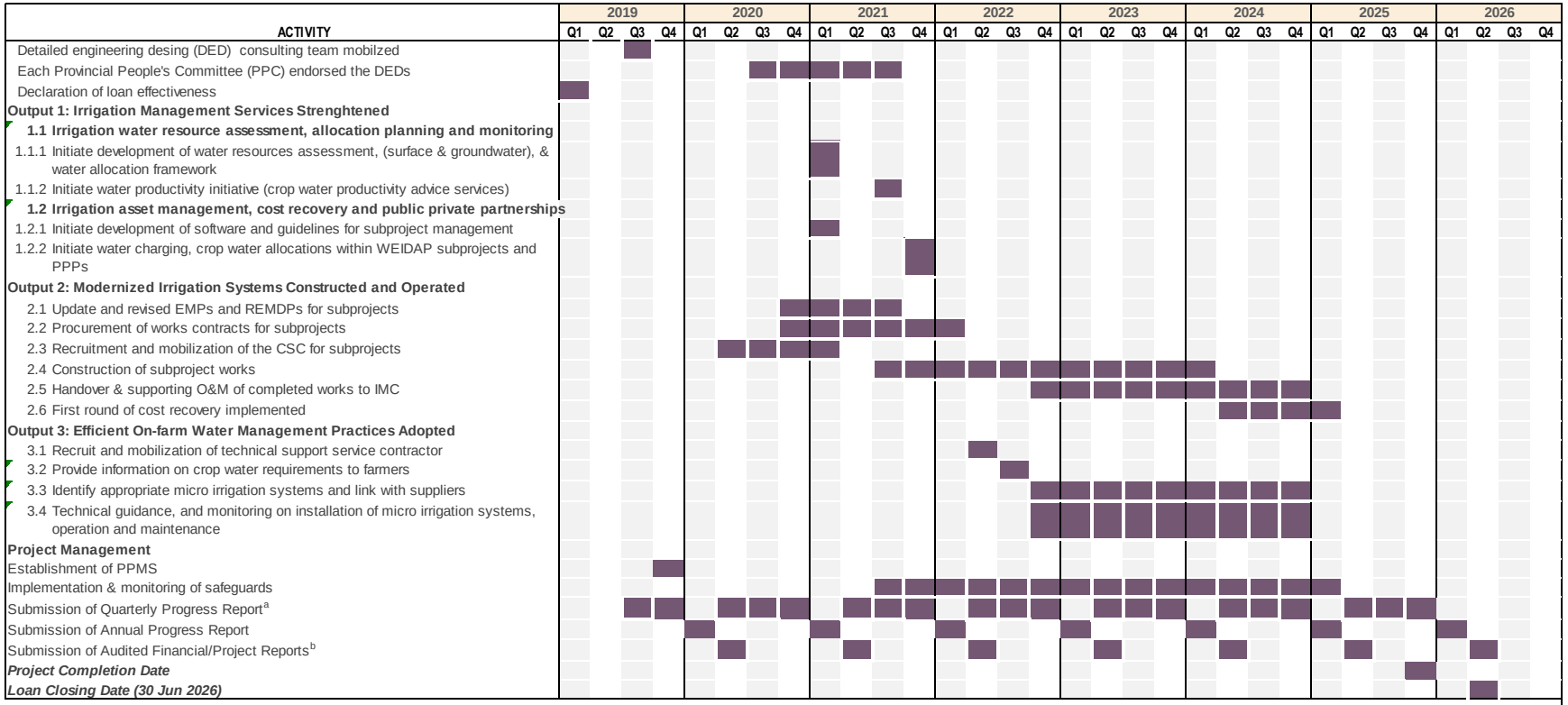
ADB = Asian Development Bank, CESCs = construction engineering support consultants, CPMU = central project management unit, CPO = Central Project Office, DED = detailed engineering design, DARD = Department of Agriculture and Rural Development, GOV = Government of Viet Nam, REOI = request for expressions of interest, MARD = Ministry of Agriculture and Rural Development, MOF = Ministry of Finance, PPMU = provincial project management unit; PPC = provincial people's committee.
Source: Asian Development Bank.

Table 2: Viet Nam Project Readiness Filters
(Updated on 11 Sept 2018)

Actions	Date of Action Completed	By Whom	By When	Status	Projected date for meeting the milestone and actions required
1.1 Concept Paper includes an assessment of required readiness level of the project (high level readiness vs. low level). - Management and team to agree on the required level of readiness, timeline for project processing and possible funding source for Detailed Design. - For large infrastructure type projects, a separate funding (such as an ongoing loan, a TA loan or Project Preparation and Start-up Support Facility) or piggybacking from the ongoing loan is identified (so that the recruitment of DD consultants can be processed before the project's approval) - Safeguard category is discussed and agreed to	Jun 2015	ADB	Concept Paper Stage		
Advance actions agreed to be included in Government's Pre-FS - Joint proposal of EA/ADB to this effect reflected in the mission Aide Memoire - Advance Actions to include preparation and approval of procurement related activities and resettlement framework/plan. See Note 1 for acceptable actions as per Decree 16	8 Aug 2017	EA/ADB	Concept Paper Stage	Agreed and included in pre-FS.	
2.1 Pre-FS submitted to MPI/Prime Minister - Agreed advance actions included - Proposed financial conditions and mechanism applied to the project, repayment method and financial capacity of EA included	27 Oct 2017 submission of revised Pre-FS	EA	Before Fact Finding	First submission was on 4 Jul 2017.	
2.2 Pre-FS approved by the Prime Minister Appraisal Committee provides its recommendation to Prime Minister with inputs from MPI, MOF, SBV and other relevant ministries	18 May 2018	EA/ Prime Minister	Before SRM/MRM		
2.2.1 Financial mechanism and on-lending modality reviewed by MOF as a part of inputs to the Appraisal Committee's recommendation		MOF	Before SRM/MRM	Initial review by MOF on 3 Aug 2017.	
2.3 Project Administration Manual prepared and agreed to with ADB (PAM to include the following 2.3.1 to 2.3.4)	11 Aug 2017	EA/ADB	Before SRM/MRM	Completed.	
2.3.1 Procurement Plan detailing contract packages, procurement modality, decision making structure and schedule are ready; agreed to with ADB					
2.3.2 Financial management system, audit arrangement, fund flow oversight established: agreed to with ADB					

Actions	Date of Action Completed	By Whom	By When	Status	Projected date for meeting the milestone and actions required
2.3.3 Resettlement and Ethnic Minorities Development Plan are prepared and agreed to with ADB	18 Dec 2017	EA/ADB	Before SRM/MRM	Completed	
2.3.4 Environment Safeguard Documents are prepared and agreed to with ADB. Initial Environment Examination, including EMP for Category B Projects	9 Nov 2017	EA/ADB	Before SRM/MRM	Completed.	
2.4 Funding source for detailed engineering design agreed between EA and ADB, and draft detailed TORs for detailed engineering design consultants and project supervision consultants ready	11 Aug 2017	EA/ADB	Before SRM/MRM	Completed.	
2.5 Fund mobilization plan for land acquisition and resettlement plan prepared		EA/ADB	Before SRM/MRM	Agreed funding will be from counterpart. Resettlement plan to be updated after DED completion.	All completed by 31 Dec 2018.
2.6 . Government's Feasibility Study is completed and approved by the competent authority. - EA assigns Project Owner to complete the FS; MPI, MOF and other related agencies to provide opinions - Agreed procurement plan to be included to avoid a separate approval process EIA/EMP of government to be included to avoid a separate approval process – Note 3	22 Jun 2018	National Assembly for National Projects EAs for Projects category A, B, C	Before SRM/MRM	On-going	
3.1 Establishment of CPMU and PPMUs officially announced with core staff in place		EA	By Loan Negotiations	Based on Decree 16, PMU to be established within 15 days from FS approval.	Oct 2018
3.2 Call for Expression of Interest and/or Request for Proposal for detailed engineering design consultancy work and project supervision consultants advertised or issued		EA	By Loan Negotiations	With Advance action under Government counterpart fund. Nov 2017	Dec 2018

B. Overall Project Implementation Plan



ADB = Asian Development Bank, CSC = construction supervision consultants, EMP = environmental management plan, IMCs = irrigation management companies, O&M = operation and maintenance, PPMS = project performance management system, PPP = public private partnership, REMDP = resettlement and ethnic minority development plan, WEIDAP = water efficiency improvement in drought-affected provinces project.

[a] Fourth quarter progress report will be replaced by the annual progress report.

[b] Submission of Jan-Jun 2026 annual audited financial report is due on Dec 2026.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations: Roles and Responsibilities

12. The Ministry of Agriculture and Rural Development (MARD) and the five participating provincial people's committees (PPCs) will be the executing agencies. MARD will be responsible for the overall implementation and management of the project through its Central Project Office (CPO). The CPO will establish a central project management unit (CPMU), to implement activities under output 1. It will also be responsible for overall coordination of the project with the Asian Development Bank (ADB), other central government agencies and provincial agencies. The participating PPCs will delegate implementation responsibility to their respective Department of Agriculture and Rural Development (DARD). In their respective provinces, each DARD will establish a PPMU to implement activities under outputs 2 and 3. All loan proceeds will be channeled directly to the provinces on re-lending terms and conditions agreed between the Ministry of Finance (MOF) and the provinces. MARD will receive no loan proceeds.

13. The CPMU and PPMUs will be established immediately after approval of the minutes of the loan negotiation. The CPMU will be headed by a project director and supported by qualified staff responsible for social/gender safeguards, environment safeguards, resettlement safeguards, procurement accounts, monitoring and evaluation and office administration.

14. Each PPMU will be headed by a project director and have staff responsible for safeguards, implementation support, contract administration and supervision, procurement, accounts, monitoring and evaluation, and office administration. ADB recommends that staff with previous experience in implementing ADB projects or other official development assistance (ODA) projects be recruited for the PMUs. Qualifications of selected staff will be subject to ADB's review and no-objection.

Table 3: Project Management Roles and Responsibilities

Project Implementation Organizations	Management Roles and Responsibilities
Ministry of Finance	• Ensure timely signing of on-lending agreements; • Communicate with ADB for any amendments in the allocation of the loan and grants amounts; • Review the withdrawal applications; and • Ensure timely allocation and release of both project and counterpart funds.
Executing Agencies	
Ministry of Agriculture and Rural Development (MARD)	Overall supervision and guidance in the implementation of the project at the national level; and timely provision of counterpart contribution both in-kinds and in-cash.
Binh Thuan Provincial People's Committees, Dak Lak Provincial People's Committees Dak Nong Provincial People's Committees Khan Hoa Provincial People's Committees and Ninh Thuan Provincial People's Committees	In their respective provinces, each provincial people's committee will: • be responsible for overseeing project activities. • ensure timely provision of counterpart funds. • assign a vice-chairman to be responsible to this project.
Implementing Agencies	
Central Project Office (CPO), MARD - through Central Project Management Unit (CPMU)	• In-charge of all day-to-day management and coordination work during project preparation and implementation; • Review the terms of reference for the detailed engineering design consultants; • Recruit and supervise construction engineering support consultants with sub-agreement with respective PPMUs; • Recruit and mobilize independent external auditor with sub-agreement with PPMUs; • Recruit and mobilize technical service provider for application of micro irrigation with sub-agreements with respective PPMUs; • Mobilize and supervise service providers for output 1; • Support the provinces in procuring service contracts; • Assist in the procurement of works under international competitive bidding and national competitive bidding; • Assist PPMUs in developing project management procedures, and implementation plan; • Develop financial management manual for use by all PMUs; • Open and maintain advance account for the grants proceeds; • Maintain separate project accounts for the project; • Process withdrawal applications for payments to contractors/technical service providers; • Consolidate and submit required periodic project related reports (i.e. progress reports, project completion report) and safeguards and social monitoring reports; • Have its financial statements audited by an external auditor acceptable to ADB as per the loan and grants agreements; • Coordinate implementation and monitoring of social and environmental safeguards; • Ensure compliance with social and environmental safeguards as per ADB's SPS 2009; • Support and guide implementation of gender action plan and report to ADB on progress (using ADB's template); • Develop a PPMS in coordination with PPMUs; and • Prepare project completion report for the government.

Project Implementation Organizations	Management Roles and Responsibilities
Departments of Agriculture and Rural Development (DARDs) - through Provincial Project Management Unit (PPMU)	• Engage detailed engineering design consulting services and prepare bidding documents in appropriate format; • Update initial environmental examinations (IEEs) reports (as needed), environment management plans, and resettlement and ethnic minority development plans (as needed) and submit to ADB for no-objection and disclosure; • With the support from the CPMU, procure goods and works under the subproject and administer and monitor suppliers; • Undertake contract management, construction supervision and quality control, with the support of supervision companies; • Under the guidance of CPMU, develop project management procedures, implementation plan; • Coordinate public consultation and disclosure activities; • Submit bidding documents, bid evaluation reports, and other necessary documentations to ADB for necessary approval; • Coordinate implementation of land acquisition and resettlement activities with relevant departments; • Coordinate implementation of environmental management, supervision and monitoring activities with Department of Natural Resources and Environment; • Establish and implement project grievance redress mechanism; • Coordinate implementation and monitoring of social safeguard plans and gender action plan; • Open and maintain separate advance accounts; • Submit withdrawal applications; • Maintain separate project accounts for the project; • Have its financial statements audited by an external auditor acceptable to ADB as per the loan and grants agreements; • Submit required periodic project related reports (i.e. progress report and completion report), and safeguards and social monitoring reports to CPMU for consolidation; and • Update PPMS under the guidance of CPMU.
Asian Development Bank (ADB)	• Responsible for administering the project including monitoring compliance with loan and grant covenants; • Perform and support in procurement review, public financial management, safeguards and social monitoring and supervision; • Ensure timely disbursement of loan and grant proceeds.

Source: Project preparatory technical assistance (PPTA) consultants.

B. Key Persons Involved in Implementation

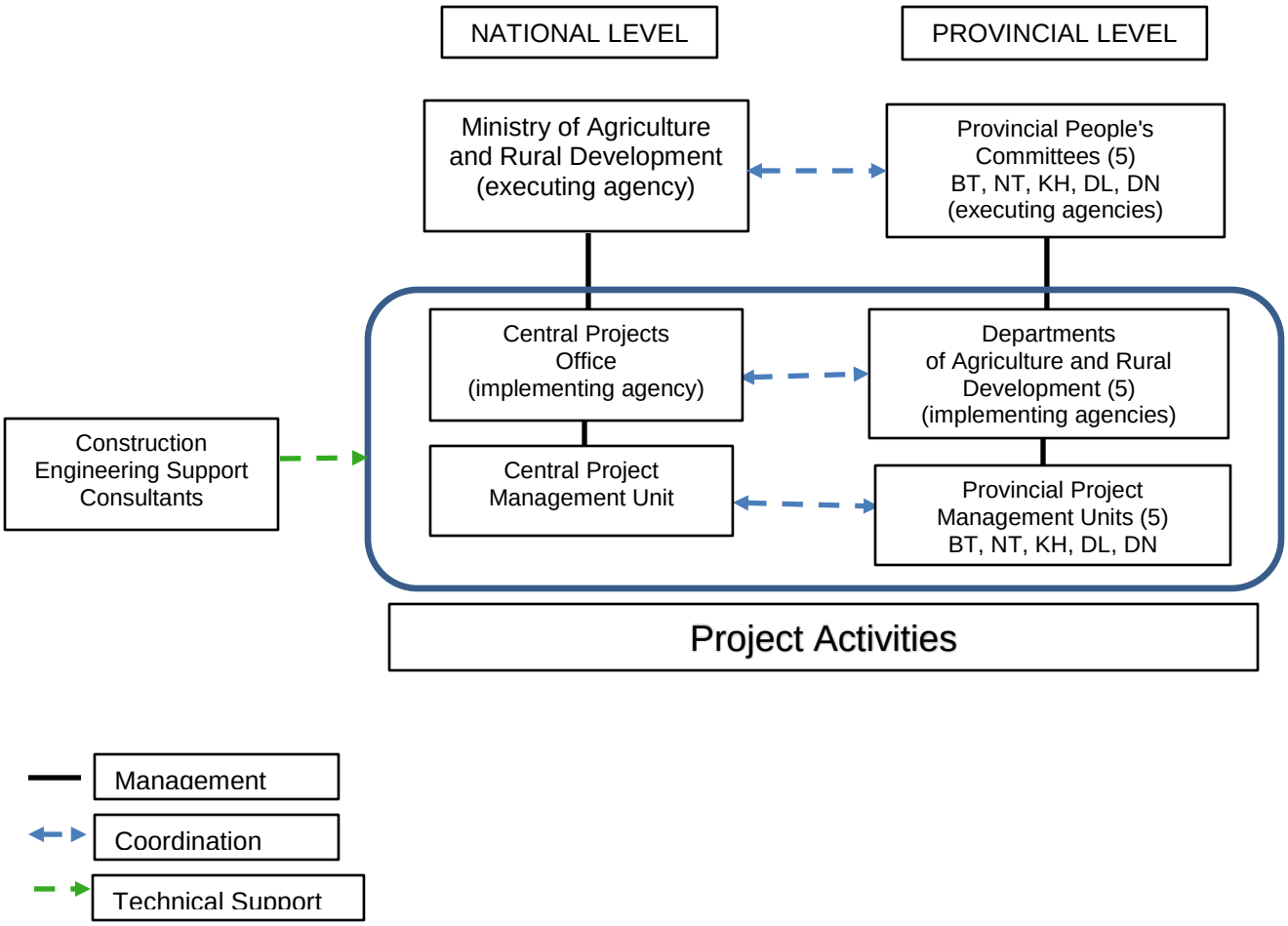
Executing Agency	Names of Key Personnel
PPC Binh Thuan	Mr. Nguyen Ngoc Hai Chairman Fax: (+84- 0252) 3822919
PPC Khanh Hoa	Mr. Le Duc Vinh Chairman Fax: (+84- 0258) 3810891
PPC Dak Lak	Mr. Pham Ngoc Nghi Chairman Fax: (+84- 0262) 08050554
PPC Dak Nong	Mr. Nguyen Bon Chairman Fax: (+84- 0501) 3544279
PPC Ninh Thuan	Mr. Luu Xuan Vinh Chairman Fax: (+84- 0259) 3822866

Implementing Agencies	Names of Key Personnel
Central Projects Office, MARD	Name: Mr. Nguyen Hong Phuong Director General Office Address: No. 23 Hang Tre, Hanoi Telephone: 091 3223057 Email Address: phuong1612@yahoo.com
Binh Thuan, DARD	Name: Mr. Nguyen Huu Phuoc Deputy Director Office Address: 17 Thu Khoa Huan, Phan Thiet, Binh Thuan Telephone: 091 8157801 Email Address: huuphuoctlln@yahoo.com.vn
Ninh Thuan, DARD	Name: Mr. Trinh Minh Hoang Director Office Address: 134 21/8 street, Phan Rang-Thap Cham, Ninh Thuan Telephone: 093 3559568 Email Address: minhhoangkbt@yahoo.com
Khanh Hoa, DARD	Name: Mr. Le Tan Ban Director Office Address: 04 Phan Chu Trinh, Nha Trang, Khanh Hoa Telephone: 090 5222079 Email Address: letanban06@gmail.com
Dak Lak, DARD	Name: Mr. Nguyen Hoai Duong Director Office Address: 47 Nguyen Tat Thanh, Buon Ma Thuot, Dak Lak Telephone: 093 5817818 Email address: nnptnt@daklak.gov.vn
Dak Nong, DARD	Name: Mr. Le Trong Yen Director Office Address: Nghĩa Trung, Gia Nghĩa, Đăk Nông Telephone: 097 5096789 Email address: yenlt.snnptnt@daknong.gov.vn

ADB	
Environment, Natural Resources and Agriculture Division (SEER) Southeast Asia Department (SERD)	Name: Mr. Jiangfeng Zhang Director Address: 6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines Telefax: +632 6322231 Email Address: jzhang@adb.org Name: Mr. Sanath Ranawana[a] Principal Portfolio Management Specialist Address: 6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines Telefax: +632 6322231 Email Address: sranawana@adb.org

[a] Transferred to the South Asia Department effective 23 April 2018. He will remain the project's team leader until he is replaced.

C. Project Organization Structure



IV. COSTS AND FINANCING

15. ADB will finance expenditures in relation to modernization of eight irrigation systems, engineering consultants, construction supervision and monitoring, , technical service provider for the application of micro irrigation, safeguards monitoring (including gender), and external auditor. The government will fund $23.21 million for project implementation including land acquisition and resettlement costs, development of systems for subproject maintenance and all taxes and duties.

16. The grants will finance the water resource assessments; water productivity initiative; water charging/cost recovery; and a portion of the national government incremental cost related to coordination.

A. Cost Estimates Preparation and Revisions

17. The cost estimate was prepared jointly by ADB and the government using the 3rd quarter 2018 prices. The cost estimate will be revised during mid-term review mission estimated on the third year of the project life.

B. Key Assumptions

18. The following key assumptions underpin the cost estimates and financing plan:

(i) Exchange rate: VND 23,308 = $1.00 (as of 28 August 2018)

(ii) Price contingencies based on expected cumulative inflation over the implementation period are as follows:

Table 4: Escalation Rates for Price Contingency Calculation

Item	2018/ 19	2019/ 20	2020/ 21	2021/ 22	2022/ 23	2023/ 24	2024/ 25	Average
Foreign rate of price inflation	1.4%	1.5%	1.5%	1.6%	1.6%	1.6%	1.6%	1.6%
Domestic rate of price inflation	3.7%	4.0%	5.0%	5.0%	5.0%	5.0%	5.0%	4.8%

Source: Asian Development Bank.

C. Detailed Cost Estimates by Expenditure Category

Table 5a: Consolidated Cost Estimates by Expenditure Category

Expenditure Category	million (Dong)			thousands $		
	Local Currency	Foreign Exchange	Total	Local Currency	Foreign Exchange	Total
I. Investment Costs						
A. Land Acquisition and Resettlement	102,202.4	0.0	102,202.4	4,330.0	0.0	4,330.0
B. Construction and Civil Works						
1. Works Contract	2,630,811.8	0.0	2,630,811.8	100,413.3	0.0	100,413.3
2. Other Works (100% govt)	42,467.2	0.0	42,467.2	1,822.0	0.0	1,822.0
3. Irrigation Equipment	55,722.4	0.0	55,722.4	2,119.3	0.0	2,119.3
4. Irrigation System Operations and Managen	25,493.6	0.0	25,493.6	969.6	0.0	969.6
Subtotal	2,754,495.0	0.0	2,754,495.0	105,324.2	0.0	105,324.2
C. Servcie Contracts						
1. Detailed Engineering Design	96,768.0	0.0	96,768.0	4,054.7	0.0	4,054.7
2. Construction Supervision	30,925.6	0.0	30,925.6	1,176.2	0.0	1,176.2
3. Technical Support for On-farm Micro-Irrigati	11,829.4	0.0	11,829.4	450.0	0.0	450.0
4. Water Resource Assessment	11,654.0	0.0	11,654.0	500.0	0.0	500.0
5. Water Productivity Initiative	10,488.6	0.0	10,488.6	450.0	0.0	450.0
6. Technical Systems for Subproject Manage	6,992.4	0.0	6,992.4	300.0	0.0	300.0
7. Water Charging / Cost Recovery	6,992.4	0.0	6,992.4	300.0	0.0	300.0
8. Construction Engineering Support Consulta	41,022.1	0.0	41,022.1	1,760.0	0.0	1,760.0
9. Monitoring and evaluation	14,461.1	0.0	14,461.1	550.0	0.0	550.0
Subtotal	231,133.6	0.0	231,133.6	9,540.9	0.0	9,540.9
D. Project Management						
1. CPO Management/Coordination	2,563.9	0.0	2,563.9	110.0	0.0	110.0
2. National Govt. Staff [a]	21,035.2	0.0	21,035.2	800.0	0.0	800.0
3. Provincial Govt. Staff [b]	43,513.4	0.0	43,513.4	1,655.0	0.0	1,655.0
Subtotal	67,112.5	0.0	67,112.5	2,565.0	0.0	2,565.0
Total Base Cost and Contingencies	3,154,943.5	0.0	3,154,943.5	121,760.0	0.0	121,760.0
II. Interest during implementation		58,269.9	58,269.9		2,500.0	2,500.0
Total Project Costs (A+B)	**3,154,943.5**	**58,269.9**	**3,213,213.4**	**121,760.0**	**2,500.0**	**124,260.0**

Note: Figures may not add up due to rounding.
[a] Includes updating of REMDP and EMP.
[b] Includes safeguard external monitoring, gender and audit report.
Source: Asian Development Bank estimates.

Table 5b: Cost Estimates by Expenditure Category by Province and by CPMU (in thousands)

Expenditure Category	Binh Thuan		Ninh Thuan		Khanh Hoa		Dak Lak		Dak Nong		National Government		Total	
	VND	USD	VND	USD	VND	USD	VND	USD	VND	USD	VND	USD	VND	USD
I. Investment Costs [a,b,c]														
A. Land Acquisition and Resettleme	25,230.9	1,082.5	25,230.9	1,082.5	12,615.5	541.3	13,894.2	541.3	25,230.9	1,082.5	0.0	0.0	102,202.4	4,330.0
B. Construction and Civil Works														
1. Works Contract	470,048.2	17,877.4	808,894.9	30,764.8	388,308.5	14,773.3	520,287.3	19,788.2	443,272.9	17,209.6	0.0	0.0	2,630,811.8	100,413.3
2. Other Works (100% govt)	7,784.9	334.0	14,311.1	614.0	0.0	0.0	0.0	0.0	20,371.2	874.0	0.0	0.0	42,467.2	1,822.0
3. Irrigation Equipment	3,099.9	117.9	0.0	0.0	30,557.6	1,162.2	22,065.0	839.2	0.0	0.0	0.0	0.0	55,722.4	2,119.3
4. Irrigation System Operations and I	1,745.8	66.4	262.9	10.0	9,620.6	365.9	12,812.5	487.3	1,051.7	40.0	0.0	0.0	25,493.6	969.6
Subtotal	482,678.8	18,395.7	823,468.9	31,388.8	428,486.7	16,301.4	555,164.7	21,114.6	464,695.8	18,123.6	0.0	0.0	2,754,495.0	105,324.2
C. Servcie Contracts														
1. Detailed Engineering Design	14,942.8	641.1	25,116.7	1,077.6	14,544.2	624.0	19,916.8	757.5	22,247.5	954.5	0.0	0.0	96,768.0	4,054.7
2. Construction Supervision	6,052.6	230.2	9,954.5	378.6	4,682.8	178.1	4,822.1	183.4	5,413.7	205.9	0.0	0.0	30,925.6	1,176.2
3. Technical Support for On-farm Mic	2,957.6	112.5	2,957.3	112.5	1,478.6	56.3	1,478.6	56.3	2,957.2	112.5	0.0	0.0	11,829.4	450.0
4. Water Resource Assessment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11,654.0	500.0	11,654.0	500.0
5. Water Productivity Initiative	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10,488.6	450.0	10,488.6	450.0
6. Technical Systems for Subproject	1,748.1	75.0	1,748.1	75.0	874.0	37.5	874.0	37.5	1,748.1	75.0		0.0	6,992.4	300.0
7. Water Charging / Cost Recovery	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6,992.4	300.0	6,992.4	300.0
8. Construction Engineering Support	10,255.5	440.0	10,255.5	440.0	5,127.8	220.0	5,127.8	220.0	10,255.5	440.0		0.0	41,022.1	1,760.0
9. Monitoring and evaluation	3,615.3	137.5	3,615.3	137.5	1,807.6	68.8	1,807.6	68.8	3,615.3	137.5	0.0	0.0	14,461.1	550.0
Subtotal	39,571.9	1,636.3	53,647.3	2,221.2	28,515.0	1,184.6	34,027.1	1,323.4	46,237.3	1,925.4	29,135.0	1,250.0	231,133.6	9,540.9
D. Project Management														
1. CPO Management/Coordination	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,563.9	110.0	2,563.9	110.0
2. National Govt. Staff [a]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21,035.2	800.0	21,035.2	800.0
3. Provincial Govt. Staff [b]	10,845.8	412.5	10,845.8	412.5	5,422.9	206.3	5,553.0	211.2	10,845.8	412.5	0.0	0.0	43,513.4	1,655.0
Subtotal	10,845.8	412.5	10,845.8	412.5	5,422.9	206.3	5,553.0	211.2	10,845.8	412.5	23,599.1	910.0	67,112.5	2,565.0
Total Base Cost and Contingencies	558,327.4	21,527.0	913,192.9	35,105.0	475,040.1	18,233.5	608,639.0	23,190.5	547,009.9	21,544.0	52,734.1	2,160.0	3,154,943.5	121,760.0
II. Interest during implementation		625.0		625.0		312.5		312.5		625.0		0.0		2,500.0
Total Project Cost	**558,327.4**	**22,152.0**	**913,192.9**	**35,730.0**	**475,040.1**	**18,546.0**	**608,639.0**	**23,503.0**	**547,009.9**	**22,169.0**	**52,734.1**	**2,160.0**	**3,154,943.5**	**124,260.0**

Note: Figures may not add up due to rounding.

[a] Includes updating of resettlement and ethnic minority development plan (REMDP) and environmental management plan (EMP).

[b] Includes safeguard external monitoring, gender and audit report.

Source: Asian Development Bank estimates.

D. Allocation and Withdrawal of Loan and Grant Proceeds

Table 6a: ADB Allocation and Withdrawal of Loan Proceed

Cat	Description	Total Amount Allocated for ADB Financing ($)	Basis for Withdrawal from the Loan Account
1	Binh Thuan Province (Works, Goods, Consulting Services) *	17,826,000	100% of total expenditure claimed**
2	Ninh Thuan Province (Works, Goods, Consulting Services) *	29,495,000	100% of total expenditure claimed**
3	Khanh Hoa Province (Works, Goods, Consulting Services) *	15,113,000	100% of total expenditure claimed**
4	Dak Nong Province (Works, Goods, Consulting Services) *	17,641,000	100% of total expenditure claimed**
5	Dak Lak Province (Works, Goods, Consulting Services) *	19,925,000	100% of total expenditure claimed**
	Total	**100,000,000**	

*Subject to the condition for withdrawal described in paragraph 5 of Schedule 3 of the Loan Agreement.
** Exclusive of taxes and duties imposed within the territory of the Borrower.

Table 6b: WFPF Allocation and Withdrawal of Grant Proceed

Cat	Description	Total Amount Allocated for NTF Financing ($)	Basis for Withdrawal from the Grant Account
1	Consulting Services (Water Resource Assessment)	300,000	66.0% of total expenditure claimed*
2	Consulting Services (Water Productivity Initiative)	400,000	97.8% of total expenditure claimed*
3	Incremental Cost (Central Project Office)	50,000	50.0% of total expenditure claimed*
	Total	**750,000**	

* Exclusive of taxes and duties imposed within the territory of the Recipient.

Table 6c: CCF Allocation and Withdrawal of Grant Proceed

Cat	Description	Total Amount Allocated for CCF Financing ($)	Basis for Withdrawal from the Grant Account
1	Consulting Services (Water Charging/Cost Recovery)	250,000	91.7% of total expenditure claimed*
2	Incremental Cost (Central Project Office)	50,000	50.0% of total expenditure claimed*
	Total	**300,000**	

* Exclusive of taxes and duties imposed within the territory of the Recipient.

E. Detailed Cost Estimates by Financier

Table 6a: Project Cost Estimates by Financier
($ thousands)

	Government												
	National		Provincial		ADB		CCF		WFPF		Total		Duties &
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Taxes
I. Investment Costs													
A. Land Acquisition and Resettlement	0.0	0.0%	4,330.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	4,330.0	3.5%	0.0
B. Construction and Civil Works													
1. Works Contract / Construction Cost	0.0	0.0%	10,411.2	10.4%	90,002.1	89.6%	0.0	0.0%	0.0	0.0%	100,413.3	80.8%	10,411.2
2. Other works	0.0	0.0%	1,822.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1,822.0	1.5%	165.6
3. Irrigation Equipment	0.0	0.0%	211.9	10.0%	1,907.4	90.0%	0.0	0.0%	0.0	0.0%	2,119.3	1.7%	211.9
5. Irrigation System Operations and Management	0.0	0.0%	96.9	10.0%	872.7	90.0%	0.0	0.0%	0.0	0.0%	969.6	0.8%	96.9
Subtotal	0.0	0.0%	12,542.0	11.9%	92,782.2	88.1%	0.0	0.0%	0.0	0.0%	105,324.2	84.8%	10,885.6
C. Service Contracts													
1. Detailed Engineering Design	0.0	0.0%	405.5	10.0%	3,649.2	90.0%	0.0	0.0%	0.0	0.0%	4,054.7	3.3%	405.5
2. Construction Supervision	0.0	0.0%	117.6	10.0%	1,058.6	90.0%	0.0	0.0%	0.0	0.0%	1,176.2	0.9%	117.6
3. Technical Support for On-Farm Micro Irrigation System	0.0	0.0%	40.0	8.9%	410.0	91.1%	0.0	0.0%	0.0	0.0%	450.0	0.4%	40.0
4. Water Resource Assessment	200.0	40.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	300.0	60.0%	500.0	0.4%	45.5
5. Water Productivity Initiative	50.0	11.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	400.0	88.9%	450.0	0.4%	40.9
6. Technical Systems for Subproject Management	0.0	0.0%	300.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	300.0	0.2%	27.3
7. Water Charging / Cost Recovery	50.0	16.7%	0.0	0.0%	0.0	0.0%	250.0	83.3%	0.0	0.0%	300.0	0.2%	27.3
8. Construction Engineering Support Consultants	0.0	0.0%	160.0	9.1%	1,600.0	90.9%	0.0	0.0%	0.0	0.0%	1,760.0	1.4%	160.0
9. Monitoring and evaluation[b]	0.0	0.0%	50.0	9.1%	500.0	90.9%	0.0	0.0%	0.0	0.0%	550.0	0.4%	50.0
Subtotal	300.0	3.1%	1,073.1	11.2%	7,217.8	75.7%	250.0	2.6%	700.0	7.3%	9,540.9	7.7%	914.0
D. Project Management													
1. CPO Management / Coordination	10.0	9.1%	0.0	0.0%	0.0	0.0%	50.0	45.5%	50.0	45.5%	110.0	0.1%	10.0
2. National Govt Staff	800.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	800.0	0.6%	72.8
3. Provincial Govt. Staff[a]	0.0	0.0%	1,655.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1,655.0	1.3%	0.0
Subtotal	810.0	31.6%	1,655.0	64.5%	0.0	0.0%	50.0	1.9%	50.0	1.9%	2,565.0	2.1%	82.8
Total Base Cost and Contingencies	1,110.0	0.9%	19,600.0	16.1%	100,000.0	82.1%	300.0	0.2%	750.0	0.6%	121,760.0	98.0%	11,882.4
Interest During Implementation	0.0	0.0%	2,500.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2,500.0	2.0%	0.0
Total Project Cost	**1,110.0**	**0.9%**	**22,100.0**	**17.8%**	**100,000.0**	**80.5%**	**300.0**	**0.2%**	**750.0**	**0.6%**	**124,260.0**	**100.0%**	**11,882.4**

Note: Figures may not add up due to rounding.
[a] Includes updating of REMDP and EMP.
[b] Includes safeguard external monitoring, gender and audit report.
Source: Asian Development Bank estimates

Table 6b: Project Cost Estimates by Financier
($ thousands)

	Binh Thuan		Ninh Thuan		Khanh Hoa		Dak Lak		Dak Nong		CPO		Total	
	Govt	ADB	Govt	ADB	Govt	ADB	Govt	ADB	Govt	ADB	Govt	CCF & WFPF	Govt	ADB, CCF & WFPF
I. Investment Costs														
A. Land Acquisition and Resettlement	1,082.5	0.0	1,082.5	0.0	541.3	0.0	541.3	0.0	1,082.5	0.0	0.0	0.0	4,330.0	0.0
B. Construction and Civil Works														
1. Works Contract / Construction Cost	1,629.0	16,248.4	3,216.8	27,548.0	2,071.3	12,702.1	2,217.7	17,570.5	1,276.5	15,933.2	0.0	0.0	10,411.2	90,002.1
2. Other works	334.0	0.0	614.0	0.0	0.0	0.0	0.0	0.0	874.0	0.0	0.0	0.0	1,822.0	0.0
3. Irrigation Equipment	11.8	106.1	0.0	0.0	116.2	1,046.0	83.9	755.3	0.0	0.0	0.0	0.0	211.9	1,907.4
4. Irrigation System Operations and Manageme	6.6	59.8	1.0	9.0	36.6	329.3	48.7	438.6	4.0	36.0	0.0	0.0	96.9	872.7
Subtotal	1,981.4	16,414.3	3,831.8	27,557.0	2,224.1	14,077.4	2,350.3	18,764.4	2,154.5	15,969.2	0.0	0.0	12,542.0	92,782.2
C. Service Contracts														
1. Detailed Engineering Design	64.1	577.0	107.8	969.8	62.4	561.6	75.8	681.8	95.5	859.1	0.0	0.0	405.5	3,649.2
2. Construction Supervision	23.0	207.2	37.9	340.7	17.8	160.3	18.3	165.1	20.6	185.3	0.0	0.0	117.6	1,058.6
3. Technical Support for On-Farm Micro Irrigatio	10.0	102.5	10.0	102.5	5.0	51.3	5.0	51.3	10.0	102.5	0.0	0.0	40.0	410.0
4. Water Resource Assessment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.0	300.0	200.0	300.0
5. Water Productivity Initiative	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	400.0	50.0	400.0
6. Technical Systems for Subproject Manageme	75.0	0.0	75.0	0.0	37.5	0.0	37.5	0.0	75.0	0.0	0.0	0.0	300.0	0.0
7. Water Charging / Cost Recovery	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	250.0	50.0	250.0
8. Construction Engineering Support Consultan	40.0	400.0	40.0	400.0	20.0	200.0	20.0	200.0	40.0	400.0	0.0	0.0	160.0	1,600.0
9. Monitoring and evaluation[b]	12.5	125.0	12.5	125.0	6.3	62.5	6.3	62.5	12.5	125.0	0.0	0.0	50.0	500.0
Subtotal	224.6	1,411.7	283.2	1,938.0	149.0	1,035.7	162.8	1,160.6	253.6	1,671.9	300.0	950.0	1,373.1	8,167.8
D. Project Management														
1. CPO Management / Coordination	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	100.0	10.0	100.0
2. National Govt Staff	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	800.0	0.0	800.0	0.0
3. Provincial Govt. Staff[a]	412.5	0.0	412.5	0.0	206.3	0.0	211.2	0.0	412.5	0.0	0.0	0.0	1,655.0	0.0
Subtotal	412.5	0.0	412.5	0.0	206.3	0.0	211.2	0.0	412.5	0.0	810.0	100.0	2,465.0	100.0
Total Base Cost and Contingencies	3,701.0	17,826.0	5,610.0	29,495.0	3,120.5	15,113.0	3,265.5	19,925.0	3,903.0	17,641.0	1,110.0	1,050.0	20,710.0	101,050.0
Interest During Implementation	625.0	0.0	625.0	0.0	312.5	0.0	312.5	0.0	625.0	0.0	0.0	0.0	2,500.0	0.0
Total Project Cost	**4,326.0**	**17,826.0**	**6,235.0**	**29,495.0**	**3,433.0**	**15,113.0**	**3,578.0**	**19,925.0**	**4,528.0**	**17,641.0**	**1,110.0**	**1,050.0**	**23,210.0**	**101,050.0**

Note: Figures may not add up due to rounding.

[a] Includes updating of REMDP and EMP.

[b] Includes safeguard external monitoring, gender and audit report.

Source: Asian Development Bank estimates

Table 6c: Project Cost Estimates by Financier

	Government		ADB	CCF	WFPF
Expenditure Category	**National**	**Provincial**			
A. Land Acquisition and Resettlement					
B. Construction and Civil Works					
Detailed engineering design					
Construction supervision					
Construction of irrigation (Includes first 12 months support after completion)					
Irrigation equipment					
O&M the first 12 months after completion (Other works)					
Taxes and duties for the above					
C. Service Contracts					
Technical engineering support					
Technical service provider for micro irrigation system					
Water assessment and allocation services					
Water productivity initiative					
Irrigation management software development					
Water charging framework and PPP participation					
Safeguards external monitoring (including gender)					
External auditor					
D. Project management support					
CPO incremental cost / coordination					
PPMU counterpart staff					
E. Interest During Implementation					

F. Detailed Cost Estimates by Outputs

Table 7: Project Cost Estimates by Output ($ thousands)

		Output 1		Output 2		Output 3	
	Total Cost	Amount	%	Amount	%	Amount	%
I. Investment Costs							
A. Land Acquisition and Resettlement	4,330.0	0.0	0.0%	4,330.0	100.0%	0.0	0.0%
B. Construction and Civil Works							
1. Works Contract / Construction Cost	100,413.3	0.0	0.0%	100,413.3	100.0%	0.0	0.0%
2. Other works	1,822.0	0.0	0.0%	1,822.0	100.0%	0.0	0.0%
3. Irrigation Equipment	2,119.3	0.0	0.0%	2,119.3	100.0%	0.0	0.0%
5. Irrigation System Operations and Management	969.6	0.0	0.0%	969.6	100.0%	0.0	0.0%
Subtotal	105,324.2	0.0	0.0%	105,324.2	100.0%	0.0	0.0%
C. Service Contracts							
1. Detailed Engineering Design	4,054.7	0.0	0.0%	4,054.7	100.0%	0.0	0.0%
2. Construction Supervision	1,176.2	0.0	0.0%	1,176.2	100.0%	0.0	0.0%
3. Technical Support for On-Farm Micro Irrigation System	450.0	0.0	0.0%	0.0	0.0%	450.0	100.0%
4. Water Resource Assessment	500.0	500.0	100.0%	0.0	0.0%	0.0	0.0%
5. Water Productivity Initiative	450.0	450.0	100.0%	0.0	0.0%	0.0	0.0%
6. Technical Systems for Subproject Management	300.0	0.0	0.0%	300.0	100.0%	0.0	0.0%
7. Water Charging / Cost Recovery	300.0	300.0	100.0%	0.0	0.0%	0.0	0.0%
8. Construction Engineering Support Consultants	1,760.0	0.0	0.0%	1,760.0	100.0%	0.0	0.0%
9. Monitoring and evaluation[b]	550.0	0.0	0.0%	550.0	100.0%	0.0	0.0%
Subtotal	9,540.9	1,250.0	13.1%	7,840.9	82.2%	450.0	4.7%
D. Project Management							
1. CPO Management / Coordination	110.0	110.0	100.0%	0.0	0.0%	0.0	0.0%
2. National Govt Staff	800.0	800.0	100.0%	0.0	0.0%	0.0	0.0%
3. Provincial Govt. Staff[a]	1,655.0	0.0	0.0%	1,655.0	100.0%	0.0	0.0%
Subtotal	2,565.0	910.0	35.5%	1,655.0	64.5%	0.0	0.0%
Total Base Cost and Contingencies	121,760.0	2,160.0	1.8%	119,150.0	97.9%	450.0	0.4%
Interest During Implementation	2,500.0	0.0	0.0%	2,500.0	100.0%	0.0	0.0%
Total Project Cost	**124,260.0**	**2,160.0**	**1.7%**	**121,650.0**	**97.9%**	**450.0**	**0.4%**

Note: Figures may not add up due to rounding.
[a] Includes updating of REMDP and EMP.
[b] Includes safeguard external monitoring, gender and audit report.
Source: Asian Development Bank estimates.

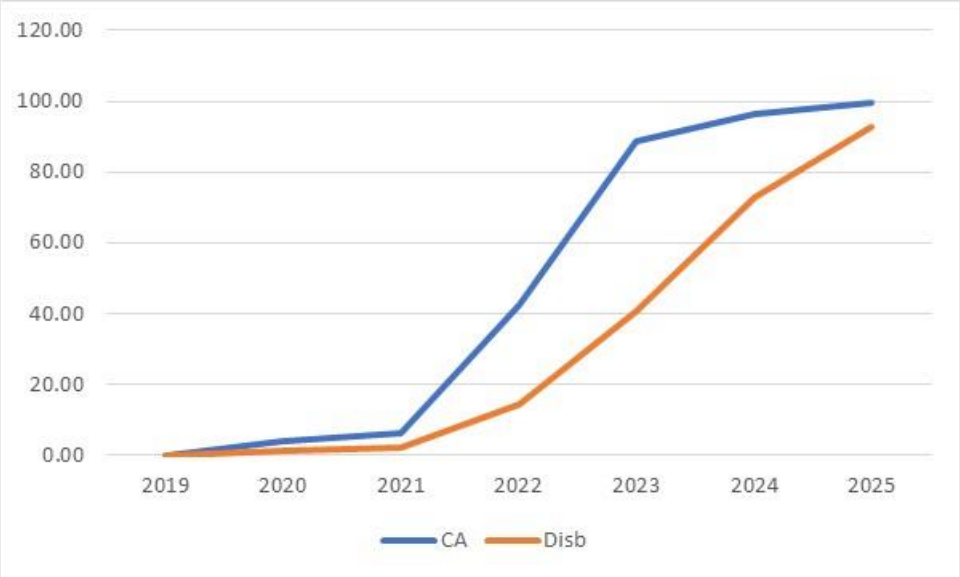
G. Detailed Cost Estimates by Year

Table 8: Project Cost Estimates by Year ($ thousands)

	2019	2020	2021	2022	2023	2024	2025	2026	Total Cost
I. Investment Costs									
A. Land Acquisition and Resettlement	1,082.5	2,165.0	649.5	433.0	0.0	0.0	0.0	0.0	4,330.0
B. Construction and Civil Works									
1. Works Contract / Construction Cost	0.0	0.0	0.0	25,103.3	30,124.0	25,103.3	10,041.3	10,041.3	100,413.3
2. Other works	0.0	0.0	0.0	455.5	546.6	455.5	182.2	182.2	1,822.0
3. Irrigation Equipment	0.0	0.0	0.0	529.8	635.8	529.8	211.9	211.9	2,119.3
4. Irrigation System Operations and Management	0.0	0.0	0.0	0.0	48.5	193.9	678.7	48.5	969.6
Subtotal	0.0	0.0	0.0	26,088.6	31,354.8	26,282.6	11,114.2	10,483.9	105,324.2
C. Service Contracts									
1. Detailed Engineering Design	405.5	2,250.4	1,398.9	0.0	0.0	0.0	0.0	0.0	4,054.7
2. Construction Supervision	0.0	0.0	117.6	235.2	294.1	294.1	235.2	0.0	1,176.2
3. Technical Support for On-Farm Micro Irrigation Syst	0.0	0.0	0.0	45.0	112.5	202.5	90.0	0.0	450.0
4. Water Resource Assessment	0.0	25.0	425.0	50.0	0.0	0.0	0.0	0.0	500.0
5. Water Productivity Initiative	0.0	22.5	157.5	67.5	135.0	67.5	0.0	0.0	450.0
6. Technical Systems for Subproject Management	0.0	0.0	0.0	15.0	135.0	135.0	15.0	0.0	300.0
7. Water Charging / Cost Recovery	0.0	15.0	240.0	30.0	15.0	0.0	0.0	0.0	300.0
8. Construction Engineering Support Consultants	88.0	176.0	352.0	352.0	352.0	352.0	44.0	44.0	1,760.0
9. Monitoring and evaluation[b]	0.0	41.3	110.0	110.0	110.0	110.0	55.0	13.8	550.0
Subtotal	493.5	2,530.1	2,801.0	904.7	1,153.6	1,161.1	439.2	57.8	9,540.9
D. Project Management									
1. CPO Management / Coordination	0.0	11.0	22.0	22.0	22.0	18.7	8.8	5.5	110.0
2. National Govt Staff	0.0	80.0	160.0	160.0	160.0	136.0	64.0	40.0	800.0
3. Provincial Govt. Staff[a]	0.0	165.5	331.0	331.0	331.0	281.3	132.4	82.7	1,655.0
Subtotal	0.0	256.5	513.0	513.0	513.0	436.0	205.2	128.2	2,565.0
Total Base Cost and Contingencies	1,576.0	4,951.6	3,963.5	27,939.4	33,021.4	27,879.6	11,758.6	10,669.9	121,760.0
Interest During Implementation	0.0	0.0	0.0	250.0	250.0	1,125.0	750.0	125.0	2,500.0
Total Project Cost	**1,576.0**	**4,951.6**	**3,963.5**	**28,189.4**	**33,271.4**	**29,004.6**	**12,508.6**	**10,794.9**	**124,260.0**

Note: Figures may not add up due to rounding.
[a] Includes updating of REMDP and EMP.
[b] Includes safeguard external monitoring, gender and audit report.
Source: Asian Development Bank estimates.

H. Contract and Disbursement S-Curve



ADB Loan Procceds

	Contract Awards					Disbursement				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2020	0.000	0.500	1.000	1.500	3.000	0.000	0.000	0.000	1.000	1.000
2021	0.000	1.500	0.000	1.000	2.500	0.000	0.000	0.000	1.000	1.000
2022	0.000	8.000	10.000	18.000	36.000	0.000	0.000	5.000	7.000	12.000
2023	0.000	12.000	12.000	22.000	46.000	0.000	5.000	6.000	15.000	26.000
2024	0.000	3.000	2.500	2.500	8.000	2.000	10.000	10.000	10.000	32.000
2025	0.000	1.000	1.000	1.000	3.000	2.000	6.000	6.000	6.000	20.000
2026	0.000	0.500	0.500	0.500	1.500	2.000	2.000	2.000	2.000	8.000
					100.000					100.000

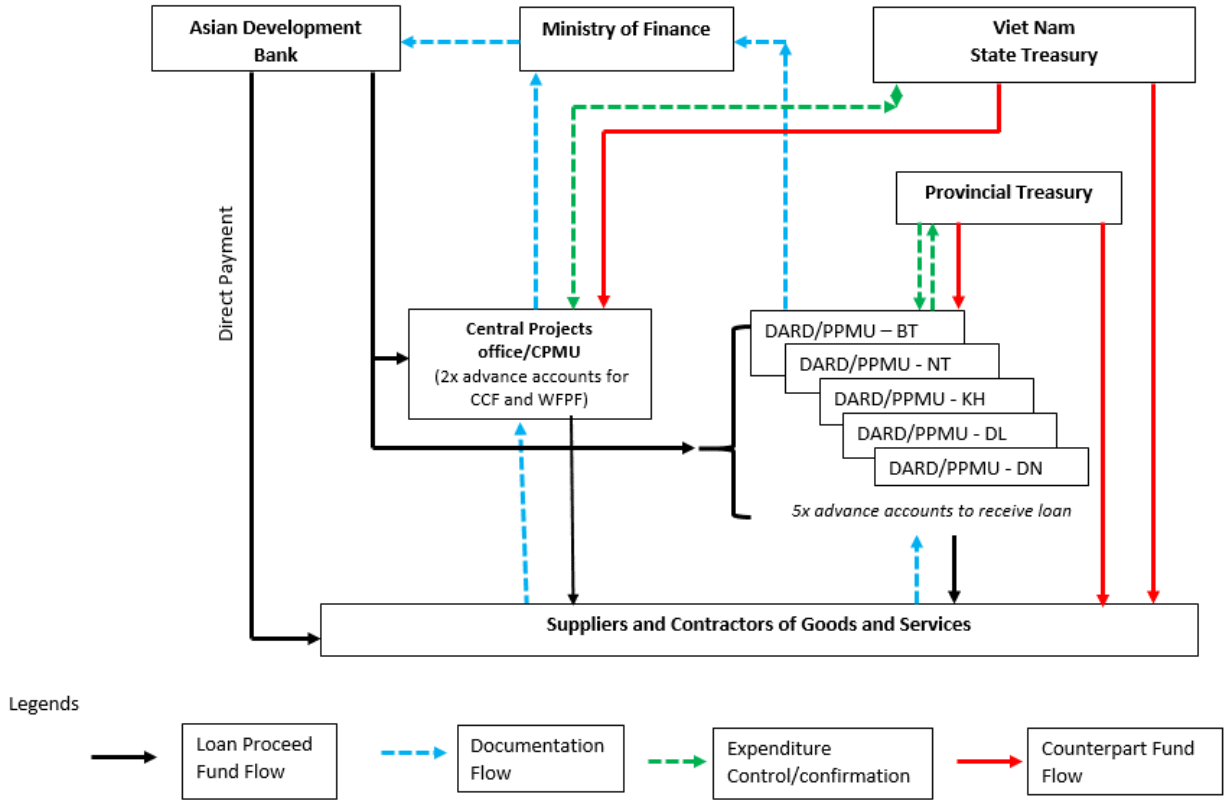
Grant - NTF

	Contract Awards					Disbursement				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2020	0.000	0.000	0.300	0.400	0.700	0.000	0.000	0.000	0.070	0.070
2021	0.000	0.000	0.000	0.015	0.015	0.000	0.000	0.000	0.080	0.080
2022	0.000	0.000	0.000	0.015	0.015	0.000	0.000	0.000	0.130	0.130
2023	0.000	0.000	0.000	0.012	0.012	0.000	0.000	0.000	0.180	0.180
2024	0.000	0.000	0.000	0.008	0.008	0.000	0.000	0.000	0.110	0.110
2025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100
2026	0.000	0.000	0.000	0.000	0.000	0.000	0.080	0.000	0.000	0.080
					0.750					0.750

Grant - CCF

	Contract Awards					Disbursement				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2020	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.020	0.020
2021	0.000	0.000	0.000	0.010	0.010	0.000	0.000	0.000	0.020	0.020
2022	0.000	0.000	0.000	0.012	0.012	0.000	0.000	0.000	0.040	0.040
2023	0.000	0.000	0.000	0.013	0.013	0.000	0.000	0.000	0.040	0.040
2024	0.000	0.000	0.000	0.010	0.010	0.000	0.000	0.000	0.050	0.050
2025	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.050	0.050
2026	0.000	0.000	0.000	0.000	0.000	0.030	0.050	0.000	0.000	0.080
					0.300					0.300

I. Fund Flow Diagram



19. Fund flow for the loan and ADB administered grant proceeds are laid out in the diagram above. Grant proceeds from the Climate Change Fund (CCF) and Water Financing Partnership Facility (WFPF) will be downloaded to CPMU only and loan proceeds to the provinces only.

20. Payments made by CPMU and PPMUs need to be certified by the Treasury (at central and provincial levels respectively) upon receipt of payment documents. Based on the payments that have been authorized by the state/provincial treasury, CPMU and each PPMU will prepare withdrawal applications with associated payment documents as per ADB Loan Disbursement Handbook, 2017 and submit to MOF for endorsement. Authorized withdrawal applications will be forwarded to ADB for processing.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

21. The financial management assessment (FMA) was conducted between March to May 2017, in accordance with ADB's Guidelines on the Financial Management and Analysis of Projects and the Financial Management Due Diligence: Methodology Note. The FMA reviewed financial management capacity of (i) the CPO for MARD, and (ii) DARDs for the Provincial People's Committees (PPCs) of five project provinces. The scope of FMA covered funds flow arrangements, staffing, accounting and financial reporting systems, internal and external auditing arrangements, and financial information systems. The FMA was prepared based on the information collected from the EA and IAs.

22. The FMA concluded that the overall financial management risk rating of the project before considering mitigating measures is **moderate**. This is because CPO and DARDs have sufficient capacity in financial management of donor-funded projects and they will establish respective project management units (PMUs) exclusively for this project. The capacity of CPO and DARDs are not limited to financial management, but also to other areas related to project management such as consultant recruitment and procurement of goods and works. Based on the FMA, it is concluded that the EA and the IAs have the capacity to use the statement of expenditure and advance fund procedures. During the project implementation, the CPO will supervise and guide the central project management unit (CPMU) while each of the five DARDs will do the same for the provincial project management units (PPMUs). The CPO already have financial management manual used for other ADB projects and will update the manual for this project. Each of CPMU and PPMUs will have two full-time qualified accountants with a chief accountant dedicated for financial management of this project at the national and provincial levels.

23. The FMA concluded that the prevailing structure and system of project financial management in the EA and IAs, after considering mitigating measures is appropriate. The identified financial management risks will be closely monitored during project implementation. The financial management action plan is provided in Table 9.

Table 9: Financial Management Action Plan

Action	Responsible Agency	Timing
EAs and IAs will establish CPMU and PPMUs.	EAs and IAs	Oct 2018
EAs and IAs will ensure recruitment of two full-time qualified accountants, one of which has experience with ADB or the World Bank project.	EAs and IAs	Oct 2018
EAs/CPO will give a first round of training to accountants of PPMUs on ADB financial management requirements or get them to attend ADB's training on disbursement.	EAs	Dec 2018
EAs/CPO and IAs will ensure that PPMUs will use an accounting software satisfactory for the government and ADB.	EAs and IAs	Three months from project effectiveness.
CPMU will develop a financial management manual.	CPMU	Three months from project effectiveness.

ADB = Asian Development Bank, CPMU = central project management unit, CPO = central project office, EA = executing agency; IAs = implementing agencies; PPMU = provincial project management unit.

B. Disbursement

1. Disbursement Arrangements for ADB Funds

24. The loan, CCF grant and ADB administered grant proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time), and detailed arrangements agreed upon between the government and ADB. Online training for project staff on disbursement policies and procedures is available.[7] Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

25. Under the guidance of CPO and DARDs, CPMU and each PPMU in the participating provinces will be responsible for all disbursement arrangement including (i) preparing disbursement projections, (ii) requesting budgetary allocations for counterpart funds, (iii) collecting supporting documents, and (iv) preparing and sending withdrawal applications to ADB. At the end of each year, realistic projections of contract awards and disbursement for the next year will be made for an assessment and projection of ADB funds.

26. Following this arrangement, works contractors, goods and service suppliers will submit invoices to their respective PPMU. Each PPMU will be responsible for preparing all supporting documentation required for payment and retain original documentation for purposes of audit. The PPMUs shall prepare withdrawal applications for direct payments or make the necessary payments directly from the advance fund account after securing expense concurrence from the provincial state treasury.

27. **Advance fund procedure**. A total of seven advance accounts will be established - two accounts to receive the advance from each grant at the CPMU level and five in each of the PPMU to receive the advance from the loan. The currency of the advance fund accounts is in US dollar. The advance fund accounts are to be used exclusively for each financier's share of eligible expenditures. The CPMU and PPMUs who established the advance fund account in its name, is accountable and responsible for proper use of advances to the advance fund account.

28. The total outstanding advance to each of the advance accounts should not exceed the estimate of each financier's share of expenditures to be paid through the respective advance account for the forthcoming six months. The CPMU and PPMUs may request for initial and additional advances to the advance accounts based on an Estimate of Expenditure Sheet[8] setting out the estimated expenditures to be financed through the accounts for the forthcoming six months. Supporting documents should be submitted to ADB or retained in the CPMU and PPMUs in accordance with the ADB's Loan Disbursement Handbook (2017, as amended from time to time) when liquidating or replenishing the advance accounts.

29. **Statement of expenditure procedure (SOE)**.[9] The SOE procedure may be used for reimbursement of eligible expenditures or liquidation of advances to the advance accounts. The ceiling of the SOE procedure is the equivalent to $100,000 per individual payment. Supporting documents and records for the expenditures claimed under the SOE should be maintained and made readily available for review by ADB's disbursement and review missions, upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit.

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[7] Disbursement eLearning. http://wpqr4.adb.org/disbursement_elearning.

[8] ADB. 2017. Loan Disbursement Handbook. 8A.

[9] SOE forms are available in Appendix 7B of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

Reimbursement and liquidation of individual payments in excess of the SOE ceiling should be supported by full documentation when submitting the withdrawal applications to ADB.

30. Before the submission of the first withdrawal application, the borrower should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the government, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is set in accordance with the ADB's Loan Disbursement Handbook. Individual payments below this amount should be paid (i) by the executing agency and/or implementing agency and subsequently claimed to ADB through reimbursement, or (ii) through the advance fund procedure, unless otherwise accepted by ADB.

2. Disbursement Arrangements for Counterpart Fund

31. MARD and the five PPCs will annually allocate counterpart funds for the project. The government will finance local taxes and duties; value-added tax and other similar types of taxes and duties. Counterpart funds are directly downloaded to CPMU and five PPMUs from the state treasury and provincial treasury.

C. Accounting

32. CPMU and each PPMU will maintain separate project accounts and records by funding sources and by categories as outlined in the financing agreements for all project expenditures incurred. The project's accounting records and chart of accounts must be in compliance with the Circular 195/2012/TT-BTC dated 15/11/2012 issued by MOF. All supporting documents will be retained per requirements by ADB and the government of Viet Nam with easy access for the authorized users of such information. Each PMU will prepare annual project financial statements using the modified method of accounting and in accordance with the Vietnamese government accounting laws and regulations, specifically Circular 195/2012/TT-BTC under the Vietnamese Accounting Standards, as well as the reporting requirements by ADB.

D. Auditing and Public Disclosure

33. MARD and each PPC through their respective PMUs will cause the detailed project financial statements to be audited in accordance with the International Standards on Auditing (ISA) and International Standard on Assurance Engagements on (ISAE) by an independent auditor acceptable to ADB (see Appendix 8). The audit report will comprise the financial statements prepared by project management and the auditor's opinion following ISA 800: "Special Considerations - Audits of Financial Statements Prepared in Accordance with Special Purpose Frameworks" on whether the project financial statements present fairly, in all material respects, or give a true and fair view of the project's financial positions and activities in accordance with the applicable financial reporting framework as set forth in the Accounting Section C above. Additionally, the auditor will also issue audit opinion on whether (i) the proceeds of the loan were used only for the purpose(s) of the project; and (ii) the borrower or executing agency was following the financial covenants contained in the loan agreements (where applicable) in accordance with requirements per ISAE 3000: "Assurance Engagements other than Audits or Reviews of Historical Financial Information". ADB requires a reasonable assurance engagement to be conducted under these standards. Limited assurance engagements are not acceptable. The annual audit report will include a management letter and a schedule of non-compliance findings, as necessary.

34. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

35. Each of the PPC and CPO audited project financial statements will be submitted to ADB annually for each reporting period (fiscal year) from the date of loan effectiveness until the loan closing date or as agreed for the purpose of the project. The audited financial statements, together with the auditor's opinions, management letter and other supplementary information, if any, will be submitted in the English language to ADB within six months of the end of the fiscal year. The government and the PPCs have been made aware of ADB's policy on delayed submission, and the requirements for satisfactory and acceptable quality of the audited accounts (covering failure of submitting audited accounts and financial statements by the due dates). ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower), or for additional support to be provided to the auditor, if the audits are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to examine the project's financial accounts and the auditor's working papers to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

36. Public disclosure of the audited project financial statements, including the auditor's opinion on the project financial statements, will be guided by ADB's Public Communications Policy 2011.[10] After the review, ADB will disclose the audited project financial statements and the opinion of the auditors on the project financial statements no later than 14 days of ADB's confirmation of their acceptability by posting them on ADB's website. The management letter, additional auditor's opinions, and audited entity financial statements will not be disclosed.[11]

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting

37. All advance contracting will be undertaken in conformity with ADB's Procurement Guidelines (2015, as amended from time to time) and ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The issuance of invitations to bid or the request for submission of proposal under advance contracting will be subject to ADB's prior approval. The borrower, the executing agencies, and the implementing agencies have been advised that approval of advance contracting does not commit ADB to finance the project.

38. Contracts for the detailed engineering design consultants, construction engineering support consultants; and consulting team for the water resources assessment (surface and ground water) and water allocation framework will be recruited as part of advance contracting. The steps include soliciting and evaluating expressions of interest, shortlisting of firms, and preparation and evaluation of proposals. Said contracts will be awarded only after the project is declared effective.

B. Procurement of Goods, Works, and Consulting Services

39. All procurement of goods and works will be undertaken in accordance with ADB's Procurement Guidelines (2015, as amended from time to time).

[10] Public Communications Policy: http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications.

[11] This type of information would generally fall under public communications policy exceptions to disclosure. ADB. 2011. *Public Communications Policy*. Paragraph 97(iv) and/or 97(v).

40. International competitive bidding (ICB) procedures will be used for civil works contracts estimated to cost $10.0 million or more, and supply contracts valued at $2.0 million or higher. Shopping will be used for contracts for procurement of works and equipment worth less than $100,000. National competitive bidding (NCB) procedures will be used for civil works estimated to cost $100,000 or higher but less than $10.0 million, goods and equipment worth $100,000 and higher but less than $2.0 million.

41. Since the project is confinanced by the Netherlands Trust Fund under Water Financing Partnership Facility, which allows for universal procurement, a blanket waiver of member country procurement eligibility restrictions will apply as approved by the Board in 2013.[12]

42. Procurement of works shall include construction of modern irrigation systems which are characterized by a combination of canal and pump-pipe pressure systems, together with control and flow measurement equipment, some with automation and remote SCADA monitoring and operation.

43. In consideration of: (i) some electrical equipment associated with the works contracts including pumps, valves, sensors and meters, need to be quickly replaced in event of failure to avoid disruption of operations, (ii) commissioning of modern systems entails calibration and adjustment of valves, meters and other equipment and, particularly for any SCADA systems, also takes time, and (iii) IMCs and any third-party operators needs to acquire new skills in operating procedures. Therefore, civil works contracts should include provision to support for operation throughout the (12 month) maintenance period to include, as appropriate for each subproject:

(i) Joint commissioning of the scheme by the contractor and IMC or other third-party, to be tested under various operating/ actual use conditions.

(ii) Contractor to provide operator(s) to remain on site through-out both commissioning and the full (12-month) maintenance period to operate the scheme together with the IMC or other third-party.

(iii) On-call engineer(s)/ specialist(s) to be available to visit the subproject, and carry out adjustment, repair and replacement of equipment as necessary.

(iv) Contractor to provide O&M manual for subproject, with detailed instructions concerning M&E equipment (how to replace, etc.).

(v) Contractor to train IMC/ other third-party operators through: (i) joint operation and maintenance for the maintenance period, and (ii) instruction and practical demonstration on detecting and replacement of faulty equipment.

44. Contractor to provide a small workshop with spare parts, equipment and components, such as pumps, valves, flow and pressure meters, and so on.

45. An 18-month procurement plan indicating threshold and review procedures, goods, works, and consulting service contract packages and national competitive bidding guidelines is in Section C - Procurement Plan.

[12] ADB. 2013. *Blanket Waiver of Member Country Procurement Eligibility Restrictions in Cases of Cofinancing for Operations Financed from Asian Development Fund Resources*. Manila (R29-13).

C. Procurement Plan

Basic Data

Project Name: Water Efficiency Improvement in Drought-Affected Provinces Project	
Project Number: 49404-002	**Approval Number:** XXXX
Country: Viet Nam, Socialist Republic of	**Executing Agencies**: Ministry of Agriculture and Rural Development (MARD) PPCs of Binh Thuan, Ninh Thuan, Khanh Hoa, Dak Lak and Dak Nong
Project Procurement Classification: Category B	**Implementing Agencies**: National: Central Project Management Unit, CPO, MARD Province: DARDs of Binh Thuan, Ninh Thuan, Khanh Hoa, Dak Lak and Dak Nong
Project Procurement Risk: Moderate	
Project Financing Amount: US$124,260,000 **ADB Financing:** US$100,000,000 **Cofinancing (ADB Administered):** $1,050,000 **Non-ADB Financing:** US$23,210,000	**Project Closing Date:** 30 June 2026
Date of First Procurement Plan: 30 August 2018	**Date of this Procurement Plan**: 30 August 2018

1. Methods, Thresholds, Review and 18-month Procurement Plan

a. Procurement, Consulting Methods, and Thresholds

46. Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works		
Method	**Threshold**	**Comments**
International Competitive Bidding for Goods	US$2,000,000 and Above	Prior review of all contracts.
National Competitive Bidding for Goods	Between US$100,000 and US$1,999,999	The first NCB from each province is subject to prior review, thereafter post review.
Shopping for Goods	Up to US$99,999	Post review.
International Competitive Bidding for Works	US$10,000,000 and above	Prior review of all contracts.
National Competitive Bidding for Works	Between US$100,000 and US$9,999,999	The first NCB from each province is subject to prior review, thereafter post review.
Shopping for Works	Up to US$99,999	Post Review.

Consulting Services	
Method	**Comments**
Consultant's Qualification Selection	Subject to prior review.
Fixed Budget Selection	
Quality- and Cost-Based Selection	
Single Source Selection	Subject to prior review. For package: CPC-C-03

b. Goods and Works Contracts Estimated to Cost $1 Million or More

47. The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number	**General Description**	**Estimated Value**	**Procurement Method**	**Review** (Prior/ Post)	**Bidding Procedure**	**Advertisement Date** (quarter/year)	**Comments**
	None						

c. Consulting Services Contracts Estimated to Cost $100,000 or More

48. The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months.

Package Number	**General Description**	**Estimated Value**	**Recruitment Method**	**Review** (Prior/ Post)	**Advertisement Date** (quarter/year)	**Type of Proposal**	**Comments**
CPO-C-01	Construction engineering support consultants	1,760,000	QCBS	Prior	Q4 / 2018	FTP	Assignment: International Advance Contracting: Y Comments: To be recruited by CPMU. Five contracts to be signed by each province. Cost ratio of 90:10
CPO-C-03	Water resources assessment (surface and groundwater) and water allocation framework	500,000	SSS	Prior	Q4 / 2018	BTP	Assignment: National Advance Contracting: Y Comments: To be recruited by CPMU. WFPF Grant Finance
PPC-DED-BT PPC-DED-DK PPC-DED-DN PPC-DED-KH PPC-DED-NT	Detailed engineering design contracts (5 contracts)	$4,054,700	FBS	Prior	Q4 / 2018	BTP	Assignment: National Advance Contracting: Y Comments: Each province will recruit their respective DED firm. Each contract will be lumpsum.
CPO-C-04	Crop monitoring online platform development	450,000	FBS	Prior	Q1 / 2019	BTP	Assignment: International Advance Contracting: N Comments: To be recruited by CPMU. WFPF Grant Finance

Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior/ Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
CPO-C-05	Water charging framework, institutional arrangement and protocols to engage service providers to operate modernized irrigation systems	300,000	CQS	Prior	Q1 / 2019	BTP	Assignment: National Advance Contracting: N Comments: To be recruited by CPMU. CCF Grant Finance
CPO-C-08	External Auditor	100,000	CQS	Prior	Q4 / 2019	BTP	Assignment: National Advance Contracting: N Comments: 70:30. To be recruited by CPMU. Five contracts to be signed by each province.

2. Indicative List of Packages Required Under the Project

49. The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Goods and Works							
Package Number	**General Description**	**Estimated Value**	**Procurement Method**	**Review** (Prior/ Post)	**Bidding Procedure**	**Advertisement Date** (quarter/year)	**Comments**
BT-W-01	Tra Tan: Upgrade irrigation canal system and establish new piped distribution system	5,564,450	NCB	Prior	1S1E	Q4 / 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Small Works Comments: To be procured by Binh Thuan PPMU
BT-W-02	Du Du-Tan Thanh: Construction of New Pipe Distribution Irrigation System	12,497,250	ICB	Prior	1S1E	Q4 / 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Large Works Comments: To be procured by Binh Thuan PPMU

Goods and Works							
Package Number	**General Description**	**Estimated Value**	**Procurement Method**	**Review** (Prior/ Post)	**Bidding Procedure**	**Advertisement Date** (quarter/year)	**Comments**
DL-W-01	Krong Buk Ha Subproject	9,674,400	NCB	Prior	1S1E	Q4 / 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Small Works Comments: To be procured by Dak Lak PPMU
DL-W-02	Construction of pipe irrigation system in Doi 500 and Ea Kuang in Dak Lak Lot 1: Doi 500 Pipe Irrigation System Lot 2: Ea Kuang Pipe Irrigation System	6,452,120 2,050,790 4,401,330	NCB	Post	1S1E	Q4 / 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Small Works Comments: To be procured by Dak Lak PPMU
DL-W-03	Construction of pipe irrigation system for Buon Yong and Ea H'Leo-Ea Drang in Daklak Lot 1: Buon Yong Pipe Irrigation System Lot 2: Ea H'Leo - Ea Drang Pipe Irrigation Systems	4,988,130	NCB	Post	1S1E	Q4 / 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Small Works Comments: To be procured by Dak Lak PPMU
DN-W-01	Dak Mil Irrigation Rehabilitation and Weir Construction	10,154,570	ICB	Prior	1S1E	Q4 / 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Large Works Comments: To be procured by Dak Nong PPMU
DN-W-02	Cu Jut Weir Construction (10)	7,095,030	NCB	Prior	1S1E	Q4 / 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Small Works Comments: To be procured by Dak Nong PPMU

Goods and Works							
Package Number	**General Description**	**Estimated Value**	**Procurement Method**	**Review** (Prior/ Post)	**Bidding Procedure**	**Advertisement Date** (quarter/year)	**Comments**
KH-W-01	Cam Ranh: Main Canal Upgrade, Four Pumping Stations and Associated Pipe Distribution System and Suoi Dau Main Canal Upgrade, One Pumping Station and Associated Pipe Distribution System	16,301,400	ICB	Prior	1S1E	Q4 / 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Large Works Comments: To be procured by Khanh Hoa PPMU
NT-W-01	Thanh Son-Phuoc Nhon: Construction of Piped Distribution System	9,715,290	NCB	Prior	1S1E	Q4 / 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Small Works Comments: To be procured by Ninh Thuan PPMU
NT-W-02	Nhon Hai-Thanh Hai: Main Delivery Pipe from Tan My pipeline to Subproject Area	6,056,700	NCB	Post	1S1E	Q4 / 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Small Works Comments: To be procured by Ninh Thuan PPMU
NT-W-03	Nhon Hai-Thanh Hai: Construction of Piped Distribution System within Irrigation Area	5,789,770	NCB	Post	1S1E	Q4 / 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Small Works Comments: To be procured by Ninh Thuan PPMU
NT-W-04	Road Rehabilitation	9,213,040	NCB	Post	1S1E	Q2 / 2021	Prequalification of Bidders: N Domestic Preference Applicable: N Advance Contracting: N Bidding Document: Small Works Comments: To be procured by Ninh Thuan PPMU

Consulting Services							
Package Number	**General Description**	**Estimated Value (cumulative)**	**Estimated Number of Contracts**	**Recruitment Method**	**Review** (Prior/Post)	**Type of Proposal**	**Comments**
BT-C-01	Construction Supervision Consultants – Binh Thuan Province	230,200	1	CQS	Prior	BTP	Assignment: National Advance Contracting: N Comments: 90:10. Recruitment by PPMU.
DL-C-01	Construction Supervision Consultants – Dak Lak Province	183,400	1	CQS	Prior	BTP	Assignment: National Advance Contracting: N Comments: 90:10. Recruitment by PPMU.
DN-C-01	Construction Supervision Consultants – Dak Nong Province	205,900	1	CQS	Prior	BTP	Assignment: National Advance Contracting: N Comments: 90:10. Recruitment by PPMU.
KH-C-01	Construction Supervision Consultants – Khanh Hoa Province	178,100	1	CQS	Prior	BTP	Assignment: National Advance Contracting: N Comments: 90:10. Recruitment by PPMU.
NT-C-01	Construction Supervision Consultants – Ninh Thuan Province	378,600	1	CQS	Prior	BTP	Assignment: National Advance Contracting: N Comments: 90:10. Recruitment by PPMU.
CPO-C-02	Independent safeguards monitoring consultants	419,870	1	QCBS	Prior	BTP	Assignment: National Advance Contracting: N Comments: To be recruited by CPMU. Five contracts to be signed by each province.
CPO-C-07	Technical Support for application of Micro Irrigation	450,000	1	QCBS	Prior	BTP	Assignment: National Quality-Cost Ratio: 90:10 Comments: Q3 2020. To be recruited by CPMU. Five contracts to be signed by each province.

3. Non-ADB Financing

50. The following table lists goods, works and consulting services contracts over the life of the project, financed by Non-ADB sources.

Consulting Services				
General Description	**Estimated Value (cumulative)**	**Estimated Number of Contracts**	**Recruitment Method**	**Comments**
Development of Technical Systems for Subproject Management (CPO-C-06)	$300,000	1	SSS (BTP)	Assignment: National Comments: QIII 2019. To be recruited by the five provinces.

4. National Competitive Bidding

a. General

51. The procedures to be followed for the procurement of goods, non-consulting services, and works under contracts awarded on the basis of National Competitive Bidding shall be those set forth in: (a) Law on Procurement No. 43/2013/QH13 dated November 26, 2013 ("Law on Procurement") and (b) Decree No. 63/2014/ND-CP dated June 26, 2014 (collectively, "National Procurement Laws"). Whenever any procedure in the National Procurement Laws is inconsistent with the ADB Procurement Guidelines (March 2013, as amended from time to time), the ADB Procurement Guidelines shall prevail, amongst others on the following.

b. Eligibility

(i) The eligibility of bidders shall be as defined under section I of the ADB Procurement Guidelines; accordingly, no bidder or potential bidder should be declared ineligible for reasons other than those provided in section I of the ADB Procurement Guidelines, as amended from time to time. Conditions of bidders' participation shall be limited to those that are essential to ensure bidders' capability to fulfill the contract in question. Foreign bidders shall be eligible to participate under the same conditions as national bidders. Foreign bidders shall not be asked or required to form joint ventures with, or be subcontractors to, national bidders in order to submit a bid.

(ii) A firm declared ineligible by ADB cannot participate in bidding for an ADB-financed contract during the period of time determined by ADB.

(iii) A bidder shall not have a conflict of interest, which term shall be defined in accordance with section 1 of ADB Procurement Guidelines.[13] Any bidder found to have a conflict of interest shall be ineligible for contract award.

(iv) Government-owned enterprises in the Borrower's country shall be eligible to participate as a bidder only if they can establish that they are legally and financially autonomous, operate under commercial law and are not dependent agencies of the Borrower or Sub-Borrower.

(v) National sanction lists may only be applied with approval of ADB.[14]

c. Preferences

52. No preference of any kind shall be given to domestic bidders over foreign bidders or for domestically manufactured goods over foreign manufactured goods. Unless otherwise stated in the applicable financing agreement, preferences among domestic bidders set forth in Article 14(3) of the Law on Procurement shall not be applied.

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[13] Detailed guidance on how to apply conflict of interest test is available under section 1 of ADB's standard bidding documents for goods and works (as amended from time to time).

[14] For fraud and corruption cases, Section 50 of ADB's Integrity Principles and Guidelines provides that ADB may decide that another international financial institution's or legal or regulatory body's determination that a party has failed to adhere to appropriate ethical standards, as defined by any established system of principles, rules, or duties, including the laws or regulations of a state, constitutes that party's failure to maintain the highest ethical standards as required by ADB's Anticorruption Policy. The party may be subject to remedial action in accordance with the Integrity Principles and Guidelines. http://www.adb.org/sites/default/files/integrity-principles-guidelines.pdf

d. Bidding Procedure

53. Single stage-single envelope shall be the default bidding procedure and application of other bidding procedures shall require ADB's prior approval.

e. Time for Bid Preparation

54. The time allowed for the preparation and submission of bids for large and/or complex packages shall not be less than thirty (30) days from the date of the invitation to bid or the date of availability of the bidding documents, whichever is later.

f. Standard Bidding Documents

55. The Borrower's standard bidding documents, acceptable to ADB, shall be used. Bidders shall be allowed to submit bids by hand or by mail/ courier.

g. Bid Opening and Evaluation

(i) Bids shall be opened in public, immediately after the deadline for submission of bids, regardless of the number of bids received.

(ii) Except with the prior approval of ADB, merit points shall not be used in bid evaluation.

(iii) No price adjustments shall be made for evaluation purposes in accordance with Article 117(6) of Decree 63 when unit rates offered by the bidder are determined to be abnormally low.

(iv) Bidders shall be given commercially reasonable time period to respond to clarification requests.

(v) Bidders shall not be eliminated from detailed evaluation on the basis of minor, non-substantial deviations.15

(vi) Except with the prior approval of ADB, negotiations contemplated under paragraphs 7 and 8 of Article 117 of Decree No. 63/2014/ND-CP shall not take place with any bidder prior to contract award.

(vii) A bidder shall not be required, as a condition for award of contract, to undertake obligations not specified in the bidding documents or otherwise to modify the bid as originally submitted.

h. Rejection of All Bids and Rebidding

56. No bid shall be rejected on the basis of a comparison with the Procuring Entity's estimate or budget ceiling without ADB's prior concurrence.

57. All bids shall not be rejected, and new bids solicited without ADB's prior approval.

[15] A minor, non-substantial deviation is one that, if accepted, would not affect in any substantial way the scope, quality, or performance specified in the contract; or limit in any substantial way, the Contracting entity rights or the Bidder's obligations under the proposed contract or if rectified, would not unfairly affect the competitive position of other bidders presenting substantially responsive bids.

i. Publication of the Award of Contract, Debriefing

(i) For contracts subject to prior review, within 2 weeks of receiving ADB's "No-objection" to the recommendation of contract award, the borrower shall publish in the Government Public Procurement Gazette, or well-known and freely-accessible website the results of the bid evaluation, identifying the bid and lot numbers, and providing information on: i) name of each bidder who submitted a bid; ii) bid prices as read out at bid opening; iii) name and evaluated prices of each bid that was evaluated; iv) name of bidders whose bids were rejected and the reasons for their rejection; and v) name of the winning bidder, and the price it offered, as well as the duration and summary scope of the contract awarded.

(ii) For contracts subject to post review, the procuring entity shall publish the bid evaluation results no later than the date of contract award.

(iii) In the publication of the bid evaluation results, the Borrower shall specify that any bidder who wishes to ascertain the grounds on which its bid was not selected, may request an explanation from the Borrower. The Borrower shall promptly provide an explanation of why such bid was not selected, either in writing and/or in a debriefing meeting, at the option of the Borrower. The requesting bidder shall bear all the costs of attending such a debriefing.

j. Contract Administration

58. The Contract Agreement, as such term is defined in the relevant bidding document, shall be applied without any modification during implementation except as otherwise agreed by ADB.

k. Fraud and Corruption

59. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB stating that ADB will sanction a party or its related parties, including declaring ineligible, either indefinitely or for a stated period of time, to participate in ADB-financed, administered or supported activities if it at any time determines that the party has, directly or indirectly through an agent, engaged in integrity violations as defined under ADB's Integrity Principles and Guidelines, including corrupt, fraudulent, collusive, or coercive practices in competing for, or in executing, an ADB-financed, administered or supported contract.

l. Right to Inspect/ Audit

60. Each bidding document and contract financed by ADB shall include a provision requiring bidders, contractors, agents (whether declared or not), sub-contractors, sub-consultants, service providers, or suppliers and any personnel thereof, to permit ADB to inspect all accounts, records and other documents relating to any prequalification process, bid submission, and contract performance (in the case of award), and to have them audited by auditors appointed by ADB.

D. Technical Services Terms of Reference

61. The terms of reference for these contracts are detailed in the appendixes attached to this PAM.

Table 10: Summary of Technical Services

Technical Service Contracts Title	Summarized Scope of Work
Construction engineering support consultants (CPO-C-01)	To support the CPO's CPMU, the PPCs, DARDs, PPMUs and IMCs in oversight of construction quality and any design variations, SP management arrangements including metering and charging, possible involvement of 3rd party firms under PPP arrangements, including supervising the technical support for high efficiency on farm water management systems and practices.
Independent safeguards monitoring consultants (CPO-C-02)	Will monitor the implementation of safeguards if it's in accordance with the agreed EMPs, REMDPs, GAP and ADB's Safeguard Policy Statement, 2009.
Water resources assessment, surface and groundwater), and water allocations framework (CPO-C-03)	Assess water resources, surface and groundwater, and design and initiate a groundwater monitoring program in selected WEIDAP SPs. Consider and advise on water allocations between sectors, and priorities in event of water shortage/ drought. Output will include long term plans/ scenarios to meet rising demand from non-agricultural sectors. Contract to include for additional monitoring wells as required in the selected (two coastal) subprojects.
Crop monitoring online platform development (CPO-C-04)	Each subproject will have the option of accessing water productivity data generated through a mobile network distribution system to be piloted under the project.
Water charging framework, institutional arrangement and protocols to engage service providers to operate modernized irrigation systems (CPO-C-05)	In line with the new Law on Hydraulic Structures, provinces are expected to initiate water charging for irrigation. Particularly for the piped - hydrant schemes, accurate volumetric metering will facilitate transparent charging. However, in drought years, water will be short, and farm allocation priorities need to be established, giving priority to high-value and perennial crops. The water charging framework/ amounts should reflect this. Finally, the IMCs do not at present have the skills to manage modern systems and water charging, and under this contract PPP options will be considered to bring in necessary expertise, as an alternative to strengthening IMCs.
Development of Software and Guidelines for SP Management (CPO-C-06) - to be recruited by the Province	With focus on WEIDAP subprojects, review and upgrade IMC asset inventories and operation control systems, developing database/ software control systems as appropriate, and also develop together with the IMCs and others concerned, generic guidelines for: (i) SP operations and software control systems, and (ii) SP maintenance planning, budgeting and implementation. The assignment will review the SCADA/ metering systems provided under the engineering contracts for each SP in output 2, with the aim to support uniformity in soft water/ database systems. Note: In addition to periodic maintenance of civil works infrastructure including canal banks, lining, and concrete structures, the new engineering control systems will need periodic calibration/ checking and part replacement. The maintenance guidelines need to cover both civil works and the equipment associated with the control systems.
Technical support for application of micro irrigation systems (CPO-C-07)	Selected firm to provide technical advice to local stakeholders/ farmers on: (i) connectivity options to hydrants, such hose or buried pipe installations, (ii) on technically appropriate on-farm water distribution / application systems, drip, sprinkler, buried pipe & drag hose, depending on soils, land slopes, crops and watering requirements and farmer preference, and (iii) post implementation care, including fertigation for drip, cleaning of filters and clogged emitters, replacement of broken fittings, and so on.
External auditor (CPO-C-08)	The objectives are to enable the auditor to (i) express an independent and objective opinion as to whether the project financial statements present fairly, in all material respects, or give a true and fair view of the project's financial position, its financial performance and cash flows, and (ii) provide a reasonable assurance/opinion over certain specific representation made in the Statement of Compliance.
Construction supervision consultants (per province)	Each province will have one construction supervision consulting contract to provide technical supervision to the civil works contractors. To ensure that works are in accordance with the approved detailed engineering design.

62. The Institute for Water Resources Planning (IWRP) will be directly engaged to undertake the water resources assessment (surface and groundwater) and water allocation framework

development. IWRP is the only institution that develop and monitor the development strategies, planning and management of irrigation, flood and drought in river basins on the central and central highlands regions since 1975. They are the only one who holds the comprehensive databases on water resources and irrigation development in all river basins in the regions. Furthermore, crop water productivity is a new technology in Viet Nam and IWRP is the only Vietnamese institution that has national experts, together with the United Nations Education Scientific and Cultural Organization's - Institute for Water Education experts, that are required to undertake assessing baseline crop water productivity for WEIDAP. The existing surveyed data and trained capacities from IWRP is critical to assure quality and progress of WEIDAP which is not widely available in Viet Nam. While IWRP is a government-owned research center, its services are of a unique and exceptional nature and its participation is critical to project implementation. Therefore, it is eligible to participate in the project in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time) para 1.13(c).

63. The Center for Water Resources Software (CWRS) will be directly engaged by the government for the development of software and guidelines for subproject management, as the assignment requires expertise in geographic information system, water resources management of irrigation systems, and managing built systems such as remote-sensing technology to serve the irrigation schedule planning and system operation, SCADA technology for monitoring and controlling water distribution of systems. CWRS is the only agency in Viet Nam conducting in-depth research and development for managing, monitoring, controlling and operating irrigation systems in real time. Specifically, CWRS has been: (i) developing software tools for automatic image analysis and interpretation instead of manual interpretation using different remote-sensing image sources; (ii) researching GIS and software to manage irrigation area of each parcel and each irrigation work structure to ensure that the system runs smoothly on WebGIS platform; (iii) manufacturing and upgrading SCADA technology devices; and (iv) using researched technologies to develop system for managing, monitoring irrigation works in Vietnam (htpp://thuyloivietnam.vn), including the information management for 5858 reservoirs; Vietnam's river network, and large scale irrigation structures. Currently, the system is connected to receive data from 27 reservoirs, 11 salinity measuring stations equipped with automatic monitoring devices, almost 500 reservoirs with manually entered data. The system is also set to update data from 657 rain gauge stations, 496 water level monitoring stations from the server system of National Hydro- meteorological center. In addition, the system updates data from 37 hydropower reservoirs from the server system of Electricity Vietnam Corporation (EVN). This system has been step-by-step developed via the implementation of packages on managing, monitoring and operating irrigation works in different projects in Vietnam. While CWRS is a government-owned research center, its services are of a unique and exceptional nature and its participation is critical to project implementation. Therefore, it is eligible to participate in the project in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time) para 1.13(c).

VII. SAFEGUARDS

A. Involuntary Resettlement

64. The overall project is categorized as B for involuntary resettlement. The project will result in minor social and economic displacement resulting from the rehabilitation of existing canals, the installation of buried pipe distribution networks (above which the land is to be converted into public land to facilitate access for maintenance), and the widening of existing road alignments in association with providing service roads to the irrigation infrastructure. All eight subprojects for which resettlement and ethnic minority development plans (REMDPs) have been prepared, all

are rated as Category B for resettlement. The nature and scale of displacement are specified in the REMDPs that guide implementation of the irrigation modernization subprojects.

65. For output 2, the following have, or shall be applied:

(i) Surveys were conducted to enable the quantification of resettlement impacts and baseline data for the preparation of the draft REMDPs. They include the inventory of losses (IOL) to estimate resettlement impacts and a socioeconomic survey to assess pre-project living standards as well as likely social impacts resulting from land acquisition;

(ii) Public consultations with stakeholders comprising government entities, private sector interests and affected households were held during preparation of the REMDP. Meaningful consultations will continue during the updating and implementation of the REMDPs. The draft and updated REMDPs will be disclosed to affected households and their communities;

(iii) During DED process, locations of pipe alignments may change marginally and will result to changes to the REMDP. As the process of DED is proceeding, the REMDP shall be progressively updated and the consultation with affected households and communities continued through the DED phase;

(iv) The final REMDPs for all eight subprojects shall be disclosed prior to PPC approval for the investment to proceed. The fundamental objective of the project resettlement policy is to replace and compensate lost assets based on the principle of replacement cost. Compensation and various forms of assistance will be provided. Once land acquisition is completed, income restoration measures will be put in place in a way that will ensure that standards of living of the project affected persons are at least restored to their pre-project levels, and that those in the category of vulnerable groups (i.e. poor households.) are assisted to help improve their socioeconomic status;

(v) REMDPs will be updated upon loan effectiveness, endorsed by PPCs and submitted to the ADB for review and concurrence. The updated REMDPs will require further detailed studies (including DMS and replacement cost survey) and additional consultation. Principal aspects to be updated in REMDPs are resettlement impacts based on DMS; census of affected people; entitlement matrix; and replacement costs and details of consultations and disclosure; and

(vi) The PPMUs, with participation of the wards/communes, and relevant mass organizations (particularly the Women's Union (WUs)) will have primary responsibility for the updating and implementation of the REMDPs with the support of the consultants. As such the capacity of these bodies is of critical importance and the project must ensure appropriate capacity building assistance in the form of information, training, and consultation and mentoring that will be supported by the resettlement officer located in the PPMU as well as by national specialists provided under the construction engineering support consultants (CESC).

66. The EAs/IAs and the PPMUs will ensure that any involuntary resettlement is carried out in accordance with the agreed REMDPs, ADB's Safeguard Policy Statement (2009), and the laws and regulations on involuntary resettlement that apply in Viet Nam. In case of discrepancies between government laws, regulations, and procedures, and ADB's Safeguards Policy Statement (2009), ADB' Safeguards Policy Statement will take precedence.

67. The CPO/CPMU will engage the services of a qualified appraiser to carry out the replacement cost survey for land and non-land assets and submit the replacement cost survey report to the PPCs for review and approval.

68. PPMUs shall ensure that prior to the issuance of the notice for site possession and commencement of construction activities for a specific section, the resettlement specialist in CESC has officially confirmed in writing that (i) payment has been fully disbursed to the displaced/affected persons and rehabilitation measures are in place for that specific section as per the updated REMDPs agreed between the EAs and ADB; (ii) for affected persons that were already compensated have been cleared from the specific section in a timely manner; and (iii) that the specific section is free from any encumbrances.

69. PPCs shall provide counterpart funds for land acquisition in a timely and sufficient manner, will carry out resettlement and monitoring activities specified in the agreed REMDPs, and will meet any unforeseen obligations more than the budget cited in the REMDPs to satisfy resettlement objectives.

70. The PPMUs are responsible for internal monitoring with assistance from the resettlement specialist of the CESC. PPMUs will submit semi-annual internal monitoring reports to ADB. Final monitoring and evaluation need to be conducted after completion of all resettlement activities to assess (i) achievement of resettlement objectives; (ii) changes in living standards and livelihoods; (iii) restoration of the economic and social base of the affected people; (iv) effectiveness and sustainability of entitlements; and (v) the need for further support as required. Findings monitoring reports will be submitted to ADB through CPMU (on behalf of MARD).

71. For the rehabilitation of existing rural road alignments to improve market access and provide incentives for private investment in the area. As the roads are already in existence, there are existing corridors of public land with defined set-backs from the road edges. Land acquisition will therefore be minimal and required only where the road is to be straightened to meet higher road safety requirements. During preparation, the alignments were surveyed, and a resettlement plan prepared for the road upgrading. The same principles outlined for output 2 above are to be used for the resettlement plan implementation for the rural road rehabilitation.

B. Environment

72. The overall project is classified as Category B for environment as reflected from all the eight subprojects under output 2. Five separate initial environmental examinations (IEEs) have been prepared, including eight subproject environment management plans (EMPs) for the five participating provinces. CESC will include an environment safeguards specialist who will work closely with the DED national consultant and PPMUs. The CESC environment safeguard specialist will support updating subproject EMPs to be approved by ADB to reflect changes in the subproject, if any and include detail of the impacts and mitigation measures identified during DED. The approved EMP will be integrated in the bidding and civil contract documents. Site EMP in detailing mitigation measure implementation in each construction package will be prepared by respective contractor and submitted to PPMUs for review.

73. The CESC environment safeguards specialist will support CPMU to procure environment monitoring contract and work closely with the construction supervision consultants and independent safeguard monitoring consultants to support the PPMU in monitoring and supervision of the EMP implementation and ensure environment compliance in each subproject.

During construction phase, semi-annual environment monitoring reports will be prepared and submitted by PPMU to CPMU (on behalf of MARD) and ADB for review and uploading on ADB's website.

C. Ethnic Minorities

74. ADB's Indigenous People's policy requires that under an ADB loan, the borrower will undertake meaningful consultation with affected Indigenous Peoples, herein referred to in the Vietnamese context as "Ethnic Minorities" to ensure their informed participation in (i) designing, implementing, and monitoring measures to avoid adverse impacts on them or, when avoidance is not possible, to minimize, mitigate, and compensate for such effects; and (ii) tailoring project benefits that accrue to them in a culturally appropriate manner. Consultation will be carried out in a manner commensurate with the impacts on affected communities. The consultation process and its results are documented and reflected in the REMDP.

75. The overall project is classified as Category B for ethnic minorities and all eight irrigation modernization subprojects are Category B. In some cases, particularly in the Central Highland provinces of Dak Lak and Dak Nong, ethnic minorities form the majority of the population of subproject command areas and since the project is designed to provide positive impacts to these groups, measures to mitigate negative impacts have been incorporated in the combined REMDPs.

76. Internal monitoring and progress reporting will be the responsibility of the PPMUs. At the local level, the commune supervision board with representatives of ethnic minority people will monitor on a regular basis. The process of establishing participatory monitoring must begin with the identification of monitoring criteria by the beneficiaries themselves, against which they will judge the success or failure of the subproject.

77. **Prohibited investment activities**. Pursuant to ADB's Safeguard Policy Statement (2009), ADB funds may not be applied to activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the Safeguard Policy Statement (2009).

VIII. GENDER AND SOCIAL DIMENSIONS

78. **Beneficiaries**. The project will directly benefit about 39,140 households or an estimated 184,000 people in the eight subproject command areas who will benefit from the project, 18% being ethnic minorities (EMs), 5,800 poor households, and a further 3,000 near poor. Households in target provinces are predominantly dependent upon agriculture for their livelihoods. MOLISA reports national poverty levels of 9.9% country-wide in 2016 yet within three of the five participating provinces, poverty levels are higher - Ninh Thuan - 14.9%; Dak Lak - 19.4%; and Dak Nong - 19.3%. Poverty levels are lower than the country average in Binh Thuan and Khanh Hoa because of the alternative income sources available. Poverty is characterized by lack of land, labor, access to credit, limited production knowledge and trade skills (especially of the ethnic and poor women with lower education), and poor access productive (irrigation) and rural road infrastructure (and consequently, to public services). A further issue is language barrier facing indigenous EMs, especially middle-aged women, preventing their participation in public/community meetings and in agricultural extension training activities proposed under the project.

79. With the project, the poor and landless will have more opportunities to provide labor on larger-scale farms expected with the larger commercial farming enterprises and the larger scale

private investors in high-tech agricultural production zone. If the poor own land within the planned command areas, they will directly benefit from a more secure source of water for productive and household purposes. As irrigation water is widely used for domestic purposes, the increased ease of access from the higher levels of service will result in women spending less time collecting water for domestic purposes (especially in the dry season).

80. The project is categorized Effective Gender Mainstreaming (EGM). A gender analysis identified relevant gender issues, including women have fewer opportunities than men to participate in public decision making, access information/training, and employment, especially during the low agricultural season. There will be social risks associated with project implementation during and after civil works (the arrival of labor gangs to carry out the works programs and install piped systems with the consequent threat of HIV/AIDS transmission, human trafficking and sexual harassment). Women should be encouraged to participate in the wage opportunities where equal wages for work of equal value is required.

81. A **Gender Action Plan** was prepared, based on gender analysis, in consultation with the provinces, DARDs/PPMUs and local authorities and includes gender strategies, activities and targets. The GAP will promote gender equality through enhancing women's access to economic opportunities, and social services and decision making and reduce social risks and vulnerabilities for communities with specific efforts targeting on ethnic minorities, women in communities of project areas. The PPMUs, with the support of the CPO/CPMU and CESCs will develop M&E system that provides sex-disaggregated data wherever relevant and gender specific information and assign a gender focal point and engage a social / gender specialist who shall be responsible for GAP implementation support, monitoring and reporting.

82. **Implementation arrangements and budget**: ADB will finance around $30,128 for the implementation of the GAP activities. Each PPMU will assign a gender focal point to be responsible for coordinating GAP implementation, monitoring and reporting. The PPMUs will incorporate GAP monitoring in their quarterly progress reports, (using the ADB GAP Progress Report template appendix 11) to government and ADB. The overview of the GAP is presented here and is also detailed in the linked document No.15 accessible from the Appendix 2 of the RRP.

Table 11: Gender and Action Plan

Project Output	**Gender Action Plan Actions and Targets**
Output 1: Irrigation management services strengthened.	
1.1 Water allocation and planning and framework for water charging	1.1.1 Water allocation and planning and water charging framework developed taking into account needs and constraints as raised during consultations conducted with men and women in command areas. 1.1.2 At least 40% women participants in the consultations. 1.1.3 Two facilitators trained per subproject commune with at least one-woman facilitator. 1.1.4 Ethnic group participation in consultations and dissemination sessions (at least 20% - overall aggregate for all sub-projects areas), and with facilitators who can speak the concerned local ethnic languages or conducted in ethnic languages (in areas with 40% or more ethnic population).[a] 1.1.5 At least 40% women participate in dissemination sessions. 1.1.6 Women Union's representative will be present during stakeholder consultation meetings on framework for water charging.

	1.1.7 Among the farmers linked to an information system providing advice on irrigation scheduling, at least 35% are female farmers and at least 20% are ethnic minority.
1.2 Improved operation and maintenance mechanisms for IMCs in project irrigation systems	1.2.1 At least 25% of IMC staff in technical training sessions on modern irrigation management are women.[b] 1.2.2 At least 25% of newly recruited irrigation staff for the project command areas are women.
1.3 Engage PPP irrigation operators to manage pumped systems	1.3.1 Potential PPP irrigation operators mapping in the project districts includes mapping of women led and/or owned operators/related enterprises. 1.3.2 Ensure PPP irrigation opportunity information encourages women to apply and is disseminated/reaches all potential bidder including female led and/or owned operators/related enterprises. 1.3.3 25% of participants in awareness raising and promotion of PPP initiatives/pilot meetings are women.
Output 2: Modernized irrigation infrastructure developed.	
2.1 Detailed engineering design	2.1.1 At least 40% of participants in community consultations in command areas are women and at least 20% of participants are from ethnic groups (overall aggregate – for all subproject areas) (endnote a). 2.1.2 At least one consultation per command area is conducted with Women's groups and Women's Union during the detailed design phase to identify routing of pipe alignments and locations of hydrant offtakes from the buried pipes. 2.1.3 Venue and timing of consultation meetings are convenient for women to attend. 2.1.4 Local ethnic language is used where and when needed, in areas with 40% or more ethnic population (endnote b). 2.1.5 At least 19,200 ha served by modernized irrigation systems wherein all women-headed households and ethnic minority households with land will have access to the irrigation services.
2.2 Civil works	2.2.1 Contractors provide Women's Union with information on unskilled work opportunities to local women. 2.2.2 Contractors prioritize at least 25% of the unskilled jobs opportunities for women and at least 20% for ethnic minority. 2.2.3 Contractors comply with national labor laws through their human resources policies and ensure equal pay for work of equal value between men and women performing unskilled work and do not use child labor. 2.2.4 Female workers are provided with training and equipment, including safety equipment, with safe toilet and changing facilities to perform their jobs.
2.3 Prevention of HIV AIDS and human trafficking, as well as sexual harassment at the workplace	2.3.1 Majority of construction workers interviewed during field visits can identify at least two HIV prevention methods after attending HIV/AIDS awareness raising and human trafficking briefing sessions. 2.3.2 Contractors have policy of zero tolerance for sexual harassment at the workplace; all construction workers are made aware of zero tolerance policy and mechanism of redress if needed.
Output 3: Efficient on-farm water management practices adopted.	
3.1 Access to technical support services	3.1.1 Micro irrigation training materials are free from gender bias and promotes the participation of women in water

		management.
	3.1.2	Al least 40% of the farmers receiving training on water productivity on-farm are women.
	3.1.3	Demonstrations of micro irrigation per each type of high-value crop must be provided to at least one poor ethnic household (in ethnic minority area) and one poor female headed household[c] within the subproject command area.
3.2 Project management and capacity building	3.2.1	At least 30% of PMUs staff positions are held by women.
	3.2.2	Key PMU's staff, including management staff, will be briefed on gender mainstreaming in irrigation, agriculture and climate change to assist in implementing, monitoring and reporting of GAP.
	3.2.3	All IMC staff working at project districts will be trained/sensitized on gender and irrigation management as well as resilience to climate change.
	3.2.4	Provincial IMC staff and other stakeholders (contractors, supervision consultants, PPP operators, service suppliers, etc.) will be oriented on the GAP and their associated responsibilities under GAP.
	3.2.5	25% of attendees in study tour to pumping system in Viet Nam are women.
	3.2.6	Each PMU shall assign a gender focal point responsible for GAP implementation, monitoring and reporting.
	3.2.7	Gender consultant will be mobilized with 18 person-month inputs to support GAP implementation, monitoring and reporting.
	3.2.8	Sex-disaggregated project performance and monitoring system instituted to report on gender and ethnic minority indicators and aid in monitoring the GAP implementation and design and monitoring framework.

GAP = gender action plan, IMC = irrigation management company, PMU = project management unit, PPP = public-private partnership.

[a] Target for subprojects are based on the proportion of ethnic minority as follows: Tra Tan subproject (Binh Thuan): 4.5%; Du Du- Tan Thanh subproject (Binh Thuan): 35%; Thanh Son- Phuoc Nhon subproject (Ninh Thuan): 35%; Thanh Hai- Nhon Hai subproject (Ninh Thuan): 0%; Khanh Hoa subproject: 5%; Dak Lak subproject: 50%; Dak Mil subproject (Dak Nong): 20% and Cu Jut subproject (Dak Nong):30%. Dissemination sessions include information on water allocation/ planning framework associated priorities for crops; and water charging framework.

[b] Specific baseline and target for provinces based on staffing profile of Irrigation companies as followings: Binh Thuan: 25%; Ninh Thuan: 20%; Khanh Hoa: 30%; Dak Lak: 25% and Dak Nong: 30%.

[c] Female headed households are defined as households in which woman is the main decision maker (due to being single, widow, or her husband is away for work or sick/ with disability then can't join decisions making).

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION

A. Project Design and Monitoring Framework

Impact of the Project is Aligned with
Climate resilience and water productivity in agriculture improved (government's national climate change strategy, agricultural restructuring plan, and Law on Hydraulic Works)[a]

Results Chain	**Performance Indicators with Targets and Baselines**	**Data Sources and Reporting Mechanisms**	**Risks**
Outcome Climate-resilient and modernized irrigation systems in five provinces established[b]	By 2026: a. Agricultural water productivity increased by 20% (2017 baseline: D5,000 per cubic meter for coffee, D44,000 per cubic meter for peppers, D11,000 per cubic meter for dragon fruits, and D110,000 per cubic meter for mangoes) b. At least 65% of farmers connected to climate-resilient and modernized project irrigation systems, of whom at least 5% are from households headed by women, and 15% from ethnic minority households (2017 baseline: 0)[c]	a. Project monitoring reports b. IMC, irrigation operators, and water user association records	Modernized irrigation systems fail to meet the desired level of service because of climate variability beyond anticipated levels.
Outputs 1. Irrigation management services strengthened	By 2025: 1a. Water resource assessment and allocation planning operationalized, with gender and social dimensions integrated in design and implementation (2017 baseline: 0) 1b. A system for asset management and operational control of irrigation schemes adopted by five PPCs (2017 baseline: 0) 1c. 4,000 farmers linked to an information system with irrigation scheduling, of whom 35% are female, and at least 20% from ethnic minority households (2017 baseline: 0) 1d. At least one piped irrigation system operated by a third party (2017 baseline: 0)	1a. IMC reports, government decrees, and irrigation operation manual 1b–c. IMC annual reports and project-generated reports; budget requests submitted by IMCs. 1d. Project monitoring reports	Irrigation management companies are unfamiliar with the technical aspects of management, operation and maintenance of pressurized pipe irrigation systems.
2. Modern irrigation infrastructure developed	2a. At least 19,200 ha served by modernized irrigation systems wherein all households headed by women and ethnic minority households with land have access to irrigation services (2017 baseline: 0) 2b. 185 kilometers of piped irrigation systems installed (2017 baseline: 0)	2a–b. Project-generated reports	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
3. Efficient on-farm water management practices adopted	3a. On-farm micro irrigation adopted on at least 10,000 ha, 5% of which are farms owned by women, and 20% farms owned by ethnic minorities (2017 baseline: 0) 3b. At least 1,500 farmers received training on improving on-farm water productivity, of whom 40% are females, and 20% from ethnic minority households (2017 baseline: 0)	3a–b. Project-generated reports	Uptake of micro irrigation in the farms is limited because of market volatility and climate variability.

Key Activities with Milestones

1. Irrigation management services strengthened

1.1 Develop subproject asset management and operational control systems (Q4 2019)
1.2 Develop framework for improved operation and maintenance and third-party management of irrigation systems (Q2 2021)
1.3 Implement water resource assessment and allocation planning at subproject level (Q4 2021)
1.4 Develop and launch an online portal for on-farm irrigation scheduling (Q2 2023)

2. Modern irrigation infrastructures developed

2.1 Initiate procurement of civil works contracts (Q4 2019)
2.2. Respective PPC to endorse the detailed engineering designs (Q4 2019–Q1 2020)
2.3. Sign contracts with construction supervision consulting firms for five provinces (Q2 2020)
2.4. Implement the first round of cost recovery (Q2 2024)
2.5. Turn irrigation systems over to IMCs (Q3 2022–Q3 2024)

3. Efficient on-farm water management practices adopted

3.1 Recruit and mobilize technical advisor for micro irrigation technical advisory services (Q2 2021)
3.2 Disseminate information to farmers on crop water requirements (Q3 2021)
3.3 Identify appropriate micro-irrigation options and link farmers with suppliers (Q3 2021)
3.4 Provide technical guidance on micro-irrigation applications (Q1 2024)

Project Management Activities

Mobilize construction engineering support consultant (Q1 2019)
Review and update the resettlement and ethnic minority development plans and environmental management plans (Q4 2019–Q1 2020)
Mobilize monitoring and evaluation consultants (Q2 2020)
Recruit and mobilize external auditors (Q4 2019)
Implement the gender action plan (Q3 2019–Q4 2024)

Inputs

Asian Development Bank: $100.00 million (concessional loan)
Netherlands Trust Fund under the Water Financing Partnership Facility: $0.75 million (grant)
Climate Change Fund: $0.30 million (grant)
Government: $23.21 million

Assumptions for Partner Financing

Output 1: Australian Water Partnership

D = dong, ha = hectare, IMC = irrigation management company, PPC = provincial peoples' committee, Q = quarter.

[a] Government of Viet Nam. 2011. *Prime Minister Decision 2139/QD-TTG of December 5, 2011: Approving the National Strategy for Climate Change*. Hanoi; Government of Viet Nam. 2013. *Prime Minister Decision No. 899/QD-TTg: Approval of Agricultural Restructuring Towards Greater Added Value and Sustainable Development*. Hanoi; and Government of Viet Nam. 2017. *Law on Hydraulic Works*. Hanoi.

[b] The participating provinces are Binh Thuan, Dak Lak, Dak Nong, Khanh Hoa, and Ninh Thuan.

[c] Asian Development Bank. 2017. *Water Efficiency Improvement in Drought-Affected Provinces*. Consultant's Report. Manila (TA 9147-VIE). According to the project preparatory technical assistance's poverty and social assessment report, about 14% of households in the project areas are households headed by women, but their farms lands are scattered. Similarly, ethnic minority households account for 18% of the households in the project areas.

Source: Asian Development Bank.

B. Monitoring

83. **Project performance monitoring.** Project progress and performance will be based on the indicators and targets shown in the design and monitoring framework (DMF). Five kinds of monitoring will be carried out including: (i) activity/ implementation progress and output monitoring; (ii) outcome/ benefit monitoring and evaluation; (iii) environment, resettlement, social and gender safeguards monitoring; (iv) financing agreement covenant monitoring; and (iv) financial monitoring/audit. Details of the PPMS is in Appendix 10

84. The project performance monitoring should be carried out by all PPMUs and will be submitted to ADB through CPMU for consolidation, on an annual basis to ensure that the intended project benefits are receive and that the distribution of benefits amongst households in the irrigation command areas are received equitably throughout.

85. **Compliance monitoring.** The CPO, CPMU, PPC, and PPMU with assistance of the construction engineering support consultants and construction supervision consultants will conduct compliance monitoring and submit reports and information to ADB concerning (i) the use of the loan and grant proceeds, (ii) project implementation, (iii) project performance, and (iv) compliance with the loan and grant covenants. These reports will be included in the (i) periodic progress reports on project implementation, and (ii) project completion report which should be submitted not later than six months after the physical completion of the project.

86. ADB will undertake regular review missions to assess the status of compliance of the project, executing and implementing agencies with the loan covenants related to policy, legal, economic, financial, environmental, and institutional elements. Non-compliance issues identified during the ADB review missions will be specified in the quarterly progress reports together with the recommended course of action.

87. **Gender and Social Dimensions Monitoring.** The GAP has been prepared to guide implementation to ensure that gender issues are adequately addressed. Performance against the GAP will be monitored by the PPMU staff who will review subproject activities to ensure conformity. The monitoring of project impacts will be collected on a sex disaggregated basis to demonstrate that women and men have equal access to project opportunities in an equal manner. Each PPMU will be responsible for monitoring the GAP and will report on achievements against project requirements on a quarterly basis.

C. Evaluation

88. ADB will conduct regular (at least twice per year) reviews throughout implementation of the project to assess implementation performance and achievement of outcomes and objectives, examine financial progress, and identify issues and constraints affecting the project and work out time-bound action plans for their resolution.

89. A midterm review will also be undertaken within 36 months from loan effectiveness. This review will include a comprehensive evaluation of project implementation arrangements, detailed evaluation of the scope and implementation process and progress of subprojects, feedback from the PPMS, performance of consultants, capacity building progress, and possible reallocation of loan proceeds. During this more significant review, the impact from the pro-poor initiatives linked to irrigation system development will be assessed as will the allocation by local IMCs for the maintenance of the infrastructure developed under the project. Remedial action will be instituted as required.

90. Within six months of physical completion of the project, MARD will submit a project completion report to ADB.[16]

D. Reporting

91. MARD through the CPMU will consolidate reports from PPCs and submit to ADB the following (i) quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions, (c) updated procurement plan, (d) updated implementation plan for the next 12 months, and (e) brief update on safeguard including GAP monitoring report using ADB's format; (iii) semi-annual safeguard monitoring reports; and (iv) a project completion report within six months of physical completion of the project. To ensure that projects will continue to be both viable and sustainable, project accounts and the executing agency audited financial statements together with the associated auditor's report, should be adequately reviewed.

E. Stakeholder Communication Strategy

92. Project preparation has been conducted with stakeholder agencies in the government at national, provincial, district and commune levels including MARD, MOF, MPI and provincial equivalents. Meetings have also been held in the participating provinces with DPI, DARD and DOF officials, focusing on management arrangements and issues. Requirements for ensuring appropriate levels of consultation for subproject preparation and implementation have been reviewed and confirmed.

93. Initial subproject preparation includes consultation requirements involving documented evidence of inclusive consultation with all communities in the subproject area and participant information on numbers of women and men by ethnic minority. Subproject socio-economic/gender surveys that identify vulnerable groups to provide basis for specific consultation and participation mechanisms will be followed during implementation.

94. During implementation, the process of consultation will continue throughout detailed engineering design of subprojects to afford community groups the opportunity to voice their views on how the subproject is to be designed, implemented and operated. In addition, associated initiatives will be built into the design of each subproject to enhance the impact from and sustainability of the investments, particularly, the need to make payments for the pumping of water through piped ring main systems for farmer access. These associated initiatives will be identified in a participatory manner from a menu of options developed with the respective stakeholders and beneficiaries and will strengthen community-based organizations such as the women's unions, village mediation units, producers and marketing groups, and businesses.

5. Participation

95. It is anticipated that the community will be mobilized in several different ways during subproject design, implementation and operation. During subproject design and preparation stages, community participation will consist primarily of their contributing to pipe locations, siting of offtake hydrants, river and road crossing structures and other aspects of location concerning infrastructure. During construction, there will be significant opportunities for active participation,

particularly for the poor households who will benefit from the subproject through provision of wage labor to the contractors. This will be encouraged through the bidding documents which will request the contractors to investigate this option, whenever possible. The community will also be able to participate in the O&M of the completed infrastructure whenever possible through provision of labor or in some cases funds. The beneficiary communities will need to be consulted in the level of service provided during operations as they will ultimately be expected to contribute to ensure sustainability.

6. Awareness

96. Information about the project and the subprojects including the objectives, potential environmental impact, implementation arrangements, resettlement and compensation matters, gender issues, issues of concerns for ethnic minorities will be provided to beneficiaries. Information will be provided through village meetings, pamphlets, and other announcements in both Vietnamese language and the language(s) of the communities whenever appropriate. The community will be fully informed of issues such as their right to participate in the subprojects and to be compensated for any loss of property including productive land and/or assets as well as gender equity and other relevant policies. Separate meetings and discussions will be arranged with the people who are directly affected by land acquisition and/or resettlement issues. The community and particularly the affected households will be provided with detailed guidance and procedures regarding resettlement and compensation.

Table 12: Consultation and Participation Plan

Topics/Subjects	Stakeholder Group	Why Included	Type of Participation		Participation Methods	
				Method	Responsibility	Timeline Cost
REMDP	Affected people, women, poor and vulnerable households, ethnic minority groups within subproject command areas.	Representing interests of women and ethnic groups.	Information sharing (M), Collaboration (M)	Separate meetings with ethnic groups in local language, and meetings with women organized through women union. Printed information about infrastructure and training programs available in local and accessible language (or visual depictions) posted in accessible public areas. Designation and provision of materials/toolkit to women's groups and disseminating information about work and training opportunities from the project.	CPO, PPMUs, CESC, women's unions at levels of province, district and commune	Included in REMDP
GENDER EQUALITY	Beneficiary communities and villages, vendors at tourist sites, poor and vulnerable households and ethnic groups, with 50% representation of women.	Direct beneficiaries of project will have equal opportunity to receive training in micro irrigation and in the receipt of grants to install micro irrigation.	Information sharing (M). Consultation (M). Collaboration (M).	Information: Community meetings and dissemination of information brochures on project scope, design elements, participation mechanisms, and entitlements for person affected by involuntary resettlement impacts. Consultation through village meetings and focus group discussions on measures to enhance benefits and mitigate risks. Decisions: Community members determine participation and guidelines for women's groups with support from village leaders and mass organizations to ensure they are inclusive, with representatives of ethnic groups, women and other subgroups.		During detail design of infrastructure subprojects and throughout project implementation. Included in GAP budget.

Topics/Subjects	Stakeholder Group	Why Included	Type of Participation		Participation Methods	
				Method	**Responsibility**	**Timeline Cost**
SOCIAL RISKS	Mass Organizations (e.g. Viet Nam Women's Union)	Representing interests of women and ethnic groups.	Information sharing (H)	Project management and Implementation: Direct consultations and participation in project implementation through collaboration with PPMU and representation on provincial committees. Strategic Decision Making: Contribute to decisions on destination management and GAP and consultation plan implementation. Information sharing with women about employment and contract bidding.	Monitoring: Representation on provincial steering committees and district/ commune level committees.	During detailed design of subprojects and throughout project implementation. Included in GAP budget.
Project Design, Implementation, and Monitoring	Provincial district and commune administrations	Representatives of government are responsible for project implementation, and representing provincial, district and commune interests.	Partnership (H) Information sharing, (H)	Approvals: Review and approve annual work plan and budgets, safeguard documents, civil works design, and site management contracts or concessions.	PPMU	During detailed design of subprojects and throughout project PPMU cost.
	Implementing agencies - DARD, PPMUs and institutions contracted as service providers	Setting policy and guidelines and coordination and approvals.	Information Sharing, (H) Collaboration (M)	Policy Guidance and Approvals: Semi-annual meetings of the national project steering committee provide direction on project implementation matters. Review periodic progress reports and safeguards reports.	PPMU	At least two meetings of each committee per year. PPMU management cost.

X. ANTICORRUPTION POLICY

97. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with MARD, CPO, PPCs and DARDs. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.[17] All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all project contractors, suppliers, consultants, and other service providers. Individuals and/or entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.[18]

98. To support these efforts, relevant provisions are included in the loan and grant agreements and the bidding documents for the project. References on ADB's Anticorruption Policy can be accessed through the following link: http://www.adb.org/Integrity/.

XI. ACCOUNTABILITY MECHANISM

99. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith, to solve their problems by working with the concerned ADB operations department. Only after doing that and, if they are still dissatisfied, should they approach the Accountability Mechanism.[19]

XII. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

100. All revisions and/or updates during the course of implementation should be retained in this section to provide a chronological history of changes to implemented arrangements recorded in the PAM, including revision to contract awards and disbursement s-curves.

Date of Latest Version	Change Effected	Authorizing Document

[17] Anticorruption Policy: http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf
[18] ADB's Integrity Office web site: http://www.adb.org/integrity/unit.asp
[19] Accountability Mechanism. http://www.adb.org/Accountability-Mechanism/default.asp.

Appendix 1 – Detailed Implementation Arrangements for Each Output

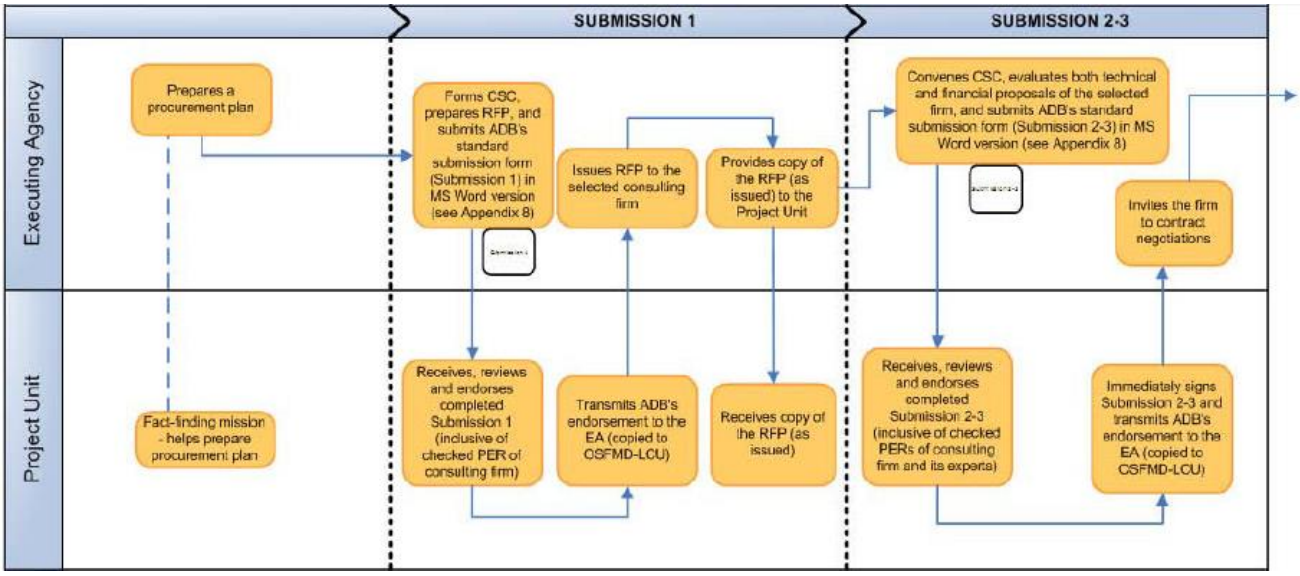
1. **Output 1: Irrigation management services strengthened**. The following technical services will be contracted to implement this output:

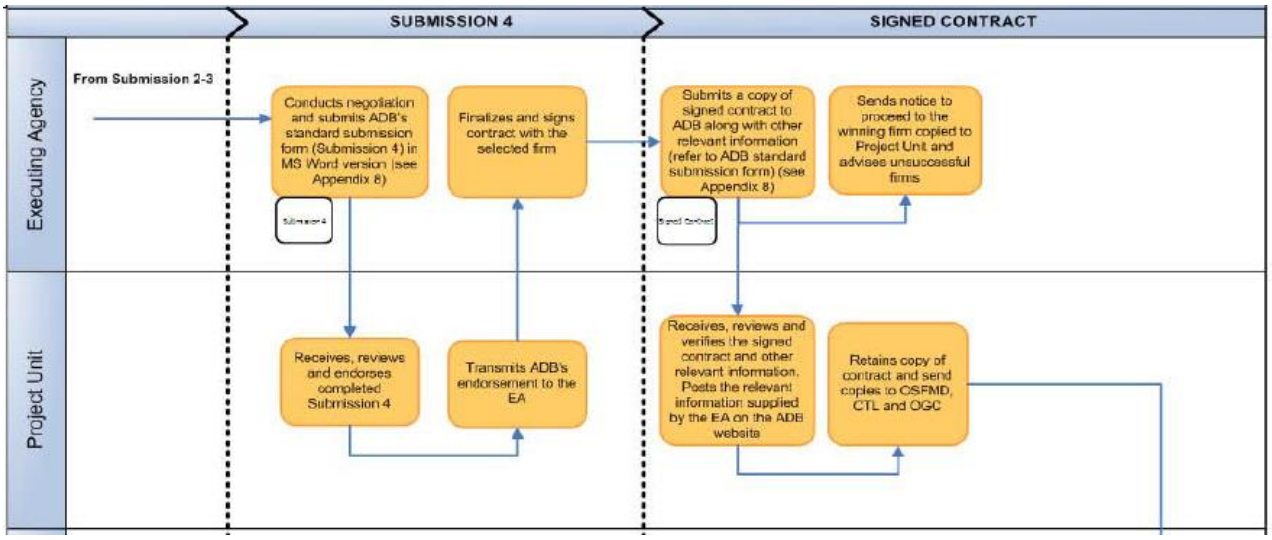
SN	Contract Title	Recruitment Method	Estimated Duration (in yrs.)	Comments
Irrigation water allocation and delivery services				
1	Water resources assessment (surface and groundwater) and water allocation framework	SSS	4	with IWRP using lumpsum contract – WFPF grant proceeds
Maintenance of irrigation systems				
2	Crop monitoring online platform development	FBS	4	WFPF grant proceeds
3	Development of Software and Guidelines for SP Management	SSS	5.5	with CWRS using time-based contract. – Government counterfund
4	Water charging framework, institutional arrangement and protocols to engage service providers to operate modernized irrigation systems	CQS	4	Time-based contract. – CCF grant proceeds

CCF = Climate Change Fund, CWRS = Center for Water Resources Software, CQS = consultants' qualification selection, FBS = fixed budget selection, IWRP = Institute of Water Resource Planning, PPP = public-private partnership, SPs = subprojects, SSS = single source selection, WEIDAP = water efficiency improvement in drought-affected provinces project, WFPF = Water Financing Partnership Facility; yrs. = years

2. The Institute of Water Resources Planning (IWRP) will be directly recruited to develop the water resource assessment (surface and groundwater) and water allocation framework and the Center for Water Resources Software (CWRS) will be directly recruited by the provincial government under government procedure, for the development of software and guidelines for subproject management to ensure compatibility with the current nationwide system. Step involved in single selection are illustrated in Figure 1 below. This entails submissions 1 to 4 to the Asian Development Bank (ADB).

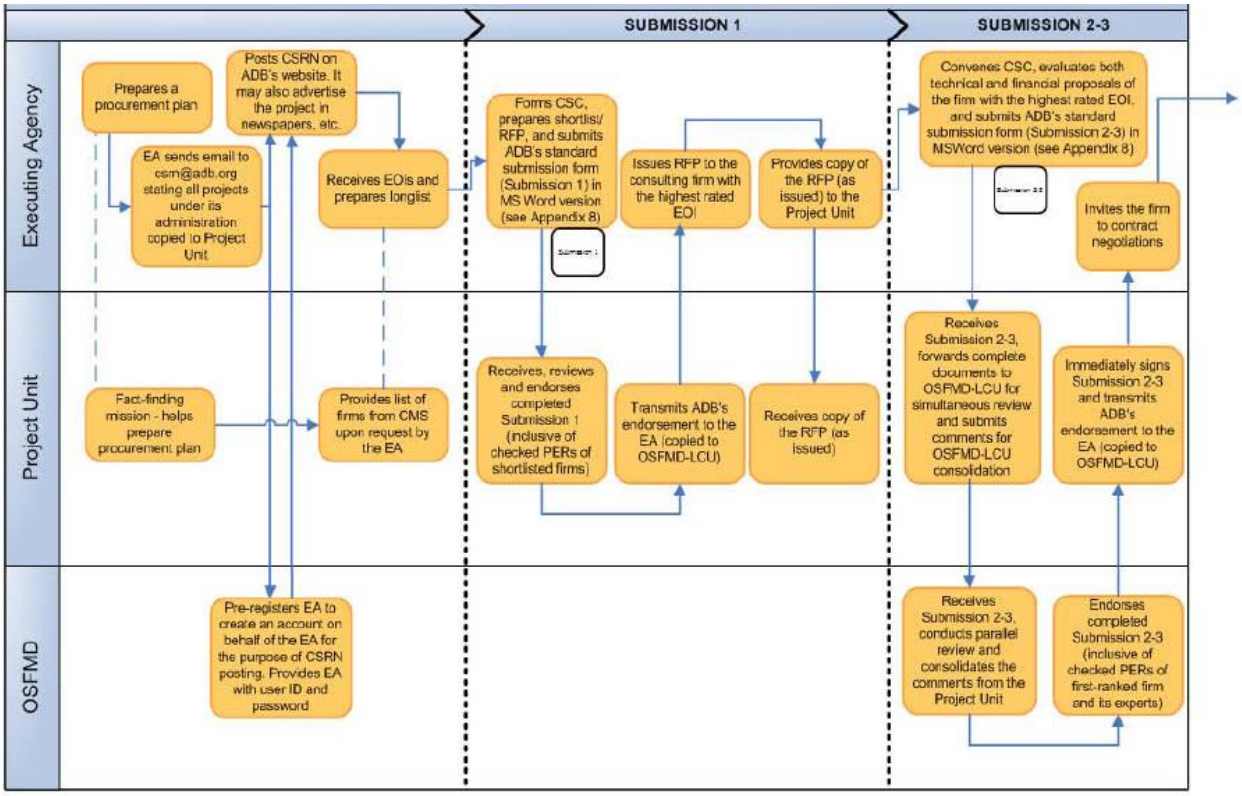
Figure 1: Single Selection Method

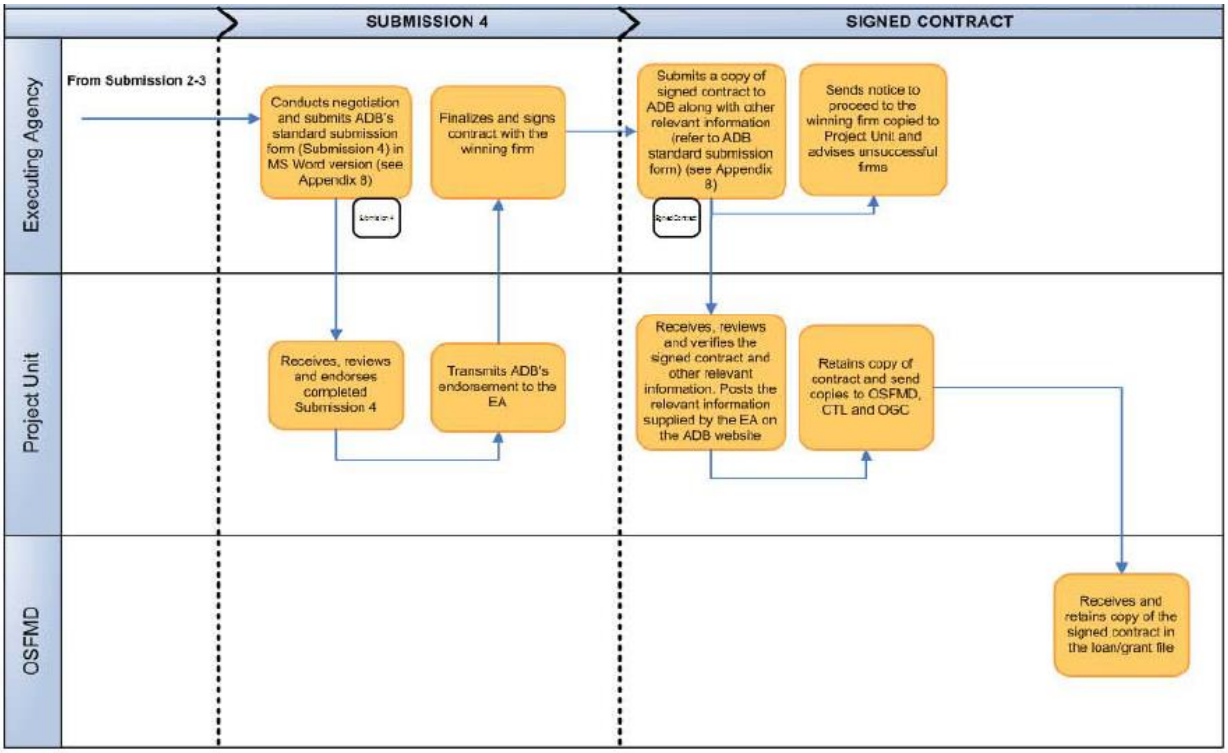




3. The climate change fund will be providing support to help recruit a technical advisory firm, using consultant qualification selection method (Figure 2) to prepare a water charging framework, institutional arrangement and protocols to engage service providers to operate modernized irrigation systems.

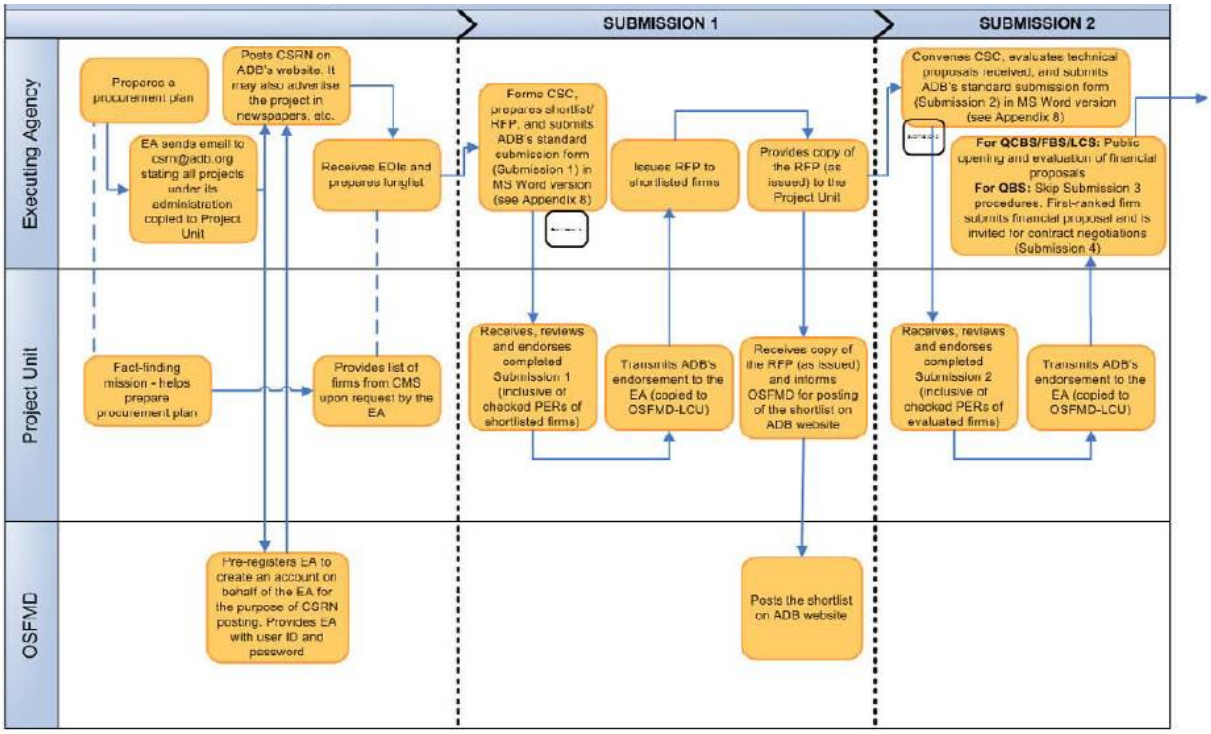
Figure 2: Consultant Qualification Selection Method

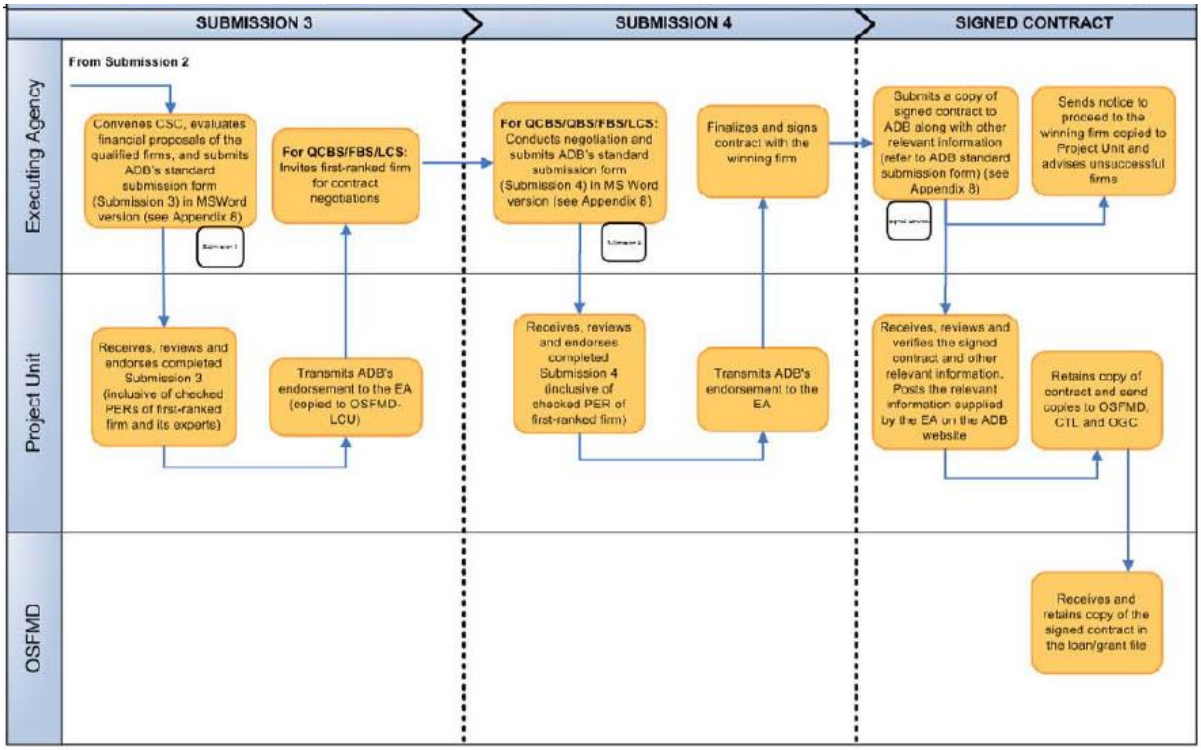




4. Using a fixed based selection method, an international consulting firm will be recruited to do the crop monitoring online platform development working closely with IWRP and telecommunication companies.

Figure 3: Fixed Budget Selection and Quality Cost-Based Selection Method





5. All documents and templates related to the recruitment of consulting services can be accessed or downloaded through this link https://www.adb.org/business/main. As part of project readiness, all terms of reference are provided as appendixes accessible from the project administration manual (PAM).

6. **Output 2: Modernized irrigation infrastructures developed.** Once the feasibility studies have been approved by the Ministry of Agriculture and Rural Development (MARD), the provincial project management unit (PPMU) will recruit national consultants to prepare the detailed engineering design (referred to as "DED national consultants") following fixed based selection. The designs will take into account projected climate change impacts and incorporate design features that enhance resilience of the interventions, as appropriate. The provincial line agencies will assist in carrying out the necessary surveys and provide technical support to the DED national consultants to ensure compliance with standards and regulations of the government of Viet Nam, incorporating the concept of the higher levels of service required for diversification into HVCs.[1]

7. The Department of Agriculture and Rural Development (DARDs) will review and submit DEDs to ADB for no-objection through CPMU. ADB in consultation with CPMU, will review DED to ensure that the principles of modernization are incorporated. DARD will update and approved the DED based on ADB's recommendation, if any.[2] Copy of approved DED should be forwarded to ADB to ensure consistencies when reviewing bid documents.

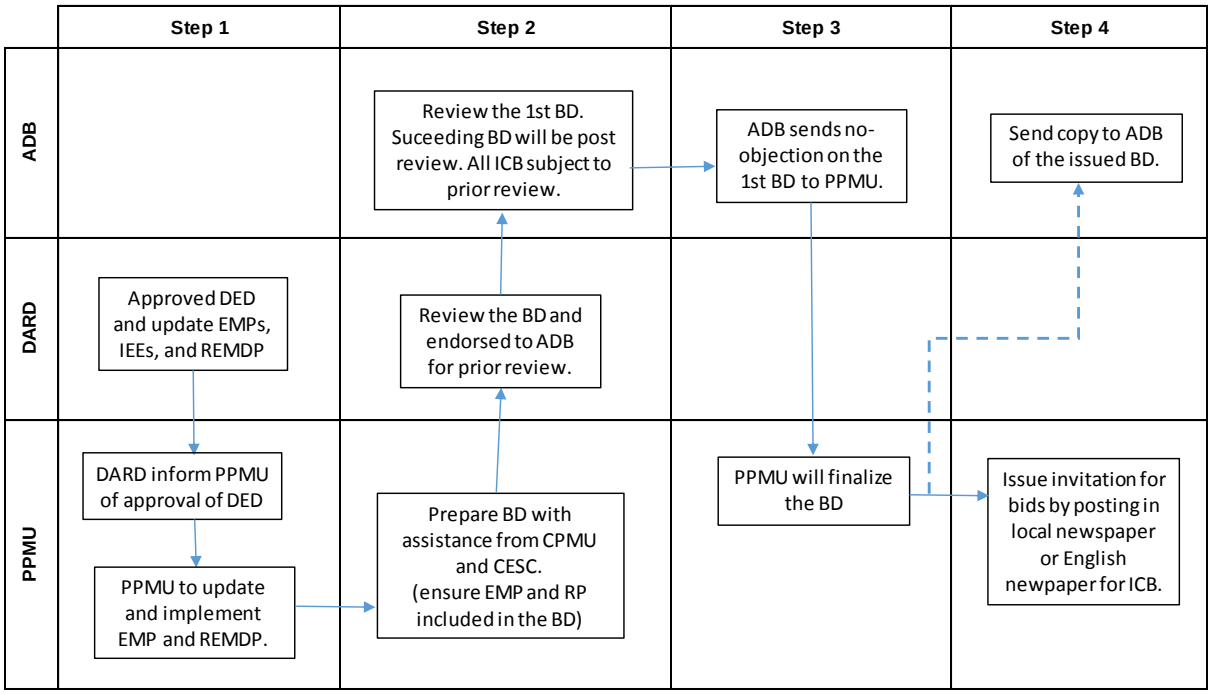
[1] The Australian Water Partnership is providing support in the form of initial workshops with the DED national consultants followed by progress reviews by visiting technical specialists from Australia.

[2] ADB under the Water Financing Partnership Facility, have recruited one International Irrigation Specialist and one National Irrigation Specialist to review the detailed engineering design to ensure its technical soundness.

8. Resettlement plans, IEEs and EMPs needs to be updated for any changes based on the approved DED before the PPMU can initiate the preparation of bidding documents. Required resettlement action should be initiated prior to start of the construction. The CPMU will recruit independent monitoring environment and safeguard consultants to ensure compliance with the approved EMPs and REMDPs.

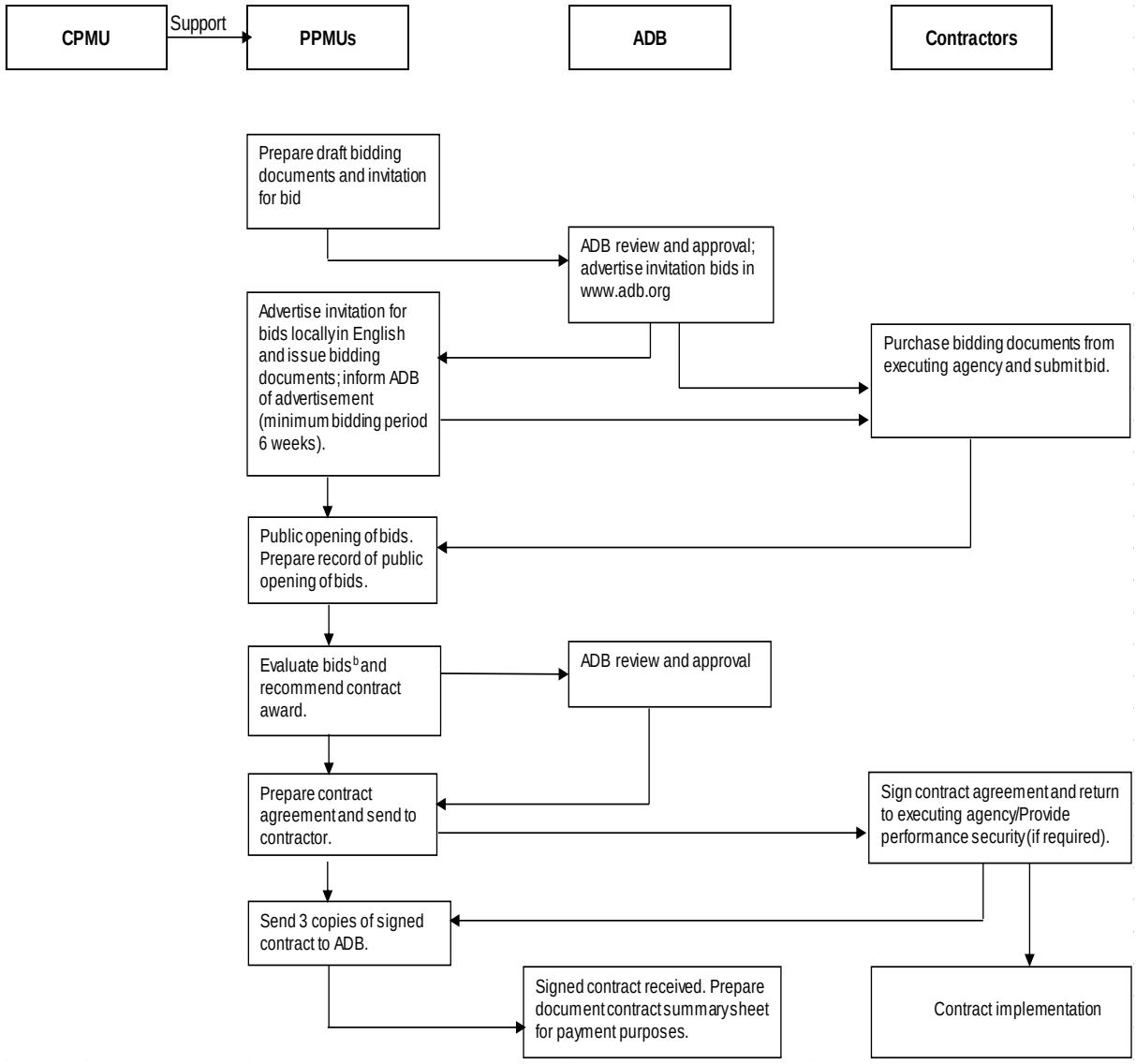
9. After the approval of DED and updating of EMPs and REMDPs, bidding documents will be prepared by the concerned PPMU with support from CPMU and the construction engineering support consultants (CESC). The bidding will be done in accordance with the methods and procedures defined in the procurement plan. For international competitive bidding (ICB) contracts, the bidding documents shall be prepared based on ADB's standard bidding document for ICB contracts for goods/works as appropriate, available in ADB's website. For national competitive bidding (NCB) contracts, the bidding document prepared shall be based on the harmonized standard bidding documents for NCB contracts issued by ADB. All ICB contracts and the first NCB goods/works contract from each province shall be subject for prior review by ADB. For prior review contracts, the draft bidding documents shall be submitted for ADB review and prior approval.

Figure 4: Preparation of Bidding Documents



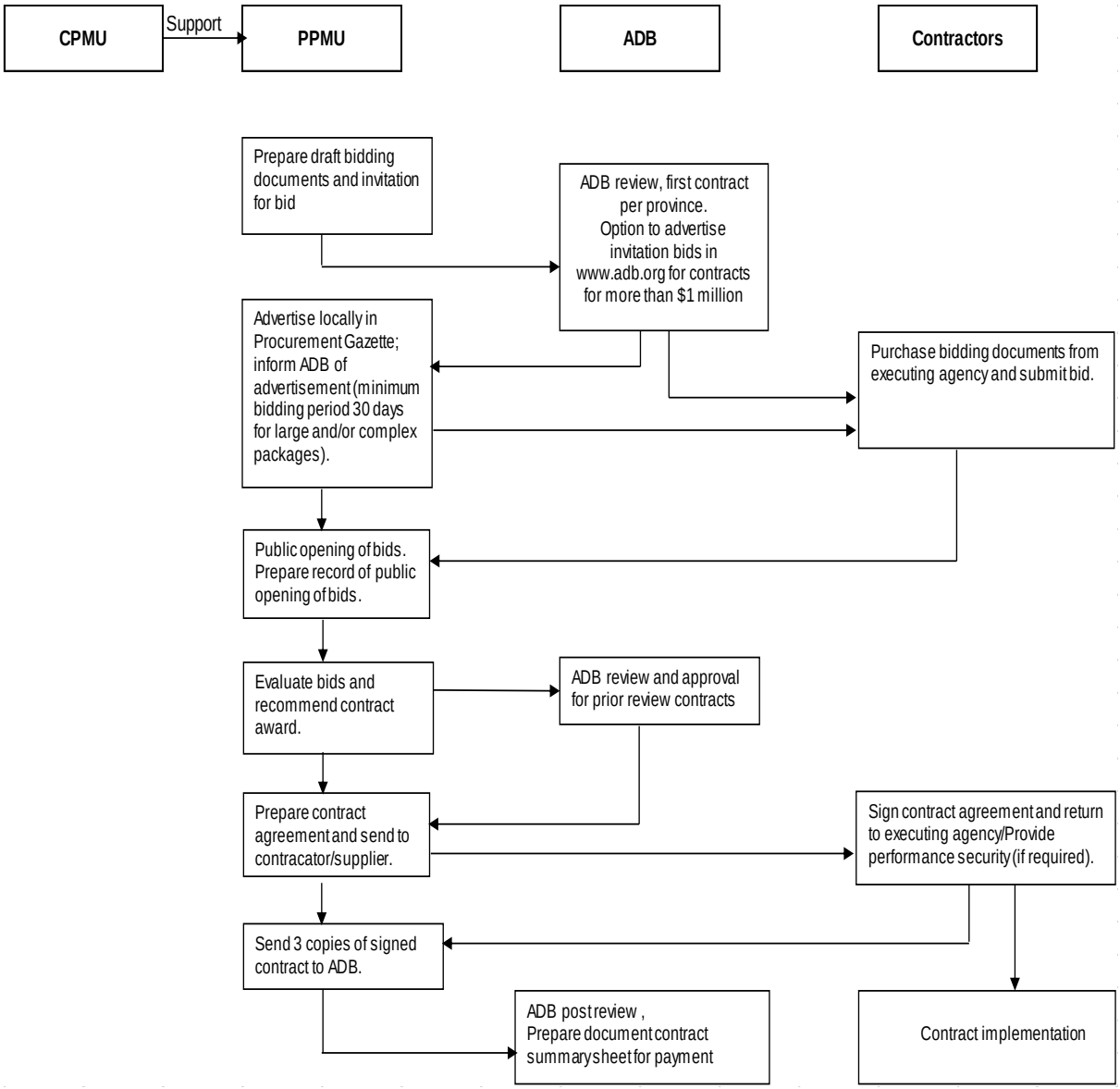
ADB = Project team
BD = bidding document
CPMU = Central Project Management Unit
PPMUs = provincial project management units
DED = detail engineering design
DARD = Department of Agriculture and Rural Development

Figure 5: Procurement Workflow for ICB Contracts
(with no prequalification, 1S1E and ADB prior review)



CPMU = Central Project Management Unit
PPMUs = Provincial Project Management Units
ADB = Asian Development Bank

Figure 6: Procurement Workflow for NCB Contracts
(with no prequalification, 1S1E and ADB prior/post review)



CPMU = Central Project Management Unit
PPMUs = Provincial Project Management Units
ADB = Asian Development Bank

10. **Output 3: Efficient on-farm water management practices adopted.** A servicer provider will be engaged to provide micro irrigation system to the farmers within the command area of the subprojects. CPMU will initiate the recruitment following ADB's Guidelines on the Use of Consulting Services (2013, as amended from time to time). Quality-cost-based selection method will be used using 90:10 quality cost ratio and bio-data technical proposal will be submitted.

Appendix 2: Terms of Reference for the Construction Engineering Support Consultants

A. Background

1. The project will modernize eight irrigation systems in five provinces that were most severely affected by the drought, namely Binh Thuan, Dak Lak Dak Nong, Khanh Hoa and Ninh Thuan. The modernized irrigation systems will support farmers to grow high-value crops (HVC) which will increase the water productivity of agriculture. The project takes a comprehensive and integrated approach under three outputs: (i) irrigation management services strengthened; (ii) modernized irrigation infrastructures developed; and (iii) efficient on-farm water management practices adopted. The project is aligned with the government's agriculture sector strategy and supports implementation of its recently approved Law on Hydraulic Structures. It is also aligned with ADB's country partnership strategy for Viet Nam (2016–2020), specifically pillar 2: increasing the inclusiveness of infrastructure and service delivery, and pillar 3: improving environmental sustainability and climate change response.

B. Objective, Scope of Services and Expected Deliverables

2. The construction engineering support consultants (CESC) will support project implementation working closely with the Central Project Office (CPO), provincial Department of Agriculture and Rural Development (DARDs) in the provinces and their respective project management units (PMUs), as well as with irrigation management companies (IMCs) and any 3rd parties contracted under the public-private partnership arrangements for subproject operation and maintenance. The CESCs will also act as a linkage, with the key experts provided under Australian Water Partnership (AWP) who will provide knowledge sharing and transfer support in several key areas, in one or more of the subprojects.[1]

3. The duration of the assignment is for 72 months with a total of 166 person-months inputs to be provided intermittently. The CESCs will specifically undertake the following tasks in consultation with the executing and implementing agencies:

Management Support

- Review and finalize the technical bidding/ procurement documents for services, goods and works, listed above,[2] and assisting in the bidding process, including prequalification, pre-bid meetings and bid evaluation
- Ensure awareness, consultation and participation of stakeholders during subproject implementation, through awareness, workshops and meetings.
- Ensure proper implementation of environmental, social, gender, and resettlement safeguards including gender action, environment management and resettlement plans
- Ensure annual monitoring and evaluation of project outcome indicators, and reporting, including supervision of the M&E contractors, providing guidance and assistance as required.

[1] The AWP will fund key experts for the following: (i) Design support with focus on modern pipe design: 79 p-days, (ii) Preparation of a water charging framework and policy recommendation: 63 p-days, (iii) Water resources planning and management, with focus on design of a groundwater monitoring program: 29 p-days, (iv) Preparation of a Water allocation framework and policy recommendation: 55 p-days, (v) Institutional support with focus on formulation of a policy on PPP (3rd party) management for irrigation: 42 p-days, (vi) Asset management and maintenance: 42 p-days, and (vii) Coordination, reporting and arrangement and support for Study tour(s) to Australia: 104 p-days.

[2] Except those for which advance action was initiated, such as for detailed engineering designs for SPs

- Assist CPO in (i) financial management and accounting of project expenditure, (ii) in preparation of quarterly and annual progress reports, and project completion reports, and (iii) annual planning.
- Develop, implement and report on capacity building for national and provincial staff assigned to the project. The program will include training on project implementation and management procedures as appropriate to each staff position and responsibility.

Technical Support

- Review water resource assessments, inter-sector allocation recommendations, and groundwater monitoring carried out in selected subprojects by the contractor firm and make recommendations for continuance and expansion of the program as appropriate.
- Provide oversight of construction quality for subprojects (SPs), including briefings for construction supervisors recruited under the construction supervision contracts.
- Prepare any needed design variations, including a review of the necessary equipment and parts to be provided under the engineering construction contracts.
- Assess, comment and improve/ add to the O&M manuals, provided by contractors for the scheme. While the contractor's manuals are expected to focus on operation and equipment, the CESCs improvements/additions are expected to guide operations to maximize water productivity.
- Assess and advise on micro irrigation technical designs and options to maximize farmer connectivity to hydrants and efficient on-farm water management, dissemination to farmers of options and micro irrigation grants for poor and near poor.
- Assess technical aspects of SP operation and maintenance including pumping and flow control systems and metering and make recommendations for improvement. Note: these technical O&M arrangements are to be in line with adopted institutional arrangements for O&M, and will be informed in part through consultations with the IMCs and private parties that may be interested in entering into private public partnership agreements with IMCs for scheme O&M.
- Plan and implement training and capacity development for IMCs focusing on technical aspects for SP O&M, water assessments and allocations.
- Review, advise, and guide work by contracted firm to develop an assess inventory database for the IMC, with a focus on WEIDAP SPs, which should improve maintenance budgeting and timely maintenance implementation.
- Review, advise, and guide work by contracted firm on Water Productivity assessments in selected subprojects, likely to be Ea Kuang Reservoir SP in Dak Lak Province, and Cam Ran SP in Khanh Hoa Province. Review findings and assist and guide development and piloting of a crop water productivity advice service. Consider possible expansion/ roll out of water productivity assessments and farmer service, and possibly including advice on crop treatment to boost yields based on remote sensed data.

Institutional Support

- Management and O&M arrangements for SPs involving IMCs and third parties under PPP contract arrangements. This will involve assessment of private sector interest, financial arrangements, risks and PPP options. Review closely the piloting of PPP planned in 1-2 SPs (likely Cam Ran in Khanh Hoa province). Prepare a policy document for PPP as well as specific arrangements/ recommendations for the other SPs.
- Assessment of water charging amounts for sustainable O&M, and affordability to farmers. Also, assessment of collection options and process to identify the best arrangements to avoid loss of funds, encourage efficient water use, and so on. Prepare

a water charging framework and policy recommendation and make specific recommendations for SPs in each province.
- Assess water allocations priorities for high water productivity as well as other identified criteria.
- Project awareness and capacity development for farmers/ water user groups.

C. Team Composition and Minimum Qualification Requirements for Key Experts

Table: List of Experts and Required Inputs (person-months)

Position	International	National
Modern Irrigation Engineer/TL	25	
International Project Completion Specialist	2	
Modern Irrigation Engineer / DTL		40
Pumping Specialist/Mechanical Engineer		6
SCADA Specialist		9
Engineering Contract Development Specialist		11
Resettlement Specialist		9
Social, Gender and Consultation Specialist		18
Environmental Specialist		6
Construction, Monitoring and Design Support Specialist		24
Monitoring and Evaluation Specialist		12
Project Completion Specialist		4
Total	**27**	**139**

4. **Modern Irrigation Engineer/Team Leader (international – 25 pm)**. The specialist shall demonstrate successful development of modern climate resilience irrigation providing affordable and flexible services to beneficiary farmers requires attention to (i) adoption of improved management services, including institutional arrangements, water charging, operations and timely maintenance, (ii) construction of quality engineering infrastructure and control/monitoring systems, and (iii) widespread adoption by farmers of efficient on-farm water management practices. The Modern Irrigation Engineer (Team Leader) will have overall responsibility for all members of the CESC team and their respective outputs, adoption of effective consultations and coordination between stakeholders and timely reporting.

5. The Team Leader will have a Master or higher degree in irrigation engineering or water resources development or other relevant field with at least 15 years' experience in planning and managing water resources or irrigation development, in both management and technical roles, in internationally financed development projects. Experience in modern irrigation development featuring pumped-pipe systems with good metering and control systems will be an advantage. S/he will be fluent in the English language with good communication skills, both verbal and written. S/he will have proven experience and management skills to lead a team of international and local specialists. Duties to be performed by the specialists include the following:

- The coordination of consultant inputs and responsible for deliverables under the CESC contract;
- Active interaction with specialists funded by the AWP to ensure that their work fits and support the outcomes of the project;
- Review and if necessary recommend modifications to the detailed engineering designs developed by government appointed engineering consultants for each subproject to ensure that agreed principles have been followed and that the designs have taken into account the anticipated impacts of climate change. The review should focus on metering and (SCADA) control systems proposed. Also review specifications, drawings and bills of quantity for the engineering works contracts for consistency, completeness and accuracy, so that they can be incorporated into bid documents;

- Review and suggest improvement/ modification of terms of reference for the various studies/ activities being performed under various other contracts. Assist in procurement including pre-bid meetings, evaluation, and provide guidance and oversight for implementation of contracts, and dissemination and wider adoption of findings and recommendations.
- Support the PMU/ PPMUs in their development of annual work plans and budgets for the implementation of the project;
- Assist the CPO-PMU in coordinating development activities of the national implementing agencies and provincial administration staff, and in attending to all social and environmental safeguards associated with project implementation;
- Support rigorous surveillance of the quality controls in the construction of engineering works financed under the project.
- Guide and support all aspects of the subproject development, including timely attention to: (a) institutional arrangements, water charging, operations and maintenance, (b) construction of quality engineering infrastructure and control/ monitoring systems, and (c) widespread adoption by farmers of efficient on-farm water management practices;
- Support stakeholder consultations and participation.
- Support annual monitoring and evaluation surveys and reporting.

6. **Project Completion Specialist (international – 2 pm)** shall prepare an evaluation and assessment on: (i) the adequacy of project preparation; design; appraisal; (ii) implementation arrangements; (iii) project benefits in terms of the design and monitoring framework; (iv) how problems were addressed, and the adequacy of the solutions adopted during implementation; and (v) performance of the borrower, beneficiaries, and ADB. The specialist will provide recommendations, based on the evaluation and lessons, for future project implementation and operation, as well as improvements in related ADB procedures.

7. The specialist will have (i) at least a master's degree or equivalent in irrigation system management or a relevant background; (ii) minimum of 10 years of relevant experience in monitoring and evaluation with relevant project; (iii) minimum of 6 years of relevant experience in sustainable financing mechanism in Viet Nam and (iv) strong interpersonal and communication skills.

8. **Modern Irrigation Engineer/Deputy Team Leader (national – 40 pm)** shall demonstrate successful development of modern climate resilience irrigation providing affordable and flexible services to beneficiary farmers requires attention to (i) adoption of improved management services, including institutional arrangements, water charging, operations and timely maintenance, (ii) construction of quality engineering infrastructure and control/monitoring systems, and (iii) widespread adoption by farmers of efficient on-farm water management practices. In the absence of the Team Leader, the irrigation engineer will have overall responsibility for all members of the CESC team and their respective outputs, adoption of effective consultations and coordination between stakeholders and timely reporting.

9. The modern irrigation engineer/ DTL will have a Master or higher degree in Irrigation Engineering or Water Resources Development or other relevant field with at least 15 years' experience in planning and managing water resources or irrigation development, in both management and technical roles. Experience in modern irrigation development featuring pumped-pipe systems with good metering and control systems will be an advantage. S/he will have a good command of the English language with good communication skills, both verbal and

written. S/he will have proven experience and management skills to lead a team of specialists. Duties to be performed by the modern irrigation engineer/ DTL include the following:

- The coordination of consultant inputs and responsible for deliverables under the CESC contract in the absence of the TL;
- Review and recommend modifications to the detailed engineering designs developed by government appointed engineering consultants for each subproject to ensure that agreed principles have been followed and that the designs have taken into account the anticipated impacts of climate change;
- Review specifications, drawings and bills of quantity for consistency, completeness and accuracy, so that they can be incorporated into bid documents;
- Advise on selection and possible adaptation of design standards and review detailed designs for adherence to design standards;
- Assist the CPO/PMU in coordinating development activities of the national implementing agencies and provincial administration staff, and in attending to all social and environmental safeguards associated with project implementation;
- Support the PMU/ PPMUs in their development of annual work plans and budgets for the implementation of the project;
- Assist the CPO-PMU in coordinating development activities of the national implementing agencies and provincial administration staff, and in attending to all social and environmental safeguards associated with project implementation;
- Support rigorous surveillance of the quality controls in the construction of engineering works financed under the project.
- Guide and support all aspects of the subproject development, including timely attention to: (a) institutional arrangements, water charging, operations and maintenance, (b) construction of quality engineering infrastructure and control/ monitoring systems, and (c) widespread adoption by farmers of efficient on-farm water management practices;
- Support stakeholder consultations and participation

10. **Pumping Specialist/Mechanical Engineer (national – 6 pm)** will ensure pumping equipment and control systems for the subprojects are fit for purpose, and to review the metering systems proposed to monitor water distribution and use, and facilitate irrigation charging if/when this is introduced. The specialist shall have tertiary qualifications from a local institution in mechanical engineering or control systems or a related field. S/he will have at least 5 years' experience in pumping/control/metering systems. Experience in remote site monitoring and control systems is highly desirable. The specialist will be reporting to the CESC Team Leader but will work closely with others, including the SCADA specialist, and the national modern irrigation engineer/deputy team leader. Duties and responsibilities include the following:

- Review detailed designs for pumping equipment, pumping stations and control systems. If significant problems are likely to be encountered and/ or design change are desirable, bring these to the attention of the team leader.
- Review metering systems, particularly for distribution and use of water from pipe systems. Consider upgrade options in consultation with others, particularly those which would make operations easier and result in efficiency and productivity gains. Also, consider upgrades for irrigation service charge collection. Upgrades should consider meter types, communication/ transmission of data, and various smart / pre-paid metering options.

11. **SCADA Specialist (national – 9 pm)** to assist in the modernization process of irrigation infrastructure being upgraded under the project. The modernized irrigation systems will have

simple supervisory control and data acquisition (SCADA) systems to facilitate efficient operation and maintenance, and incremental control equipment required water charging. The SCADA specialist will assess and advise on the proposed SCADA installations for each scheme and train operating staff on the use, maintenance and operation of the schemes.

12. The SCADA specialist will preferably have a Master or higher degree in engineering, and at least 5-years' experience in installation and/ or use of SCADA equipment for management and remote monitoring of water resources. Experience in SCADA systems installed in irrigation systems will be a big advantage. S/he will be fluent in the English language with good communication skills, both verbal and written. Duties to be performed by the specialists include the following:

- Review and assess SCADA systems currently adopted/planned elsewhere in Viet Nam and in the region;
- Review the SCADA systems proposed for each WEIDAP irrigation subproject and advise on any improvements/changes that may be considered advantageous. The recommendations will be made to promote uniformity of systems being adopted for project irrigation systems;
- For any agreed changes, the SCADA specialist will specify: (i) equipment to be adopted - sensors, loggers or as required, (ii) data transmission media and protocols, (iii) computer hardware and software systems and development;
- Develop/recommend changes for contracts for SCADA equipment;
- Assist in supervision/over sight to ensure quality control for supply, installation and commissioning of SCADA systems; and
- Arrange training to irrigation scheme operators in the use and maintenance of SCADA systems.

13. **Engineering Contract Development Specialist (national – 11 pm)** will assist the CPMU/PPMUs to undertake procurement activities, including but not limited to preparation of bidding documents, evaluation of bids for the various works procured under international and national competitive bidding (ICB/NCB) procedures following ADB's Procurement Guidelines (2015 as amended from time to time) and recruitment of consultants following ADB Guidelines on the Use of Consultants (2013 as amended from time to time) as required during project implementation.

14. The specialist will have graduate qualifications in business administration, engineering or other related fields and at least 10 years' experience in procurement, preparation of bidding documents, evaluation of bids, and contract management. The candidate is knowledgeable with ADB Procurement Guidelines (2015 as amended from time to time) and the Guidelines on the Use of Consultants (2013 as amended from time to time). Experience working with other development partners / donor funded project is advantageous. The specialist should possess excellent communication (written and oral) skills in English. Tasks include but not limited to the following:

- Review and update the procurement plan included in the project administration manual (PAM);
- Assist in preparation of efficient packaging for the procurement of goods/ works and selection of consultants
- Assist the CPMU/PPMUs to prepare bidding documents for procurement of goods and works following the international competitive bidding (ICB), national competitive

bidding (NCB) and shopping procedures based on the threshold indicated in the procurement plan;
- Assist in the issuance and opening of bids for procurement of goods and works;
- Assist in the evaluation of bids, the preparation contracts and negotiations with contractors and suppliers;
- Assist in the preparation of invitation for expressions of interest for recruitment of consulting packages required during implementation;
- Assist in the preparation of shortlist, request for proposals and evaluation of proposals for consulting services following the selection procedures identified in the procurement plan;
- Assist in the preparation for contract negotiations with consulting firms; and
- Assist the CPMU in training and building capacity of project management staff in procurement of goods, works and consulting services in accordance with ADB procedures.

15. **Resettlement Specialist (national – 9 pm)** will support the PMUs in monitoring the implementation of the eight-subproject resettlement and ethnic minority development plans (REMDPs) prior and during the construction. REMDPs have been prepared during project preparation based on proposed designs (mainly upgrading of existing canal alignments, location of new pipe alignments and the rehabilitation of existing rural access roads). During detailed engineering design to be carried out by government appointed consultants, REMDPs will need to be updated following DMS, replacement cost survey and the extensive consultation with beneficiaries, particularly for the pipe alignments and the placement of farmer offtake hydrants. The expert will work closely with the safeguard officers in the PPMUs to ensure compliance with ADB SPS 2009. MARD will maintain a monitoring role to ensure that both government and ADB procedures are respected as the resettlement plans are implemented.

16. The specialist shall have tertiary qualifications from a local institution in social science or a related field. S/he will have at least 5 years' experience in resettlement in Viet Nam on internationally financed projects and be familiar with rural development in Viet Nam. Tasks include but not limited to the following:

- Prepare training guidelines for implementation of REMDPs, in accordance with ADB's SPS (2009), including guidelines for voluntary and involuntary land acquisition for subprojects for irrigation rehabilitation in respect of piped distribution systems and capacity building of line agency staff;
- Delivery of resettlement training at central and provincial levels;
- Review subproject feasibility study procedures and approval process to ensure that resettlement safeguards are being applied per ADB standards. Ensure integration of gender and environmental management plans and actions in resettlement plans;
- Ensure that suitable and acceptable consultations have occurred during the updating and implementing of resettlement plans and ethnic minority specific action or development plans, if any, have been disclosed to affected people that resulted from the design modification during detailed engineering design;
- Provide on-job training in participatory social and resettlement impact evaluation;
- Support the monitoring of resettlement plan implementation by CPO and PPMUs alerting them to the potential risks from resettlement amongst affected households;

- Contributing to the PPMS for monitoring and reporting on resettlement implementation; and
- Assist provincial and district line management levels in preparing resettlement plans where needed and monitor the approval of those resettlement plans as required;
- Support executing and implementing agencies in the implementation of the grievance redness mechanism set forth in REMDPs

17. **Social, Gender and Consultation Specialist (national – 18 pm)** will ensure that the government and ADB gender priorities and guidelines are respected during project implementation. S/He will assist the participation of vulnerable groups in this process. S/He will assist technical support providers to target the poor and support them to gain equal access to water rights during the development of allocation plans within each subproject.

18. The specialist will have tertiary qualifications in a relevant social science and 10-year practical experience in gender mainstreaming in development projects in Viet Nam (preferable with a donor funded projects). The specialist should have gender training skills and experience in conducting at least 5 gender training skills for development projects' participants. The specialist will be familiar with ADB and government's gender, indigenous peoples (ethnic minorities) and social development policies, plans and strategies, and contemporary development issues. The specialist should have effective English skills both in speaking and writing and can write English report effectively. Duties to be performed by the specialists include the following:

- Prepare an implementation plan for the gender action plan (GAP) based on the design targets and actions designed for the project and provide orientation to stakeholder on the GAP implementation plan
- Assist MARD to implement, monitor and report on implementation of the GAP and update and revise the GAP as needed in collaboration with the monitoring and evaluation specialist;
- Prepare gender mainstreaming training material and undertake basic staff training at central and provincial levels to sensitize implementation staff and relevant stakeholders to the requirements of the GAP and REMDP;
- Facilitate gender mainstreaming training for stakeholders as specified in GAP such as for irrigation management companies (IMCs) that have direct dealings with the farming communities in the command areas;
- Provide gender inputs into terms of reference of related consultancy service packages, constructors, and works to facilitate GAP implementation;
- Train provincial, district and commune staff together with contracted service providers in facilitating farmers access to micro irrigation;
- Collaborate with the monitoring and evaluation specialist to ensure PPMS include data which are gender and ethnic disaggregated; for collection and reporting on GAP and DMF;
- Assist PMU to prepare and submit to ADB regular GAP implementation progress reports (at least on a semi-annual basis) that include both quantitative and qualitative information – following the format as provided in Appendix 11 of PAM;
- Support GAP implementation and conduct regular field visits to this effect and mentor the staff/consultant closely involved with project implementation;
- Collect human stories and qualitative information related to GAP implementation during field visits;

- Assist EA and IAs in preparing project closing report on GAP implementation as ADB Tip sheet No.5 of Gender PCR preparation.
- Provide any additional gender inputs within this project as requested by PPMUs/ PMU.

19. **Environmental Specialist (national – 6 pm)** will ensure that the environmental management plans (EMPs) for each subproject is implemented as designed during project preparation and that the potential environmental risks can be mitigated during the construction and operational phases of irrigation system modernization. The environmental specialist will also support the monitoring of ground water reserves and assist the DARD officers to maintain regular monitoring of the quality and level of ground water reserves. The specialist will support the activities of the CPO/PMU procured environmental monitoring contract that will be ongoing during the construction phase of the project. It is anticipated that the provision of surface irrigation water will reduce the demand for ground water within project command areas and this impact will need to be monitored as it forms one of the main indicators of the project outcome. There will also be environment officers appointed to the DARD/PPMU and it is expected that the environmental specialist will support the activities of these appointees during implementation with the provision of on-the-job training and technical support.

20. The specialists will have appropriate tertiary qualifications in environmental science or natural resource management from a recognized institution and will have more than 8 years' experience working in the field of environmental management for internationally funded development projects, some of which will have been undertaken in Viet Nam or elsewhere in the Greater Mekong Sub-region. The specialist will have considerable experience in environmental monitoring and will be familiar with environmental laws of Viet Nam as well as having had experience in internationally funded development projects, preferably related to infrastructure development, as an environmentalist. Training skills would also be an advantage to the specialist. Duties to be performed by the specialists include the following:

- Assist the CPO with the review of the initial environmental examinations and associated environmental management plans prepared for each subproject during project preparatory technical assistance (PPTA) and assist with updating EMPs in response to requirements of the detailed engineering design;
- Brief the staff of the CPO and of DARDs PPMUs on the environmental procedures and requirements for subproject implementation (construction and operations);
- In cooperation with the monitoring and evaluation specialists, develop the indicators that need to be monitored for groundwater quality and levels that can be incorporated into routine project monitoring activities;
- Support PPMU to establish environment management system that links with CPO/PMU environment management including the procedures of construction inspection and monitoring, period reporting and responsibilities of each party in the project environment management system;
- Support CPO/PMU to procure independent environment monitoring contract and support the independent environment consultant to prepare semi-annual monitoring report to be submitted to CPO/PMU and ADB for reviewing and upload on ADB's website;
- Visit each subproject during the construction to ensure environmental safeguards are being properly conducted in accordance with the subproject environmental management plan;

- Develop environmental management procedures to be adopted by both the provincial IMCs in operating the system storage facilities to sustain environmental flows, and the PPP irrigation operators drawing water from existing reservoirs to pump to beneficiary farmers within newly established command areas;
- Assist in developing operational guidelines for water utilization by beneficiary farmers to maximize the efficient use of water form irrigated agriculture; and
- Assist in the preparation and implementation of training activities regarding the environmental aspects of the project

21. **Construction Monitoring and Design Support Specialist (national – 24 pm)** shall provide oversight to design and construction quality. The specialist will have a Master or higher degree in Irrigation or Civil Engineering or Water Resources Development or other relevant field with at least 2 years' experience in water resources or irrigation development, in a technical role. Experience in modern irrigation development featuring pumped-pipe systems with good metering and control systems will be an advantage. S/he will have a good command of the English language with good communication skills, both verbal and written. Duties to be performed by the junior engineer include the following:

- Support team members and particularly the modern irrigation engineers/ TL and DTL.
- Support rigorous surveillance of the quality controls in the construction of engineering works financed under the project.
- Support all aspects of the subproject development, including timely attention to: (a) redesign/ variations which may be required; (b) institutional arrangements, water charging, operations and maintenance, (c) construction of quality engineering infrastructure and control/ monitoring systems, and (d) widespread adoption by farmers of efficient on-farm water management practices;
- Support stakeholder consultations and participation

22. **Monitoring and Evaluation Specialist (national – 12 pm)** to set up and ensure the routine operations of a project benefit, monitoring and evaluation (PBME) system to report on implementation progress and to assess impacts from project investments. It is important to ensure that benefits achieved are as intended and that they are shared by all members of the target communities, particularly by the poor and vulnerable households within the subproject command areas. To achieve this, there need to be baseline studies undertaken during early implementation phase to identify the current socio-economic conditions of target beneficiaries to assess their vulnerability to the impact from climate change.[3] To ensure that accurate information is collected in the eight subproject command areas, it is important to have experienced M&E specialists assist in overall base-line survey design and to provide the principles for analyzing the results. In addition, the specialists will be responsible for establishing performance monitoring of the implementation of designed activities for each subprojects and train PPMU staff in the operations of this PPMS system.

23. The specialist will have tertiary qualifications in rural development or a related field from a recognized tertiary educational institution and have at least 10 years' experience as project benefit, monitoring and evaluation (PBME) specialists or related area. Ideally, the individual will have a minimum of 5 years' experience in a multilateral agency financed PBME positing within the south-east Asian region. S/he will be responsible to the CESC Team Leader and be based in

[3] A summary socio-economic survey was prepared by CPO appointed consultants that was reviewed by PPTA consultants and found to have a few inconsistencies in terms of coverage, representation and data entry.

the CPO/PMU with travel to the target provinces as required. The specialist will be familiar with computer-based management information systems and will be an experienced programmer using off the shelf software for the monitoring and evaluation project to be developed. Duties to be performed by the specialists include the following:

- Review the monitoring and evaluation recommendations in the RRP and from the attached PAM (linked document No.6);
- Together with CPO/PMU staff, and with reference to the project design and monitoring framework (DMF) of the project, firm up/ develop a monitoring system based on measurable inputs, outputs and outcomes incorporating SMART indicators that conform with ADB and government monitoring standards;
- Together with CPO/PMU staff and gender specialist, brief PPMU officers on their duties and responsibilities under the project monitoring system for the collection of information on indicators specified in the DMF and GAP;
- Assist in recruiting a national M&E officer to the CPO/PMU to undertake PBME and impact monitoring for the overall project including reporting obligations;
- Assist the CPO/PMU in developing a survey instrument for the baseline and annual M&E surveys to be carried out in the eight subproject command areas by contract, and assist in procurement of services of a suitable organization/ firm for the survey;
- Guide the contracted organization/ firm in undertaking baseline and annual M&E surveys, review findings and reports;
- Assist the CPO/PMU in preparing routine monitoring reports on engineering implementation and institutional development progress, identifying data/ activities to be tracked and reported; and
- Periodically review monitoring activities during project implementation and report any deficiencies, problems, issues or shortcomings to the CPO/PMU.

24. **Project Completion Specialist (national – 4 pm)** under the guidance of the international project completion specialist, shall prepare an evaluation and assessment on: (i) the adequacy of project preparation; design; appraisal; (ii) implementation arrangements; (iii) project benefits in terms of the design and monitoring framework; (iv) how problems were addressed, and the adequacy of the solutions adopted during implementation; and (v) performance of the borrower, beneficiaries, and ADB. The specialist will provide recommendations, based on the evaluation and lessons, for future project implementation and operation, as well as improvements in related ADB procedures. S/he will:

- Adequacy and completeness of the project's design.
- Achievement of the project's outcome and contribution to achieving the expected impact.
- Performance of the outputs by determining deviations from appraisal regarding the scope, costs, implementation arrangements, and reasons for such deviations; and assessing the impact of such deviations on project's benefits;
- Benefits accrued from the project by evaluating direct and indirect benefits and compare the present situation with the pre-project conditions;
- Covenants and impact of their compliance/non-compliance on project's results.
- Significant environmental and poverty reduction impacts which include socio cultural impacts, when applicable, and the implementation and effectiveness of the Environment Monitoring Plans and Gender Action Plan of the project as well as other

relevant social and environmental safeguards measures and poverty reduction measures.

- Performance of the borrower and EA in managing and implementing the Project; in complying with ADB's guidelines, policies, practices, procedures, and loan covenants; and in monitoring progress effectively in comparison with quantifiable and monitoring targets.
- Contract awards and disbursements performance, and efficiency impact of institutional arrangements in awarding contracts, particularly the institutional arrangement in selecting and awarding infrastructure developments for safe agricultural zones and the use of bidding procedures in safe agricultural zone investments.
- Performance of consultants, contractors, and suppliers with respect to services, construction, supply, delivery, and installation.
- Performance of the Project at its initial stage of operation and compare with the qualified indicators in the DMF.
- Problems encountered during implementation and the effectiveness of measures to resolve them by the borrower, EA, and ADB.
- Performance of the monitoring and evaluation system established for the Project and re-examine the indicators selected for monitoring operations and assessing development impact.
- Sustainability of the Project by assessing its transition to operations, identifying any remedial measures needed, evaluating future operation and maintenance schedules, and recommending further steps the borrower and EA need to undertake.
- Perform other tasks assigned by CESC Team leader

25. The consultants will have (i) at least a master's degree or equivalent in irrigation engineer or a relevant background; (ii) minimum of 5 years of relevant experience in monitoring and evaluation of irrigation systems; (iii) minimum of 3 years of relevant experience sustainable financing mechanism in Viet Nam (v) strong interpersonal and communication skills; and (vi) excellent skills in written and spoken Vietnamese and English.

D. Reporting Requirements and Time Schedule for Deliverables

No	Description	Remarks
	Management Reports	
	Inception Report	Within 3 months of mobilization
	Quarterly progress reports documenting project progress achieved by output as measured through the indicator's performance targets, and (ii) key implementation issues and solutions. Also, consultancy inputs and utilization.	Quarterly
	Annual reports including: (i) progress achieved by output as measured through the indicator's performance targets, (ii) key implementation issues and solutions, (iii) updated procurement plan, and (iv) updated implementation plan for the next 12 months	Annually
	Project completion report documenting achievements, outcomes and lessons	Six months from project physical completion of the project
	Working Papers	
	Working papers as appropriate concerning SP development and project implementation	

E. Client Inputs and Counterpart Personnel

a. Services, facilities and property to be made available to the Consultant by the Client: _____ [list/specify]

b. Professional and support counterpart personnel to be assigned by the Client to the Consultant's team: _____ [list/specify]

Client will provide the following inputs, project data and reports to facilitate preparation of the Proposals: (list/ specify/ attach. If none, state N/A

Appendix 3: Terms of Reference for the Water Charging Framework, Institutional Arrangement and Protocols to Engage Service Providers to Operate Modernized Irrigation Systems

A. Background

1. In line with the new 2017 law on Water Resources/ Irrigation, provinces are expected to initiate water charging for irrigation. Particularly for the piped - hydrant schemes constructed under WEIDAP, accurate volumetric metering will facilitate transparent charging. However, in drought years, water will be short, and farm allocation priorities need to be established, giving priority to high-value and perennial crops. Under this contract, support will be given for each Province to develop and adopt a water charging framework and set irrigation charge amounts, which reflect this crop value, cost of providing water and priority/ assurance of supply. The Irrigation Management Companies, IMCs, do not at present have the skills to manage modern systems and water charging, and under this contract public private partnership, PPP, options will be considered to bring in necessary expertise, as an alternative, or in addition, to strengthening IMCs. Recommended arrangements will be piloted first in Khanh Hoa Province, then rolled out as appropriate in other subprojects.

2. In undertaking the assignment, the contractor shall liaise closely with MARD, the CESCs, PPCs, DARDs, IMCs and others.

B. Tasks and Deliverables

3. Under this contract, focusing on the subprojects with piped-hydrants systems, the following tasks and deliverables are required:

4. **Task 1: Metering options** shall be reviewed including metering hardware (reliability, accuracy, local or remote read), costs and management implications. The review shall also consider pre- and post- paid charging options and advantages and disadvantages. Also, to be considered is the level of metering within the irrigation system, and whether group and/ or individual household metering should be adopted. *Deliverable: working paper on metering options*

5. **Task 2: Water allocations and charging framework.** From assessments of crop farm budgets and crop values, including impact of low priority/ interrupted irrigation supply, water allocation priorities in the face of drought shall be recommended. Priority for irrigation shall be given to high-value and perennial crops, but other factors may also be factored in. Volumetric and/ or area-crop water charge rates shall be determined based on crop water requirements in the dry/ wet season months, irrigation allocation priority, as well as the cost of supplying irrigation. Crops/ farmers which are given the highest priority for water in the face of scarcity/ drought shall have a surcharge reflecting the value to farmers of having more assured/ reliable supply. Charges that cover full O&M costs shall be identified, and the subsidy requirement quantified for lower charges. *Deliverable: irrigation charging framework and irrigation charge amounts*

6. **Task 3: Management and public-private-partnership options**. Assess the irrigation management companies, IMCs, including staffing competencies and institutional set up, to manage the pipe-pump systems, and also their management tools and systems, relationship and communications with farmer stakeholders, financial aspects, etc., and also assess existence and strength of farmers/ farmer groups, and draw conclusions and make recommendations for management and O&M of the pipe-hydrant systems. This should include assessment of two or more options including various IMC/ WUG/ 3rd party management combinations. For the

recommended option, detail expected responsibilities and duties including capacity development/ training requirements. Assess risks and identify mitigation measures. If 3rd parties are to be involved, detail contractual arrangement (with the IMC), as well as payment modality, and assess 3rd party (private sector) interest. It is expected that farmer beneficiaries will bear the full cost of operation and maintenance. The study shall include for consultations with stakeholders including PPCs, IMCs, DARDs and farmers. *Deliverable: working paper on MOM arrangements for pipe-hydrant systems, with focus on 1-2 SPs where recommendations are to be piloted.*

7. **Task 4: Piloting and roll-out of charging and management arrangements**. The metering, water allocation and charging and management arrangements shall be piloted in 1-2 SPs, most likely in Khanh Hoa province. Under this contract, hands-on support shall be provided for the pilot(s) including workshops, capacity development and monitoring. It is anticipated that recommendations may require a variation to the engineering construction contract. *Deliverables: Proposed piloting arrangements, financial aspects, details of any changes/ variation to engineering construction contract, etc., training material, and monitoring reports.*

C. Schedule

8. Tasks 1 - 3 shall be completed in the first year of the assignment. Task 4 shall take three years, starting at the end of year 1/ beginning of year 2 of the assignment.

D. Staffing Expertise and Costs

9. Required expertise shall include: an irrigation engineer, an agronomist, a PPP/ institutions specialist and a financial specialist.

10. The contract cost shall include for staffing expertise and their expenses, and also for workshops, consultations, reports preparation, and so on.

Appendix 4: Terms of Reference for the Development of Software and Guidelines for Subproject Management

A. Background

1. The Irrigation Management Companies (IMC), in each province manage the public irrigation systems, including reservoirs, canals and other assets, supplying water to farmers as well as bulk supply to municipal authorities and to industry. However, performance needs to improve and will be facilitated by adoption of technical tools/ systems/ software to manage the new engineering systems.

2. With focus on WEIDAP subprojects, this contract will support a review of proposed operation control (software) systems, and existing IMC asset inventory and maintenance budgeting practices, and then develop together with the IMCs and others concerned, (generic) guidelines for: (i) subproject operation and control systems, and (ii) subproject maintenance planning, budgeting and implementation.

3. Part (i) will include a review of the (SCADA) [25] / metering systems being provided under the engineering contracts for each subproject, with the aim to ensure uniformity in software systems adopted in each province, particularly for the pipe-hydrant systems.

4. Part (ii) will include preparation of maintenance database and guidelines, to cover both civil works and the equipment associated with the control systems; the former entails guidance for routine and periodic maintenance of canal banks, lining, and concrete structures, pipe works, etc., while control systems equipment requires periodic calibration / checking and part replacement. The maintenance guideline will include recommendations for database improvement/ development and planning and budgeting of maintenance, possibly with development of yardsticks to estimate maintenance costs. After approval of the guidelines, the respective Provincial Peoples Committee and IMC will endorse their adoption. The adopted database structure shall be used for all subprojects, ensuring a common approach.

B. Tasks and Deliverables

5. Under this contract, focusing on the WEIDAP subprojects, the following tasks and deliverables are required:

- **Task 1**: **Operation and control systems**. For each subproject, basic operation control and metering (SCADA) systems are to be installed under the engineering construction contracts. Under this contract, the systems being provided shall be reviewed, and recommendations made to support uniformity, particularly for software systems. This will facilitate operations and maintenance of the systems and their future upgrade. Recommendations for possible future improvement/ expansion of the basic SCADA systems shall also be made with outline costs.

  Deliverable: working paper on SCADA systems

- **Task 2A: Asset inventory development**. The contract will support the IMCs in each province to improve their asset inventories, by (i) development of a modular GIS based (as appropriate/ directed) database asset inventory that will be populated for each of

[25] Supervisory Control and Data Acquisition Systems

the WEIDAP subprojects, with focus on the subprojects with pipe-hydrant systems. The proposed new asset inventories shall have appropriate detail for each component/ structure of the irrigation systems, as agreed with the Client and IMCs, as well as appropriate means/ systems for entering and updating structure/ asset condition and required remedial works/ quantities. The database shall have a common structure which is adopted for all subprojects.

Deliverables**:** (i) working paper on existing asset inventory/ control systems, and for the proposed new asset inventory system; and (ii) following approval by concerned authorities, development of an asset inventory database populated with data for the WEIDAP subprojects.

- **Task 2B**: **Maintenance planning and budgeting system**. A new and improved asset inventory will enable timely planning and improved budgeting of maintenance. Data from the inventory concerning asset condition and "fitness", may be combined with yardsticks[26], to estimate maintenance costs. The guideline will recognize the different categories of maintenance, such as "routine", "periodic" and "priority / emergency" maintenance, as well as describe the maintenance characteristics of different elements of the irrigation systems. For example, maintenance of earthen and concrete structures is generally "routine" or "periodic" as they continue to be fit-for-purpose even with significant deterioration in condition. In contrast, a broken pump or transformer is not fit-for-purpose has to be replaced immediately and is regarded as a "priority/ emergency" for maintenance. The guideline will also detail procedures for maintenance including planning, budgeting, and implementation arrangements. It is anticipated that the database inventory (see Task 2A) may be expanded/ linked to a maintenance budgeting tool to facilitate preparation of maintenance budgets. The maintenance planning and budgeting guideline will be approved by the respective IMC and endorsed for adoption by the respective Provincial Peoples Committee.

  Deliverables: (i) Maintenance Planning and Budgeting Guideline, (ii) Maintenance budgeting tool.

- **Task 2C: Capacity development and support for implementation**. During and following approval and development of the asset inventories (Task 2A) and maintenance planning and budgeting system (Task 2B), a series of consultations and trainings shall be given to concerned stakeholders, and particularly to IMCs, in the use of the new guidelines, database and tools. These shall be held at a central location and/ or in each province as appropriate.

  Deliverables: training guides, workshops/ trainings reports.

C. Schedule and Staffing Requirement

6. Task 1 ideally be carried out during the preparation of detailed engineering designs of sub-projects, or as soon afterwards as is possible, allowing for recommendations to be incorporated. Tasks 2A and 2B shall be completed during the construction phase of each subproject. Task 2C

[26] Maintenance yardsticks are often used to determined maintenance costs/ budgets. For some works the yardsticks are the approved rates for works/ items of equipment (schedule of rates), but many yardsticks are determined from actual maintenance costs over the years. For example, a simple yardstick for canal lining repair, may be 4% of the lining to be replaced each year.

shall commence simultaneously with Tasks 2A and 2B but continue through the first year of implementation of each subproject.

7. Required expertise shall include: irrigation engineer(s), SCADA specialist, database/ GIS specialists. The contractor may assume that IMC staff will assist in populating the new asset inventory database, providing necessary data, but shall include sufficient resources to enter the provided/ available data into the database.

8. The contract cost shall include for staffing expertise and their expenses, and also for workshops, consultations, reports preparation, and so on.

D. Contract Administration

9. Using single selection method procedure, the Centre for Water Resources Software, Vietnam Academy of Water Resources will be directly recruited with bio-data technical proposal. CPO will initiate and the recruitment until contract negotiation. However, Each PPMUs will sign a contract with the center (equals to five contracts). The contract will be for 5.5 years, starting by Year 1.

10. Payment will be made by each PPMUs upon certification of CPO that service rendered was acceptable

Appendix 5: Terms of Reference for Water Resources Assessment (Surface and Groundwater) and Water Allocation Framework

A. Background

1. The southern central coastal and central highland regions of Viet Nam face significant inter-annual variability of rainfall due to localized weather patterns, uneven flows and the influence of El Niño Southern Oscillation (ENSO). The 2014−2016 ENSO drought was the most severe in 40 years; the rainfall deficit during the 2015 monsoon period ranged from 40%−70% below the long-term average. Around 60,000 hectares of agricultural land in the central highlands was affected in varying degrees, including permanent loss of perennial crops such as coffee and pepper.

2. The Water Efficiency Improvement in Drought-Affected Provinces Project (WEIDAP) was predicated by the 2014-2016 El Nino which caused considerable water scarcity in Khanh Hoa, Ninh Thuan, Binh Thuan, Dak Lak and Dak Nong. The project will modernize eight irrigation systems to improve the reliability of supply of water to farmers growing high-value crops. This will increase the water productivity of agriculture. Currently the project area is irrigated with rainfed irrigation systems and groundwater.

3. The detail water resource is assessed in the feasibility study of subprojects conducted by the Institute for Water Resources Planning (IWRP) in 2016-2017. The assessment quantified 85% reliability of water balance for exist crops and expanded crops in subproject area based on water resources assessment and water demand calculation of all water users. The study used all available data in the project area, however the similarity catchment method is applied for several river basins where the measured water resource data is not availability. In overall project area, the measured data is limited and low level of reliability over the region. Groundwater information is very scattered and unknown rate of irrigated area using groundwater and surface water. Water use information is in high variability ranges for each crop. Therefore, the water allocation plan is not carry out in the study due to the difficulty in available data and implement mechanism of the plan.

4. The water supply plans for irrigation systems are currently based on the management experience of irrigation management company (IMC), it's built separately for each crop season according to the production plan of the local government. These plans are not flexibility with water shortage – drought condition and the high variability of crop water demand in the irrigation area.

B. Specific Tasks and Deliverables

5. This assignment support to improve irrigation water allocation plan for irrigation systems in WEIDAP subproject based on detail assessment of water resources and tempo-spatial water balance, that support for irrigation modernization and adaptation to climate change and disaster risk management in the project area.

Task 1: Water sources assessment

a. Assessment of water resources in the project area

6. Quantification of irrigation water available from surface water. This work needs to update data of hydro-meteorology from 2015 to 2017, documents before 2015 shall be inherited from feasibility study of sub-projects. The updating of following data shall be recommended: land use,

cropping, cropping pattern and economic in the project area and areas related to irrigation and water supply systems related to study area. The assessment shall be based on the most updated DEM data and remote sensing data in the region: ALOS PALSAR RTC products, Sentinel 2, Landsat 8, etc.

7. Quantification of irrigation water available from underground water. This work needs to collect and analyses all related date resource including the data of water levels in existing wells in command area, installation of new bore hole for ground water monitoring…

8. Assessment of irrigation system capacity: This work has to assess the capacity of water storage and deliverable: Reservoirs, canals at all levels, pumping systems, regulating system, etc. and assess the amount of water loss in the irrigation system. This work shall evaluate the irrigation capacity from canals and underground water.

b. Rain forecast for short-term and long-term

Assess the availability of irrigation water in short-term: within one week *forecast*
Assess the availability of irrigation water in long-term: one monthly and 3 months forecast

c. Impact of climate change on surface water and groundwater resources

9. Impact assessment of the changes in climates to surface water and groundwater in the future based on the climate change scenarios published by MONRE 2016

d. Assessment of water demand over time

10. Water demand in agricultural production, this work might need to survey and mapping the water use situation in the project area:

(i) The rate of households using surface water, groundwater and combined surface water and groundwater for irrigation.
(ii) The rate of households using the irrigation system like: Water saving, traditional irrigation.
(iii) The unmet irrigation demand i.e. if a new supply was available what is the likely demand (noting that current sustainable supplies e.g. a proportion of the groundwater will still be utilized)

11. This detail survey shall be supporting to identify (i) the pilot area and scale of groundwater monitoring systems and (ii) identify areas and level of monitoring applied water use for crops in task 2 of this assignment.

12. Calculation and assessment of water demand of other water involved user units.

e. Assessment of water balance for irrigation systems

13. The assessment shall be implemented for current situation and different scenarios of crop change and climate change in the future.

14. A water balance modelling shall be using to assessment the balance of water resource and water demands in complex subproject systems

15. Working with AWP experts;

16. Deliverables: Assessment of water demand and water balance in space and time, flexible supply amplitude and under climate change condition and with different assumptions about likely replacement of existing supply options.

Task 2: Monitoring of water resource and water use

a. Monitoring of water availability

- Establishment of monitoring system of water level, storage and rainfall in reservoirs and it's catchment (if necessary) in each subproject:
  - Khanh Hoa: Cam Ranh Reservoir and Suoi Dau Reservoir.
  - Ninh Thuan: Song Cai Reservoir, Tan My Dam; and small reservoirs associated with the Tan My irrigation system.
  - Binh Thuan: Song Mong Reservoir, Ba Bau Reservoir, Du Du Reservoir, Tan Lap Reservoir and Tra Tan Reservoir.
  - Dak Lak: Lower Krong Buk Reservoir, 500 Doi Reservoir, Buon Yong Reservoir, Ea Kuang Reservoir and Thi Tran Reservoir.
  - Dak Nong: Dak Dier Reservoir, Tay Reservoir, etc.

- Establishment of the ability to remotely access and store the observed data.

b. Monitoring of groundwater

- Selection of exist wells in the subproject beneficiary area for monitoring (excluding two Ninh Thuan subprojects and Tra Tan sub-projects).

- Set up metering accessories such as water level meter, pump flow, etc.

c. Monitoring of applied water use for crops

- Measure the amount of water used for irrigation of crops on a daily basis.
- Observation of irrigation schedules of crop.

d. Database development

- The database shall include the water source data; rainfall and other meteorological factors, flow and water levels in reservoirs and canals; water demand data; land use and crop data; Irrigation infrastructure data.

- Deliverables: Monitoring systems and database for surface, ground water and crop water using an analysis of the data obtained is required

Task 3: Development of irrigation water allocation (water sharing) framework

- Compare the demand with the available resource (quantity and reliability).
- Define the level restriction (if any): allocable and unallocated water in the system
- Define the water supply priority for all water users, the highest priority for domestic and municipal water use.

- Identify levels and thresholds of limited supply based on the water availability and the priority.
- Identify mechanism for reallocation of water resources in water shortage condition
- Identify communication mechanism and compensation for damage caused by stopping water supply
- Identify mechanism for handling complaint.
- *Deliverables:* Water allocation framework

Task 4: Development of entitlement framework and water governance

- Determine the attribute of water-use right (entitlement): quantity, quality, source, timing, purpose, duration and ownership, transfer, security and enforcement.
- Allocate entitlements to individuals or to land
- Develop an entitlement register
- Identify the Independent resource manager's roles and responsibilities to set and manage the rules
- Deliverables: Water-use right or entitlement and water licensing system

Schedule

Tasks 1 and 2 shall start at Year 1 of this project, updated and completed in the last year of the assignment. Tasks 3, and 4 starts at Year 2 and completed in the last year of the assignment.

Staffing Expertise

Required expertise shall include: irrigation engineers, river basin planning specialist, hydrological specialist, a groundwater specialist, database specialist and institutional specialist

The support from Australian Specialist shall be in:

- Surface water resource assessment; Review of the methodology and assessment
- Groundwater: Establishment of groundwater monitoring system and assessment – note this will build on the existing AWP review
- Hydrologic and remote sensing: Rain forecasting and remote sensing
- River Basin Water Allocation framework: Basin and Sub-Basin Water Allocation (water sharing) Framework
- River Basin Water entitlement framework: Basin and Sub-Basin Water Entitlement Framework

Appendix 6: Terms of Reference for Crop Monitoring Online Platform Development

A. Background

1. Recently, with the rapid development of science and technology, it is now possible to real-time inform and warn people about proper irrigation schedule and watering for crops where remote sensing and GSM networks and internet service are much better than ever. However, the actual situation in the project area, the irrigation of crops is mainly based on the experience as well as concerns about the lack of irrigation water, so farmers often over-irrigation needed when there is water. It is necessary to have a data collection and processing center and share with people in real time the water source and water demand of the plant at each day so that the people have the basis for irrigation.

2. At present, there are no irrigation guidelines and regulations for water schedule of some the key up-land crops in the project area. Developing irrigation schedule for crops is an important determinant of the efficiency of using surface water. Establishment of real-time irrigation services for farmers based on remote sensing data is the application of advanced technology in the implementation of irrigation services to farmers for efficient and economical use of water.

3. Community awareness is the key factor in the implementation of modern water-saving irrigation, other technical assistance in applying irrigation in real time, managing irrigation and allocating irrigation water. The water productivity index of the crop as well as the price of water under the Irrigation Law come into effect from July 1, 2017.

4. The information center will provide and disseminate relevant information generated from activities under outputs 1 and 3.

B. Objective

5. Establish an information service center to provide technical assistance and public awareness on water efficiency, drought prevention and response to climate change.

6. The scope of activities is to establish infrastructure for irrigation management and to organize information dissemination activities, technical training, online support via telephone and internet to promote the application. Modern science and technology on irrigation management in the field and warnings of drought in the project area, towards real-time management for management units and people in the project area.

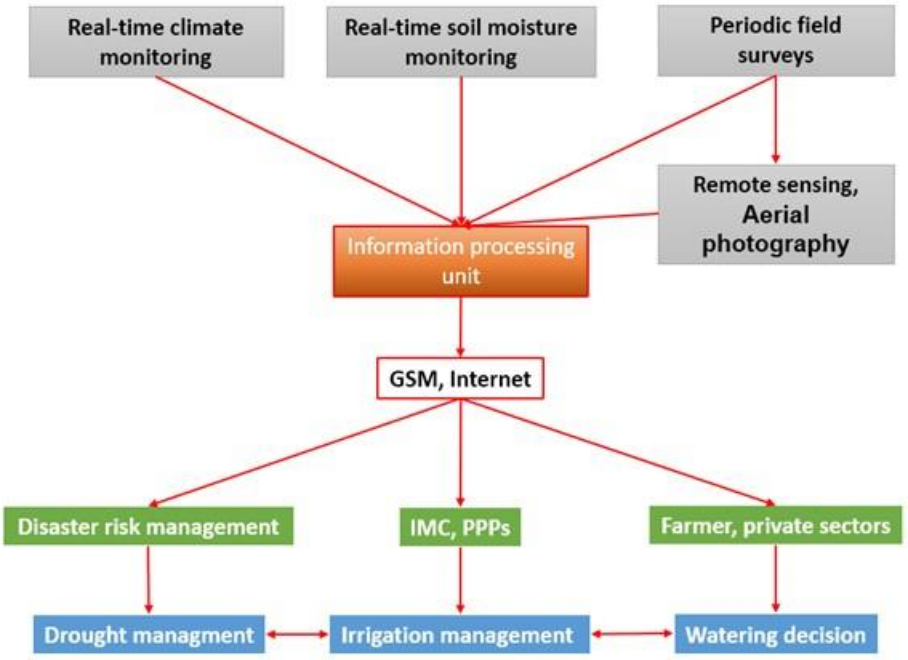
C. Scope of Work

7. **Task 1. Establishment of infrastructure (hardware) to provide real-time drought management, drought management services**:

- Set up a monitoring network, collect soil moisture factors such as moisture sensors in different areas, different soil types, different crops.
- Set up a meteorological and hydrographic data collection and processing system: real-time data collection from global data sources.
- Set up a remote sensing and image data collection system: Remote sensing images are collected from free or feeble photo sources with a repeat cycle of 3 to 12 days i.e. fly camera or drones

- Set up a field survey collection system: Field materials are needed to verify and correct remote sensing data, which includes equipment and personnel for investigations and collection. periodic
- Set up central processing system: the center piece of the center including hardware and software to process data collection, calculation and decision-making forms of information release.
- Set up information system, alert via GSM network, social network. Coordinate with GSM providers to transfer information to the service receiver, in addition to establish the supply. information through social networks and other information channels if needed.
- Training and technology transfer from equipment suppliers
- Other settings as needed.

Figure A6.1: Flowchart of the information center providing irrigation management, drought management in real time



8. **Task 2. Development of information processing unit (software)**

- Calculation of information on soil moisture and climate information, water sources
- Collect and analyse information on short-term and medium-term forecasts
- Calculate the time of irrigation of the crop: determine the degree of water shortage of the plant based on information about moisture and water source forecast, such as Crop Water Stress Index.
- Build newsletters, newsletters, alerts for the community and relevant agencies
- Receive feedback from users to improve service upgrades

9. **Task 3. Development of information service**

- Investigate, consult management levels, people to identify training needs, training, communication to develop water saving application, synthesis and classification of proposals;
- Collection of materials provided from related activities, development of propaganda materials; To select the organization of sample model parks as basis for study tours and technical training;
- Collect materials provided from relevant activities, develop the plan, content and implement training courses on irrigation water conservation, communication skills, information, technical training for the staff of specialized managers, irrigation management, cooperatives, farmers' associations, commune and district officials;
- Collect materials provided from relevant activities, develop plans, content and implement propaganda, advocacy and awareness raising on water savings for farmer households; Organizing study tours, technical training on water saving irrigation for farmers; Carry out a program of propaganda, awareness and technical guidance on irrigation water conservation through local loudspeaker system for a long time;
- Produce newsletters on relevant areas:
    - Editing documents on demand web format;
    - Editing documents disseminated through social networks;
    - Establish a website to provide information;
    - Online technical support organization during project implementation

D. Deliverables

- Establish technical infrastructure capable of providing real-time irrigation management and drought management services to the project area and adjacent areas.
- Set up an information center capable of providing online support on technical and financial issues related to modern water saving irrigation.
- Calculate and provide information on real-time irrigation planning for different user types: Irrigation Management Authority and Irrigation Operators (Farmers, Businesses).
- Provide necessary documentation for communication activities and other activities in the project.
- Irrigation management officers are provided with training and instruction to raise awareness about water saving and water and energy efficiency; Information and communication skills, organization activities to guide local farmers to raise awareness, ability to apply water saving irrigation.
- Households in the beneficiary areas, beneficiary districts, selected cities or districts in the province have sub-projects that are publicized to raise awareness, provide guidance and training on installation, operation and maintenance of water saving irrigation, using water and energy for irrigation works effectively.

Appendix 7: Terms of Reference for the Technical Service Provider for the Application of Micro Irrigation

A. Background

1. The Water Efficiency Improvement in Drought-Affected Provinces Project (WEIDAP) is a project that responds to the severe drought conditions experienced in the south-central coast, and central highlands region of Viet Nam in the period 2012-2016. It also responds to the anticipated changes in water availability predicted under the influence of climate variability. The project addresses three strategic areas to improve water use efficiency in these drought vulnerable areas including (i) the planning and allocation of water resources both between and within the agricultural sector, (ii) the more efficient distribution of water resources for irrigated agriculture, and (iii) the more efficient on-farm water management that includes crop application methods. Terms of reference outlined here relate to the latter output concerning the adoption of on-farm efficient application technologies. Under this output, activities will focus on (i) the provision of technical support services to farmers within subproject command areas to support their adoption of micro irrigation systems, and (ii) linked up with private sector suppliers and be provided training in operation and maintenance (O&M) of micro irrigation systems.

2. The services contract will be recruited by the Central Project Management Unit located within the Ministry of Agriculture and Rural Development's Central Project Office. The contract will be an output-based contract and deliverables will be agreed with the winning bidder upon the evaluation of the technical and financial proposals submitted. The single contract will ensure consistency in delivery of technical support services as well as in the implementation of the grant scheme directed at the poor. The contract will be financed by ADB loan funds that are allocated to each of the participating provinces (Binh Thuan, Ninh Thuan, Khanh Hoa, Dak Lak and Dak Nong) and invoices submitted by the service provider to the CPMU will need to be approved by the beneficiary province before funds can be released under the contract from the provincial project management units. This arrangement, although somewhat cumbersome, is unlikely to cause delays in payments as long as the claimed deliverables are concurred by the provinces.

B. Qualifications and Experience

3. The service contractor will be able to substantiate sound technical credentials for the main high-value crops grown in the eight subproject areas that include coffee, pepper, mangos, cashew nut, dragon fruit, vegetables, grapes and Vietnamese apples. The successful bidder will have access to technical information on the production and in particular, the water requirements of the main high-value crops. They will be able to substantiate operating a technical extension service system in specific target areas but within Viet Nam, preferably in multi-lateral development agency financed (although not a compulsory condition). The organization will have experience in implementing financial incentive schemes for targeted farmers in the Asian region. The successful bidder will be able to demonstrate access to the necessary technical support skills so that farmers are able to understand the latest technical requirements in the production of these items. Experience in designing and implementing technical extension programs will be a distinct advantage.

4. Characteristics of the organization that will be recruited include:

(i) Have experience in the delivery of technical support services to farmers in Viet Nam.

(ii) Have access to experienced agronomists who can support the development of technical material concerning various micro irrigation for high-value crops likely to be encountered under the project.
(iii) Have proven capacity to develop and deliver training material.
(iv) Have a demonstrated capacity to work alongside existing technical support services of government.
(v) Have experience in working with input and equipment suppliers serving high-value crop farmers.

5. Eligible organizations wishing to bid on this service contract include government owned institutions in association with other private entities, private firms, non-government organizations and other community-based organizations.

C. Responsible To

6. The services contract will come under the management of the Central Project Management Unit in Hanoi but will involve extensive travel to the five participating provinces where close cooperation with the respective Departments of Agriculture and Rural Development must be assured. The technical support operator will be supported in the filed by the Project Implementation Consultants who can advise on water availability within each target area.

D. Duties Required

7. The technical services operator will need to undertake the following responsibilities: -

8. For the technical support services, the services contractor will:

(i) Identify the main commercial entities supplying agricultural inputs and irrigation equipment to the subproject command areas.
(ii) With the assistance of the various research institutes operating in the country, identify the various technical options available to farmers for improved micro irrigation.
(iii) Design and deliver training programs for farmers and input suppliers.
(iv) Develop training material on micro irrigation operations and maintenance.
(v) Support on-farm demonstrations with leading farmers as a local extension tool to assist in the widespread adoption of micro irrigation.
(vi) Liaise with the institutions/organizations responsible for delivering real time water application advice to farmers to incorporate the use of this service as part of the strategy for improving water efficiency on-farms.
(vii) Monitor the impact of training provided with a knowledge, attitudes and practices (KAP) surveys of target audiences.

9. Maintain regular reporting on progress of these activities to CPMU and PPMUs and ADB as appropriate.

Appendix 8: Terms of Reference for the External Auditor

I. Introduction

1. A description of the project will be provided with a focus on: (i) the purpose for which the funds are intended, which is consistent with broad project objectives and budget, (ii) a description of the executing and implementing agencies, (iii) loan amount and project cost (by ADB, cofinancier(s), and government counterpart), (iv) accounting and financial management practices, financial reporting periods to be audited (whether it is the first audit or last audit), and (v) other relevant information that should be brought to the attention of the auditors.

II. Management responsibility for preparing project financial statements

2. The Management is responsible for preparing and fairly presenting the project financial statements, and for maintaining sufficient internal controls to ensure that the financial statements are free from material misstatement, whether due to fraud or error. In addition, management is responsible for ensuring that funds were used only for the purpose(s) of the project, for compliance with financial covenants (where applicable), and for ensuring that effective internal controls, including over the procurement process, are maintained. In this regard, management must:

(i) Prepare and sign the Project Financial Statements. (Annex 1).
(ii) Prepare and sign a Statement of Compliance. (Annex 2)

III. Objectives

3. The objectives of the audit of the project financial statements is to enable the auditor to (i) express an independent and objective opinion as to whether the project financial statements present fairly, in all material respects, or give a true and fair view of the project's financial position, its financial performance and cash flows, and (ii) provide a reasonable assurance opinion over certain specific representation made in the Statement of Compliance. (Please refer to Annex 2).

IV. Auditing Standards

4. The audit is required to be conducted in accordance with the Standards promulgated by the International Auditing and Assurance Standards Board (IAASB), including: (i) International Standards on Auditing (ISA); and (ii) International Standards on Assurance Engagements (ISAE).

5. These standards require that the auditor comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the project financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the project financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the project financial statements whether due to fraud or error. In making those risk assessments, the auditor considers the internal control relevant to the entity's preparation and fair presentation of the project financial statements in order to design audit procedures that are appropriate in the

circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control.

An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the project financial statements. The auditor also notes the impact on APFS arising from any material deviations from the agreed accounting standards and comment on any accounting policy changes during a financial year or from one year to another.

6. In complying with ISA, the auditor will pay particular attention to the following standards:

(i) ISA 800: Special Considerations – Audits of Financial Statements Prepared in Accordance with Special Purpose Frameworks. Where the audit report has been issued under ISA 800, it shall include the mandatory Emphasis of Matter paragraph alerting users of the audit report that the project financial statements are prepared in accordance with a special purpose framework and that, as a result, the project financial statements may not be suitable for another purpose. The auditor shall include this paragraph under an appropriate heading;

(ii) ISA 240: The Auditor's Responsibilities Relating to Fraud in an Audit of Financial Statements.

(iii) ISA 250: Consideration of Laws and Regulations in an Audit of Financial Statements.

(iv) ISA 260: Communication with Those Charged with Governance.

(v) ISA 265: Communicating Deficiencies in Internal Control to those Charged with Governance and Management.

(vi) ISA 330: The Auditor's Responses to Assessed Risks.

V. Audit Deliverables:

A. Audited project financial statements:

7. The auditor must verify that the project financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB), or national equivalents.

8. An auditor's opinion providing reasonable assurance over the project financial statements (see Annex 1 for requirement of annual financial statements).

B. Reasonable Assurance Opinion over the Use of loan proceeds and Compliance with Financial covenants.

9. The auditor will provide a reasonable assurance opinion following ISAE 3000 "Assurance Engagements other than Audits or Reviews of Historical Financial Information" for the following confirmations provided by Management in the Statement of Compliance

(i) That the proceeds of the loan were used only for the purpose(s) of the project; and

(ii) That the borrower or executing agency/implementing agency was in compliance with the financial covenants of the legal agreement(s), where applicable.

10. The auditor needs to outline the degree of compliance for each of the financial covenants in the loan agreement.

11. Where reasonable assurance has been provided using ISAE 3000 (on the use of loan proceeds and compliance with financial covenants), the assurance report must contain, among others:

(i) A statement that the engagement was performed in accordance with ISAE 3000
(ii) Subject matter;
(iii) Criteria for measurement;
(iv) A summary of the work performed; and
(v) The auditor's conclusion.

C. Management letter (Annex 3).

D. Specific Considerations in Audit Deliverables**:**

12. The auditor will, during the course of the audit, pay particular attention to the following:

(i) The use of external funds in accordance with the relevant legal and financing agreements;
(ii) The provision of counterpart funds in accordance with the relevant agreements and their use only for the purposes intended;
(iii) The maintenance of proper books and records;
(iv) The existence of project fixed assets and internal control related thereto;
(v) Project's accounting policies and confirm the extent to which the agreed project accounting policies have been applied. In particular, the impact on the APFS arising from any material deviations from the agreed accounting standards. Comments on any accounting policy changes, either during a financial year, or from one year to another.
(vi) On the advance fund procedure (where applicable), audit procedures are planned and performed to ensure (a) the advance account (and any sub-accounts) has been managed in accordance with ADB's Loan Disbursement Handbook, (b) the cash balance of the advance account (and any sub-accounts) is supported by evidence, (c) the expenditures paid from the advance account (and any sub-accounts) comply with the approved project purpose and cost categories stipulated in the loan agreement, and (d) the amount of expenditures paid from the advance account (and any sub-accounts) comply with disbursement percentage stipulated in the loan agreement
(vii) On the SOE procedure (where applicable), audit procedures are planned and performed to ensure that (a) the SOEs have been prepared in accordance with ADB's Loan Disbursement Handbook, (b) the individual payments for expenditures stated in the SOE are supported by evidence, (c) the expenditures stated in the SOEs comply with the approved project purpose and cost categories stipulated in loan agreement, (d) the amount of expenditures stated in the SOEs comply with disbursement percentages stipulated in the financing agreements, (e) adequate

supporting documentation has been maintained to authenticate claims stated in the SOE for reimbursement of eligible expenditures incurred and liquidation of advances provided to the advance account;

(viii) Any weakness in internal controls. Review and evaluate the system of internal controls in effect, including internal audit procedures, to determine the degree of reliance that may be placed upon them and to determine the extent of testing of actual transactions needed to assure the auditor of the accuracy of the accounting records.

13. All reports must be presented in the English language within 6 months following the end of the fiscal year. The Auditor's reports on the projects financial statements should be prepared in eight copies (four in English and four in Vietnamese).

14. Public disclosure of the project financial statements, including the auditor's opinion on the audited project financial statements, will be guided by ADB's Public Communications Policy (2011). After review, ADB will disclose the audited project financial statements and the opinion of the auditor on the audited project financial statements no later than 14 calendar days of ADB's confirmation of their acceptability by posting them on ADB's website. The management letter and the additional auditor's opinions will not be disclosed.

VI. Audit qualification

15. The following are the requirements on the qualification of auditing firms for auditing ADB funded projects in Viet Nam. It must be authorized to practice in Viet Nam and be capable of applying the agreed international auditing standards. All established procedures and methodology are reliable and in conformity with ISA. The detailed requirements on the qualification of auditing company are:

a. Be a legal entity with business license granted by the competent authority, as requested by Vietnamese law; having business registration or set up business in the fields relevant to the requirements of the TORs
b. Must be impartial and independent from all aspects of management or financial interests in the EA/IA being audited. In particular, the auditor should be independent of the control of the entity.
c. Be included in the most updated list of authorized auditing companies and auditors which is approved by Ministry of Finance and published on website: www.mof.gov.vn;
d. Have adequate staff, with appropriate professional qualifications and suitable experience in finance/financial management in Official Development Assistance (ODA) funded projects or Government projects/ programs, including experience in auditing the Enterprise Financial system (EFS) comparable in nature, size and complexity to the entity whose audit they are to undertake;
e. Notify and get written endorsement of the EA every time a staff member is substituted; and
f. Subcontracting of audit services is not permitted.

16. The following are the requirements on the qualification of Individual auditor for each proposed position in the audit: The auditor must be authorized to practice in the country and be capable of applying the agreed auditing standards. The auditor should have appropriate

professional qualifications and suitable experience, including experience in auditing the accounts of projects or entities comparable in nature, size and complexity to the project or entity whose audit they are to undertake. To this end, the auditor is required to provide curriculum vitae (CV) of the personnel who will provide the opinions and reports, together with the CVs of managers, supervisors and key personnel likely to be involved in the audit work. These CVs should include details of audits carried out by these staff, including ongoing assignments.

17. The auditor will be impartial and independent from any aspects of management or financial interest in the entity or project under audit. In particular, the auditor should be independent of the control of the entity. The auditor should not, during the period covered by the audit, be employed by, or serve as director for, or have any financial or close business relationship with the entity. The auditor should not have any close personal relationships with any senior participant in the management of the entity. The auditor must disclose any issues or relationships that might compromise their independence.

18. (*Note: The TOR must indicate clearly how many international and national experts the assignment will include.)*

19. The following are the outline TOR of each position:

20. Audit Director (AD)/Engagement partner:

a. Hold highest responsibility for the audit engagement, the Director will be responsible for:

- Provide directives for the whole audit team from the planning, implementation of the audit and issuing audit opinions.
- Take responsibility for the overall quality of the audit. Assure the audit is carried out in compliance with the Firm’s quality standards and procedures and with the requirements of clients.
- Developing an understanding of client’s business and becoming a "functional expert" in the area.

b. Minimum Qualifications/Experience**:**

- A university graduate (preferably with a post–graduate degree) in Accounting, finance, Certified auditor certificate by the MOF or international certificate (ACCA or other recognized international accounting/ auditing certificate),
- At least 15 years or above experience working in auditing services; At least 4-year experience in management of auditing teams; and at least 8 years actual working years in auditing since being granted with Vietnamese or international auditor certificate;
- Should have worked as Audit Director for at least three audit contracts on ADB, the World Bank or other international donors funded projects;
- Fluent English is compulsory;
- Experience working for a Big 4 or large regional accounting firm is a plus.

21. Audit Managers (AM):

a. The Manager will be responsible for**:**

- Receive the instructional directives from Directors and give detailed guidance to all team members;
- Monitor the audit fieldwork of engagement team, reviews staff work and ensure that it meet professional standards and the internal audit department's guidelines;
- Take responsibility for the quality of the audit before submitting to Director;
- To be the contact point with Client's Management and Chief Accountant regarding key issues identified, audit adjustments; and
- Monitor the progress of the audit and monitor the adherence to the committed deadline

b. Minimum Qualifications/Experience:

- A university graduate (preferably with a post–graduate degree) in Accounting, finance, Certified auditor certificate by the MOF or international certificate (ACCA or other recognized international accounting/ auditing certificate),
- At least 10 years or above experience working in auditing services; Audit seniors who are the team leader shall have 5 years' experience in their profession;
- Audit experience for ADB/World Bank funded projects in Vietnam would be an advantage;
- Ability to work within budgetary and time constraints while providing a high-level of client satisfaction;
- Certified auditor certificate by the MOF or international certificate (ACCA or other recognized international accounting/ auditing certificate).

22. Senior Auditors/ Team leaders at field: (SA/TL)

a. The Senior Auditors will be responsible for**:**

- Follow the instructions from Director and Engagement Manager;
- Keep AD and AM being updated with the key issues or key audit adjustments day to day;
- Being responsible for the audit quality of the whole team in front of AM;
- Being responsible for the compliance with auditing firm quality standards
- and procedures and with the requirements of Clients/ Projects.

b. Minimum Qualifications/Experience:

- Senior Auditors are required to be graduates of a recognized university in the fields of Commerce, Economics, Accounting and Auditing or equivalent;
- At least 05 years or above experience working in auditing services;
- Preferably to whom holding Certified auditor certificate by the MOF or international certificate (ACCA or other recognized international accounting/ auditing certificate);

- Preferably should have worked as Auditor for audit contracts on ADB's, the World Bank's on other international donors' funded projects; and
- English proficiency would be preferable.

23. Auditor:

a. The Auditors will be responsible for:

- Implementing professional work, auditing assigned sections in the agencies, be responsible for the data and issues related to the auditing activities.
- Supporting to release the official report; draft minute of audit; report to the Team leader of the rising issues related to the audit in the agencies.

b. Minimum Qualifications/Experience:

- A university graduate (preferably in recognized university in the fields of Commerce, Economics, Accounting and Auditing or equivalent);
- At least 03 years or above experience working in auditing services Preferably to whom holding Certified auditor certificate by the MOF or international certificate (ACCA or other recognized international accounting/ auditing certificate);
- Should have worked as Auditor for audit contracts on ADB's, the World Bank's on other international donors' funded projects would be preferable).
- English proficiency would be preferable.

VII. Other matters

24. **Locations to be Audited:**

(Note: In case project includes many levels, like: central level, provincial and even lower levels and the auditors may have to travel to all lower levels to do the audit, the TOR should specify the levels/provinces where Auditors must visit.)

25. **Phasing of the Audit:**

The TORs must specify in the following table when the report will be submitted in draft and in final format:

Month of fiscal year (FY) and report submission

Period	FY start	FY End	Report Submission	Remarks
1				
2				

26. Although the auditing firm will be contracted for the mentioned audit phases (maximum three years per contract), it must submit the financial proposal in US$ in a format indicating the amount for each financial year independently: (i) If performance is not satisfactory in one year then the client will not be bound for subsequent year's audits; and (ii) If the performance is satisfactory, the auditor may participate in bidding process for the next fiscal years, but the total

assignment should be up to 6 years for one project. The period needs to be cover will be from loan effective date to the end of 04 months grace period (if any) from the loan closing date.

(Note: In case project wants to lengthen the contract with Auditor, after the first three years contract, but not through re-bidding, it is required to discuss the matter with ADB Team leader.)

27. **Available Information and Services to be Provided to the Auditor:**

a. The auditor should have full and complete access, at all reasonable times, to all records and documents including books of account, legal agreements, bank records, invoices and any other information associated with the project and deemed necessary by the auditor. The auditor will also obtain confirmation of amounts disbursed and outstanding at ADB. In case access has been restricted, the auditor must note this in the management letter.

b. The auditor will be provided with full cooperation by all employees of the entity and the project implementing units, whose activities involve, or might be reflected in, the annual project financial statements. The auditor will be assured tights of access to banks and depositories, consultants, contractors, and other person or firms hired by the employer.

c. The Auditor shall have the right of access to banks and depositories, consultants, contractors and other persons or firms engaged by the project. If necessary, the auditing company can be requested, free of charge, to participate in a wrap-up session for the Ministry of Finance (MOF), the EA/IAs and ADB to share common findings across projects being audited and provide recommendations for addressing bottlenecks in preparation for the next audit.

d. ADB can request access to the auditors unedited audit working papers.

28. **Reporting Relationships:**

The audit services will be contracted by the central project management units. The Auditor shall report to: the Project Director and Chief Accountant.

(Note: provide name, title, phone number, email address of contact persons)

Appendix 9: Terms of Reference for the Construction Supervision Consultants (CSC)

I. Scope of Work

1. This package aims to provide consulting services to support the PPMUs in supervision of construction of the eight subprojects in the provinces of Binh Thuan, Ninh Thuan, Khanh Hoa, Dak Lak, and Dak Nong in the central and southern coastal regions of Viet Nam. The consulting services are expected to ensure quality and timely implementation of the project in line with the regulations of ADB and the Government of Viet Nam. The Construction Supervision Consultants (CSC) will be financed from ADB resources and recruited by the respective PPMUs from local firms following *ADB Guidelines on the Use of Consultants* (2013 as amended from time to time).

2. To carry out supervision of construction of civil works and supply and installation of equipment for eight subprojects in project provinces. The consultants will also provide non-key national experts and support personnel to carry out the assignment. The services described in these TORs are expected to be performed over a period of 42 months beginning in Year 3.

Table 1: Indicative Inputs for Construction Supervision Consultants

Key National Experts	**Individual**	**Person-Months***	**Total**
Civil Engineer Construction/Team Leader	5	10	50
Mechanical Engineer	5	10	50
Electrical Engineer	5	8	40
Subtotal			**140**
Non-Key National Experts			
Field Inspectors	5	31	155
Measurement Team	5	29	145
Material Testing Labs/Technicians	5	5	25
Accounting Assistants	5	5	25
Draftsmen/Auto CAD Operator	5	29	145
Invoice/Claim Specialist	5	6	30
Subtotal			**525**
Total			**665**

* Specific TOR will be reviewed, and updated based on individual provinces requirements.

1. Consultant Services

3. The Consultant will be required to supervise construction of civil works and installation of equipment for eight identified subprojects located in the five project provinces. The consulting services for CSC include, but may not be limited to the following:

(i) review all contract documents including plans/drawings, and technical specifications, to identify potential conflicts in the provisions, details, as well as lack of or insufficient information for the contractor to perform its contractual obligations;

(ii) review each of the contractors' work schedule and method statement; equipment and plant schedule; site organization and personnel deployment plan; plan for establishment of construction camp; and any other plan or schedule that may be required in the execution of the work and ensure conformity with specifications, contractual obligations as well as applicable norms and regulations;

(iii) review any subsequent modification or update to the contractors' work plans and schedules that may be required in the execution of the work to ensure conformity with specifications, contractual obligations and applicable norms and regulations;
(iv) review the contractor's method statement and work program to ensure conformity with the Environmental Management Plan (EMP), and other safeguard regulations (including resettlement, gender, and other social safeguard issues);
(v) provide or make arrangements for contracting material testing laboratories and maintain quality control records of all laboratory tests;
(vi) monitor and supervise the execution of field tests and sampling, including soil compaction, concrete sampling, and others and maintain quality control records of all field tests and sampling;
(vii) supervise the work of the contractor and report to the client on progress of work and any deficiencies noted during construction and recommend remedial action;
(viii) review requests and suggestions from contractors regarding necessary additional works or changes in the scope of works and make recommendations to the client accordingly;
(ix) inspect and evaluate the contractors' installations, plants and equipment including type, origin and specifications, for conformity with contractual obligations, specifications and applicable norms and regulations;
(x) review site management and site safety plans for conformity with contractual obligations and applicable regulations and laws;
(xi) assist the EA in the assessment of claims and disputes from the contractors;
(xii) review and recommend approval of the contractors' working drawings and as-built drawings and quality control records;
(xiii) hold weekly and monthly field meetings with the contractors to review progress of work against plans; identify problems areas; review field test and sample schedules; and make projections of work for the following period;
(xiv) review the contractors' claims/invoices and billings and recommend approval;
(xv) prepare weekly, monthly and quarterly reports on progress of work highlighting any issue that may require attention and decision by the client; and
(xvi) ensure that the project is constructed, operated and maintained in strict conformity with the technical specifications and all applicable laws and regulations, including environmental and social development regulations.

II. Detailed Tasks of Specialists

1. Key Experts

a. Civil Engineer (Construction Management)/Team Leader

4. The International Civil Engineer (Construction Management) / Team Leader will be responsible for the overall management and delivery of the tasks of the consultant team. S/He will report to the Client and will work in close cooperation with the Construction Engineering Supervision Consultants (CESC). Tasks will include but not limited to:

(i) manage and coordinate overall consulting service inputs in close cooperation with the Client and the CESC;
(ii) advise the CPMU regarding arrangements for effective construction supervision and contract management of all subprojects;
(iii) advise the CPMU on proper procedures, regulations and norms to achieve quality construction;
(iv) prepare detailed time bound implementation schedules, work plans, and financial plans for the construction supervision team;
(v) prepare and ensure timely submission of regular progress reports of construction activities for all subprojects, and advise on actions to be taken in case of adverse variances against implementation plans;
(vi) consolidate progress reports into semi-annual progress reports of all construction activities;
(vii) identify and make necessary arrangements for material testing laboratory prior to the beginning of construction activities;
(viii) make appropriate plans and ensure coordination of the construction supervision activities including all necessary testing and quality control activities;
(ix) prepare a quality control program for all construction activities for each subproject/contract including required field and laboratory testing and make necessary arrangements to ensure proper maintenance of all quality control records of laboratory and field tests;
(x) review weekly, monthly and quarterly reports prepared by the field inspectors and national key experts on progress of work and advise on action that may be needed by the team, the contractors and the client;
(xi) provide on-the-job training to staff of the CPMU in contract management and construction supervision;
(xii) ensure supervision of all sampling, testing and commissioning of subproject facilities and equipment;
(xiii) ensure strict supervision of the Contractor's work schedule and method statement; equipment and plant schedule; site organization and personnel deployment plan; plan for establishment of construction camp; and any other plan or schedule that may be required from the Contractor in the execution of the work; and
(xiv) ensure compliance with all project requirements and specifications as well as applicable norms and regulations.
(xv) review all contract documents including plans/drawings, and technical specifications for civil works and equipment supply contracts for the subprojects under their responsibility to identify any potential conflict in the provisions, as well as lack of or insufficient information for the contractor to perform its contractual obligations;
(xvi) review each of the Contractors' work schedule and method statement; equipment

and plant schedule; site organization and personnel deployment plan; plan for establishment of construction camp; and any other plan or schedule that may be required from the Contractor in the execution of the work and ensure conformity with contractual obligations, specifications and applicable norms and regulations;

(xvii) review all subsequent modification or update by the Contractors to the work plans, schedules and other documents described in (iii) above to ensure conformity with contractual obligations, specifications and applicable norms and regulations;

(xviii) review the contractors' method statements and work programs to ensure conformity with the Environment Management Plan (EMP), and other safeguard regulations (including resettlement, gender, and other social safeguards);

(xix) establish a schedule of field and laboratory tests to be carried out for each contract;

(xx) supervise the work of field inspectors and ensure the presence of inspectors on the sites at all time and particularly during sampling and testing;

(xxi) maintain quality control records and results of all field and laboratory tests;

(xxii) assess the contractors' requests/suggestions for additional works or changes in the scope of works and make recommendation accordingly;

(xxiii) inspect and evaluate the contractors' installation, plants and equipment including type, origin and specifications, for conformity with contractual obligations and applicable regulations;

(xxiv) review site management and site safety plans for conformity with contractual obligations and applicable regulations and laws;

(xxv) in collaboration with the invoice/claim specialist, review the contractor's claims and billings and recommend approval;

(xxvi) assist and advise the Client with the assessment of claims and disputes;

(xxvii) hold weekly and monthly field meetings with the contractors to review progress of work against plans; identify problems areas; review field test and sample plans and schedule for the coming week; and make projections of work for the following week/months;

(xxviii) supervise the preparation of as built drawings for projects under his/her responsibility;

(xxix) prepare weekly, monthly and quarterly reports on progress of work highlighting any issue that may require immediate attention and decision by the client; and

(xxx) ensure that the project is constructed in strict conformity with the technical specifications and all applicable laws and regulations.

5. The Civil Engineers Construction will hold an engineering degree from a recognized university in civil engineering or other relevant discipline. They will have at least 10 years of work experience in supervision of civil works contracts and contract management preferably in the irrigation subsector. Fluency in both spoken and written English is essential.

a. Mechanical Engineer

6. The Mechanical Engineer will be responsible for supervision of delivery and installation of equipment related to pumping stations in all subprojects. His/her tasks will be as follows:

(i) under the guidance of the International Civil Engineer (Construction Management) supervise implementation of all contracts for supply and installation of mechanical equipment for the subproject pumping stations;

(ii) review all contract documents including detailed drawings, and technical specifications for supply contracts to identify any potential conflict in the provisions, as well as lack of or insufficient information for the contractor to perform its contractual obligations;

(iii) review the schedule of delivery of all equipment and coordinate with the contractors regarding the logistics for delivery and temporary storage of the equipment at the job sites;
(iv) review each of the contractors' work schedule and method statement; equipment and plant schedule; site organization and personnel deployment plan; equipment testing and any other plan or schedule that may be required for the installation of equipment and ensure conformity with contractual obligations, specifications and applicable norms and regulations;
(v) establish a schedule of equipment testing and commissioning to be carried out for each contract;
(vi) supervise the work of field inspectors during delivery, storage and installation of equipment and ensure the presence of inspectors on the sites at key times and particularly during testing and commissioning;
(vii) maintain quality control records and results of all tests;
(viii) assess the contractors' requests/suggestions for additional works or changes in the scope of works and make recommendation accordingly;
(ix) inspect and evaluate the contractors' installation, plants and equipment including type, origin and specifications, for conformity with contractual obligations and applicable regulations;
(x) review site management and site safety plans for conformity with contractual obligations and applicable regulations and laws;
(xi) in collaboration with the invoice/claim specialist, review the contractor's claims and billings and recommend approval;
(xii) assist and advise the Client in the assessment of claims and disputes;
(xiii) hold weekly and monthly field meetings with the contractors to review progress of work against plans; identify problems areas; review field test and sample plans and schedule for the coming week; and make projections of work for the following period;
(xiv) supervise the preparation of as built drawings;
(xv) revise and update as necessary the handbooks and operation manuals for all equipment to be provided under the subprojects, including the operation and maintenance (O&M) manual;
(xvi) prepare weekly, monthly and quarterly reports on progress of work highlighting any issue that may require immediate attention and decision by the client; and
(xvii) ensure that the project is constructed in strict conformity with the technical specifications and all applicable laws and regulations.

7. The Mechanical Engineer will hold an engineering degree from a recognized university in mechanical engineering or other relevant discipline. He /she will have at least 10 years' experience in supervision of contracts for supply and installation of equipment preferably relating to water pumping stations and flood control. Fluency in both spoken and written English is essential.

b. Electrical Engineer

8. The Electrical Engineer will be responsible for supervision of delivery and installation of all electrical connections, and electrical equipment and controls related to the pumping stations required in the subprojects. His/her tasks will be as follows:

(i) under the guidance of the international Civil Engineer (Construction Management) supervise implementation of all contracts for supply and installation of electrical equipment for the subprojects;

(ii) review all contract documents including detailed drawings, and technical specifications for supply contracts to identify any conflict in the provisions, as well as lack of or insufficient details/ information for the contractor to perform its contractual obligations;
(iii) review the schedule of delivery of all electrical equipment and coordinate with the contractors regarding the logistics and temporary storage of the equipment at the job sites;
(iv) review each of the contractors' work schedule and method statement; equipment and plant schedule; site organization and personnel deployment plan; equipment testing and any other plan or schedule that may be required for the installation of equipment;
(v) establish a schedule of equipment testing and commissioning to be carried out for each contract;
(vi) supervise the work of field inspectors in the installation of electrical equipment and ensure the presence of inspectors on the sites at key times and particularly during testing and commissioning;
(vii) maintain quality control records and results of all tests;
(viii) assess the contractors' requests/suggestions for additional works or changes in the scope of works and make recommendation accordingly;
(ix) inspect and evaluate the contractors' installation, plants and equipment including type, origin and specifications, for conformity with contractual obligations and applicable regulations;
(x) review site management and site safety plans for conformity with contractual obligations and applicable regulations and laws;
(xi) in collaboration with the invoice/claim specialist, review the contractor's claims and billings and recommend approval;
(xii) assist and advise the Client in the assessment of claims and disputes;
(xiii) hold weekly and monthly field meetings with the contractors to review progress of work against plans; identify problems areas; review field test and schedule for the coming week; and make projections of work for the following week/months;
(xiv) supervise the preparation of as built drawings;
(xv) revise and update as necessary the handbooks and operation manuals for all electrical equipment to be provided under the subprojects, including the operation and maintenance (O&M) manual;
(xvi) prepare weekly, monthly and quarterly reports on progress of work highlighting any issue that may require immediate attention and decision by the client; and
(xvii) ensure that the project is constructed in strict conformity with the technical specifications and all applicable laws and regulations.

9. The Electrical Engineer will hold an engineering degree from a recognized university in electrical engineering or other relevant discipline. He /she will have at least 10 years' experience in supervision of contracts for supply and installation of electrical substations for pumping equipment. Fluency in both spoken and written English is essential.

2. Non-Key National Experts

a. Field Inspectors

10. The number and person months for field inspectors shown in Table 1 above are only indicative. The consultant is responsible to determine the need and number of field inspectors required for the services and to field these non-key experts as required on a timely fashion.

Nevertheless, there should be a minimum of one field inspector for each subproject site. The field inspectors will report to the respective National Civil/ Mechanical/ Electrical Engineers and will be responsible to ensure that the work carried out by the contractors complies with the drawings and specifications as well as all the relevant norms and regulations. The inspectors will be present on the site at all time during construction and particularly during every field test or material sampling and will be responsible to ensure that the tests and sampling are carried out according to the specifications, and that the sampled material is handled properly and carried to the respective material testing laboratory in the required time. The field inspectors will attend weekly meetings between the consultant and the contractors and will report on any issue requiring attention of the consultant and/or the Client. They will report on any delay or potential delays in execution of the work, as well as any deficiency noted during execution of the contract.

11. The cost associated with the work of the inspectors, including fees and out of pocket expenses should be itemized as reimbursable cost in the financial proposal together with other eligible out of pocket expenses. Costs not identified in the Financial Proposal will be deemed to be borne by the consultant at no cost to the Client.

b. Measurement Teams

12. The number and composition of measurement teams shown in Table 1 above are only indicative, the consultant is responsible to determine the need, composition and number of measurement teams required for the services and to field these teams as required on a timely fashion. Nevertheless there should be a minimum of one measurement team for each subproject. The teams will report to the respective technical specialists and submit all material quantities, work quantities and other relevant data related to the construction work. The data generated by the measurement teams will be used by the draftsmen/CAD Operators to prepare as built drawings, and by the invoice/claim specialist for the preparation of payment certificates.

13. The cost associated with all measurement teams, including fees and out of pocket expenses should be itemized as reimbursable cost in the financial proposal together with other eligible out of pocket expenses. Costs not identified in the Financial Proposal will be deemed to be borne by the consultant at no cost to the Client.

c. Material Testing Laboratories / Technicians

14. The consultant will provide or will identify and make arrangements for contracting material testing laboratories to carry out all the necessary material testing for the subprojects, The consultant will ensure that the laboratory is equipped with all necessary equipment and that adequate number of laboratory technicians is assigned to carry out the sampling and testing on all eight subprojects. All results of all material testing and quality control records shall be maintained both at the lab facilities and the project offices.

15. The cost associated with material testing laboratories, including the cost of technicians, and support personnel, as well as out of pocket expenses should be itemized as reimbursable cost in the financial proposal together with other eligible out of pocket expenses. Costs not identified in the Financial Proposal will be deemed to be borne by the consultant at no cost to the Client.

3. Support and Administrative Personnel

16. The Consultant shall provide all supporting and administrative staff necessary to fulfill its

obligations under the TORs on schedule and in accordance with appropriate standards of quality. Administrative and support staff positions may include interpreters/translators, secretary, office assistants, drivers, janitors and security personnel. Supporting and administrative staff must have appropriate qualifications and diplomas to suit their relevant assignment, with a minimum of 3 years of working experience.

17. The cost of all support and administrative personnel including fees and out of pocket expenses should be itemized as reimbursable cost in the financial proposal together with other eligible out of pocket expenses. Costs not identified in the Financial Proposal will be deemed to be borne by the consultant at no cost to the Client.

a. Invoice/ Claim Specialist

18. The Invoice/Claim Specialist will work in close collaboration with the Team Leader and the national engineers. He/she will be responsible to review all invoices and claims from the contractors and recommend payment by the Client. The main tasks of the Invoice Claim Specialist will be as follows:

(i) in cooperation with the field inspectors, measurement teams and the engineers, verify all quantities of materials, and equipment supplied for construction;
(ii) in cooperation with the field inspectors, measurement teams and the engineers, verify all quantities of work completed;
(iii) verify all invoices and claims submitted by the contractors, and recommend payment by the client;
(iv) assist in the issuance of monthly certificates of payments;
(v) maintain accounting records of all invoices and payments under each contract;
(vi) assist in the preparation of monthly progress reports;
(vii) prepare final accounting report for each contract; and
(viii) assist in the preparation of completion certificates for each contract.

19. The Invoice/Claim Specialist will hold a degree from a recognized university in finance, accounting or other relevant discipline. He / she will have at least 10-year experience in management and accounting for civil works contracts and contracts for supply and installation of equipment. Fluency in both spoken and written English is essential.

b. Accounting Assistants

20. The consultant will provide accounting personnel in sufficient number to assist the Invoice /Claim Specialist in the evaluation of invoices and claims by the contractors and maintain accurate accounting records. The number of accounting assistants show in Table 1 above is only indicative; the consultant is responsible to ensure that adequate number of accounting personnel is fielded at the appropriate time to maintain accurate and detailed accounts of all subproject contracts. The consultant will ensure that detailed accounting records of each contract are maintained both at the site office and the main project office in Ninh Thuan/Khanh Hoa being the most central provinces.

21. The cost associated with accounting personnel, including fees and out of pocket expenses should be itemized as reimbursable cost in the financial proposal together with other eligible out of pocket expenses. Costs not identified in the Financial Proposal will be deemed to be borne by the consultant at no cost to the Client.

c. Draftsman/Auto CAD Operators

22. All construction drawings and built drawings will be entered on Auto CAD software. The consultant will provide experienced and qualified Draftsmen/Auto CAD operators in sufficient numbers to carry out this work efficiently and within the required time constraints. The number of Draftsmen/Auto CAD Operators shown in Table 1 above is only indicative and the consultant is responsible to determine the number and timing of fielding of Draftsmen/Auto CAD Operators. The draftsmen/Auto CAD operators will be responsible to:

(i) support measurement teams with measurement drawings;
(ii) prepare outline and detailed drawings as required; and
(iii) prepare as built drawings of each subproject/contract.

23. The cost associated with draftsmen/Auto CAD operators, including fees and out of pocket expenses should be itemized as reimbursable cost in the financial proposal together with other eligible out of pocket expenses. Costs not identified in the Financial Proposal will be deemed to be borne by the consultant at no cost to the Client.

III. Outputs and Deliverables

24. Within the scope of this consulting service, the consultant is required to prepare and submit the following reports in English to the Client in one electronic file and five (5) hard copies.

a. Inception report

25. Within one month from mobilization the Team Leader shall prepare and submit a draft inception report to the Client. The draft inception report should include appropriate review of proposed works, TORs, detailed engineering design, contract documents, and other documents and information related to the work to be carried out. The draft inception report will include a proposed work program for construction supervision of all eight subprojects, including schedule of personnel, and will identify issues which require attention of the authorities for decision. Once the Client and the CESC have provided their comments on the draft inception report, the consultant will incorporate these comments and finalize the Inception Report within 2 weeks of receipt of the comments.

b. Weekly and Monthly Construction Progress Reports

26. The consultant will provide concise reports on a weekly and monthly basis of progress of work for each contract. The construction progress report will indicate progress against targets and plans, identify potential delays and difficulties, suggests remedial action, provide cash flow projections and status of payments and other relevant information for the decision makers.

c. Quarterly Progress Reports

27. The Team Leader will prepare Quarterly Progress Reports based on a format to be agreed between the Client and the consultant. The Quarterly Progress Reports will be submitted within 1 month of the end of each calendar quarter and will summarize the major issues and problems affecting or likely to affect implementation of the subprojects and will recommend action to overcome any problem identified.

d. Draft and Final Report

28. A draft final report in a format acceptable to the Client should be submitted within one month of completion of each contract/subproject. The draft report will be reviewed by the CPMU and the CESC, and comments to be incorporated in the final report. The final report incorporating comments from must be submitted within one month of issuance of completion certificate for each contract.

e. Auto CAD Drawings

29. All plans and drawings shall be prepared using Auto CAD software. The drawing should be prepared and printed as required in the appropriate formats. After completion all drawings including as-built drawings and other relevant documents shall be turned-over by the Consultant to the client.

IV. Equipment and Services to be provided by the Consultant

30. The Consultant will be responsible for:

(i) Provision of vehicles (rental) and vehicle operation cost;
(ii) Provision of support and administrative personnel including secretary(ies), translator(s)/interpreter(s); accountant(s), technical assistant(s), drivers, janitors and security personnel;
(iii) Office operational cost including electricity and other utilities; and
(iv) Office equipment.

31. The Consultant will provide its own insurance, subsistence, office and computer equipment and consumables. Provision will be made for the cost of temporary field office and operation, including electricity and telephone, and other eligible reimbursable costs to fulfill the consultancy services. After project completion any equipment purchased under sub-project using project funds, shall be handed over and become the property of the client.

32. The cost of equipment and services to be paid under the project should be itemized as reimbursable cost in the financial proposal together with other eligible out of pocket expenses. Costs not identified in the Financial Proposal will be deemed to be borne by the consultant at no cost to the Client.

V. Counterpart Contribution

33. The Client will provide all necessary and relevant project data, reports, etc. to facilitate implementation of the assignment. In addition, the Client will provide adequate office facilities for the consultant in the PPMUs of participating provinces that are equipped with air conditioning, internet access and telephone line. The Client will ensure that sufficient number of qualified counterpart staff are assigned to work with the consultants throughout the duration of the assignment, but the consultant will provide for its own support staff including secretary(ies), accountant/clerk(s), translator(s), drivers, and security.

Appendix 10: Project Performance Management System

A. Introduction

1. The project performance management system (PPMS) is a results-based approach to project planning, performance monitoring, and evaluation of results. Performance is largely measured and evaluated against the Design and Monitoring Framework, for achievement at two levels: (i) outcome and impact, and (ii) outputs and activities. The project design and monitoring framework has been appended as Appendix 1 to RRP. Safeguards and financial aspects are also assessed and monitored.

2. Systematic monitoring allows the various project performance reports (PPRs) to be prepared providing information on project implementation and progress in achieving development outcome and impact, as well as adherence to the various safeguard plans. These will be reviewed by the executing and implementing agencies as well as ADB, in various review missions. At the end of the project, the project completion report (PCR) summarizes achievements and lessons learnt.

3. In this section, the PPMS system is described, complete with the monitoring and evaluation implementation arrangements and responsibilities.

B. Monitoring Scope and Implementing Arrangement

4. Five kinds of monitoring will be carried out including: (i) activity/ implementation progress and output monitoring, (ii) outcome/ benefit monitoring and evaluation; (iii) environment, resettlement, social and gender safeguards monitoring; (iv) loan agreement covenant monitoring; and (iv) financial monitoring/ audit. The bulk of monitoring and reporting will fall under the consultancy contract for the construction engineering support consultants, together with MARD, and supported by various other contracts, as follows:

- Independent environmental monitoring contract to monitor adherence to the environment management plan
- Independent social safeguards monitoring contract to monitor adherence to resettlement and gender action plans
- M&E contract to carryout baseline and annual surveys in (selected) subprojects.
- Independent financial audit contract for financial audits.

Implementation progress and output monitoring

5. The construction engineering support consultants (CESC) will design and establish a monitoring and evaluation system to report on achievements under each output. However, most the data will be collected/ provided by others, including from studies/ contracts funded by project as well as from the IMCs.

6. Ideally a simple data base will be developed and maintained by the CESCs to track progress of activities and achievement of outputs, otherwise spreadsheets/ word documents may be used. The suggested structure for the database/ monitoring systems, following the DMF, is as follows:

- *Module 1: Irrigation management services strengthened*
    - 1a: water allocations between crops and other users. This is closely related to the following study, "*Water resources assessment (surface and groundwater), and water allocation framework".* Water use / allocations will be monitored for selected SPs.
    - 1b: recovery of O&M. This is closely related to the following study, "Water charging framework, identifying institutional arrangements and preparing protocols to engage service providers to operate modernized irrigation systems". Adoption of water charging, charge amounts, and collection rates / achievement will be monitored in (selected) SPs.
    - 1c: irrigation asset condition reports prepared and used for budgeting. This is closely related to the following study: "*Development of software and guidelines for subproject management.* Adoption and use of effective systems to track engineering assets and use for budgeting will be monitored in (selected) SPs.

- *Module 2: Modernized irrigation infrastructures developed*
    - For each SP list proposed engineering works, and track physical construction progress each quarter. Evaluation would be against planned progress.

- *Module 3: Efficient on-farm water management practices adopted*
    - 3a & 3b: at least 10,000 ha irrigated using on-farm micro irrigation and at least 1,500 farmers receive training on improving water productivity on-farm. Data would largely be from the contractor implementing "Technical support for High Efficiency Irrigation Systems and implementation/ administration of Micro Irrigation." Data would be collected and disaggregated for each SP.

- *Module 4: Contracts utilization and disbursement* – for each contract track fund utilization or financial disbursement for the whole project.

7. The CESC will be responsible for introducing the monitoring system into the DARD/PPMUs and for training the local M&E staff on the collection of data against established indicators as well as progress reporting required every quarter to ADB and provincial and national governments.

8. The progress will be reported against the agreed contract timetable for completion of works and other deliverables with reports reporting against these deliverable measures.

9. Where possible, the progress reporting will incorporate opinions of that will be obtained from interviews of samples of beneficiaries within the command areas. The beneficiary communes will also be consulted to obtain their views as to implementation progress and to raise any potential implementation issues in the process.

Outcome Monitoring & Evaluation

10. Outcome/ benefit monitoring and evaluation will be carried out on an annual basis to ensure that the intended project benefits are received and that the distribution of benefits amongst households in the irrigation command areas is reasonably equitable.

11. The essential first phase of outcome and impact monitoring is to establish a baseline against which project impacts can be measured. While a baseline survey was undertaken during preparation, a more comprehensive study is needed against which impacts can be measured - particularly the distribution of benefits. Thereafter, surveys of (selected) subproject (SP) will be conducted, each year initially and then after a longer, 5-10-year gap. Surveys are proposed for two SPs located in coastal provinces and two in highland provinces. Outcome/ impact monitoring surveys will be tendered and carried out under contract. The field surveys should be done at the same time each year, in the mid/ late dry season, from March to May. In addition to field surveys the following data sources will be used: (i) Progress reports and data; (ii) IMC/ operator data/ records/ reports from various studies supported by the project, e.g., Development of Technical Systems for SP Management, Water Productivity (baseline and crop water productivity advice service), etc.

- M&E Field surveys by 3rd party contractors (1-3 weeks the field in selected SPs), with HH and group interviews (questionnaires and discussion checklists to be developed)

12. Design of the survey instruments will be by the CESC M&E specialist in consultation with others, including the social, gender and communications specialist, and the CPO/PMU and PPMU appointed monitoring and social specialists. It will include household and group interview questionnaires and checklists. Special focus will be given to the poor and vulnerable groups. The survey will be standardized to allow comparison between subprojects.

13. The Annual M&E reports would comprise the following sections:

- Status of SP development (engineering works, management arrangement, implementation of irrigation service charge collection, etc.).
- Rainfall/ water availability in previous season (these distort/ affect annual findings).
- Groundwater depths / trends.
- Farmer interest and connectivity to system, volumes of irrigation water used (pipe systems) / irrigation practices, payment of ICS, etc.
- Adoption of on-farm micro irrigation.
- Crop areas, crop types, yields, prices, marketing, etc.
- Social/ wealth indicators and distribution of benefits.

Appendix 11: ADB GAP Monitoring Template

Date of Update:

Project Title:
Country:
Project No.:
Type of Project (Loan/Grant/TA):
Approval and Timeline:
Gender Category:
Mission Leader:
Project Impact:
Project Outcome:

Gender Action Plan (GAP Activities, Indicators and Targets, Timeframe and Responsibility)	**Progress to date (as of _____)** (This should include information on period of actual implementation, sex-disaggregated quantitative updates (e.g. number of participating women, women beneficiaries of services, etc.), and qualitative information. However, some would be on-going - so explain what has happened so far towards meeting the target.	**Issues and Challenges** (Please include reasons why an activity was not fully implemented, or if targets fall short, or reasons for delay, etc., and provide recommendations on ways to address issues and challenges)
Output 1: Irrigation management services strengthened		
1. Water allocation/planning and water charging framework developed taking into account needs and constraints as raised during consultations conducted with men and women in command areas.		
2.		
3.		
Output 2:		
1.		
2.		
3.		
Output 3:		

Comments/ Remarks:

Accomplished by : _____

Date Accomplished: _____