**ADB LOAN 2223-VIE**
**CENTRAL PROJECT OFFICE**
Project Number: 30292

# PROJECT COMPLETION REPORT OF THE BORROWER

**September, 2012**


Donor agency:
**Asian Development Bank**

ExecutingAgency:
**Central Project Office**
**Ministry of Agricultural and Rural Development**
**Socialist Republic of Vietnam**

## CURRENCY EQUIVALENTS

Currency – Vietnam Dong (VND)

| | | **At appraisal** (19/12/2005) | **At Completion** (30/06/2012) |
|---|---|---|---|
| VND 1.00 | = | $ 0.00006329 | $ 0.00004808 |
| $1.00 | = | VND 15,800 | VND 20,860 |

## ABRREVIATIONS

| | | |
|---|---|---|
| ADB | – | Asian Development Bank |
| CPO | – | Central Project Office |
| CPMU | – | Central Project Management Unit |
| CRWRP | – | Central Region Water Resources Project |
| DARD | – | Department of Agricultural and Rural Development |
| DONRE | – | Department of Natural Resources and Environment |
| EA | – | Executing Agency |
| EIRR | – | Economic Internal Rate of Return |
| EMDP | – | Ethnic Minority Development Plan |
| EMP | – | Environmental Management Plan |
| FS | – | Feasibility Study |
| GAP | – | Gender Action Plan |
| GIS | – | Geographic Information System |
| GOV | – | Government of Vietnam |
| IA | – | Implementing Agency |
| ICB | – | International Competitive Bidding |
| IEE | – | Initial Environmental Examination |
| IMC | – | Irrigation (and Drainage) Management Company |
| LCB | – | Local Competitive Bidding |
| M&E | – | Monitoring and Evaluation |
| MARD | – | Ministry of Agriculture and Rural Development |
| MONRE | – | Ministry of Natural Resources and Environment |
| N/A | – | Data Not Available |
| O&M | – | Operation and Maintenance |
| PIM | – | Participatory Irrigation Management |
| PMIS | – | Project Management Information System |
| PPMU | – | Provincial Project Management Unit |

| | | |
|---|---|---|
| PPMS | – | Project Performance and Management System |
| PPP | – | Purchasing Power Parity |
| PPTA | – | Project Preparatory Technical Assistance |
| RRP | – | Report and Recommendation of the President |
| RP | – | Resettlement Plan |
| SIEE | – | Summary of Initial Environmental Examination |
| SOE | – | Summary of Expense |
| SPAM | – | Special Project Administration Mission |
| SSP | – | Social Support Program |
| TA | – | Technical Assistance |
| WUA | – | Water User Association |
| WUG | – | Water User Group |
| WUO | _ | Water User Organization |

## WEIGHTS AND MEASURES

| | | |
|---|---|---|
| ha (hectare) | – | 10,000 $m^2$ |
| kg (kilogram) | – | 1,000 gram |
| km (kilometre) | – | 1,000 m |
| $km^2$(square kilometre) | – | 1,000,000 $m^2$ |

## NOTES

(i.) The fiscal year (FY) of the Government ends on 31 December. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2006 ends on 31 December 2006.

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

# CONTENTS

## Tables

# BASIC DATA

## A. Loan Identification

1. Country: Socialist Republic of Vietnam
2. Loan Number: 2223-VIE(SF)
3. Project Title: Central Region Water Resources Project
4. Borrower: Socialist Republic of Vietnam
5. Executing Agency: Ministry of Agricultural and Rural Development
6. Amount of Loan: $ 74,300,000 (SDR 52,128,000)
7. Project Completion Number: ……

## B. Loan Data

1. Appraisal
   - Date started: 22 September 2005
   - Date completed: 05 October 2005

2. Loan Negotiations
   - Date started: 24 November 2005
   - Date completed: 26 November2005

3. Board Approval: 19 December 2006

4. Loan Agreement: 18 December 2006

5. Loan Effectiveness
   - In Loan Agreement: 08 May 2007
   - Actual: 08 May 2007
   - Number of Extensions: 0

6. Closing Date
   - In Loan Agreement: 30 June 2012
   - Actual: 30 June 2012
   - Number of Extensions: 0

7. Terms of Loan
   - Service Charge: 1% per annum during the grace period and 1.5% per annum thereafter.
   - Maturity (number of years): 32
   - Grace Period (number of years): 8

8. Disbursements
   a. Dates

| Initial Disbursement | Final Disbursement | Time interval(months) |
|---|---|---|
| 06 August 2007 | 25 September2012 | 62.6 |

| Effective date | Original closing date | Time interval(months) |
|---|---|---|
| 08 May 2007 | 30 June 2012 | 62.7 |

b. Amount($ millions)

| Category | Original Allocation | Last Revised Allocation[1] | Amount cancelled | Net Amount Available | Amount Disbursed | Undis-bursed Balance |
|---|---|---|---|---|---|---|
| 01. Civil Works | 57.767 | N/A | N/A | N/A | N/A | N/A |
| 02. Materials and Equipment | 1.745 | N/A | N/A | N/A | N/A | N/A |
| 2a. Vehicles | 0.397 | N/A | N/A | N/A | N/A | N/A |
| 2b. Other equipment and materials | 1.348 | N/A | N/A | N/A | N/A | N/A |
| 03. Consulting Services | 3.669 | N/A | N/A | N/A | N/A | N/A |
| 04. Survey, Investigation | 1.301 | N/A | N/A | N/A | N/A | N/A |
| 05. Environmental Management | 0.610 | N/A | N/A | N/A | N/A | N/A |
| 06. Workshops and Trainings | 1.377 | N/A | N/A | N/A | N/A | N/A |
| 07. Project Management | 2.196 | N/A | N/A | N/A | N/A | N/A |
| 08. O&M | 0.158 | N/A | N/A | N/A | N/A | N/A |
| 09. Service Charge | 1.887 | N/A | N/A | N/A | N/A | N/A |
| 10. Unallocated | 3.590 | N/A | N/A | N/A | N/A | N/A |
| **Total** | **76.045** | **80.964** | **0** | **0** | **80.228** | **0.735** |

9. Local Costs (Financed)
   - Amount ($) N/A
   - Percent of Local Costs N/A
   - Percent of Total Cost N/A

## C. Project Data

1. Project Cost ($ millions)

| Cost | Appraisal Estimate | Actual[2] |
|---|---|---|
| Foreign Exchange Cost | 37.82 | N/A |
| Local Currency Cost | 61.18 | N/A |
| **Total** | **99.00** | **99.69** |

2. Financing Plan ($ millions)

| Item | Appraisal Estimate | Actual |
|---|---|---|
| Implementation Costs | | |
| Borrower-Financed | 24.7 | 20.68 |
| ADB-Financed | 74.3 | 79.01 |
| Other External Financing | 0 | 0 |
| **Total** | **99.0** | 99.69 |

[1] Aide Memoire of Final Project Review Mission (15-27/06/2012)
[2] Exchange rate at project completion date: $1 = VND 20,860

IDC costs

| | | |
|---|---|---|
| Borrower-Financed | 0 | 0 |
| ADB-Financed | 1.89 | 1.21 |
| Other External Financing | 0 | 0 |
| **Total** | **1.89** | **1.21** |

ADB = Asian Development Bank, IDC = Interest During Construction.

3. Cost Breakdown by Project Component ($ millions)[3]

| Cost | Appraisal Estimate | Actual |
|---|---|---|
| A: Irrigation Management Systems Improvement | 13.75 | N/A |
| B: Irrigation Infrastructure Improvement | 70.09 | N/A |
| **Total** | **83.84** | **N/A** |

4. Project Schedule

| Item | Appraisal Estimate | Actual |
|---|---|---|
| Date of Contract with Consultants | Jun 2007 | May 21, 2008 |
| Date of Technical Design Completion | Dec 2008 | Dec 2008 |
| Civil Works | | |
| Commencement of Construction | 2007 | 2008 |
| Completion of Construction | Dec 2011 | Jun 30, 2012 |
| Equipment and others | Jul 2007 | Jul 2007 |
| Date | | |
| Commencement of Purchase | Jul 2007 | Jul 2007 |
| Completion of Purchase | Dec 2010 | Oct 2011 |
| Completion of Equipment Installation | Dec 2010 | Oct 2011 |
| Operation | | |
| Trial completion | Jul 2007 | Oct 2011 |
| Commencement of Operation | Jul 2007 | Oct 2011 |
| Other dates | | |

5. Project Performance Report Ratings

| Implementation Period | Ratings | |
|---|---|---|
| | Development Objectives | Implementation Progress |
| From 8 May 2007 to 31 December 2007 | Satisfactory | Not Satisfactory |
| From 1 January 2008 to 31 December 2008 | Satisfactory | Satisfactory |
| From 1 January 2009 to 31 December 2009 | Satisfactory | Satisfactory |
| From 1 January 2010 to 31 December 2010 | Satisfactory | Satisfactory |
| From 1 January 2011 to 31 December 2011 | Satisfactory | Satisfactory |
| From 1 January 2012 to 30 June 2012 | Satisfactory | Satisfactory |

## D. Data on Asian Development Bank Missions

| Name of Mission | Date | No. of Persons | No. of Person-Days | Specialization of Members |
|---|---|---|---|---|
| Fact-Finding | 24 May– 01 Jun 2005 | 4 | 7 | g, k, f, h |
| Appraisal | 22 Sep– 05 Oct 2005 | 4 | 14 | g, k, f, h |

[3]No contingencies and bank interests included during project implementation

| | | | | |
|---|---|---|---|---|
| Inception | 15 – 20 Jan 2007 | 3 | 6 | g, f, h |
| Review | 3 – 13 Dec 2007 | 2 | 11 | g |
| SPAM | 16 – 23 Jun 2008 | 2 | 8 | g |
| Review | 12 – 19 Dec 2008 | 2 | 8 | g |
| Review | 27 Nov – 11 Dec 2009 | 3 | 15 | g, h, e |
| Review | 10 – 22 Jun 2010 | 3 | 13 | g, h, e |
| Review | 17 – 28 Dec 2010 | 1 | 12 | g |
| Review | 20 Jun – 14 Jul 2011 | 3 | 15 | g, h, e |
| Review | 8 – 20 Dec 2011 | 1 | 13 | g |
| Review | 15 – 27 Jun 2012 | 1 | 13 | g |
| Project Completion Review | | | Not yet | |

a –agromist, b –counsel, c –economist, d –engineer, e –environment specialist, f –financial analyst, g – program officer, h –social development specialist, i –control officer, j –procurement specialist, k –project specialist, l –resettlement specialist, m –local staff member, n –staff consultant.

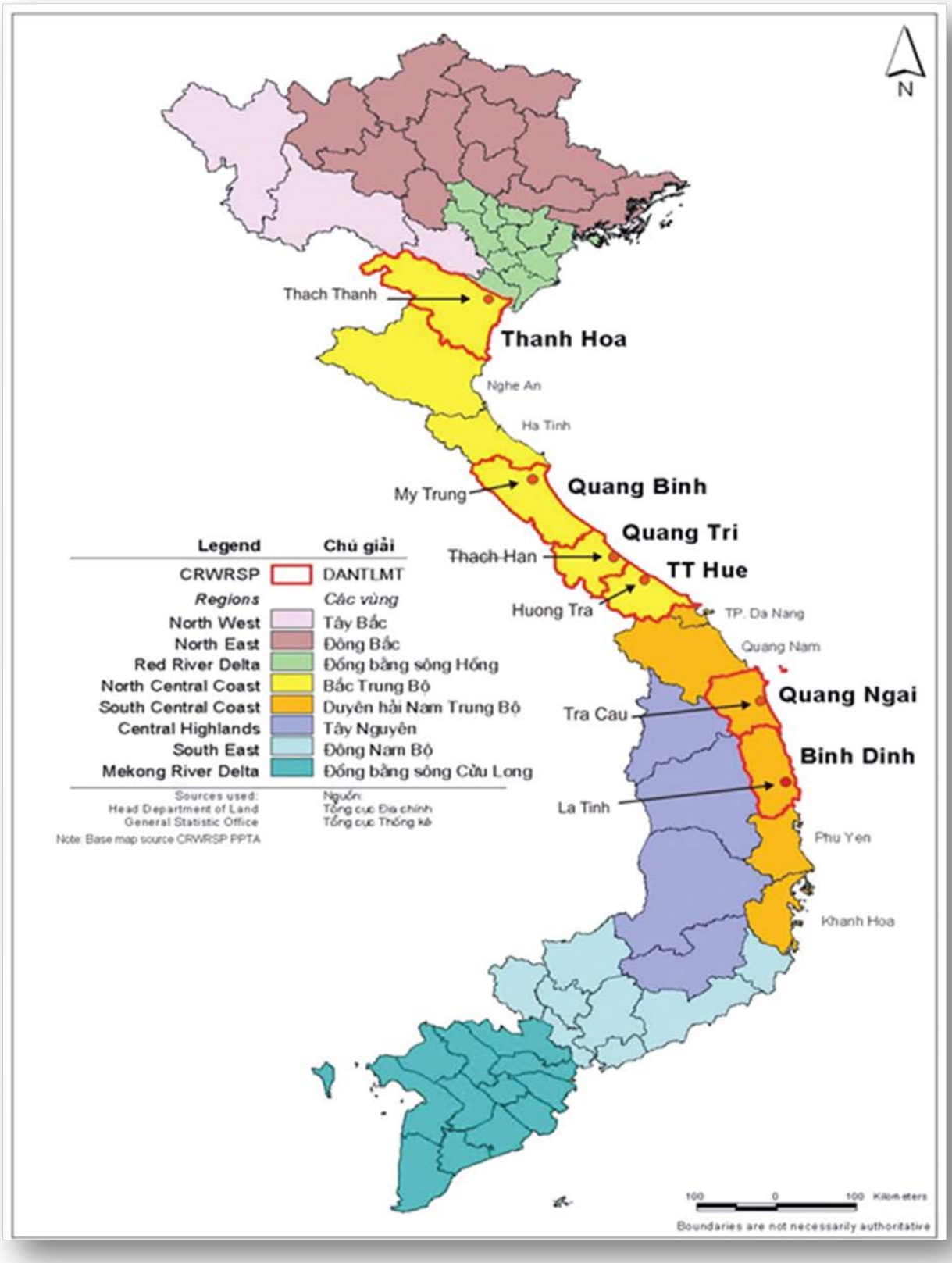



**Figure 1.**Map of Subproject Locations of the Central Region Water Resources Project

# I. PROJECT DESCRIPTION

## A. Background

1. The Asian Development Bank (ADB) has been supporting water resources projects in Vietnam since 1993. Since then, 4 projects were completed: (i) Irrigation and Flood Protection Rehabilitation Project (Loan 1259-VIE (SF)); (ii) Red River Delta Water Resources Sector Project (Loan 1344-VIE(SF)); (iii) Second Red River Basin Sector Project (Loan 1855-VIE(SF)); and (iv) Central Region Water Resources Project (Loan 2223-VIE(SF)).

Central Region Water Resources Project (hereinafter called the Project) is part of Vietnam Assistance Program 2002 – 2004. This program has allocated 1/3 of loan for poverty regions in Central Vietnam focused on livelihood improvement and poverty reduction. The Project was carried out in 6 provinces: Thanh Hoa, Quang Binh, Quang Tri, Thua Thien Hue, Quang Ngai, and Binh Dinh.

## B. Project Objectives

2. Project objectives include:

(i) General objectives: Poverty reduction in project provinces;

(ii) Specific objectives: Enforce agricultural production and increase agricultural production profit through: (a) irrigation system management improvement; (b) construction, rehabilitation, and completion of irrigation and drainage infrastructure, and natural disaster reduction measures strengthen; and (c) sustainable environmental protection and management.

## C. Project Components

3. Project has two (2) components:

(i) Component A: Irrigation Management Systems Improvement; and

(ii) Component B: Irrigation Infrastructure Improvement.

## D. Summary of Component A

4. Establishing Financially Viable Service Providers through: (a) Assisting DARDs in developing business plans for IMCs for achieving autonomy and financial sustainability, restructuring IMCs; (b) training staff in PPCs, DARDs, provincial agencies, and IMCs in understanding and supporting institutional reform for improved irrigation management; skill development for irrigation scheme O&M; social impact assessments; and irrigation management for greater achievements in poverty reduction, gender equality, and community participation.

5. Strengthening Water User Participation through: (a) assisting MARD in carrying out participatory assessment of the needs and capabilities of existing WUOs and developing regulations and guidelines for WUO operations and management; (b) Establishing/Strengthening WUOs; (c) training farmers and local communities inparticipatory planning and decision making, WUOs legal empowerment and legal literacy.

6. Developing Onfarm Infrastructure through a participatory process.

7. Assisting in operationalizing the Project Performance Management System (PPMS)

8. Supporting Social Support Program (SSP), including Gender Action Plan (GAP) and HIV/AIDS Awareness Program.

## E. Summary of Component B

9. Component B of the Project comprises the following works: (i) complete detailed design of subprojects; (ii) implement subprojects; (iii) resettle and compensate affected persons; and (iv) conduct Environmental Management Plans (EMP). Below is the summary of civil works in each subproject[4].

10. **Thach Thanh Subproject (Thanh Hoa Province).** The subproject comprises the following works to improve water delivery for irrigated rice and sugarcane: (i) rehabilitation of 3 existing and construction of 10 new pumping stations lifting water from the Buoi River to serve 2,280 ha; (ii) rehabilitation of 8 small storage reservoirs and construction of 1 new reservoir to serve 1,291 ha; (iii) construction of about 90 km of earth canals to replace deteriorated concrete flumes; and (iv) rehabilitation of Bai Muong weir.

11. **Thuong My Trung Subproject (Quang Binh Province).** The subproject will improve environment, irrigation, drainage, and flood protection around Hac Hai lagoon for 4,188 ha to enable two rice crops, and prevent saline intrusion for 2,481 ha. The main works to be implemented are: (i) 82 km of embankment, (ii) rehabilitation of 66 existing and construction of 23 new sluice gates, (iii) rehabilitation of 25 existing and construction of 15 new pumping stations, and (iv) related bridges and aqueducts.

12. **Nam Thach Han Subproject (Quang Tri Province).** The scheme, designed in the 1970s to irrigate 17,000 ha, was never completed because of water shortages. Its completion can now be realized because the Rao Quan Reservoir, now under construction by Electricity of Vietnam, will increase water availability and render the subproject feasible. The completed scheme will allow full production on 13,867 ha. The works comprise (i) upgrading the Nam Thach Han headworks[5] and canal system (including lining 13 km of main canal and 45 km of primary and lower canals); and (ii) construction of Ben Da weir to expand irrigation area.

13. **Tay Nam Huong Tra Subproject (Thua Thien Hue Province).** The scheme is badly deteriorated and suffers from poor drainage in some parts, exacerbated by brackish water in the Huong River, its main source of supply. The works comprise (i) enlarging the Khe Ngang Reservoir, serving 50 ha; (ii) constructing 8.6 km of new main canal; (iii) raising the spillway of the Tho Son Reservoir, serving 260 ha; (iv) upgrading the 3-, 5- and 7-community canals; and (v) constructing a pumping station and associated culverts and sluices at Nam Thanh to improve drainage on 300 ha.

14. **Tra Cau Subproject (Quang Ngai Province).** The subproject comprises the Liet Son–Chop Vung, Nui Ngang, and Dien Truong irrigation schemes. These were never completed and have deteriorated since construction in the 1980s. The works comprise (i)

[4] RRP, Oct 2005
[5] Headwork's means the structure or group of structures controlling the quantity of water entering a major canal.

construction of the Chop Vung Reservoir to serve 700 ha; (ii) heightening the dam and spillway of the Dien Truong Reservoir, and rehabilitating and extending the canal system, including construction of an access road to the dam; and (iii) completion of primary and lower level canals in the Nui Ngang system.

15. **La Tinh Subproject (Binh Dinh Province).** Because of its deterioration, much of which resulted from flood damage, only about 1,800 ha of a total command area of 3,950 ha are currently irrigated. The works comprise (i) reconstruction of the Cay Ke weir to serve 1,000 ha; (ii) lining 80 km of irrigation canal and rehabilitation of canal structures, (iii) Rehabilitation of 21.5 km of flood protection embankments between Phu Ly bridge and Cay Ke weir, and between La Tinh and the Can River, and (iii) rehabilitation of three flood diversion/retention spillways.

## F. Project Costs

16. Based on loan agreement, the total Project cost, including contingencies, taxes, and duties, was estimated at $99 million. The foreign exchange cost was estimated at $37.8 million or 38% of the total Project cost. The local currency cost including taxes was $61.2 million or 62% of the total Project cost. A loan of $74.3 million, including $1.9 million of interest charge, is equivalent to 75% of the Project cost. Counterpart fund was $24.7 million, equivalent to 25% of the Project cost.

# II. EVALUATION OF DESIGN AND IMPLEMENTATION

## A. Relevance of Design and Formulation

17. The Project's objectives were designed in accordance with priorities of GOV and ADB from approval date until now. From 2005 to 2007 (i.e. the period for project preparations and approval process), the government gave priority to rehabilitation of IMCs/IMEs, and infrastructure improvement and constructions and option to motivate social-economic development, poverty reduction in rural areas. Until now, this priority is still maintained.

18. Governmental materials used as rationales for Project formulation and approval include Socio-Economic Development Strategy (2001 – 2010)[6] and Five Year Plan for Socio-Economic Development (2006 - 2010). These materials stress priorities as follows: (i) agricultural industrialization and modernization in rural areas, (ii) properly agricultural production, (iii) science-technology development, (iv) water resources conservation management, and (v) industrial and service development. Project's objectives were designed in compliance with the above government's materials.

19. The priority of the Asian Development Bank at approval time was to focus on poverty reduction as mentioned in Comprehensive Poverty Reduction and Growth Strategy (CPRGS) and Poverty Reduction Partnership Agreement between GOV and ADB in 2002. Project's general objective absolutely satisfies this priority.

20. Vietnam's Socio-Economic Development Strategy for 2011-2020 defines that one of its objectives is to develop a modern, efficient and sustainable agriculture. As a result, the poverty rate should be reduced by 2-3%/year on average and natural disaster impacts should be reduced. Strategic Direction of Water Resources Development to 2020 and

[6]Government of Vietnam.Socio-economic Development Strategy 2001-2010. 2003.

toward 2050[7] specify the following objectives: (i) supply enough irrigation water for 4.5 million ha of agricultural land (3.83 million ha for rice), ensuring timely and effective irrigation/drainage for 100% area of 2 rice crops; (ii) improve the efficiency in management and operation of irrigation structures in order to achieve higher than 90% of the designed capacity. Project's outcomes complied with the above objectives.

## B. Project Outputs

### 1. Component A: Irrigation Management Systems Improvement

#### a) Financially Viable Service Providers Establishment

21. On 14 November 2008, the Government of Vietnam issued Decree 115/2008/NĐ-CP (hereinafter called Decree 115) about amendment to Decree 143/2003/NĐ-CP on detailed implementation of several articles of the Ordinance on Irrigation Works Operation and Protection. Decree 115 has a policy of water fee reduction for farmers, and became effective on 01 January 2009. However, the Loan Agreement contains some inappropriate regulations to Decree 115. Thus, on 20 October 2009, ADB issued a document reporting amendments to the Loan Agreement for Vietnamese economic suitability (Appendix 1).

22. The amendments to the Loan Agreement create conditions for ICMs to build appropriate business plans in accordance with Decree 115 and ADB's requirements. Business plans were approved by PPCs on the basis of ADB's satisfaction. The business plans will: (i) set out a time-bound program for achieving financial sustainability through structural and other changes to the organization and staffing; (ii) describe key functions, service requirements, equipment and skills, budgets, information flows, accounting procedures, performance monitoring, and financing plans; (iii) include support for the establishment and strengthening of WUOs and Water User Associations (WUAs)—umbrella associations of WUOs—that can be contracted for O&M previously done by IMCs; and (iv) set out annual targets and milestones.

23. An Operation and Maintenance Plan (O&M Plan) for irrigation schemes is a part of a business plan. Irrigation infrastructure after project completion will be handed over to IMCs and WUOs for management and operation whose annual O&M cost is very big. Therefore, besides stable income from irrigation, water services, etc., IMCs need supports from local authorities. From June to December 2010, PPCs approved O&M plans for irrigation schemes on a basis for IMCs to ask for fund allocation to cover O&M expenditures after construction completion.

24. In 2009, 06 IMCs of 06 provinces have been successfully restructured as one-member limited liability irrigation management companies, and operated under Enterprise Law (no. 60/2005/QH11).

#### b) Strengthening Water User Participation

25. ADB's previous projects normally focus on rehabilitation and construction of WUO on the basis of hydraulic boundaries, but the results were not satisfactory. In this Project, local provinces are supported in strengthening/establishing WUOs with consultants (one consultant team per subproject). Consultants' main roles are to: (i) evaluate irrigation management status in Project areas, define needs in strengthening and establishment of WUOs, build capacity in Participatory Irrigation Management (PIM) and propose appropriate PIM model at Project areas; (ii) compose WUO establishment and strengthening guidelines, instruction manuals at primary level; (iii) establish/strengthen,

[7] Approved by the Prime Minister at decision No: 1590/QD-TTg on 9 October 2009

monitor and support WUOs; (iv) design and conduct capacity building programs for WUOs; and (v) monitor and assess implementation results.

26. For strengthening irrigation management at the grassroots level, the Project has assisted to establish 15 new WUOs and 4 WUAs, and strengthen 117 WUOs in compliance with agreed process, ensuring: (i) WUOs have full legal status, seals, and bank accounts[8]; (ii) operation regulations of each WUO were agreed by water users and approved by communal people's committees; and (ii) the irrigation team in each WUO is organized and performs its functions on the basis of hydraulic boundaries with appropriate number of staff members and specific operational regulations. Table 2-1 below outlines number of WUOs strengthened and established in subprojects.

**Table 2-1: Number of WUOs in subprojects**

| Subproject | Number of WUOs | | |
|---|---|---|---|
| | Total | Strengthened | New |
| Thach Thanh | 16 | 9 | 7 |
| Thuong My Trung | 24 | 20 | 4 |
| Nam Thach Han | 52 | 47 | 5 |
| Tay Nam Huong Tra | 13 | 13 | 0 |
| Tra Cau | 20 | 20 | 0 |
| La Tinh | 11 | 8 | 3 |
| **Total** | **136** | **117** | **19** |

27. WUOs' main duties are: (i) maintaining a separate financial accounting system for irrigation/drainage activities; (ii) signing irrigation contracts with IMEs and water users; (iii) proposing onfarm structure development needs suitable for each own particular irrigation system, sending participants to onfarm structure design missions, and (iv) organizing onfarm construction.

**c) Onfarm Development**

28. Unlike previous ADB-financed projects[9], ADB, this time, has allocated a considerable budget for onfarm infrastructure development (hereinafter referred to as onfarm system). In July 2011, ADB agreed to use the Project savings as an additional amount of fund for onfarm construction[10].

29. To motivate new/strengthen WUOs, the Project has allocated about VND600 million per WUO for 135 registered WUOs which are eligible for onfarm construction on their own. PPMUs organized necessary trainings for the WUOs and extended current design and monitoring consultant contracts in order to help WUOs implement onfarm construction. Women and poor people were encouraged to participate in construction activities as a source of income

30. Onfarm construction cost is VND217,042 million (equivalent to 10% of total Project

[8]Excluding 4 WUAs which do not have yet any seal and bank account, as the current regulatory framework in Vietnam does not support registration of legal status for this type of organization/entity.

[9]Irrigation and Flood Protection Rehabilitation Project (Loan 1259-VIE (SF)); (ii) Red River Delta Water Resources Sector Project (Loan 1344-VIE (SF)); (iii) Second Red River Basin Sector Project (Loan 1855-VIE (SF)); (iv) Phuoc Hoa Water Resources Project (Loan 2025-VIE (SF)).

[10]Aide memoire of ADB's Project Review Mission (20 June – 04 July 2011. Mission comprised Mr.Ho Le Phong (Sr. Project Officer/Mission Leader), Ms. Nguyen Nhat Tuyen (senior social specialist) and Mr. Pham Quang Phuc (environmental specialist).

cost and 13% of total cost for civil works)[11]. The Project has rehabilitated and constructed 652 onfarm structures with a length of 280.8 km and hundreds of canal structures. Service area of onfarm structure is 13,709 ha covering 86 communes, districts in the Project area. Table 2-2 below shows onfarm construction results in subprojects.

**Table2-2: Onfarm construction in subprojects**

| No. | Subproject | Irrigation Area (ha) | Canals | Length (m) | Cost (VND million) | | |
|---|---|---|---|---|---|---|---|
| | | | | | Total | ADB | Counterpart |
| 1 | Thach Thanh | 2,209 | 124 | 62,959 | 35,867 | 30,487 | 5,380 |
| 2 | Thuong My Trung | 4,395 | 45 | 28,545 | 38,703 | 32,898 | 5,805 |
| 3 | Nam Thach Han | 2,123 | 223 | 61,714 | 60,244 | 51,208 | 9,037 |
| 4 | Tay Nam Huong Tra | 1,268 | 119 | 41,199 | 20,736 | 17,626 | 3,110 |
| 5 | Tra Cau | 1,598 | 78 | 41,754 | 32,178 | 27,351 | 4,827 |
| 6 | La Tinh | 2,117 | 63 | 44,601 | 29,314 | 24,917 | 4,397 |
| | **Total** | **13,709** | **652** | **280,772** | **217,042** | **184,486** | **32,556** |

*Source:* PPMUs.

**d) Project Performance Management System (PPMS)**

31. The project implementation support consultant (MWH) assisted CPO/CPMU in designing, purchasing specialized equipment, and operating PPMS based on information management software in connection with Geographic Information System (GIS) for subprojects. The Project contracted with VICA in providing baseline survey services at each subproject in order to supply information for the Project monitoring and evaluation activities. PPMS/GIS started pilot operation in 2009.

32. The Project has organized 12 training classes for 135 staff specialized in PPMU/GIS from CPO/CPMU, PPMUs and relevant units on data collection/use and PPMU/GIS operation. However, PPMS operation results were not as expected because of the following reasons: (i) project management officers from CPO to PPMU did not fully understand PPMS; (ii) PPMUs lacked PPMS-specialized staffs; and (iii) project monitoring and assessment data were not reliable and not frequently updated.

**e) Gender Action Planand HIV/AIDS Awareness Program**

33. The Project has organized 138 study tours, trainings, workshops about Gender Action Plan (GAP) and Social Support Program (SSP) for 6,597 people, of which 46% are women. GAP, HIV/AIDS Awareness Program and SSP were efficiently conducted. Women participation index in GAP, SSP at subprojects has reached 46% and passed the target by 6%.

34. The Project, in collaboration with PIM consultants and PPMUs, has organized many capacity development training classes for WUOs. Gender index from results of WUO/WUA capacity building, organized by both PPMUs and PIM consultants, was 44.3%, which was 4.3% over the target.

35. Detailed implementation results of component A are provided in Appendix 2.

[11] In comparison with funded projects, onfarm structure cost is equivalent to 10% of the total project cost.

## 2. Component B: Irrigation Infrastructure Improvement

### a) Subprojects

#### (1) Thach Thanh Subproject

Thanh Vinh pumping station
(before project)


Thanh Vinh pumping station
(after project)

36. The subproject has: (i) rehabilitated and constructed 23 water resources headworks including 10 small reservoirs; (ii) constructed 13 pumping stations, 1 transportation bridge; (iii) reinforced 178.6 km irrigation canal (main canal, primary, secondary, and onfarm canals) and established/strengthened 674 canal structures; and (iv) constructed HDPE-PE100, PN6 pipeline with 5.8km long (main line of 2.9 km long, branch of 2.5 km long, and water delivery line of 0.43 km long) bringing water from Vung Su Reservoir to 89 ha irrigation (15 ha of crop and 74 ha of sugarcane) and to 180 households (about 720 people) in Thanh Vinh commune. In comparison to ADB's Report and Recommendation of the President (RRP), the subproject has additionally constructed: (i) more than 80 km of rehabilitated irrigation canal; and (ii) 5.8 km of HDPE-PE100, PN6 pipeline for water delivery from Vung Su Reservoir to households and irrigation area.

37. The subproject has awarded 42 contracts with the total cost of VND189,174 million, lower than the estimated cost of VND199 million. However, at the time of final acceptance, all contract prices were adjusted due to price escalation and additional works. As a result, the total contract cost after adjustment is VND222,224 million (17.5% higher than the awarded cost). During subproject implementation, 27 civil work contracts have been awarded at a cost of VND201,607 million, equivalent to 91% of total awarded contract cost and to 75% of total subproject cost.

*38.* Detailed results of Thach Thanh Subproject are presented in Appendix 3 (Attachment 3.1)

### (2) Thuong My Trung Subproject

C9 sluice (before project)

C9 sluice (after project)

39. The main implemented works are: (i) 82 km of embankment, (ii) rehabilitation of 66 existing and construction of 23 new sluice gates, (iii) rehabilitation of 25 existing and construction of 15 new pumping stations, (iv) related bridges and aqueducts, and (v) constructed 28.6 km onfarm canal and canal structures. In accordance with requirements in appraisal report, the subproject's irrigation infrastructure construction was satisfactory.

40. The subproject has awarded 66 contracts with the total cost of VND280,877 million, (VND5,632 million lower than the estimated cost). However, at the time of final acceptance, all contract prices were adjusted due to price escalation and additional works. As a result, the total contract cost after adjustment is VND320,435 million (10.1% higher than the awarded cost). The subproject has awarded 49 civil-work contracts with a total cost of VND302,710 million, equivalent to 94% of total awarded contract cost and to 79% of total subproject cost.

41. Detailed results of Thuong My TrungSubproject are presented in Appendix 3 (Attachment 3.2)

### (3) Nam Thach Han Subproject

Main dam of Nam Thach Han
(before project)


Main dam of Nam Thach Han
(after project)

42. The subproject has: (i) rehabilitated and constructed (headworks) main dam,

auxiliary dam 3, spillway, sluice, sand sluice; consolidated dam surface of 6 auxiliary dams (auxiliary 1, 2, 4, 5, 6 and 7); (ii) upgraded 252.9 km, including: main canal: 13.5km; primary canal: 48 km (06 primary canals: N1, N2A, N2B, N3, N4, N6); secondary and smaller canals: 26 canals, 45.4 km; onfarm structures: 223 canals, 61.7 km; and (iii) upgraded/renewed 565 canal structures, including: 205 bridges, 327 sluices, 04 aqueducts, 08 siphons, 20 inlet and outlet spillways and 01 drop.

43. The subproject has awarded 102 contracts with the total cost of VND382,533 million (about 2% lower than the estimated cost - VND7,684 million). However, at the time of final acceptance, all contract prices were adjusted due to price escalation and additional works. As a result, the total contract cost after adjustment is VND427,091 million (12% higher than the awarded cost). Among 102 awarded contracts, there are 80 civil-work contracts with a cost of VND401,207 million, equivalent to 94% of total awarded cost and 81% of the total cost (the highest cost among all subprojects). This rate shows that local province has effectively used the fund for irrigation infrastructure construction.

44. Detailed results of Nam Thach Han are presented in Appendix 3 (Attachment 3.3)

**(4) Tay Nam Huong Tra Subproject**

Khe Ngang Dam (before project)

Khe Ngang Dam (after project)

45. The subproject has: (i) constructed Khe Ngang Reservoir with main homogeneous-earth fill dam of more than 473 m long, maximum height of 15.8 m; auxiliary earth dam of more than 733 m and other structures, like: spillways, culverts, canal system, and other subsidiary structures; (ii) rehabilitated Tho Son Reservoir, earth dam of 607.3m long, maximum height of 15.3 m and other structures; (iii) constructed Ba Xa drainage system including Nam Thanh drain pumping station, canal on the right side of Nam Xa canal, 4 km long, and cleaned up drains; and (iv) rehabilitated 11.6 km of main canal (in RRP is 8.6 km), 2.5km of branch canals and 41.2 km of onfarm structure; dredged and rehabilitated 28 km of irrigation and drainage canals; constructed 3.7 km canal, 5.5 km construction-management road; 3.5 km medium and low voltage lines and 3 transformer stations.

46. Khe Ngang Reservoir is a medium-size structure. The main dam foundation is treated with cement-earth piles according to Jet-Grouting technology. As the contractor was not experienced in this new method for foundation treatment, a problem occurred during construction. There was settlement in the foundation, leading to many cracks in the main dam. This accident delayed the implementation, and repairing efforts cost a substantial amount of fund. In case of civil work contract No.18-Construction of Khe Ngang main dam body: the initial contract cost was VND19,321 million; after price

adjustment due to price escalation and additional works, the cost became VND45,752 million, increased by 137%. In the civil work contract No.19-foundation treatment for Khe Ngang main dam: the initial contract cost was VND26,397 million, which increased by 11% to VND29,260 million after price adjustments.

47. The subproject has awarded 32 civil work contracts (among 71 awarded contracts) with the cost after price adjustment of VND247,274 million (27% higher than the initial awarded cost) equivalent to 93% of the total awarded contract cost, and 80% of the total cost. Such a high level of price adjustment might be due to low quality design, and large additional volume of works in comparison with the estimated work volume in the Bidding documents, or low capacity contractors which lead to unexpected increase in construction amount.

48. Detailed results of Tay Nam Huong Tra are presented in Appendix 3 (Attachment 3.4)

**(5) Tra Cau Subproject**

Dien Truongspillway (before project)

Dien Truongspillway (after project)

49. The subproject comprised of 3 components has results as follows: (1) Nui Ngang irrigation scheme: rehabilitated and constructed 15.719 km of primary canal, 14.4 km of secondary canal, and 02 construction management houses; (2) Dien Truong irrigation scheme: rehabilitated and constructed 01 reservoir headwork, including: (i) rehabilitated earth dam of 372 m long, 21.1 m high; (ii) repaired culverts; and (iii) rehabilitated flood discharge spillway with 30 m width and discharge flow of 404 $m^3/s$; rehabilitated 6.4 km of main canal, 2.9 km of primary canal, 1.8 km of management concrete road, 01 power system, and 01 70$m^2$-management-house; and (3) Liet Son – Chop Vung irrigation scheme: rehabilitated and constructed 21.84 km of primary canal, 19 km of secondary canal. The subproject has upgraded 52.3 km of onfarm canal. The Chop Vung irrigation scheme (serving 450 ha of irrigation area) was removed from the subproject due to inefficiency. The subproject has gained very good results in terms of irrigation infrastructure construction, exceeding the ADB approved requirements.

50. The subproject has awarded 95 contracts with the total cost less than the estimated cost by nearly VND5,000 million (2%). Even after price adjustment due to price escalation and additional works, the actual cost was about 4% lower than the initial cost (by about VND10,000 million). This shows that local design consultants did not precisely calculate the amount of work load. They did overestimate the work volume. Among 95

awarded contracts, there are 49 civil work contracts with a total cost VND200,224 million, equivalent to 91% of the total awarded contract cost, and 69% of the total cost.

51. Detailed results of Tra Cauare presented in Appendix 3 (Attachment 3.5)

**(6) La Tinh Subproject**

Canal before project

Canal after project

52. The subproject has: (i) rehabilitated an emergency road to Hoi Son Reservoir and reinforced downstream part of spillway of Suoi Tre Reservoir; (ii) rehabilitated Cay Gai weir gate, reconstructed Cay Ke weir to replace the old, unused one; (iii) rehabilitated and constructed 140.7 km of canal and on-canal structures, including: 66.9 km of main and primary canals; 29.3 km of secondary canal, and 44.6 km onfarm canal which has 2.6km of PVC pipe (an additional work in comparison with the initial project plan); and (iv) rehabilitated 25 km of dyke downstream of La Tinh River. All subproject constructions were completed by 31 March 2012. Measurements for final acceptance and hand-over procedures were also completed. Volume and amount of irrigation infrastructure works were higher than required.

53. The subproject has awarded 74 contracts with the total cost lower than the estimated cost by nearly VND5,076 million (2%). Even after price adjustment due to price escalation and additional works, the actual cost was about 10% higher than the initial cost (by about VND28,264 million). Among 74 awarded contracts, there are 53 civil work contracts with a total cost of VND294,996 million, equivalent to 95% of the total awarded cost, and 81% of the total cost. The subproject has quite efficiently used investment fund for irrigation infrastructure construction.

54. Detailed results of La Tinh are presented in Appendix3 (Attachment 3.6)

**b) Project Costs**

55. Allocation of loan proceeds to subprojects, after Loan Agreement was signed, is presented in Table 2-3.

**Table 2-3: Allocation of Loan Proceeds after Loan Agreement was signed[12]**

| Subproject | Total | Source (VND million) | | Allocation Rate |
|---|---|---|---|---|
| | | ADB | Counterpart | |
| Thach Thanh | 194,150 | 144,760 | 49,390 | 12.4% |
| Thuong My Trung | 263,958 | 203,409 | 60,549 | 16.9% |

[12]Decision 2949/BNN-XD on 13/12/2006 by MARD

| Subproject | Total | Source (VND million) | | Allocation Rate |
|---|---|---|---|---|
| | | ADB | Counterpart | |
| Nam Thach Han | 344,444 | 278,665 | 65,779 | 22.0% |
| Tay Nam Huong Tra | 187,210 | 131,613 | 55,597 | 12.0% |
| Tra Cau | 267,269 | 186,874 | 80,395 | 17.1% |
| La Tinh | 307,118 | 228,603 | 78,515 | 19.6% |
| **Total** | **1,564,149** | **1,173,924** | **390,225** | **100 %** |

1 $ = 15,800 VND (Exchange rate in 12/2006)

56. During the Project implementation, due to SDR depreciation, in August 2011, the ADB increased the loan proceeds to $80.964 million (10% increase)[13], and the counterpart fund also increased by $27.3 million (10.5% increase)[14]. Subproject costs until 30 June 2012 are shown in Table 2-4.

**Table 2-4: Project cost in termsofsubprojects**

| Subproject | Total | Source (VND million) | | Allocation Rate |
|---|---|---|---|---|
| | | ADB | Counterpart | |
| Thach Thanh | 265,465 | 204,975 | 60,490 | 12.8% |
| Thuong My Trung | 378,058 | 296,890 | 81,168 | 18.2% |
| Nam Thach Han | 482,928 | 385,818 | 97,110 | 23.2% |
| Tay Nam Huong Tra | 327,712 | 240,517 | 87,195 | 15.8% |
| Tra Cau | 270,138 | 207,900 | 62,238 | 13.0% |
| La Tinh | 355,212 | 289,594 | 65,618 | 17.1% |
| **Total** | **2,079,513** | **1,625,694** | **453,819** | **100 %** |

$1 = VND 20,860 (exchange rate on 28 June 2012)

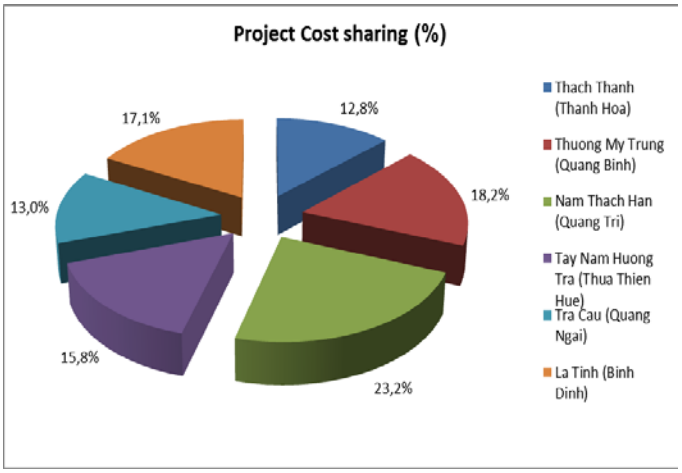
**Table 2-5: Project cost in terms of components**

| No. | Items | Project Cost (VND million) | | | |
|---|---|---|---|---|---|
| | | Total | ADB | Counterpart | |
| | | | | Central | Provincial |
| 1 | Civil works | 1,648,019 | 1,397,726 | - | 250,292 |
| 2 | Vehicles and equipment | 17,310 | 15,579 | 241 | 1,490 |
| 3 | Project management | 21,490 | 13,644 | - | 7,846 |
| 4 | Consulting services | 81,012 | 60,677 | 13,877 | 6,459 |
| 5 | Resettlement | 123,943 | - | - | 123,943 |
| 6 | Others | 39,309 | 12,097 | (6,505) | 33,717 |
| 7 | Contingencies | - | - | - | - |
| 8 | CPO management | 148,430 | 125,971 | 27,849 | 18,954 |
| | **Total** | **2,079,514** | **1,625,693** | **35,461** | **442,702** |
| | **Total ($)** | **99,689,048** | **77,933,527** | **1,699,974** | **21,222,550** |

*(*) Exchange rate on 28 June 2012:*
*$1= VND 20,860*

[13]AM of Final Project Review Mission (15-17 June 2012)
[14]Decision 1914QD-BNN-XD on 22 August 2011 by MARD

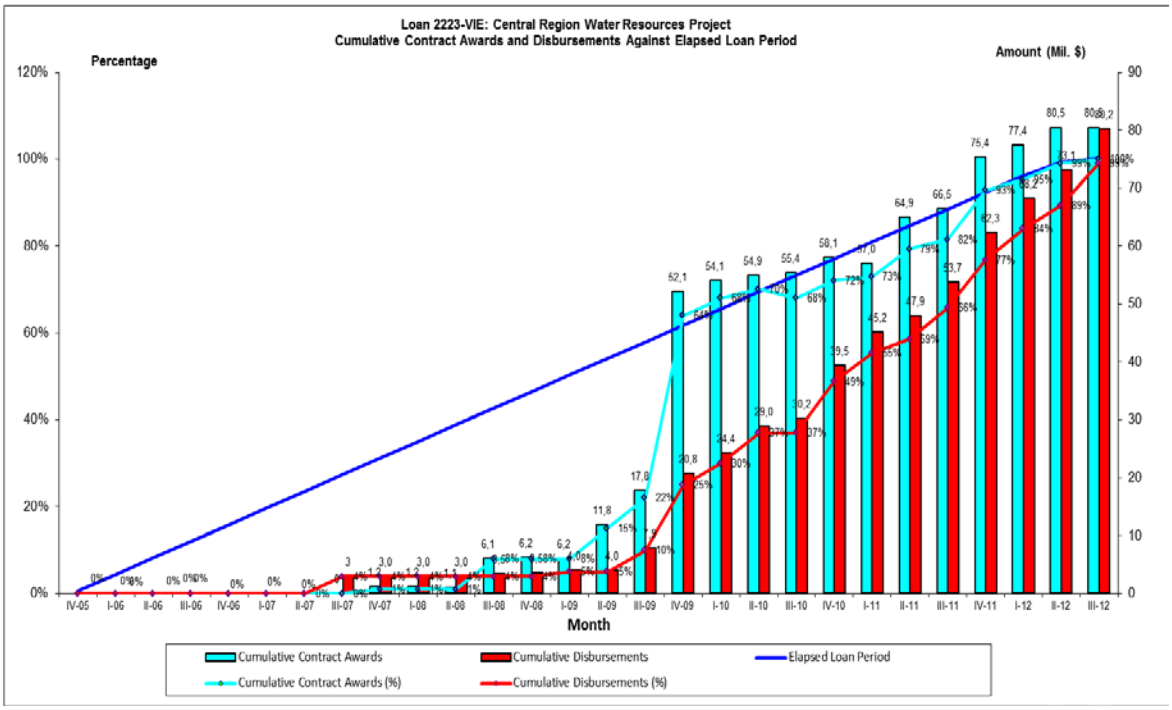
57. Tables 2-4 and 2-5 above show that funds allocated to Thach Thanh, Thuong My Trung, Nam Thach Han and Tay Nam Huong Tra are all higher than initial allocation. The funds actually allocated for Tra Cau and La Tinh subprojects are smaller than in the initial allocation. In addition, due to changes in exchange rate between USD and VND at the times the MARD allocated funds to subprojects after the loan approval[15], from 2006 to 2011, the actual cost has increased by 35%, and the loan proceeds has increased by 45%. Different levels of increase in the project funds in USD and VND can be explained by the fact that the depreciation level of VND is very much different from that of $. The exchange rate between $ and VND during Project was strongly fluctuated and unstable. Almost all contractors were negatively impacted due to price fluctuation, particularly when stakeholder's payment dues were late.




58. Total project cost by 30 June 2012 was $99,689,048 in which ADB Loan was $80,228,484. The total project savings was $375,416.

### c) Disbursements

59. Ceiling of the Project's impress accounts is $3.0 million. On 6 August 2007, ADB's first disbursement was $3.0 million, 90 days after Loan approval (on 8 May 2007). ADB's last disbursement was $0.44million (on 25 September 2012). Figure 2-6 below summaries results of contract awards and disbursements by project year. Details are in Appendix 4.




*Source:* ADB and CPO, September 2012

[15]GOV regulations: all expenditures within Vietnam are in VND.

60. The lowest disbursement was in 2008 due to technical design progress of local consultants. Civil works contracts were mainly awarded in 2009 and 2010. The highest disbursement was in 2009 with the amount higher than 56% of the total cost. Constructions were mainly completed in 2010 and 2011 so that disbursements in these two years were higher than those in other years.

61. Until 30 September 2012, CPO has disbursed $80.23 million and not disbursed $0.74 million.

**d) Project Schedule**

62. There was a delay in project approval by the GOV. On 19 December 2005, of Directors approved the Project (approved RRP); however until 23 October 2006, the Government approved the project as a condition for loan negotiation. After 01 year of loan approval, GOV approved negotiation results and signed the loan agreement on 18 December 2006 (Loan No. 2223 VIE (SF)). The loan agreement was eligible for fund withdrawal on 8 June 2007.

63. According to the Loan Agreement, the project completion date was supposed to be on 31 December 2011 and loan closing date was supposed to be on 30 June 2012. However, due to project implementation delays, ADB has agreed to change completion date to 30 June 2012.

**e) Implementation Arrangements**

64. The Project was implemented by CPO, belonged to MARD, at central level. CPO set up central project management unit (CPMU) for management at provincial level. CPMU's missions are to (i) provide overall management and coordination of the Project; (ii) liaise with PPC and DARD in each province to improve irrigation management systems; (iii) guide and coordinate DARD to improve irrigation infrastructure; (iv) implement the PPMS; (v) procure consulting services[16]; (vi) coordinate with the PPMU in each province to procure goods and services through international competitive bidding; (vii) prepare forecasts of contract awards and disbursements and arrange project account audits; (viii) prepare major reports covering the whole Project by consolidating the reports from each province; and (ix) prepare the Project Completion Report.

65. At provincial level, in each province, one PPMU was created under the direct administration of DARD to manage its subproject. In Quang Binh province, in particular, the province assigned Quang Binh IMC to be the stakeholder, and PPMU was under the direct administration of IMC. PPMU's missions are to: (i) improve irrigation management systems; (ii) improve irrigation infrastructure; (iii) procure goods and services using local competitive bidding (LCB); and (iv) operationalize the PPMS, implement resettlement, EMP, GAP, HIV/AIDS awareness program, and EMDP.

66. Project arrangements for implementation are appropriate. Based on experience from previous projects, since TA period, project implementation and management model was designed quite appropriately. Entrusting project provinces with the full responsibility for project implementation, including such steps as investment preparations, technical designing, procurement of goods and works, contract management, construction supervision, land acquisition and resettlement, etc. is not only complied with ADB guidelines but also with national capital construction investment management mechanisms. Therefore, project management and implementation received high cooperation and assistance from central level to provincial level.

[16]Other than domestic consulting services to be used only for a particular subproject.

**f) Conditions and Covenants**

67. Overall, GOV and MARD have met regulations and agreements (Appendix 6) of the Loan Agreement. Counterpart funds were provided properly but sometimes late due to constraints relating to counterpart funds in some provinces. The level of satisfaction of the Loan Agreement conditions and commitments is shown in Appendix 5.

**g) Consultant Recruitment and Procurement**

68. All civil works, goods, and related services were procured in accordance with ADB's *Guidelines on the Use of Consultants (2007)* and *Guidelines for Procurement (2006)*.

69. International consultants were selected by CPO under QCBS. CPO signed a contract with Montgomery Watson Harza (MWH) on 21 May 2008 in agreement to support CPO in project management and implementation. The allocation of international consultants was later than project commencement date in May 2007 because EA had to comply with both GOV's administration and ADB's regulations. International consulting services ended on 31 December 2011. In addition, CPO and PPMUs also hired local consultants to support such tasks as designing, basic surveys, resettlement and environment monitoring, construction supervision, establishment or strengthening WUOs, etc.

70. Civil-work contractor selection was conducted by PPMUs under LCB process. No major issues happened during selection process. Vehicle and equipment packages in the Project only accounted for 0.8%, very insignificantly in comparison with other packages.

**h) Performance of Consultants, Contractors, and Suppliers**

71. International consultants prominently assisted in project implementation. Their results are highly recognized. Total international consultant man-months allocated were 72.64 (26.36 lower than the approved international consultant man-months), and local consultant man-months allocated were 215.73 (9.27 lower than the approved number).

72. Quality of consultants in feasibility study and in design was different (not satisfied at the beginning) but has considerably improved during project implementation. Almost all consulting firms, companies, and organizations were capable to comply with GOV's guidelines and design standards as well as ADB's social and environmental evaluation requirements. Monitoring consultants (construction, environment, resettlement, society) have performed well.

73. Overall, performance of primary civil-work contractors satisfied national standards. At some subprojects' construction sites, cleaning-up was not performed well. Some machines, equipment and materials were left at sites. Performance of local/international providers was satisfactory. There is not any major problem with commissioning, running tests and hand-over of equipment as a part of supply contracts.

**i) Performance of the Borrower and the Executing Agency**

74. MARD and CPO have much experience in ODA project implementation. CPO has mobilized experienced management staff for CPMU. During project implementation, CPO director is also the project director; PPMUs inThanh Hoa, Quang Tri, Thua Thien Hue, Quang Ngai and Binh Dinh provinces were under administration of subproject stakeholders which are DARDs. Basically, staff of PPMUs is experienced management officials arranged by stakeholders.

75. After delay in the beginning, CPMU of CPO has performed its mission well and created an efficient coordination network with PPMUs. CPO/MARD is familiar with project

approach procedures and processes based on previous experience from other ADB-funded water resources projects[17]. In short, performance of the executing agency was evaluated satisfactory, and this is the first water resources project executed by MARD satisfied the timeline proposed in the Loan Agreement.

**j) Performance of the Asian Development Bank**

76. Performance of the ADB was very well evaluated. ADB's Resident Mission in Vietnam has efficiently supported the Project, and was always ready to consult when necessary. Project review mission was conducted in every 6 months and was an effective way in monitoring project in order to ensure the achievement of project's goals.

# III. EVALUATION OF PERFORMANCE

## A. Relevance

77. After years of operation, water resources schemes of subprojects are deteriorated, causing efficiency decrease and agricultural productivity decrease. The reason of deterioration, besides long operation, is from poor management, leading to infrequent maintenance. At project completion, the Project has satisfied government's priorities and ADB's poverty reduction strategy by enforcing agricultural development through rehabilitation of water resources structures along with flood and environmental protection.

78. The Project has created better service providers through capacity building for IMCs, IMEs, and establishment/strengthening of WUOs at provincial level. That contributes to the increase of agricultural productivity and beneficiary's income. The appropriateness of the Project was stressed through rehabilitation of onfarm structures, equivalent to 10% of the total project cost, in which 30.5% of construction performed by WUOs. This shows WUO's participation and autonomy in the Project.

79. Rehabilitation of construction system depends on specific conditions of each province in the project area in order to fully promote strength in agricultural productivity and community services. Project's water resources structures mainly serve for rice irrigation; some particular structures provide additional services, like: sugarcane irrigation (Thach Thanh Subproject), aquaculture (Tra Cau Subproject), fresh water delivery (Thach Thanh, Nam Thach Han and Tra Cau Subprojects), flood protection and environmental improvement (Thuong My Trung, Tay Nam Huong Tra, and La Tinh Subprojects).

80. In relation to the scope of works, Nam Thach Han Subproject cancelled the item of Ben Da Dam expansion[18] (with an estimated cost of $1.35 million) and Tra Cau Subproject cancelled Chop Vung component (with an estimated cost of $5.7 million) because of inefficiency. However, these changes are evaluated minors. Other units of all subprojects remain unchanged. In addition, many new items of works have been added thanks to the project savings of VND515.4 billion originating from differences in the project fund amount between the loan signing date and the project completion date, and also from cancellation of several irrelevant items of works. Added works mostly related to onfarm development in order to satisfy project's mission in agricultural production development and profit increase. In short, the Project was rated satisfactory.

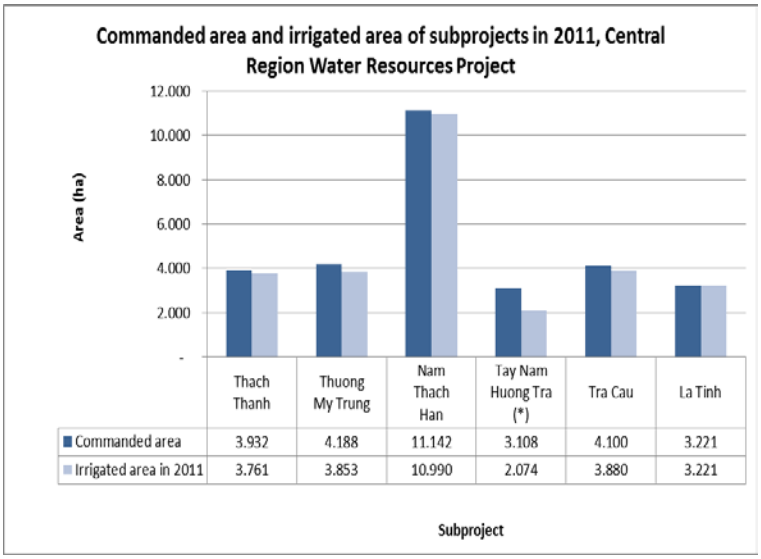
[17] Irrigation and Flood Protection Rehabilitation Project (ADB Loan 1259-VIE), Red River Delta Water Resources Sector (ADB Loan 1344-VIE), and Second Red River Basin Sector Project (ADB Loan 1855-VIE)

[18] RRP, October 2005.

## B. Efficacy in Achievement of Purpose

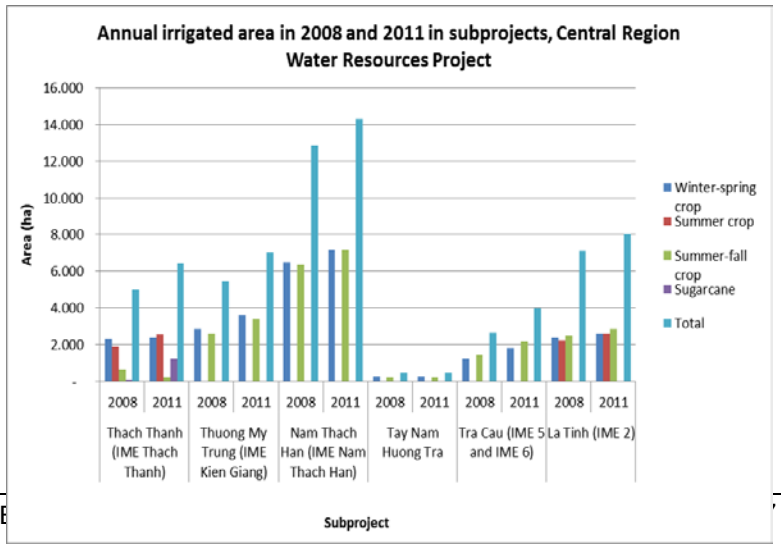
81. Total command area of the Project reduced by 3,025 ha (9%), in which area for rice and other plants reduced by 3,124 ha but aquaculture area increased by 99 ha compared to the time of FS preparations. Command area of Thuong My Trung Subproject remains unchanged. Command area of Thach Thanh Subproject increased by 32 ha (0.8%), Tay Nam Huong Tra Subproject increased by 41 ha (1.3%), and La Tinh Subproject increased by 110 ha (3.2%). Command area of Nam Thach Han Subproject reduced by 2.458 ha (17.5%) due to Ben Da component removal and over-estimation during subproject preparation, and that of Tra Cau Subproject reduced by 750 ha (15%) due to Chop Vung component removal and change in shrimp raising area by Quang Ngai PPC.

82. Irrigated area (for rice and other crops) of subprojects in 2011 was 27,779 ha, equivalent to 93.6% of command area[19]. The lowest irrigated area is in Tay Nam Huong Tra Subproject (66.7%) due to Khe Ngang Reservoir (service area is 1,034 ha) in completion, the second lowest is in Tra Cau Subproject (72.8%). The highest irrigated areas are in La Tinh Subproject (100%), Nam Thach Han Subproject (98.6%), Thach Thanh Subproject (95.7%), and Thuong My Trung (94%) (See the figure). Hence, irrigated area in La Tinh, Nam Thach Han, Thach Thanh Subprojects have exceeded the project target of 95%. However, for precise system efficiency evaluation, it is necessary to have data after 2 – 3 years of operation; data from year 2011 can not fully reflect the Project efficiency.




83. Aquaculture area served with water, in 2011, has achieved 75% of project command area. Nam Thach Han and La Tinh Subprojects have served 100% of command area (1,049 ha); Thach Thanh Subproject has served 53% of command area. Tay Nam Huong Tra and Tra Cau Subprojects have not provided water for aquaculture yet.

84. Total yearly irrigated area for the whole project in 2011 increased by 20.2% compared with that in 2008 (before project). Yearly irrigated area increases the most in Tra Cau (50.6%), Thach Thanh (29.6%), and Thuong My Trung (28.9%) Subprojects respectively. On the other hand, at Tay Nam




[19]Source: PPMU and IMC

Huong Tra Subproject, yearly irrigated area decreases by 1.2% because Khe Ngang Reservoirs under construction.

85. Income from irrigated land (only for rice) in 2011 increased by 25.5% compared to baseline year (2009). The purpose of the Project is, by 2015, to increase income equivalent to or higher than 20% compared to baseline year (2009). In other words, the achievement of 2011 has exceeded the target. The highest increases were achieved in Thuong My Trung (34%), La Tinh (30.7%), and Nam Thach Han (26.7%) subprojects. The lowest increase was in Tay Nam Huong Tra Subproject (14.8%)[20].

86. Poverty standards issued by the government for 2001–2005, 2006–2010, and 2011–2015 periods for rural areas, are VND100,000/capita/month, VND200,000/capita/month, and VND400,000/capita/month[21] respectively. Poverty rate in 2011, from Table 3-1, shows that the highest poverty rate is in Thach Thanh Subproject, followed by Nam Thach Han, Thuong My Trung, La Tinh, Tra Cau, and Tay Nam Huong Tra Subprojects.

**Table 3-1. Poverty rate in subprojects**

| Subproject | Poverty rate in baseline year (2009) (%) | Poverty rate in 2011 |
|---|---|---|
| Thach Thanh | 14.0 | 30.4 |
| Thuong My Trung | 13.2 | 15.8 |
| Nam Thach Han | 13.2 | 17.5 |
| Tay Nam Huong Tra | 8.3 | 9.7 |
| Tra Cau | 12.9 | 14.5 |
| La Tinh | 11.0 | 15.4 |
| **Total** | **12.1** | **17.4** |

*Source:* VICA Consultant

87. Poverty rate in the project area in 2011 is 17.4%[22]. After conversion to Purchasing Power Parity (PPP), the poverty lines for the periods of 2006 – 2010 and 2011 – 2015 have increased by 1.64 and 2 times respectively, in comparison with that in the period 2001 – 2005. The current poverty line of Vietnam is getting close to the international line of $2/day. If cumulative inflation is included, poverty rate under PPP for the period of 2011 – 2015 has increased by 2 times compared with that of the period of 2001 – 2005, and by 1.23 times compared with that of the period of 2006 – 2010. After converting the poverty rate to the baseline year (2009), poverty rate in project area currently increases by 2% compared with baseline year (Appendix 6). Because subprojects have not been completed and fully performed, poverty reduction impact has not achieved. The Project is forecasted to fully achieve its efficiency by 2015.

88. All IMCs were restructured as one-member limited liability companies. All 6 business plans of IMCs were approved and became effective. All 6 O&M plans of IMCs

[20]VICA Consultant. Final Report, June 2012.
[21]Decision No. 1143/2000/QD-LDTBXH on 01 November 2000 by MOLISA about poverty standards for 2001-2006; Decision No. 170/2005/QD-TTg on 08 July 2005 by PM about poverty standards for 2006–2010; and Decision No. 09/2011/QD-TTgon 30 January 2011 by PM about property standards for 2011–2015
[22]VICA Consultant. Final Report, June 2012.

were also approved. Except Tay Nam Huong Tra IME, under Thua Thien Hue IMC (Tay Nam Huong Tra Subproject) with allocated budget for O&M of only 51.4% of planned budget (Khe Ngang Reservoir has not been handed-over), allocated budgets for other O&M Plans in other IMCs/IMEs are higher than 90% of planned budgets. O&M plans are satisfactory.

89. Total WUO members are 111,892 persons. All leaders of newlstrengthened WUOs were voted and selected. Most new/strengthened WUOs/WUAs directly involved in partial onfarm construction on their administration regions. Onfarm structure quality performed by WUOs/WUAs was evaluated in good quality and well met the project schedule.

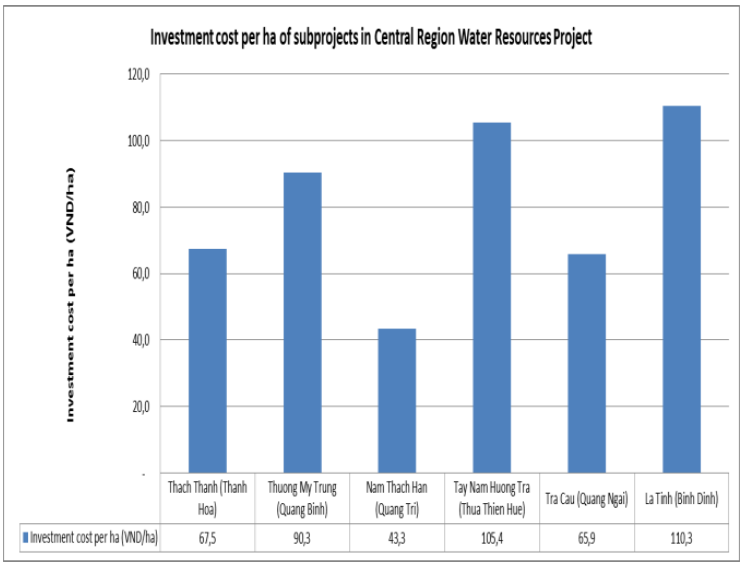
90. WUOs of subprojects provided irrigation services for 100% of irrigated area, except Nam Thach Han Subproject. New/strengthened WUOs currently serve 43% of irrigated area. It is forecasted that IMC and local authority will continue establishing/strengthening WUOs for irrigation service expansion. All WUOs sent members to capacity building, trainings, and field trips to other provinces whose WUOs function efficiently. WUOs were provided with equipment, like tables, computers, closets, etc., for operation with a total cost of VND3.98 billion. Since established/strengthened, WUOs have played important roles in irrigation management of provinces.

91. The Project has organized 360 trainings locally and internationally on different topics, such as: O&M management improvement skills for IMCs/IMEs, gender, HIV/AIDS, onfarm O&M, rice and fresh water fish model, production planning, PIM, onfarm construction techniques… with a total of 15,527 participants with a rate of women of 42.4%. Among organized trainings: 259 classes organized for WUOs with a rate of women of 44.3%, 65 trainings on HIV/AIDS with a rate of women of 47.9%. Overall, project purposes were satisfactorily achieved.

## C. Efficiency in Achievement of Outputs and Purpose

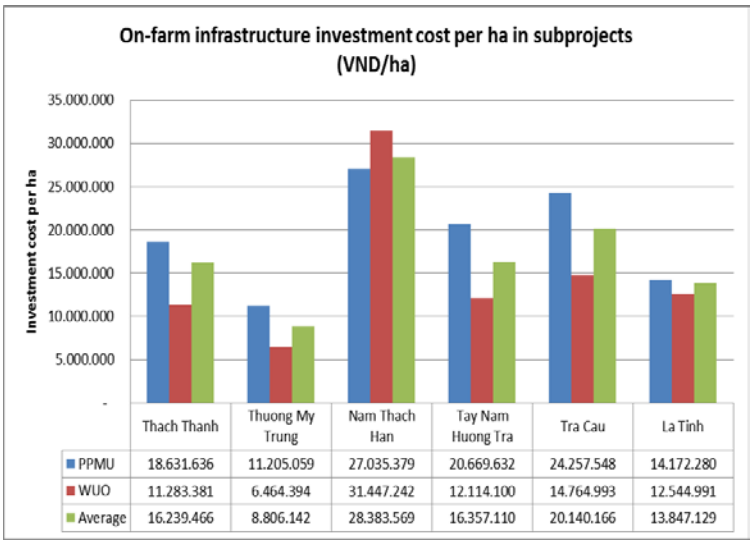
92. The Project comprises Component A – Irrigation Management Systems Improvement and Component B – Irrigation Infrastructure Improvement. The Project was designed in appropriateness of performance capacity of MARD and related provinces. In general, outputs and purpose of the Project were satisfactorily achieved.

93. The average investment cost per ha for the whole Projects VND70 million/ha ($3,358/ha[23]), in which the lowest investment cost per ha is in Nam Thach Han Subproject (VND43.3 million/ha – $2,078/ha), followed by Tra Cau Subproject (VND65.9 million/ha – $3,159/ha), Thach Thanh Subproject (VND67.5 million/ha – $3,237/ha). The highest investment cost per ha is in La Tinh Subproject (VND110.3 million/ha – $5,287/ha) and Tay Nam Huong Tra Subproject (VND105.4million/ha – $5,055/ha) (Figure).




[23]Exchange rate: US$1 = VND 20,860

94. Data about investment cost per ha for onfarm infrastructure in the subprojects shows that the average investment cost per ha for onfarm development in the entire Project is VND15.8 million/ha ($767/ha). The lowest investment cost per ha for onfarm infrastructure is seen in Thuong My Trung Subproject (VND8.8 million/ha – $427/ha) followed by La Tinh Subproject (VND13.9 million/ha – $675/ha), and Thach Thanh Subproject (VND16.2 million/ha – $786/ha). The highest investment cost per ha for onfarm infrastructure are in Nam Thach Han (VND28.4 million/ha – $1,379/ha) and Tra Cau (VND20.1 million/ha – $976/ha) Subprojects. Therefore, investment cost per ha for onfarm in frastructure in Nam Thach Han Subproject is 3 times higher than that in Thuong My Trung Subproject. It was surprised that, in Nam Thach Han Subproject, investment rate for onfarm development for the works conducted by WUOs was higher than that conducted by PPMU. This result shows that the efficiency of investment on onfarm infrastructure of Nam Thach Han Subproject is low (Appendix 2).




| | Thach Thanh | Thuong My Trung | Nam Thach Han | Tay Nam Huong Tra | Tra Cau | La Tinh |
|---|---|---|---|---|---|---|
| PPMU | 18.631.636 | 11.205.059 | 27.035.379 | 20.669.632 | 24.257.548 | 14.172.280 |
| WUO | 11.283.381 | 6.464.394 | 31.447.242 | 12.114.100 | 14.764.993 | 12.544.991 |
| Average | 16.239.466 | 8.806.142 | 28.383.569 | 16.357.110 | 20.140.166 | 13.847.129 |

95. Except Nam Thach Han Subproject, investment cost per ha for onfarm structures performed by PPMUs is normally 11.5% to 42.3% higher than that performed by WUOs. Particularly, at Thuong My Trung Subproject, WUO-performed investment cost per ha for onfarm infrastructure was only VND6.5 million/ha, equivalent to 40.9% of the average investment cost per ha for onfarm structures for the entire Project. In other words, onfarm investment efficiency in Thuong My Trung Subproject is very high. These results also demonstrate that assigning WUOs to do onfarm development works is an appropriate solution that has led to high investment efficiencies.

96. The economic efficiency of subprojects was recalculated by the approaches described at the time of appraisal. Results show that the Economic Internal Rate of Return (EIRR) is highest in Tra Cau Subproject (25%), followed by Thuong My Trung (21%), Thach Thanh (18%), La Tinh (18%) Nam Thach Han (16%) and Tay Nam Huong Tra (13%) Subprojects. These EIRR figures show a high economic efficiency of the investment (Appendix 7).

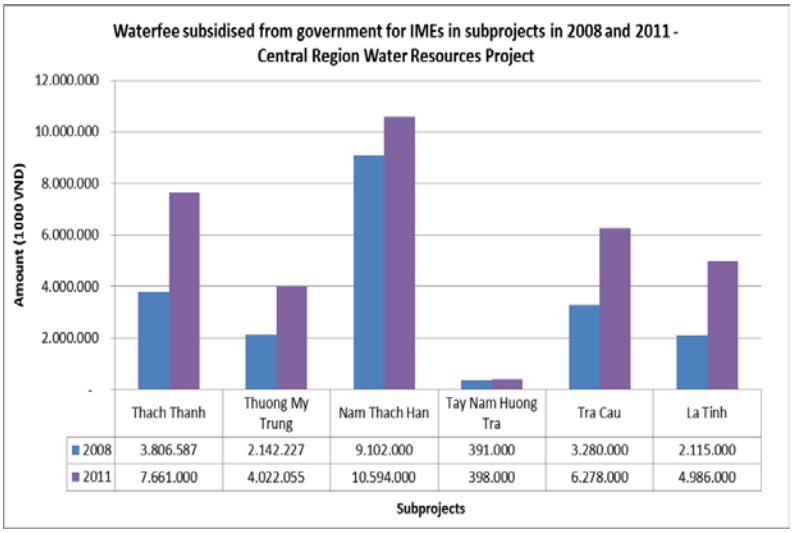
## D. Preliminary Assessment of Sustainability

97. Vietnam has a long history in maintaining water resources structure operation, even in disadvantage situations like annual floods or wars. The Project directly contributed to sustainability through O&M planning, PIM, and irrigation mapping. It is unsure if the IMCs (currently subsidized by the government) receive enough budgets for their operations, but at least the IMCs make an impression that they are sufficiently financed to maintain the operation of irrigation and drainage structures.

98. What is an optimal mechanism for operation and management cost will still be a topic for further discussions between the government and international partners. More importantly, at provincial level, the operation of water resources structures is very

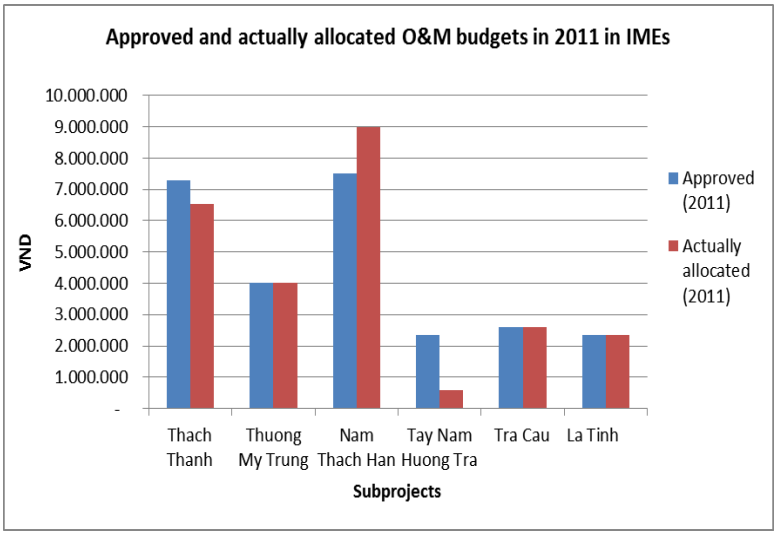
important to local people's life, and is still a pressure on local authorities to keep them working.

99. In accordance with Decree 115/2008/NĐ-CP, the government has paid water fees for farmers. Data on this assistance from the state budget for IMEs in 2008 and 2011 show that this budget subsidy has increased in all subprojects, mainly because of increase in water fees (other sources are not considerable) in association with increase of service area. Except the case in Tay Nam Huong Tra Subproject where the budget subsidy was not considerably increased (1.8%) because the service area has not increased, the other subprojects have seen a quite high level of increase in the state subsidy, namely 135.7% in La Tinh Subproject, 101.3% in Thach Thanh Subproject, 91.4% in Tra Cau Subproject, and 87.5% in Thuong My Trung Subproject. The increase of revenue from water fees (subsidized by the State budget) has helped to ensure operations in IMEs (See figure).




100. O&M plans prepared by IMCs were all approved by relevant PPCs. IMEs in Thuong My Trung, Tra Cau, La Tinh Subprojects received the 2011 O&M budget in the same amount as approved. However, the IMEs in Thach Thanh, Tay Nam Huong Tra Subprojects only received 89.7% and 24.6% of the approved budget, respectively. The O&M budget allocated for Nam Thach Han Subprojects 19% higher than the approved budget. Ensuring a good O&M budget at Thuong My Trung, Nam Thach Han, Tra Cau, and La Tinh Subprojects will contribute to long term and stable operations of the structures. Allocated budget for Tay Nam Huong Tra Subproject was very much lower than the approved budget because Khe Ngang Reservoir has not been handed-over for operations (See figure).

101. Due to salary reform of the government in recent years and due to labour increases in number of employees in some IMEs to prepare for hand over and operations after project completion, the salary cost has considerably increased (compared between 2008 and 2011). On average, that labour cost increase at IMEs is 39.8%. The highest increase is in Tay Nam Huong Tra Subproject (101.6%), followed by La Tinh (68.3%), Nam Thach Han (65.7%), and



Thuong My Trung (56.2%) Subprojects. Increase in labour cost helps ensure operations and sustainability of structures. However, it is also necessary to assess labour-use efficiency in order to ensure a good balance in budgeting and giving enough funds for frequent O&M and minor repairs.

102. Financial reports from IMEs show that, within 2011, all IME's accounts in subprojects were well-balanced.

103. At provincial level, new/strengthened WUOs have income from onfarm water fees. Due to the increase in service area, the amount of money from onfarm water fees has increased by around 30% on average in comparison with that before the Project. Most of WUOs can be self-financing, and many are profitable; for example, in Thuong My Trung Subproject, total net profit of 24 new/strengthened WUOs has increased from VND2.1 billion in 2010 to VND3.5 billion in 2011, equivalent to increase by 67.5%, in which the WUO having the highest net profit is Tuy Loc WUO with the amount of VND911 million.

104. WUOs, conducting onfarm O&M, received income from water frees equivalent to about 6% of WUOs' total cost. Among costs in WUOs, labor cost and power cost are respectively equivalent to 50% and 13% of the total cost. Overall, preliminary assessment of outputs and outcomes rates the project sustainable.

## E. Environmental, Sociocultural, and Other Impacts

105. The Project has a considerably positive impact on environment and socio-culture: (i) Community participation improvement in smallsize construction planning; (ii) Increasing income through agricultural productivity increase; (iii) Protecting people from floods; (iv) Fresh water delivery to residential area; (v) Local transportation improvement; (vi) Environmental condition improvement; and (vii) Water free reduction.

106. Initial Environmental Examination (IEE) for subprojects, summarized IEE shorten for the Project, and Environmental Management Plan (EMP) for each subproject were prepared and approved in compliance with ADB's requirements.

107. PPMUs have recruited environmental monitoring consultants to conduct 42 EMP monitoring missions during construction at 6 subprojects. Supervising frequency is 3 month/time on average; sampling, conservation, analysis and reporting comply with Vietnamese current regulations[24]. Results show environmental requirements and criteria have been satisfied.

108. Environmental, socialcultural impact evaluation results were rated satisfactory. The Project has considerably improved environmental condition at the project area, e.g. ecosystem improvement at Hac Hai lagoon – Thuong My TrungSubproject. The Project EMP has described fully and clearly potential impacts during construction as well as mitigation solutions as a basis for relevant parties (environmental monitoring consultants, and construction supervision consultants, contractors) to implement and comply with the ABD's safeguard policy and the GOV's regulations. Overall, the Project has no considerably negative environmental impact.

[24]National technical norms on ambient air quality for residential areas *(QCVN 05:2009/BTNMT; QCVN 06:2009/BTNMT)*, Standards on levels of noise *for public and residential areas (TCVN 5949 - 1995); Vibration caused by factories, construction (TCVN 6962 - 2001); QCVN 08:2008/BTNMT on surface water quality control and QCVN 08:2008/BTNMT for ground water*.

109. Total number of beneficiaries in Project area is 147,389 households (about 600,000 people) in 86 communes and districts in 6 provinces (Thanh Hoa, Quang Binh, Quang Tri, Thua Thien Hue, Quang Ngai, and Binh Dinh). According to the monitoring report of the consultant doing baseline survey – VICA, rice production in 2011 in all subprojects increased, contributing to 20.7% yearly increase in the whole project area, compared with that in the baseline year (2009). This is the result from increase in productivity, area, and the cropping intensity. As a result, income from irrigated land is VND27.8 million/ha, increases by 25.5% in comparison with that in 2009[25].

110. In terms of social perspectives, during implementation, the Project complied with ADB's safeguard and GOV's resettlement policies. The Project has organized community consultations, conducted Detailed Measurement Survey (DMS), inventory making and valuation of affected assets, disclosed information, after completion of detailed designs, and updated 8 RPs which were then approved by ADB, between April 2009 and January 2010.

111. The Project has affected 13,372 households, in which 27 relocated (0.2% of affected households (AHs)), 386 lost more than 10% of agricultural land (3% of AHs), and 12,959 inconsiderably affected. All 6 subprojects have completed compensation for AHs. Total compensation from provincial budget is VND106,239 million, equivalent to 5% total investment and 26% counterpart fund from provinces. (Table3-2).

**Table 3-2.Summary of Resettlement**

| Subproject | Affected Households | | | | Affected land area | | Compensation (million VND) |
|---|---|---|---|---|---|---|---|
| | Total | Details | | | Permanently acquired ($m^2$) | Temporarily Borrowed ($m^2$) | |
| | | Relocated | Agricultural land lost ≥10% | Minor affected | | | |
| Thach Thanh | 2,443 | 11 | 191 | 2,241 | 569,934 | 2,459 | 13,790 |
| Thuong My Trung | 3,380 | 0 | 36 | 3,344 | 2,166,921 | | 26,531 |
| Nam Thach Han | 509 | 0 | 0 | 509 | 146,859 | 144,817 | 5,118 |
| Tay Nam Huong Tra | 2,419 | 14 | 30 | 2,375 | 766,776 | | 30,000 |
| Tra Cau | 2,392 | 0 | 0 | 2,392 | 399,223 | 168,760 | 17,800 |
| La Tinh | 2,229 | 2 | 129 | 2,098 | 245,399 | 45,285 | 13,000 |
| **Total** | **13,372** | **27** | **386** | **12,959** | **4,295,112** | **361,321** | **106,239** |

112. All complains were resolved immediately at communal level. Complains are mostly about the accuracy of DMS results, and on that basis, corrections and adjustments were made by the DMS teams. Until 30 June 2012, MARD and ADB had not received any complain or claim on resettlement and compensation.

113. Through PIM development, water users' capacity building was along with the establishment/strengthening of WUOs. Beneficiaries are more connected in basic irrigation management activities, and then gradually control onfarm structure repaired/rehabilitated through O&M, and onfarm water fee contribution.

114. Results show that there is no beneficial distinction between female-headed and male-headed households. At Project communes, single-female-headed households frequently receive community sharing in irrigation water supply (especially when irrigation

[25]Final Report, June 212, VICA consultant.

water is limited) or finding onsite jobs (masonry workers or cooking for workers at construction sites). Construction and rehabilitation of water resources structures help create jobs for local labors, including poor women, remarkably improving their living[26].

115. The rate of women participating in management and inspection boards (leaders) of WUOs is only 3.1%; woman staff in administration of WUOs/WUAs is 51.7%; rate of irrigation women is 1.3%. On average, rate of women participated in managing WUOs/WUAs and water delivery is 8.2%. The rate of women participated in management and operation at WUOs is very limited because of unusual working time and hardwork. However, impact on women is considered positive, especially on flood reduction and water delivery improvement in dry seasons.

116. Number of ethnic minority people in the Project area is few, with the exception of Thach Thanh Subproject where the rate of Muong ethnic people is about 85%. According to VICA's survey report, there is no distinction between Kinh and ethnic minority people. Water resources structures have contributed to: irrigation water increase and flood protection for regions, life improvement, agricultural economic development, and poverty reduction.

117. Overall, the Project brings positive impact to environment, sociocultural, and is rated satisfactory.

# IV. OVERALL ASSESSMENT AND RECOMMENDATIONS

## A. Overall Assessment

118. The Project has achieved proposed goals/outcomes as planned. Goals and outcomes are all achieved, so that the Project is evaluated "successful".

## B. Lessons Learned

### General

1. The Project was simply and clearly designed to be appropriate with implementation capacity of MARD and PPMUs. The Central Water Resources Project is considered the most successful ADB-financed water resources projects because this is the first Project to complete on time and meet all requirements. The Project can be used as a model for upcoming CPO-managed projects.

2. The Project has a very slow beginning. Implementation progress during the first 2 years is not considerable. At that time, ADB has rated the Project "Risky". Amendments to the Loan Agreement and management capacity building have helped the Project complete on time.

3. International consultant mobilization was late. International assistant consultants were not mobilized until nearly one year after loan effectiveness in June 2007. At the beginning, the Project was delayed partly because of no international consultants and time for them to catch up with the implementation progress. This also affected their assistance to CPO and PPMU.

[26]Final Report, June 2012, VICA consultant.

4. In general, consultant selection and mobilization was slow. The baseline survey was conducted in 2009 while the Project had started in 2007. Hence, baseline survey data could not reflect status of project areas before the project. In addition, review missions (twice a year) by consultants in June and October were basically inappropriate because as usual, there would not be any data about ongoing cropping activities. Right from the beginning of the baseline survey, there were some inconsistencies among the parties in understanding and interpreting meanings of monitoring indicators. Thus, survey data was not very much useful for PPMS and project monitoring and evaluation.

5. CPO and PPMUs do not have PPMS specialists. The Project's PPMS still operates at trial status. No data was provided to CPO by PPMU via this system.

6. Different capacities in ODA project implementation in different project provinces led to many constraints during the subproject implementation. PPMUs do not understand ADB's requirements and loan conditions, especially safeguard policies. This required CPO to strengthen cooperation with PPMUs, and to conduct necessary trainings, workshops on the basis of collaboration among PPCs, DARDs and PPMUs in order to achieve Project's requirements. Training should be conducted as soon as possible during project implementation phase. In addition, the Project has used the leading approach to define the best performing province as an example to motivate the others. This approach is particularly useful for Component A.

7. Coordination of ADB, CPO, PPMU, and international consultants in project implementation is very important. At first, such the coordination was not strong and efficient. Afterward, through frequent meetings, responsibilities of each partner for time-bound actions were clearly defined, which helped accelerate the progress.

8. Frequent monitoring and evaluation of donors and stakeholders are necessary not only for performance but also for adjustments during project implementation, in order to ensure quality and implementation process.

**Component A – Irrigation Management Systems Improvement**

1. This is the most important and challenging component of any project, and needs special attention.

2. PPMUs were not prepared to meet institutional and organizational requirements for component A.

3. CPO and consultants especially paid attention to and organized trainings in order to meet ADB's requirements relating to business plans, O&M plans, etc.

4. The Project must have onfarm development plans and mechanisms right at the beginning, and encourage WUOs to construct onfarm structures, create jobs, and help people improve their living.

**Component B – Irrigation Infrastructure Improvement**

1. Some provinces allocated counterpart funds quite late, resulting to implementation delay.

2. Vietnamese standards are quite clear and strictly followed by design consultants. However, in ODA projects, these designs must be evaluated independently. In case of this Project, independent evaluation of design was not done, leading to some problems during implementation. Particularly, Chop Vung component of Tra Cau Subproject had been included in PPTA and RRP but it was then always questioned by the following review missions. Therefore, the Project had to conduct supplementary studies within nearly two years before ADB decided not to finance Chop Vung. The subproject had to be restructured.

3. It is found that the current designs for dams do not mention any monitoring equipment or dam safety related issues.

## C. Recommendations

1. GOV and ADB need more efforts to minimize delays at the beginning of the Project.

2. CPO and consultants need to early identify different trainings, study tours needs for PPMUs and conduct a feasible plan to satisfy these needs. It is necessary to conduct trainings at the beginning of the project so that PPMUs can achieve project requirements and goals.

3. PPMUs need to fully understand requirements and conditions of donors. CPO needs to maintain communication with PPMUs in order to interpret and give guidance on the donors' requirements.

4. CPO must maintain their collaboration with PPMUs, ensuring that PPMUs understand conditions of donors and the project.

5. Design must be appraised carefully before the project to avoid Chop Vung's case.

6. It's necessary to have dam safety, monitoring equipment in all future dam designs as well as an Emergency Response Program.

7. Future irrigation system designs should include water gauging equipment and facilities.

8. Experience and lessons from Central Region Water Resources Project need to be applied in coming projects.

# APPENDICES

# Appendix 1. Amendments to the Loan Agreement between the Socialist Republic of Vietnam and the Asian Development Bank

(The letter from ADB on 20/9/2009)

**In Schedule 6 – Executing of Project and Operational of Project Facilities; Other Matters,**

(i) paragraph 5, shall be replaced as follows:

Regulatory Framework

5. The Borrower shall adopt, within thirty-six months of the Effective Date, necessary regulatory framework with revised institutional arrangements for management of irrigation systems at provincial and commune levels to enable achievement of the Project objectives more effectively. In particular, the Borrower shall take necessary measures to restructure IMCs, WUOs and WUOs and transfer the management of irrigation assets to IMCs, and WUOs/WUOs, as appropriate. The restructuring of IMCs shall include the establishment and full implementation of (a) technical and economic norms, including the quantities and assessed value of water provided which will depend on the size of area irrigated the crops being irrigated and the season in which the irrigation takes place; and (b) PPC-IMC contracts using the order-placing mechanism.

(ii) In paragraph 6, the words “water pricing strategy” shall be deleted.

Business Plans

6. The Borrower shall, through MARD and the PPCs, ensure that each IMC develops its own business plan for achieving financial sustainability through organizational changes. Each IMC shall define its key functions, services, equipment and skills requirements, budgets, information flows, accounting procedures, performance monitoring, water pricing strategy, and financing plan. Business plans shall set out annual targets and milestones the achievement of which shall trigger release of Project funds to IMCs and beginning of civil works. Each business plan shall need to be approved by a respective PPC, and be satisfactory to ADB.

(iii) paragraph 7 shall be replaced as follows:

WUGs/WUAs

7. The Borrower shall ensure through MARD and PCCs that each WUG under the Project is set up as legal entity on the basis of a combination of hydraulic and administrative boundaries. WUGs shall be set up to ensure official representations of WUGs for canal serving multiple WUGs to operate and maintain the canals effectively, including fair sharing of water resources from the canal. At least 40 percent of participants of WUGs or WUAs shall be women.

(iv) the heading “water Fees” and paragraph 8 shall be replaced as follows:

Financial Viability

8. The Borrower shall ensure through MARD and the PPCs that, by end of Project implementation, funding for operation and maintenance is determined and established in accordance with plan technical and economic norms issued by MARD to achieve and maintain the financial viability of IMCs and WUOs/WUOs (i.e., full funding of O&M costs), subject to compliance with the Borrower’s applicable laws and regulations.

# Appendix 2. Performance of Component A – Irrigation Management Systems Improvement

## 1. Business Plan

### 1.1 Business Plan Approval

Section 6 of schedule 6 to the Loan Agreement states that: "the Borrower shall ensure through MARD and PPCs that each IMC develops its own business plan for achieving financial sustainability through organizational changes. Each IMC shall define its keyfunctions, services, equipment and skills requirements, budgets, information flows, accounting procedures, performance monitoring, water pricing strategy, and financing plan. Business plans shall set out annual targets and milestonesthe achievement of which shall trigger release of Project funds to IMCs and beginning of civil works. Each business plan shall need to be approved by a respective PPC, and be satisfactory to ADB."

Upon the regulation above, civil works (Component B of the project, equivalent to nearly 80% of total funds) shall not be implemented unless IMCs' business plans, prepared in accordance with project requirements, are approved by PPCs.

About two (02) years after the Loan Agreement with ADB, GOV issued Decree 115/2008/NĐ-CP on 14 November 2008 about amendments to Decree 143/2003/NĐ-CP on detailed implementation of several articles of the Ordinance on Irrigation Works Operation and Protection. Decree 115 has a policy of water fee reduction for farmers, and became effective on 01 January 2009.

Decree 115 is an important legal document directly controlling agricultural and rural development activities, and directly impact farmers' benefits and responsibilities (70% of population). The policy of water fee reduction for farmers in Decree 115 is an important policy of Vietnam. However, the Loan Agreement contains some inappropriate regulations to Decree 115.

In compliance with Decree 115 and for on-time project implementation, the Borrower (Vietnam) has met ADB's representatives for the regulation's policy explanation and clarification. Thus, on 20 October 2009, ADB issued a document reporting amendments to the Loan Agreement for Vietnamese economic suitability (Appendix 06).

During discussion between ADB and GOV on The Loan Agreement's amendments suited to Decree 115, IMCs were supported by MWH consultants and related agencies from MARD, provinces on Business Plans with contents in accordance with current situations and ADB's regulations.

As soon as the Loan Agreement was amended (with some regulations), and the contents of business plans have been agreed by ADB, PPCs have approved IMCs' business plans whose main contents are as follows: (i) set out a time-bound program for achieving financial sustainability through structural and other changes to the organization and staffing; (ii) describe key functions, service requirements, equipment and skills, budgets, information flows, accounting procedures, performance monitoring, and financing plans; (iii) include support for the formation and strengthening of WUOs and Water User Associations (WUAs)—umbrella associations of WUOs—that can be contracted for O&M previously done by IMCs; and (iv) set out annual targets and milestones.

**Table 1-1** below outlines business plan approvals by PPCs. Business plans were prepared by IMCs in accordance with Component A's requirements and each province's

current situations, and were approved by PPCs on the basis of agreement between ADB and MARD.

**Table 1-1. Province's Business Plan Approval**

| No. | Subproject | Province's Approval | |
|---|---|---|---|
| | | Decision | Approval date |
| 1 | Thach Thanh, Thanh Hoa Province | 1331/QĐ-UBND | 5 May 2009 |
| 2 | Thuong My Trung, Quang Binh Province | 1126/QĐ-UBND | 28 May 2009 |
| 3 | Nam Thach Han, Quang Tri Province | 830/QĐ-UBND | 11 May 2009 |
| 4 | Tay Nam Huong Tra, Thua Thien Hue Province | 1224/QĐ-UBND | 18 June 2009 |
| 5 | Tra Cau, Quang Ngai Province | 870/QĐ-UBND | 26 May 2009 |
| 6 | La Tinh, Binh Dinh Province | 1299/QĐ-UBND | 5 June 2009 |

**Results**

**a) Services**

IMCs mostly focus on irrigation services. Some IMCs provide other services like water delivery, aquaculture. However, revenue from these services only accounted for 0.5-8% of total revenue. Activities, like business plan implementation (in accordance with project requirements), water fee reduction policy, WUOs establishment and strengthening, and O&M, were started in 2009.

Results of business plan implementation were evaluated on the basis of comparison between 2009 (non-project year) and 2011 (project year). Irrigation service's results of 6 PPMUs are as follows:

**Table 1-2. Irrigated area of each subproject**

| No. | Subproject | Irrigated area (ha) | Command area (ha) | Irrigated area (ha) | % Irrigated area |
|---|---|---|---|---|---|
| 1 | Thach Thanh | 4,022 | 3,932 | 3,761 | 95.7% |
| 2 | Thuong My Trung | 4,188 | 4,188 | 3,853 | 92.0% |
| 3 | Nam Thach Han | 13,867 | 11,142 | 10,990 | 98.6% |
| 4 | Tay Nam Huong Tra | 3,167 | 3,108 | 2,074 | 66.7% |
| 5 | Tra Cau | 4,250 | 4,100 | 3,880 | 94.6% |
| 6 | La Tinh | 3,947 | 3,521 | 3,521 | 100% |
| | **Total** | **33,441** | **30,141** | **28,079** | **93.6%** |

(*Source:* Aide Mémoir of the Final Review Mission (15-27 June 2012)

The project helped increase irrigated area (by 23.7% on average) and irrigation quality for all 06 subprojects.

Once irrigation system is completely handed-over to IMCs or transferred to WUOs, 100% of irrigation area will be efficiently irrigated. The increase of irrigated area and quality will lead to increase in revenue for IMCs. Statistically, average income has increased by 14.1% compared with that before the project, in which Thach Thanh increased by 44.7%

(highest) and La Tinh increased by 1.2% (lowest).

**b) Management Organization**

Irrigation Management System includes 02 management organizations, including:

- State Enterprise (Irrigation Management Company-IMC): IMCs contain Irrigation Management Enterprises. Subprojects are under administration of IMEs.
- WUOs are clients of IMCs as well as direct water suppliers for farmers.

After being restructured as one-member limited liability companies functioning under Enterprise law, IMCs have gained more autonomy and had clearer responsibilities.
The project has strengthened and established 136 WUOs (details enclosed at the end of the report).

**c) Financing Plans**

Financing plans of IMCs in 2011, in comparison with 2009, are shown in the following table.

**Table 1-3. Results of Financial Activities of IMCs in 2011**

| No. | Description | Thach Thanh | Thuong My Trung | Nam Thach Han | Tay Nam Huong Tra | Tra Cau | La Tinh |
|---|---|---|---|---|---|---|---|
| 1 | Percentage of revenue in 2011 vs. 2009 | + 44.7 | + 17.6 | + 2.3 | - 2 (Low) (*) | + 2.8 ( IMC + 1.3) | + 1.2 (IMC +5.7) |
| 2 | Percentage of Expense vs. Revenue | 84 | 100 | 81 | 145 (Exp. > Rev.) | 68.8 | 66 |
| 3 | Percentage of expense for salary vs. total cost | 53.3 | 50 | 56.5 | 39.4 | 56 | 51 |
| 4 | Percentage of frequent maintenance cost vs. total cost | 4.5 | 9 | 9.4 | 34.2 | 13 | 12 |

(*) Cost for natural disaster damage restoration is more than that cost in 2009

After nearly 3 years, IMCs, WUOs have been strengthened and improved; irrigation headworks, canal system were maintained and upgraded. However frequent maintenance cost in 2011 was low (<20% of the total cost while allowed expense would be >20% of the total cost) because, as IMCs said, recently upgraded constructions did not need such frequent maintenance cost. Hence, money was not spent properly (4.5-10% of the total cost). After project completion, frequent maintenance cost needs to be increased.

Irrigation quality improvement, area expansion, and organizational management improvement at both levels (Enterprise level and WUO level) were good solutions in increasing revenue for IMCs as well as one good condition to strengthen project sustainability.

**d) Capacity Building**

The project reserved a suitable budget for capacity building for staff, technicians of IMCs, WUOs in irrigation management, agricultural/aquacultural extension, etc.

The project has organized 360 trainings, workshops, etc. for over 15,000 participants, with the rate of women of 42.5%. WUOs sent 4,598 participants with the rate of women of 46%. Details are in Table 1-4 below.

**Table 1-4. Training Results**

| No. | Training Organizations | Number | Participants | |
|---|---|---|---|---|
| | | | Total | Woman (%) |
| | **CPO and MWH** | **52** | **1,981** | |
| 1 | CPO | 24 | 988 | N/A |
| | MWH consultants | 28 | 993 | N/A |
| | **Thach Thanh** | **51** | **2,797** | **44** |
| 2 | PPMU | 35 | 2,079 | 40 |
| | PIM consultants | 16 | 718 | 54 |
| | **Thuong My Trung** | **51** | **2,291** | **38** |
| 3 | PPMU | 33 | 1,285 | 29 |
| | PIM consultants | 18 | 1,006 | 49 |
| | **Nam Thach Han** | **100** | **4,324** | **51** |
| 4 | PPMU | 68 | 3,012 | 53 |
| | PIM consultants | 32 | 1,312 | 46 |
| | **Tay Nam Huong Tra** | **51** | **1,962** | **28** |
| 5 | PPMU | 33 | 1,222 | 16 |
| | PIM consultants | 18 | 740 | 47 |
| | **Tra Cau** | **29** | **1,206** | **49** |
| 6 | PPMU | 18 | 526 | 54 |
| | PIM consultants | 11 | 680 | 41 |
| | **La Tinh** | **26** | **966** | **35** |
| 7 | PPMU | 18 | 646 | 35 |
| | PIM consultants | 8 | 320 | 36 |
| | **Total** | **360** | **15,527** | **42.4** |

## 2. Operation and Maintenance Plan

### 2.1 Approval of Operation and Maintenance Plan

An Operation and Management (O&M) plan is one part of a business plan. After project completion, irrigation infrastructure will be handed-over to IMCs for management and operation. O&M annual cost is so big that IMCs must not only have a stable income from irrigation, water supply services, etc., but also need support from local authorities. Due to O&M plan's importance, the project requires O&M plans to be approved by PPCs in order to be funded annually.

Table 2-1, below outlines O&M plan approvals by PPCs. These plans were prepared by provincial IMCs in accordance with component A's requirements and current situations of each province. O&M plans were approved by PPCs in agreement with MARD and ADB.

**Table 2-1. O&M Plan Approvals**

| No. | Subproject | Approval of Provincial People's Committee | |
|---|---|---|---|
| | | Decision | Approval date |
| 1 | Thach Thanh | 4545/QĐ-UBND | 17 December 2010 |
| 2 | Thuong My Trung | 3408/QĐ-UBND | 9 December 2010 |
| 3 | Nam Thach Han | 1287/QĐ-UBND | 20 July 2010 |
| 4 | Tay Nam Huong Tra | 385/QĐ-UBND | 10 June2010 |
| 5 | Tra Cau | 46/QĐ-UBND | 28 September 2010 |
| 6 | La Tinh | 948/QĐ-UBND | 06 May 2010 |

## 2.2 Results

### a) Water Use Plan

Annual, seasonal Water Use Plan (WUP) was prepared by IMCs on the basis of water sources and demands. The average amount of water for irrigation was 10,000 – 12,000 $m^3$/ha/crop, 6-7 times/crop; timely water delivery for irrigated area contributed to production increase (50-200 kg/ha/crop), crop stability (5 ton/ha/crop on average), as well as water quality and cost reduction (management (esp. O&M), electricity, salary, etc.).

### b) Setting and completing technical-economic standards

Technical-economic standards have been being completed by IMCs for official authorities' approval. Currently, almost all IMCs are using their own standards. These standards limit legitimacy and are not suitable for actual production. Some local provinces have set standards in accordance with MARD's regulations; however expenditure on standard has not been carried out because of financial support policies.

### c) Operation

Most schemes have irrigation operation processes prepared by design agencies. Reservoir operation process was required to be approved by the authority.

### d) Irrigation Management Transfer

Most civil works (new or upgraded) in subprojects were recently completed, so that irrigation management hand-overs are still in progress.

### e) Information system, management equipment

The project has purchased stationery, management equipment for IMCs and WUOs, (details are shown in Table 2-2).

**Table 2-2. Cost of equipment for IMCs and WUOs**

| No. | Subproject | Unit | Cost (VND million) | | |
|---|---|---|---|---|---|
| | | | Total | ADB | Counterpart |
| 1 | Thach Thanh | IMC | 1,050 | 945 | 105 |
| | | WUO | 540 | 486 | 54 |
| | | **Total** | **1,590** | **1,432** | **158** |
| 2 | Thuong My Trung | IMC | 1,748 | 1,573 | 175 |
| | | WUO | 760 | 684 | 76 |
| | | **Total** | **2,508** | **2,257** | **251** |
| 3 | Nam Thach Han | IMC | 684 | 616 | 68 |
| | | WUO | 1,595 | 1,436 | 160 |
| | | **Total** | **2,279** | **2,051** | **228** |

| No. | Subproject | Unit | Cost (VND million) | | |
|---|---|---|---|---|---|
| | | | Total | ADB | Counterpart |
| 4 | Tay Nam Huong Tra | IMC | 783 | 705 | 78 |
| | | WUO | 143 | 129 | 14 |
| | | **Total** | **926** | **833** | **93** |
| 5 | Tra Cau | IMC | 841 | 757 | 84 |
| | | WUO | 591 | 532 | 59 |
| | | **Total** | **1,432** | **1,289** | **143** |
| 6 | La Tinh | IMC | 415 | 374 | 42 |
| | | WUO | 346 | 311 | 35 |
| | | **Total** | **761** | **685** | **76** |
| **TOTAL** | | IMC | 5,521 | 4,969 | 552 |
| | | WUO | 3,975 | 3,578 | 397 |
| | | **Total** | **9,496** | **8,547** | **949** |

### *3.* Onfarm Development Plan

For an efficient onfarm development in each province, MARD issued a document (No. 323/TCTL-QLCTTL) on 13 July 2010 about onfarm construction planning. The document states that participating people, through their organizations, play main roles in the onfarm development planning, construction, and financial management. This helps increase jobs, incomes for people and WUOs. Local provinces have built their onfarm development plans in accordance with MARD's guidelines. Subprojects' plans were agreed and approved by ADB to fund 85% of the total civil works loan.

Onfarm construction implementation in subprojects was carried out through participatory processes. In particular, WUOs involved in discussions about: (i) project proposal; (ii) onfarm construction planning; (iii) exploration and design; and (iv) onfarm management and construction process.

135 WUOs involved in onfarm construction under their own management; others partnered with local construction companies. During construction, all WUOs have participated in:

- Monitoring: they have established construction monitoring committees with participation of: WUO management unit, irrigation staff, people's representatives; and assigned tasks clearly at sites during construction;
- Financial management: expenses were clear with participation of community monitoring committees;
- Acceptance, hand-over: checking and evaluating works for hand-over with participation of technicians and people's representatives.

Results: Rehabilitated and constructed 652 canals with a length of 280,772 m; constructed hundreds of structures in 86 communes, towns in project area; Total onfarm irrigated area is 13,709 ha. Details are in Table 3-1 and Table 3-2 below.

**Table 3-1. Summary of Onfarm Development**

| No. | Subproject | Irriga-tion area (ha) | Num-ber of canals | Service zone (commune/WUO) | Length (m) | Cost (VND million) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Total | ADB | Count-erpart |
| 1 | Thach Thanh | 2,209 | 124 | 16 | 62,959 | 35,867 | 30,487 | 5,380 |
| 2 | Thuong My Trung | 4,395 | 45 | 30 | 28,545 | 38,703 | 32,898 | 5,805 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3 | Nam Thach Han | 2,123 | 223 | 65 | 61,714 | 60,244 | 51,208 | 9,037 |
| 4 | Tay Nam Huong Tra | 1,268 | 119 | 14 | 41,199 | 20,736 | 17,626 | 3,110 |
| 5 | Tra Cau | 1,598 | 78 | 19 | 41,754 | 32,178 | 27,351 | 4,827 |
| 6 | La Tinh | 2,117 | 63 | 11 | 44,601 | 29,314 | 24,917 | 4,397 |
| | **Total** | **13,709** | **652** | **155** | **280,772** | **217,042** | **184,486** | **32,556** |

**Table 3-2: Cost for Onfarm Development**

| No. | Subproject | Unit Cost (VND) | |
|---|---|---|---|
| | | For 1m of canal | For 1 ha Irrigated |
| 1 | Thach Thanh | 569,687 | 16,239,466 |
| 2 | Thuong My Trung | 1,355,862 | 8,806,142 |
| 3 | Nam Thach Han | 976,182 | 28,383,569 |
| 4 | Tay Nam Huong Tra | 503,311 | 16,357,110 |
| 5 | Tra Cau | 770,655 | 20,140,166 |
| 6 | La Tinh | 657,260 | 13,847,129 |
| | **Average** | **773,020** | **15,832,647** |

## 4. Strengthening and establishment of WUOs

For implementation fundamental of strengthening and establishment of WUOs, MARD issued document 323/TCTL-QLTTL on 13 July 2010 on WUO general establishment and strengthening regulations of subprojects. The document was agreed/approved by ADB.

### 4.1 WUOs

The project has helped provinces strengthen and establish 136 WUOs managing onfarm structures on the basis of hydraulic boundaries. All 136 WUOs have completed rehabilitation in accordance with agreed processes, ensuring: (i) WUOs have full legal status, seals, and bank accounts; (ii) Operation regulations of each WUO were agreed by water users and approved by the communal people's committee; and (ii) the irrigation team in each WUO is organized and performs its functions on the basis of hydraulic boundaries with an appropriate number of staff members and specific operational regulations. Table 4-1 below shows the number of WUOs strengthened and established in each subproject.

WUOs' main duties are: (i) maintaining a separate financial accounting system for irrigation/drainage activities; (ii) signing irrigation contracts with IMEs & water users; (iii) proposing onfarm structure development needs suitable for each own particular irrigation system, sending participants to onfarm structure design missions, and (iv) organizing onfarm construction.

**Table 4-1. WUOs strengthened and established in subprojects**

| No. | Subproject | WUOs | | |
|---|---|---|---|---|
| | | Total | Strengthened | New |
| 1 | Thach Thanh | 16 | 9 | 7 |
| 2 | Thuong My Trung | 24 | 20 | 4 |
| 3 | Nam Thach Han | 52 | 47 | 5 |
| 4 | Tay Nam Huong Tra | 13 | 13 | |
| 5 | Tra Cau | 20 | 20 | |
| 6 | La Tinh | 11 | 8 | 3 |

| | | | |
|---|---|---|---|
| **Total** | **136** | **117** | **19** |

Details of WUOs established/strengthened are as follows:

- 04 at communal level with different names: 01 Agricultural Service and Irrigation Management Cooperative; 01 WUO and 02 Agricultural Service Cooperatives (Construction);
- 04 at intercommunal level, namely: Water User Associations managing inter-communal canals; and
- 128 are Agricultural Service Cooperatives (Electricity).

### 4.2 Scale

- 03 WUOs (2%) are inter-communal (focused on Nam Thach Han subproject);
- 25 WUOs (28%) are communal;
- 41 WUOs (30%) are inter-village-scale (02 villages up); and
- 67 WUOs (40%) are village-scale (01 village)

All models are legitimate, participatory, managed on the basis of hydraulic boundaries (canals), financial autonomous at different levels; and ensure that more than 40% of participants (communal people) are women.

### 4.3 Finance

WUOs' operation mostly depends on water fees.

According to current policies, water fees of WUOs (also called "onfarm water fee"), paid by water users, are very low (80–160 kg/ha/year). This fee is decided by communal meetings, but must not be higher than that defined by the PPC. Each province has its own rate, but less than VND1 million/ha/year. Very few WUOs have used incomes from other higher-income services (electricity, seed production, etc.) for irrigation service assistance. Many WUOs were assigned to manage small civil works or large canals (under regulations in Circular 65) so that they were subsidized by State fund, in accordance with Decree 115's regulations, to ensure operation.

Statistically, almost all WUOs have managed onfarm systems very well, constructions were rarely damaged, and management cost has reduced. Particularly, WUOs, organized in accordance with project requirements, play important roles in construction's maintenance procurement, increase of users' and contractors' responsibilities, and proper expenditure for O&M. The most difficult thing for WUOs was low income, resulting to low salaries for irrigation management staff, and discouragement on their contribution and performance.

Reports and surveys show that WUOs, which are strengthened or established on the basis of hydraulic boundaries, were equipped with office stationery and management equipment (VND30-40 million per WUO), and were well trained. However, WUOs still need more efficient assistance in management capacity for better irrigation services under participatory approach.

## 5. Evaluations and Recommendations

### 5.1 Advantages

(1) Close direction and attention from MARD, ADB;

(2) CPO has functioned very well to help MARD and ADB monitor, supervise, and promptly resolve constraints and unexpected issues during project implementation;

(3) Authorities at all levels (especially District People's Committees and Communal People's Committees) have paid much attention and created favourableconditions for the project implementation;

(4) During the project, MARD and ADB have issued many guidelines on business plan, O&M plan, as well as regulations on WUO's rehabilitation and construction, onfarm development plan;

(5) The project was supported with management and training equipment;

(6) Agricultural cooperatives (irrigation services) are experienced in management;

(7) Consultant teams (MWH and other consulting firms) with experienced and responsible consultants helped carry out component A efficiently.

### 5.2 Constraints

(1) People are not clearly instructed about mechanisms, policies about irrigation management and related issues (Decree 115, 140, etc.). They disregard their participatory roles due to lack of propaganda, disclosure, and autonomy. In particular, the GOV has not amended Decree 115 to fit current situations, and IMCs' and WUOs' operation;

(2) There was no sanctions to limit/prevent damages;

(3) Local authorities have not paid much attention to the GOV's management roles in WUOs;

(4) Although some WUOs' management units have many-year experience in management, they still lack skills and techniques in water resources management and operation leading to difficulty in irrigation service implementation.

### 5.3 Recommendations

(1) PPCs should decide ordering manners for IMCs, in accordance with Decision 256, in order to ensure specialty, and to create conditions for financial autonomy (proper expenditure in compliance with technical-economic standards);

(2) MARD should make a request to the Government on amendments to Decree 115 to match current situations and operation of IMCs and WUOs;

(3) The supervising of WUOs' operation must be conducted after project completion (for at least 3 crops);

(4) Fully evaluate establishment and operation of WUOs; Learn lessons, experience from business plan, O&M plan, onfarm infrastructure, etc. for future projects' application; and

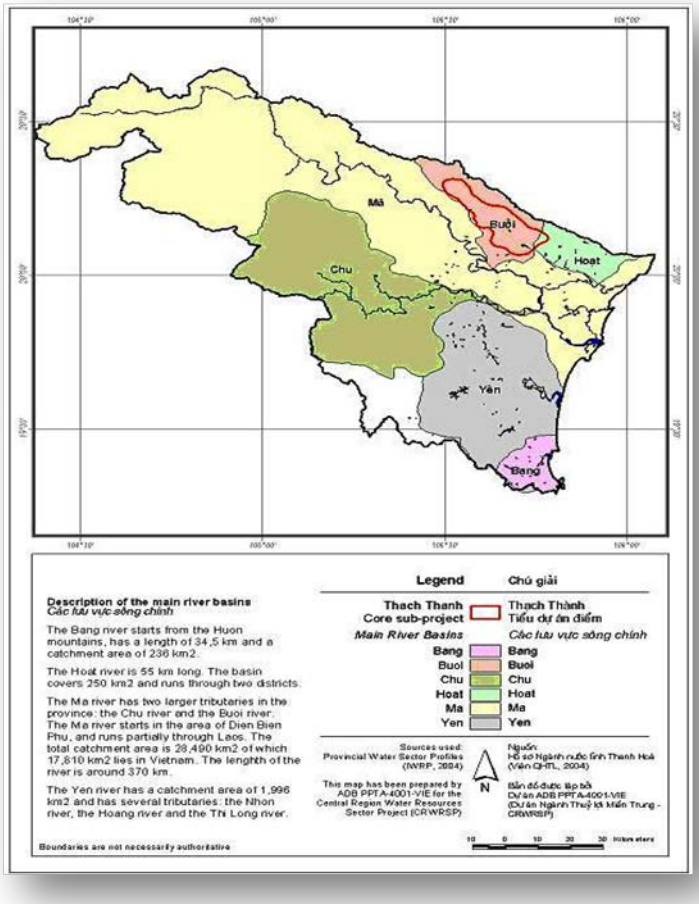
(5) Conferences, workshops on Component A's implementation review must be conducted to build guidelines for other projects.

# Appendix 3. Summary of Subproject Project Completion Reports

## Attachment 3.1. Project Completion Report - Thach Thanh Subproject (Thanh Hoa province)

### I. Introduction

Thach Thanh is a mountainous district at the north of Thanh Hoa province, 60km from Thanh Hoa city with the natural area of 559 km$^2$, along Buoi River (a branch of Ma river system).




Thach Thanh subproject in Thanh Hoa province covers 16 of 28 communes and towns of Thach Thanh district, including: Thach Quang, Thach Cam, Thach Son, Thach Binh, Thach Dinh, Thach Long, Thanh My, Thanh Vinh, Thanh Truc, Thanh Minh, Thanh Cong, Thanh Tan, Thanh Van, Thanh Tam, Thanh Tien and Thanh Long.

The district population is 137,235. The subproject's population is 96,005 (19,201 households) of Muong and Kinh ethnics; beneficiaries are 39,600 (7,920 households). Agricultural land area is 13,444 ha; Beneficiary area is 3,932 ha.

The subproject was approved under Decision 573/QD-UBND on 02 March2009 and was adjusted under Decision 1459/QD-UBND dated 11 May 2011; Decision 2445/QD-UBND on 28 July 2011 and 487/QD-UBND on 22 February 2012 by chairman of Thanh Hoa People's Committee.

**Objectives:**

- Supply enough water for 3,932 ha of cultivation land and for 25,999 people living in specific residential areas during dry season;
- Develop agriculture, foster processing industry, reduce poverty by increasing crop productivity, improve living conditions for people and environmental protection for subproject area.

**Duties:**

- Rehabilitate, upgrade 09 headworks, including 1 weir and 8 reservoirs;

- Construct 15 headworks, including: 1 reservoir, 13 pumping stations lifting water from the Buoi, 1 bridge at Vung Su lake basin for headwork management;
- Strengthen and renew canal system for 23 water resource headworks with a total length of 179 km.

## II. Results

### 1. Component A: Irrigation Management Systems Improvement

#### 1.1.Establishing Financially Viable Service Providers

With support from project consultants, the Provincial People's Committee, DARD and related agencies, Song Chu IMC has developed its business plan, in accordance with project requirements, with timeline in order to ensure financial sustainability through institutional, organizational and human resources changes.
Song Chu IMC was restructured as one-member limited liability Irrigation Management Company, under Enterprise Law.

#### 1.2.Strengthening Water User Participation

The subproject has helped local province strengthen and establish 16 WUOs (07 established, 09 strengthened) operating on the basis of hydraulic boundaries. These WUOs were legally approved and allowed to: raise funds, open bank account, and sign civil works, services or O&M contracts.

#### 1.3.Onfarm Development

The subproject has carried out participatory onfarm development program:

- Upgraded and constructed 108 onfarm canals in 14 headworks with total length of 47 km for 1,489 ha of agricultural land; and upgraded onfarm canals for 16 communes in project area with total length of 16 km for 719 ha of agricultural land.
- WUOs of project area could directly sign construction contracts for onfarm canals.
- Besides onfarm canals, the subproject also constructed pipeline HDPE-PE100, PN6 receiving water from Vung Su lake to supply for 89 ha (15 ha of rice and 74 ha of sugarcane) and for 180 households (about 720 people) in Thanh Vinh commune. The pipeline is 5.8 km long (2.9 km of main pipe, 2.5 km branch and 430 m of water pipe for living).

#### 1.4.Project Performance Monitoring System (PPMS)

The subproject has sent 40 staff to PPMS trainings conducted by CPO and MWH consultants. The PPMS has basically uploaded constructions on map. However, the PPMS needs to be continuously updated for completion.

#### 1.5.GAP and HIV/AIDS Awareness Program

The subproject has conducted GAP, HIV/AIDS Awareness Program, SSP, and Gender as subproject activities. It has organized 03 training of trainer courses on Gender, HIV/AIDS and SSP for 112 participants (45 women - 38%). PPMU Thanh Hoa conducted: 14 HIV/AIDS Awareness classes for 1,224 participants (532 women - 43%); 04 O&M skill training courses, and rice growing, fishery models for WUOs with 141 participants (34 women); 02 trips, 15 training courses for 715 participants on Water Use Plan and Implementation, and O&M. PIM consultants also participated in training WUOs in subproject areas.

Thanh Hoa PPMU has trained: 1,828 people on Gender and HIV/AIDS Awareness, SSP; 251 people on Business Plan and O&M.

### 2. Component B: Irrigation Infrastructure Improvement

#### 2.1.Procurement

**a) Contracts awarded**

The subproject has awarded 42 contracts with the total cost of VND189,174 million, lower than the estimated cost of VND189,373 million. However, at the time of final acceptance, all contract prices were adjusted due to price escalation and additional works. As a result, the total contract cost after price-adjustment is VND222,224 million (17.5% higher than the awarded cost). During subproject implementation, 27 civil work contracts have been awarded at a cost of VND201,607 million, equivalent to 91% of total awarded contract cost and to 75% of total subproject cost

**Table 2-1. Procurement Summary**

| No. | Items | No. of packages | Esti-mated Cost (VND million) | Cost (VND million) | | | Addi-tional cost (VND million) | Cost after adjustment (VND million) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Total | ADB | Counterpart | | Total | ADB | Counterpart |
| 1 | Consulting Services | 6 | 9,663 | 9,661 | 6,189 | 3,473 | 5,091 | 14,752 | 10,821 | 3,931 |
| 2 | Vehicles & Equipment | 4 | 2,937 | 2,903 | 2,613 | 290 | - | 2,903 | 2,613 | 290 |
| 3 | Civil works | 7 | 128,381 | 128,218 | 108,985 | 19,233 | 25,054 | 153,272 | 130,281 | 22,991 |
| 4 | Onfarm canals | 20 | 45,430 | 45,430 | 38,618 | 6,812 | 2,905 | 48,335 | 41,088 | 7,248 |
| 5 | Others | 5 | 2,962 | 2,962 | 904 | 2,058 | - | 2,962 | 904 | 2,058 |
| | **Total** | **42** | **189,373** | **189,174** | **157,309** | **31,866** | **33,050** | **222,224** | **185,707** | **36,517** |

**b) Contracts awarded by year**

**Table 2-2. Contracts awarded by year**

| Year | Number of Packages | Cost after price-adjustment (VND million) | Cumulative | |
|---|---|---|---|---|
| | | | Number of Packages | Cost after price-adjustment (VND million) |
| 2007 | 5 | 13,079 | 5 | 13,079 |
| 2008 | 2 | 1,201 | 7 | 14,280 |
| 2009 | 12 | 157,042 | 19 | 171,322 |
| 2010 | 1 | 1,050 | 20 | 172,372 |
| 2011 | 20 | 48,672 | 40 | 221,044 |
| 2012 | 2 | 1,180 | 42 | 222,224 |
| **Total** | **42** | **222,224** | | |

**2.2.Construction Results**

The subproject has upgraded and constructed 23 water resources headworks, 1 transportation bridge; and upgraded the canal system. Table 2-4 below summarizes subproject's works.

**Table 2-3. Summary of works**

| No. | System | Rehabilitation &Upgrade | New Construction | Canal System | |
|---|---|---|---|---|---|
| | | | | Length (m) | Structures |
| I | Reservoir | 9 | 1 | 43,601 | 343 |
| II | Pumping station | 1 | 12 | 61,331 | 331 |

| | | | | | |
|---|---|---|---|---|---|
| II | Onfarm | | | 73,703 | |
| IV | Transportation | | 01 | | |
| | **Total** | **10** | **14** | **178,635** | **674** |

**2.3.Irrigation Service Results**

Command area: 3,932 ha. In June 2012, irrigated area: 3,761 ha, equivalent to 95.7% of the command area. *(Source: AM of Final Project Review Mission, 15-27 June 2012)*

## 3. Resettlement and Compensation

Resettlement plan of the subproject has completely supplemented, and finished on 01 April 2009. The ADB issued "no-rejection" document on 29 April2009.

Total affected households are 2,392, of which: 11 were relocated (05 in Thach Cam, 05 in Thanh Tan, 01 in Thanh Van) and rebuilt houses, 191 lost equal to more than 10% of agricultural land. Total permanent acquired-land area is 569,934 $m^2$, temporarily borrowed-land area is 2,459 $m^2$.

Total compensation cost is VND13.79 billion. All 2,443 households (100%) received compensation; highly affected households received full compensation and supports. Besides, Muong highly affected households were supported with VND2,000,000 each in accordance with the subproject's policy. Compensation completed in 2009.

## 4. Subproject Cost

**Table 4-1. Thach Thanh Subproject Cost[27]**

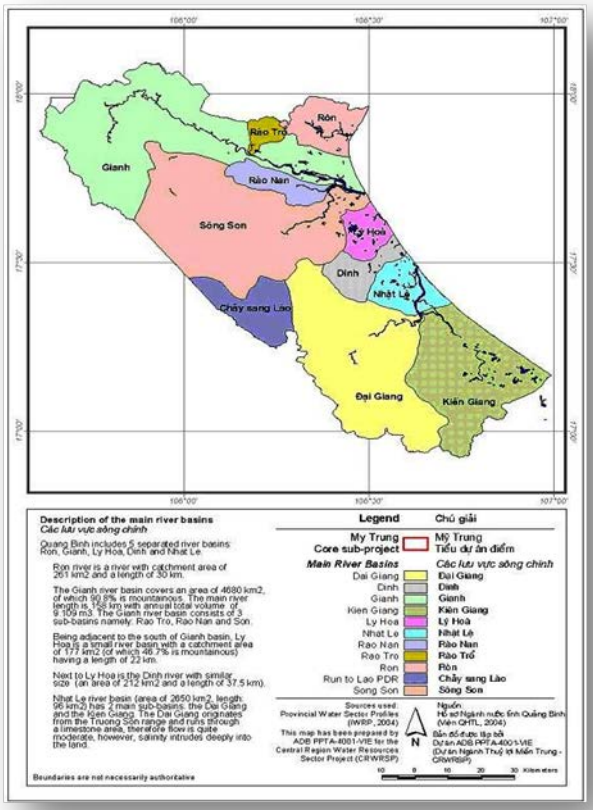
| No. | Items | Total (VND million) | ADB (VND million) | Counterpart (VND million) | |
|---|---|---|---|---|---|
| | | | | Central | Provincial |
| 1 | Civil Works | 191,894 | 163,110 | - | 28,784 |
| 2 | Vehicles and Equipment | 2,913 | 2,622 | - | 291 |
| 3 | Project Management | 2,935 | 1,908 | - | 1,027 |
| 4 | Consulting Services | 16,031 | 10,998 | - | 5,033 |
| 5 | Resettlement, Compensation | 17,428 | - | - | 17,428 |
| 6 | Other | 9,847 | 1,676 | - | 8,172 |
| 7 | Contingency | 24,350 | 18,675 | 97 | 5,578 |
| 8 | CPO management | 18,954 | 17,493 | 1,461 | - |
| | **Total** | **284,353** | **216,482** | **1,558** | **66,313** |

[27]Decision 487/QD-UBND on 22/02/2012 by Chairman of Thanh Hoa PPC

## Attachment 3.2. Project Completion Report - Thuong My Trung Subproject (Quang Binh province)

### I. Introduction

Le Ninh delta on Kien Giang river basin has a natural area of 34,261 ha, (14,742 ha of which is agricultural land, and 800 ha of which is water surface area of Hac Hai lagoon, belonging to Quang Ninh and Le Thuy districts). Thuong My Trung subproject is from My Trung dam (in the north) to Cam Lien road (in the south); the west faces Hoi Soi, Hoi Do, Hoi 186, Hoi An Son, and Kien Giang River; the east faces 1A national highway. The subproject area covers administrative boundaries of 15 communes of Quang Ninh and Le Thuy districts: (i) 05 communes in Quang Ninh district, namely Vo Ninh, Gia Ninh, Tan Ninh, Anh Ninh and Van Ninh; and (ii) 10 communes/towns in Le Thuy district, namely Lien Thuy, Phong Thuy, Cam Thuy, Thanh Thuy, Hong Thuy, Loc Thuy, An Thuy, Son Thuy, Hoa Thuy, and Kien Giang town.




The population of the subproject area is 101,655 (19,549 households) and beneficiary people are about 44,868 people (8,628 households). The subproject area is 24,146 ha, agricultural area is 9,881 ha, and beneficiary area is 4,188 ha.

The subproject was approved under Decision 3429/QĐ-UBND on 19 December 2006, and was adjusted in compliance with Decision 3279/QĐ-UBND on 15 December 2008, Decision 1640/QĐ-UBND on 14 July 2011 and Decision 2964/QĐ-UBND on 07 November 2011 by Quang Binh PPC and Decision 1563/QD-CT on 9 July 2012 by Quang Binh PPC

**Objectives**:

- Ensure efficient irrigation;
- Strengthen natural disaster prevention, saline intrusion prevention for specialized rice cropping area; Prevent water pollution.
- Recover Hac Hai lagoon's natural environment for aquacultural exploration;
- Create conditions to multiply rice producing, aquacultural models for in-canal area as well as improve cultivated land.

**Duties:**

- Supply irrigation water for 4,188 ha: irrigation by gravity for 3.318 ha, irrigation by pumps for 870 ha;
- Prevent early floods for 4,188 ha and saline intrusion for 2,481 ha;

- Upgrade 82 km of embankment; rehabilitate/construct 89 sluices; rehabilitate/construct 40 pumping stations; and
- Upgrade 45 onfarm structures with a length of more than 35 km.

## II. Results

### 1. Component A: Irrigation Management Systems Improvement

#### 1.1 Establishing Financially Viable Service Providers

Quang Binh IMC, with support from project consultants and advice from PPC, DARD, and related agencies, has developed its business plan with timeline in order to gain financial sustainability through institutional, organizational and human resources changes.

Quang Binh IMC was restructured as one-member limited liability Irrigation Management Company, under Enterprise Law.

#### 1.2 Strengthening Water User Participation

The subproject has helped local province strengthen and establish 24 WUOs (04 established, 20 strengthened) which operated on the basis of hydraulic boundaries. These WUOs were legally approved and allowed to: raise funds, open bank account, and sign civil work, service or O&M contracts. The subproject has purchased equipment for the IMC (VND1,748 million) and for 24 WUOs (VND760 million).

#### 1.3 Onfarm Development

The subproject has carried out participatory onfarm development program: Upgraded 45 onfarm canals; Irrigated 25.6km for 4,395 ha of agricultural land; Constructed 32 sluices, 208 culverts, 28 bridges, and 2 aqueducts. WUOs have directly signed construction contracts for 21 onfarm canals with the length of 7 km, 24 sluices, 14 bridges, 47 culverts and 1 aqueduct.

#### 1.4 Project Performance Monitoring System (PPMS)

The subproject has sent 8 staffs to PPMS trainings conducted by CPO and MWH consultants. The PPMS has basically uploaded constructions on map.

#### 1.5 GAP and HIV/AIDS Awareness Program

The subproject has conducted GAP, HIV/AIDS Awareness Program, SSP, and Gender as subproject activities. It has organized 03 training of trainer courses on Gender, HIV/AIDS, and SSP for 100 participants (45 women - 45%). PPMU Quang Binh conducted: 06 Gender Awareness classes for 272 participants (92 women - 34%); 06 HIV/AIDS Awareness classes for 226 participants (115 women - 43%); 06 O&M skill training courses, and rice growing, fishery models; 02 financial & credit management classes for WUGs with 362 participants (74 were women); and 03 trips, 08 training courses for 250 participants on Water Use Planning and Implementation, and O&M.

### 2. Component B: Irrigation Infrastructure Improvement

#### 2.1 Procurement

#### a) Contracts awarded

The subproject has awarded 66 contracts with the total cost of VND280,877 million (2% lower than estimated cost). However, at the time of final acceptance, all contract prices were adjusted due to price escalation and additional works. As a result, the total contract cost after price-adjustment is VND320,435 million (10.1% higher than the awarded cost).

**Table 2-1. Procurement Summary**

| No. | Items | No. of packages | Estimated Cost (VND million) | Cost (VND million) | | | Additional cost (VND million) | Cost after price-adjustment (VND million) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Total | ADB | Counterpart | | Total | ADB | Counterpart |
| I | Consulting Services | 6 | 8,878 | 7,542 | 6,863 | 679 | 2,088 | 9,630 | 8,764 | 867 |
| II | Vehicles & Equipment | 5 | 4,200 | 4,148 | 3,733 | 415 | - | 4,148 | 3,733 | 415 |
| III | Civil works | 19 | 229,497 | 225,944 | 192,052 | 33,892 | 37,469 | 263,413 | 223,901 | 39,512 |
| IV | Onfarm canals | 30 | 39,988 | 39,297 | 33,402 | 5,895 | - | 39,297 | 33,402 | 5,895 |
| V | Others | 6 | 3,946 | 3,946 | 1,854 | 2,093 | - | 3,946 | 1,854 | 2,093 |
| | **Total** | **66** | **286,509** | **280,877** | **237,905** | **42,972** | **39,557** | **320,435** | **271,654** | **48,781** |

**b) Contracts awarded by year**

**Table 2-2: Contracts awarded by year**

| Year | Number of Packages | Cost after price-adjustment (VND million) | Cumulative | |
|---|---|---|---|---|
| | | | Number of Packages | Cost after price-adjustment (VND million) |
| 2007 | 3 | 6,193 | 3 | 6,193 |
| 2008 | 4 | 2,460 | 7 | 8,653 |
| 2009 | 24 | 269,770 | 31 | 278,423 |
| 2010 | 0 | - | 31 | 278,423 |
| 2011 | 35 | 42,012 | 66 | 320,435 |
| 2012 | 0 | - | | |
| **Total** | **66** | **320,435** | | |

### 2.2 Construction Results

Besides constructing irrigation canal and onfarm system, the subproject has:

- Upgraded 82 km of embankment: Body was made by earth and strengthened by special cloth; embankment's sides were concretized;
- Rehabilitated and constructed 89 sluices, of which 66 were rehabilitated and 23 are new;
- Rehabilitated and constructed 40 pumping stations, of which 25 were rehabilitated and 15 are new.

### 2.3 Irrigation Service Results

Command Area: 4,188 ha. In June 2012, irrigated area: 3,853 ha, equivalent to 92% command area. *(Source: AM of Final Project Review Mission, 15-27 June 2012)*

## 3. Resettlement and Compensation

Resettlement plan of the subproject has completely supplemented. The ADB issued a "no-objection" document on 24 July 2009. Total affected households are 3,380. Total acquired-land area is 2,166,921 $m^2$, of which: 1,218,933 $m^2$ is used for transportation, water resources, water reservoirs, and was not compensated; 947,988 $m^2$ was compensated. 36 households were highly affected due to ≥10% of agricultural land acquisition.

Total compensation cost is VND26,531 billion. All households received compensation as well as other supports in accordance with current regulations, agreements and ADB's resettlement guidelines. Compensation completed in 2009.

## 4. Subproject Cost

**Table 4-1. Thuong My Trung subproject cost**[28]

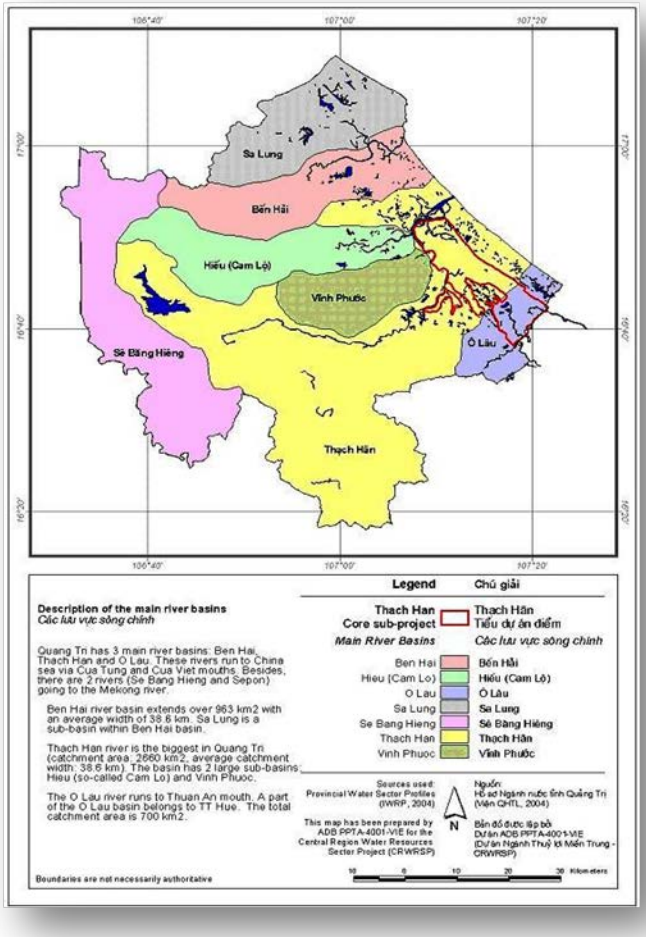
| No. | Items | Total (VND million) | ADB (VND million) | Counterpart (VND million) | |
|---|---|---|---|---|---|
| | | | | Central | Provincial |
| 1 | Civil Works | 302,284 | 256,942 | - | 45,342 |
| 2 | Vehicles and Equipment | 4,297 | 3,867 | - | 430 |
| 3 | Project Management | 4,157 | 2,702 | - | 1,455 |
| 4 | Consulting Services | 11,321 | 8,961 | - | 2,360 |
| 5 | Resettlement, Compensation | 29,406 | - | - | 29,406 |
| 6 | Other | 7,166 | 3,353 | - | 3,813 |
| 7 | Contingency | - | - | - | - |
| 8 | CPO management | 24,787 | 22,889 | 1,898 | - |
| | **Total** | **383,418** | **298,714** | **1,898** | **82,806** |

[28]Decision 1563/QD-CT 9/7/2012 by Quang Binh PPC

## Attachment 3.3. Project Completion Report – Nam Thach Han Subproject (Quang Tri province)

### I. Introduction

The subproject locates on the right side of Thach Han River in Quang Tri province, between 1A national highway and the East Sea, covering 29 communes of Hai Lang district, 12 communes of Trieu Phong district and Quang Tri town. Headwork is on Thach Han River whose left side belongs to Da Dung village, Trieu Thuong commune, and right side belongs to Nhu Le village, Hai Le commune, Hai Lang district (about 8km to the South-East of Quang Tri commune). Population in the subproject area is about 168,083 (35,017 households), beneficiaries are 137,649 (28,677 households). Natural land area is 55,831 ha, agricultural land area is 15,831 ha, and beneficiary land area is 14,078 ha.




The subproject was approved by Quang Tri people's committee under Decision 2448A/QĐ-UBND on 18 December 2006. It was adjusted and approved several times. The latest approval was Decision 2039/QĐ-UBND on 30 September 2011.

**Objectives**: Rehabilitate irrigation system, ensure safety and sustainability, minimize natural disaster risk; Reduce annual O&M cost, increase efficient irrigated area, for stable/sustainable agricultural production which contributes to economic growth of Trieu Phong, Hai Lang districts, Quang Tri commune in particular, and the province in general.

**Duties**:

- Efficiently increase water supply for cultivation land in spring crop (from 8,700 ha to 13,867 ha), and in autumn crop (from 4,500 ha to 13,350 ha);
- Improve ecosystem in the area; Increase headwork's' safety to prevent and reduce natural disaster; and
- Reduce lost, increase safety and irrigation effectiveness/efficiency for system; reduce management and O&M cost.

### II. Results

#### 1. Component A: Irrigation Management Systems Improvement

##### 1.1 Establishing Financially Viable Service Providers

Quang Tri IMC was restructured as one-member limited liability Irrigation Management

Company, under Enterprise Law. The company has developed its business plan and O&M plan for 2008-2011 on a basis of financial sustainability and efficient business operation. The business plan was approved by the provincial people's committee in accordance with current situations and ADB's requirements.

### 1.2 Strengthening Water User Participation

The subproject has strengthened 47, and established 05 WUOs of which 01 is communal and 04 are inter-communal. All WUOs were managed on the basis of hydraulic boundaries, were legally approved and allowed to: raise funds, open bank account, and sign civil works, services or O&M contracts.

### 1.3 Onfarm Development

The subproject has upgraded and constructed 223 onfarm canals belonging to 01 headwork. Total canal length is above 144 km serving 5,098.5 ha of agricultural land. 54 WUOs signed construction contracts for 127 of the above onfarm canals.

### 1.4 Project Performance Monitoring System (PPMS)

PPMS based on information management software in connection with GIS functioned with support from MWH consultants. IMC and PPMU were supplied with the PPMS, and were trained how to manage and update the system.

### 1.5 GAP and HIV/AIDS Awareness Program

The subproject has conducted GAP, HIV/AIDS Awareness Program, SSP, and Gender as subproject activities. It has organized: 03 training-of-trainers courses on Gender, HIV/AIDS, and SSP for 2,625 participants of which 1,443 were women (55%). Quang Tri PPMU has organized: 37 advanced training courses on HIV/AIDS for 1,660 participants, of which 912 are women (55%); 02 trips, 08 training courses for 387 participants, of which 157 are women (40%), on Water Use Plan and Implementation, and O&M. PIM consultants also participated in training WUGs in subproject area, and organized 16 training classes for 16 communes with 500 participants from communes, WUOs and irrigation teams.

## 2. Component B: Irrigation Infrastructure Improvement

### 2.1 Procurement

#### a) Contracts awarded

The subproject has awarded 102 contracts with the total cost of VND382,533 million, about 2% lower than the estimated cost (VND7,684 million). However, at the time of final acceptance, all the contract prices were adjusted due to price escalation and additional works. As a result, the total contract cost after adjustment is VND427,091 million (12% higher than the awarded cost).

**Table 2-1. Procurement Summary**

| No. | Items | No. of packages | Estimated Cost (VND million) | Cost (VND million) | | | Additional cost (VND million) | Cost after price-adjustment (VND million) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Total | ADB | Counterpart | | Total | ADB | Counterpart |
| I | Consulting Services | 10 | 17,201 | 16,665 | 11,340 | 5,325 | 2,894 | 19,559 | 13,974 | 5,585 |
| II | Vehicles & Equipment | 5 | 3,720 | 3,700 | 3,330 | 370 | - | 3,700 | 3,330 | 370 |
| III | Civil works | 26 | 307,745 | 300,725 | 255,616 | 45,109 | 41,436 | 342,161 | 290,837 | 51,324 |
| IV | Onfarm canals | 54 | 58,818 | 58,818 | 49,995 | 8,823 | 228 | 59,046 | 50,189 | 8,857 |
| V | Others | 7 | 2,733 | 2,625 | 291 | 2,334 | - | 2,625 | 291 | 2,334 |

| No. | Items | No. of packages | Esti-mated Cost (VND million) | Cost (VND million) | | | Addi-tional cost (VND million) | Cost after price-adjustment (VND million) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Total | ADB | Counter part | | Total | ADB | Count erpart |
| | **Total** | **102** | **390,217** | **382,533** | **320,573** | **61,960** | **44,558** | **427,091** | **358,621** | **68,471** |

**b) Contracts awarded by year**

The highest awarded cost was in 2009, equivalent to 64% of the total awarded cost. In 2011, the awarded cost was equivalent to 28% of the total awarded cost for onfarm construction.

**Table 2-2. Contracts awarded by year**

| Year | Number of Packages | Cost after price-adjustment (VND million) | Cumulative | |
|---|---|---|---|---|
| | | | Number of packages | Cost after price-adjustment (VND million) |
| 2007 | 1 | 11,523 | 1 | 11,523 |
| 2008 | 4 | 1,818 | 5 | 13,341 |
| 2009 | 24 | 271,412 | 29 | 284,753 |
| 2010 | 4 | 20,981 | 33 | 305,734 |
| 2011 | 69 | 121,357 | 102 | 427,092 |
| 2012 | 0 | - | 102 | 427,092 |
| **Total** | **102** | **427,092** | | |

### 2.2 Construction Results

Construction works between 2007 and 2012 are as followed:

- Headworks: rehabilitated and constructed main dam, auxiliary dam 3, spillway, water sluice, sand sluice; consolidated dam surface of other 6 auxiliary dams (auxiliary 1, 2, 4, 5, 6 and 7);
- Strengthened 252.9 km of canal, including:
  - Main canal: 13.5 km;
  - Primary canal: 48 km (06 primary canals: N1, N2A, N2B, N3, N4, N6);
  - Secondary and smaller canals: 45.4 km (26 canals);
  - Onfarm structures: 146 km (223 canals).
- Upgraded and constructed 565 canal structures, including: 205 bridges, 327 sluices, 04 aqueducts, 08 siphons, 20 inlet and outlet spillways, and 01 drop.

### 2.3 Irrigation Service Results

Command area: 11,142 ha. In June 2012, irrigated area: 10,990 ha, equivalent to 99% of the command area. *(Source: AM of Final Project Review Mission, 15-27 June 2012)*

## 3. Resettlement and Compensation

Total permanent acquired-land area is 146,859 $m^2$, temporary borrowed-land area is 144,817 $m^2$. Total compensation cost is VND5,119 million. All 509 households (100%) received compensation; highly affected households received full compensation as well as other supports. Compensation completed in 2011.

## 4. Subproject Cost

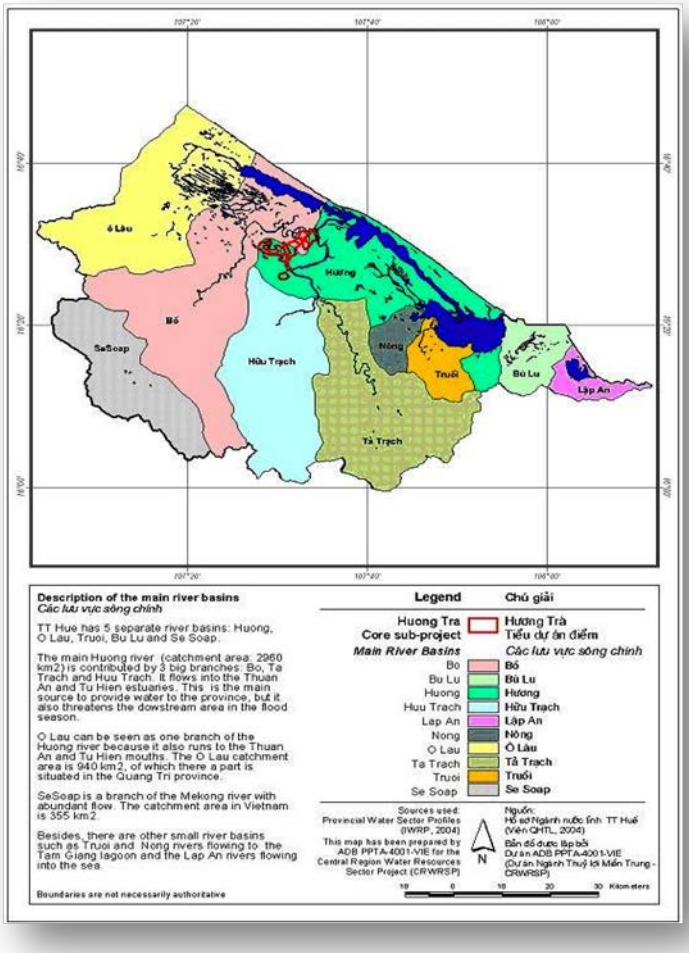
**Table 4-1: Nam Thanh Han subproject cost[29]**

| No. | Items | Total (VND million) | ADB (VND million) | Counterpart funds (VND million) | |
|---|---|---|---|---|---|
| | | | | Central | Local |
| 1 | Civil Works | 410,155 | 348,632 | - | 61,523 |
| 2 | Vehicles and Equipment | 2,160 | 1,944 | - | 216 |
| 3 | Project Management | 3,799 | 2,469 | - | 1,330 |
| 4 | Consulting Services | 22,242 | 14,782 | - | 7,461 |
| 5 | Resettlement, Compensation | 5,899 | - | - | 5,899 |
| 6 | Other | 18,869 | 6,355 | - | 12,514 |
| 7 | Contingency | 2,692 | 2,692 | - | - |
| 8 | CPO management | 32,519 | 30,026 | 2,493 | - |
| | **Total** | **498,336** | **406,900** | **2,493** | **88,943** |

[29]Decision 2039/QD-UBND on 30 September 2011 by Quang Tri PPC

## Attachment 3.4. Project Completion Report – Tay Nam Huong Tra Subproject (Thua Thien Hue province)

### I. Introduction




The subproject locates in the South West of Huong Tra district, 7 km from north of Hue city. The project area between Huong and Bo rivers is a narrow land, slowly-steep from west to east. There are many flumes, for instance Khe Nuoc, Khe Soi, Khe Ngang, etc. In addition, the area has Hoi Nam Xa, Hoi Bay Xa system, which is the main water source for irrigation from Huong River.

Natural land area is 10,854 ha; agricultural land area is 4,174 ha; and beneficiary land area is 3,176 ha. This is a fertilized land area, potential for high productivity. Currently, irrigation water is mainly from Huong River (through Nam Xa and Bay Xa) and partly from Bo River. However, water from these two rivers cannot fully supply the whole-area.

Population (in subproject area) is about 66,265 (13,253 households); beneficiaries are 50,872 (10,174 households). Beneficiary areas are: communes of Huong Ho, Huong An, Huong Chu, Huong Van, Huong Xuan, Huong Toan and Huong Vinh in Huong Tra district; Huong So commune of Hue city.

The subproject was approved by Thua Thien Hue PPC under Decision 2838/QĐ-UBND on 15 December 2006, and adjusted under: Decision 1409/QĐ-UBND on 14 July 2009, Decision 2314/QĐ-UBND on 03 November 2011, and Decision 756/QĐ-UBND on 04 May 2012.

**Objectives:**

- Increase agricultural production by recovering and expanding irrigation/drainage system, and flood protection system.
- Use integrated water resources management solutions contributing to natural disaster risk reduction;
- Protect ecosystem for cultivation area and river basins; Supply water for rural areas and aquaculture, contributing to sustainable river basin management.

**Duties:**

- Irrigation: Ensure enough water for effective irrigation for 2,127 ha of 2 rice crops, 981 ha of vegetables and industrial plants in the project area;

- Drainage: Ensure natural drainage for 2,575 ha, dynamic drainage for 286.6 ha and prevent small floods for 460 ha in the project area.

## II. Results

### 1. Component A: Irrigation Management Systems Improvement

#### 1.1 Establishing Financially Viable Service Providers

Tay Nam Huong Tra IMC was restructured as one-member limited liability Irrigation Management Company under Enterprise Law. With support from consultants, and advice from PPC, MARD and related agencies, the company has developed its business plan and O&M plan for 2008-2011 on a basis of financial sustainability and efficient business operation. The business plan was approved by the provincial people's committee in accordance with current situations and ADB's requirements.

#### 1.2 Strengthening Water User Participation

The subproject has helped local province strengthen and establish 13 WUOs operated on the basis of hydraulic boundaries. These WUOs were legally approved and allowed to: raise funds, open bank account, and sign civil works, services or O&M contracts. The subproject has purchased equipment/facilities for IMC (VND783 million) and for WUOs (VND143 million).

#### 1.3 Onfarm Development

The subproject has carried out participatory onfarm development program. In particular:

- 4 period-1 onfarm packages: PPMU signed with contractors to use local workers for construction.
- 13 period-2 onfarm packages: PPMU directly signed with 13 WUOs with construction eligibility to construct onfarm canals.
- Upgraded and constructed 119 onfarm canals in communes of Huong Ho, Huong An, Huong Chu, Huong Van, Huong Xuan, Huong Toan and Huong Vinh in Huong Tra district; Huong So commune of Hue city. Canal's total length is 40 km irrigating for 1,264 ha of agricultural land.

#### 1.4 Project Performance Monitoring System (PPMS)

Each IMC and each PPMU were supplied with 01 GPS and 01 desktop computer installed with GIS. They were trained to manage project using GIS.

Because the digital map of Thua Thien Hue province was not complete, project management and update through software have not been performed efficiently.

#### 1.5 GAP and HIV/AIDS Awareness Program

The PPMU has conducted GAP, HIV/AIDS Awareness Program, SSP, and Gender as subproject activities. It has organized: 10 training-of-trainers courses on GAP, HIV/AIDS, SSP for 440 participants (145 women - 32%); 09 advanced HIV/AIDS awareness classes for 410 participants (135 women - 33%); 01 O&M skill, and rice growing, fishery models training class for WUOs with 50 participants (20 women); 22 training classes for 782 participants (rate of women is 11%) on PIM, irrigation management transfer, water use planning and implementation, O&M, GAP in agricultural and rural development.

### 2. Component B: Irrigation Infrastructure Improvement

#### 2.1 Procurement

**a) Contracts awarded**

The subproject has awarded 71 contracts with the total cost of VND203,819 million (about 4% lower than the estimated cost). However, at the time of final acceptance, all the contract prices were adjusted due to price escalation and additional works. As a result, the total contract cost after adjustment is VND265,561 million (30% higher than the total cost).

**Table 2-1. Procurement Summary**

| No. | Total | No. of packages | Estimated Cost (VND million) | Cost (VND million) | | | Additional cost (VND million) | Cost after price-adjustment (VND million) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Total | ADB | Counterpart | | Total | ADB | Counterpart |
| I | Consulting Services | 21 | 11,345 | 9,949 | 7,543 | 2,406 | 3,385 | 13,334 | 10,537 | 2,797 |
| II | Vehicles & Equipment | 6 | 2,043 | 2,165 | 1,949 | 217 | - | 2,165 | 1,949 | 217 |
| III | Civil works | 15 | 174,434 | 168,400 | 140,800 | 27,600 | 57,676 | 226,076 | 189,825 | 36,252 |
| IV | Onfarm canals | 17 | 20,900 | 20,681 | 17,579 | 3,102 | 516 | 21,197 | 18,018 | 3,180 |
| V | Others | 12 | 2,837 | 2,624 | 826 | 1,798 | 163 | 2,787 | 965 | 1,823 |
| | **Total** | **71** | **211,558** | **203,819** | **168,696** | **35,123** | **61,742** | **265,561** | **221,293** | **44,268** |

**b) Contracts awarded by year**

The highest awarded cost was in 2010, equivalent to 86% of the total awarded cost. In 2011, the awarded cost was equivalent to 9% of the total awarded cost for onfarm construction.

**Table 2-2. Contracts awarded by year**

| Year | Number of Packages | Cost after price-adjustment (VND million) | Cumulative | |
|---|---|---|---|---|
| | | | Number of Packages | Cost after price-adjustment (VND million) |
| 2007 | 0 | 0 | 0 | |
| 2008 | 11 | 10,014 | 11 | 10014 |
| 2009 | 6 | 3,080 | 17 | 13,094 |
| 2010 | 27 | 229,129 | 44 | 242,223 |
| 2011 | 26 | 22,957 | 70 | 265,180 |
| 2012 | 1 | 380 | 71 | 265,560 |
| **Total** | **71** | **265,560** | | |

**2.2 Construction Results**

The subproject has: upgraded and constructed 02 water resources headworks, 01 pumping station; upgraded 11.6 km of main canal, 2.5 km of branch canal, 40km of onfarm structures; Cleaned up and rehabilitated 28 km irrigation and drainage ditches; constructed 3.7 km canal, 5.5 km construction-management road; 3.5 km medium and low voltage lines and 3 transformer stations.

**2.3 Irrigation Service Results**

Command Area: 3,108 ha. In June 2012, irrigated area: 2,074 ha, equivalent to 65% of the command area. (Source: AM of Final Project Review Mission, 15-27 June 2012).

**3. Resettlement and Compensation**

Resettlement plan of the subproject was completed, and ADB issued a “no-objection” document on 04 January 2009. Total affected households are 2,419, of which: 14 were relocated and have built houses for new lives, 30 were acquired ≥ 10% of agricultural

land. Total acquired-land area is 766,776 $m^2$, temporarily borrowed-land area is 0 $m^2$. Total compensation cost is VND30 billion. All 2,419 households (100%) received compensation; highly affected households received full compensation as well as other supports. Compensation completed in 2011.

## 4. Subproject Cost

**Table 4-1: Tay Nam Huong Tra Subproject Cost**

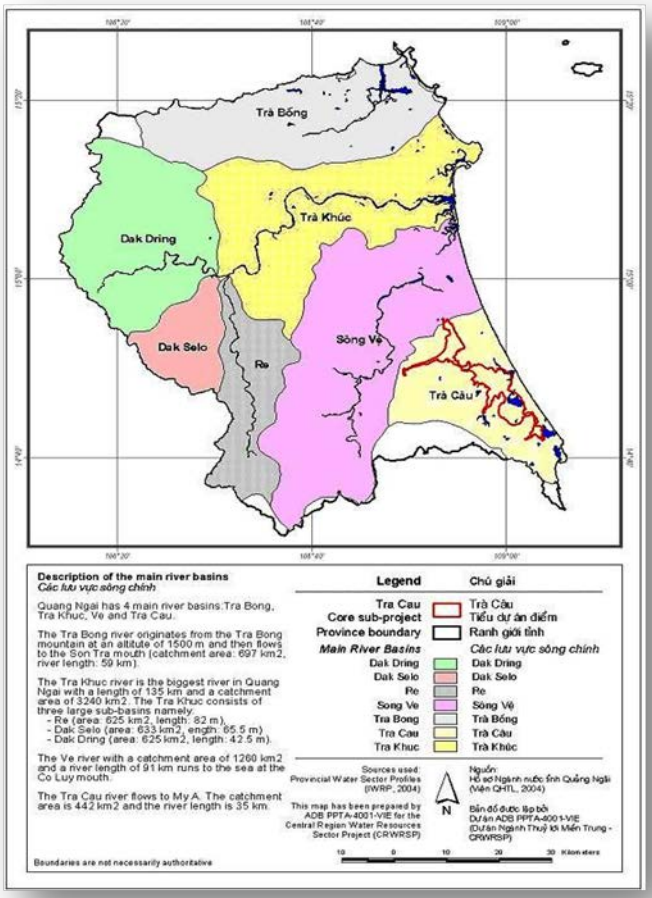
| No. | Items | Total (VND million) | ADB (VND million) | Counterpart funds (VND million) | |
|---|---|---|---|---|---|
| | | | | Central | Local |
| 1 | Civil Works | 244,521 | 207,843 | - | 36,678 |
| 2 | Vehicles and Equipment | 2,165 | 1,949 | - | 217 |
| 3 | Project Management | 3,797 | 2,143 | - | 1,654 |
| 4 | Consulting Services | 13,193 | 10,323 | - | 2,870 |
| 5 | Resettlement, Compensation | 36,000 | - | - | 36,000 |
| 6 | Other | 9,688 | 2,175 | - | 7,513 |
| 7 | Contingency | 5,938 | 4,157 | - | 1,781 |
| 8 | CPO management | 18,241 | 16,835 | 1,406 | - |
| | **Total** | **333,543** | **245,424** | **1,406** | **86,713** |

## Attachment 3.5. Project Completion Report - Tra Cau Subproject (Quang Ngai province)

### I. Introduction

Tra Cau subproject in Tra Cau river basin comprises 03 water-resources construction components with benefits of each component as follows:

- Liet Son – Chop Vung: Beneficiary zones are Pho Vinh, Pho Cuong, Pho Hoa, Pho Ninh, Pho Minh communes and Duc Pho town, Duc Pho district; Total number of households in beneficiary zones is 11.382 with about 51,282 people, of which about 38,462 mainly live on agricultural;
- Dien Truong reservoir's upgrade and maintenance: Beneficiary zones are Pho Khanh commune, Duc Pho district. Total number of people living there is 8,438 people most of which live on agricultural production; and
- Nui Ngang Irrigation Scheme: Beneficiary zones are Pho Phong, Pho Thuan communes in Duc Pho district, and Duc Lan, Duc Phong communes, Mo Duc townin Mo Duc district. Total number of households there is more than 13,634 with about 63,653 people, of which about 46,467 people live on agricultural (73%), others live on different professionals.




The investment project was approved by chairman of Quang Ngai PPC in compliance with Decision 3277/QĐ-UBND on 19 December 2006, and was adjusted and approved in compliance with Decision 936/QĐ-UBND on 08 June 2009, Decision 1646/QĐ-UBND on 24 November 2010 and Decision 1450/QĐ-UBND on 03 October 2011.

**Objectives**:

- Repair, upgrade, and construct new water resources constructions for irrigation, aquaculture, and water supply;
- Contribute to poverty reduction, production development, environmental improvement, and natural disaster mitigation.

**Duties:**

- Contribute to stable irrigation water supply for 4,100 ha of agricultural land
- Supply water for 150 ha of aquaculture and for 47,606 people.

### II. Results

### 1. Component A: Irrigation Management Systems Improvement

### 1.1. Establishing Financially Viable Service Providers

Quang Ngai IMC was restructured as one-member limited liability Irrigation Management Company under Enterprise Law. With support from consultants, and advice from PPC, MARD and related agencies, the company has developed its business plan and O&M plan for 2008-2011 on a basis of financial sustainability and efficient business operation. The business plan was approved by the provincial people's committee in accordance with current situations and ADB's requirements.

### 1.2. Strengthening Water User Participation

The subproject has strengthened 20 WUOs to manage irrigation on the basis of hydraulic boundaries. All 20 WUOs havecompleted operation reforms in association with suggested process to ensure that: (i) WUOs have complete legal entities with own accounts and seals; (ii) irrigation management's operation policies of each WUO was approved by water users and Communal People's Committee; and (iii) irrigation teams of each WUO functioned on the basis of hydraulic boundaries, with the labour number suitable for particular operation regulations.

WUOs' main duties are: (i) maintaining a separate financial accounting system for irrigation/drainage activities; (ii) signing irrigation contracts with IMEs & water users; (iii) proposing onfarm structure development needs suitable for each own particular irrigation system, sending participants to onfarm structure design missions, and (iv) organizing onfarm construction.

The subproject has purchased management equipment/facilities for Irrigation Management Companies (IMCs) and WUGs with a cost of VND841 billion and VND591 million respectively, including: office tables, chairs, closets, computers, printers. These equipment were handed over to 20/20 WUO management units by PPMU Quang Ngai with the exact amount as requested.

### 1.3. Onfarm Development

While implementing participatory onfarm development program, 17 of 20 WUOs were eligible to have business registrations, and were assigned by PPMU Quang Ngai to directly construct and develop onfarm structures with project's additional fund. At these WUOs, implementation processes were conducted with participation of their management units, irrigation staff and people's representatives at beneficiary areas, particularly in: (i) Project proposal; (ii) Onfarm planning; (iii) Design consultation and recommendation.

During onfarm construction, WUOs have implemented the followings:

- Participatory supervision: 17 WUOs established their construction monitoring units, with participation of: management teams, irrigation staff, people's representative; and clearly assigned tasks/work to staff at worksites during construction;
- Financial management: all expenses were transparent with participation of community supervising units;
- Acceptance, hand-over: check, evaluation for acceptance, hand-over with participation of technical officers and people's representative at canal areas.

Results: Upgraded and renewed 42.5 km of canal and dozens of canal structures in 11 subproject communes; Total irrigated area is 1,598 ha.

### 1.4. Project Performance Monitoring System (PPMS)

PPMS based on information management software in connection with GIS functioned with support from MWH consultants. The IMC and PPMU were supplied with 02 sets of PPMS (01 computer and 01 GPS per set) and were trained how to manage and update the system. Staff of the IMC and PPMU can basically use the PPMS.

### 1.5. GAP and HIV/AIDS Awareness Program

The subproject has conducted GAP, HIV/AIDS Awareness Program, SSP, and Gender as subproject activities. It has organized: 06 training courses on HIV/AIDS, SSP for 240 participants (174 women - 73%); 11 O&M, rice and fresh water fish model training classes for water users with 423 participants (136 women - 32%).

PIM consultants of the subproject have organized 14 training classes for 680 people (278 women - 40.8%) on PIM, irrigation management transfer, water use planning and implementation, O&M and environmental management.

## 2. Component B: Irrigation Infrastructure Improvement

### 2.1. Procurement

#### a) Contracts awarded

The subproject has awarded 95 contracts with the total cost lower than the estimated cost were about 2% (VND5,000 million). However, at the time of final acceptance, all the contract prices were adjusted due to price escalation and additional works. As a result, the total contract cost after adjustment lower than the total cost was about 4% (VND10,000 million).

**Table 2-1. Procurement Summary**

| No. | Items | No. of packages | Estimated Cost (VND million) | Cost (VND million) | | | Additional cost (VND million) | Cost after adjustment (VND million) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Total | ADB | Counterpart | | Total | ADB | Counterpart |
| I | Consulting Services | 31 | 14,213 | 13,559 | 8,658 | 4,901 | 1,475 | 15,033 | 10,400 | 4,634 |
| II | Vehicles & Equipment | 5 | 2,440 | 2,409 | 2,168 | 241 | - | 2,409 | 2,168 | 241 |
| III | Civil works | 26 | 183,088 | 179,096 | 151,417 | 27,679 | (10,081) | 169,015 | 142,911 | 26,104 |
| IV | Onfarm canals | 23 | 32,167 | 32,130 | 27,311 | 4,820 | (921) | 31,209 | 26,528 | 4,681 |
| V | Others | 10 | 3,796 | 3,629 | 1,652 | 1,977 | (319) | 3,310 | 1,384 | 1,555 |
| | **Total** | **95** | **235,705** | **230,823** | **191,206** | **39,617** | **(9,846)** | **220,976** | **183,391** | **37,215** |

#### b) Contracts awarded by year

Cumulative contracts awarded in 2009 were 45 with the cumulative cost of VND106,223 million, equal to 48% the contract cost. In 2010, due to additional works, there were 03 new contracts. In 2011, while some other subprojects focused on onfarm construction and civil work completion, Tra Cau subproject had to procure 47 packages with the cost of VND113,279 million, equivalent to 52% of total contract cost.

**Table 2-2. Contracts awarded by year**

| Year | Number of Packages | Cost after price-adjustment (VND million) | Cumulative | |
|---|---|---|---|---|
| | | | Number of Packages | Cost after price-adjustment (VND million) |
| 2007 | 3 | 1,476 | 3 | 1,476 |
| 2008 | 18 | 10,250 | 21 | 11,726 |
| 2009 | 24 | 94,497 | 45 | 106,223 |
| 2010 | 3 | 1,096 | 48 | 107,319 |
| 2011 | 47 | 113,279 | 95 | 220,598 |
| 2012 | 0 | | | |
| **Total** | **95** | **220,598** | | |

### 2.2. Construction Results

The component B of Tra Cau subproject constructed 03 irrigation schemes. Until May 2012, all units of the component B have been completely constructed and handed-over to management units, particularly:

- Nui Ngang irrigation scheme: rehabilitated and constructed 15.7 km of primary canal, 14.4 km of secondary canal, 5.43 km of tertiary and field canal, and 02 project management buildings.
- Dien Truong irrigation scheme:
    - Rehabilitated and constructed 01 reservoir headwork, including: rehabilitated earth dam of 372 m long, 21.1m high, (ii) repaired culverts and (iii) rehabilitated flood discharge spillway with 30 m width and discharge flow of 404 $m^3/s$;
    - Rehabilitated 6.4km of main canal, 2.9km of primary canal, 1.8 km management concrete road, 01 power system, and 01 70$m^2$ management house.
- Liet Son – Chop Vung irrigation scheme: Liet Son – Chop Vung irrigation scheme: rehabilitated and constructed 21.84 km of primary canal, 19km of secondary canal.

The subproject has strengthened 52.3 km onfarm canal. The Chop Vung irrigation scheme (serving 450 ha of irrigation area) was removed from the subproject due to inefficiency.

### 2.3. Irrigation Service Results

Command Area: 4,250 ha. In June 2012, irrigated area: 3,880ha, equivalent to 94.6% of the command area. *(Source: AM of Final Project Review Mission, 15-27 June 2012).*

## 3. Resettlement and Compensation

Resettlement plan of the subproject has completely supplemented, and finished in May 2009 (for Nui Ngang and Dien Truong components) and in August 2010 (for Liet Son – Chop Vung component). The ADB issued a “no-objection” document to Nui Ngang and Dien Truong components on 05/06/2009, and to Liet Son – Chop Vung component on 27 August2010.

Total affected households are 2,392, none of them was relocated or acquired, equivalent to more than 10% of agricultural land. Total permanent acquired-land area is 230,739$m^2$, temporarily borrowed-land area is 168,760$m^2$.

Total compensation cost is VND17,804 million. All 2,392 households (100%) received compensation, none is minority. The subproject completed compensation in 2010.

## 4. Subproject Cost

**Table 4-1. Tra Cau subproject cost**

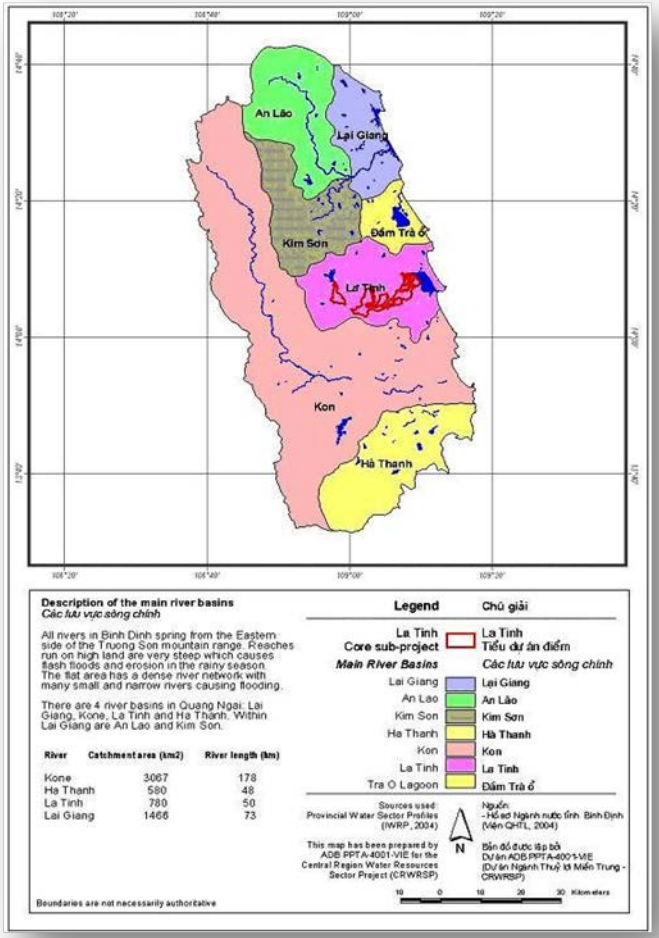
| No. | Items | Total (VND million) | ADB (VND million) | Countpart funds (VND million) | |
|---|---|---|---|---|---|
| | | | | Central | Local |
| 1 | Civil Works | 213,997 | 181,082 | - | 32,915 |
| 2 | Vehicles and Equipment | 2,848 | 2,563 | - | 285 |
| 3 | Project Management | 3,258 | 2,118 | - | 1,140 |
| 4 | Consulting Services | 17,976 | 11,897 | - | 6,079 |
| 5 | Resettlement, Compensation | 21,710 | - | - | 21,710 |

| No. | Items | Total (VND million) | ADB (VND million) | Countpart funds (VND million) | |
|---|---|---|---|---|---|
| | | | | Central | Local |
| 6 | Other | 4,692 | 1,383 | - | 3,308 |
| 7 | Contingency | 3,967 | - | - | 3,967 |
| 8 | CPO management | 25,757 | 23,776 | 1,982 | - |
| | **Total** | **294,205** | **222,819** | **1,982** | **69,404** |

## Attachment 3.6. Project Completion Report – La Tinh Subproject (Binh Dinh province)

### I. Introduction

Binh Dinh province is in the South Central Coast: the north faces Quang Ngai province, the south faces PhuYen province, the west faces Gia Lai province, and the east faces the EastSea. La Tinh River is one of the four big rivers in Binh Dinh; main branch is from highland on the west of Phu My commune to Nuoc Ngot reservoir, on North West – South East direction, to the East Sea via De Gi gate.




La Tinh irrigation scheme is on the north of Binh Dinh province, about 40km from Quy Nhon city. The subproject locates on both sides of La Tinh river, covering 9 communes of 2 districts: Cat Son, Cat Lam, Cat Hanh, Cat Tai, Cat Minh (Phu Cat district); My Hiep, My Tai, My Cat and My Chanh (Phu My district).

The subproject has: natural land area of 33,389 ha, agricultural land area of 10,290 ha, and beneficiary land area of 3,411ha. Population in subproject area is about 97,779 (22,223 households), beneficiaries are 36,466 (8,288 households).

The subproject was approved by Binh Dinh people's committee under Decision 3146/QĐ-CTUBND on 18 December 2006 with an fund of VND307 billion. Main works include: i) upgrading headworks at Hoi Son lake, Cay Gai weir and Cay Ke weir; ii) rehabilitating irrigation canal system; and iii) upgrading La Tinh river bank.

**Objectives:**

- Upgrade and construct water resources structures for irrigation/aquaculture/living water supply, poverty reduction, production increase, environmental improvement, and natural disaster reduction.

**Duties:**

- Rehabilitate and complete canal system of Hoi Son river in order to ensure water supply for 3,111 ha of cultivation area and 300 ha of aquaculture area in 8 communes (Phu My and Phu Cat districts): Cat Son, Cat Hanh, Cat Tai, Cat Minh, My Hiep, My Tai, My Cat and My Chanh;
- Upgrade La Tinh river downstream bank system for flood protection for 30,000 people and 1,427 ha of agricultural land in Cat Tai, Cat Minh, My Cat and My Chanh communes.

## II. Results:

### 1. Component A: Irrigation Management Systems Improvement

#### 1.1 Establishing Financially Viable Service Providers

Binh Dinh IMC was restructured as one-member limited liability Irrigation Management Company, under Enterprise Law. The company has developed its business plan and O&M plan for 2008-2011 on a basis of financial sustainability and efficient business operation.

#### 1.2 Strengthening Water User Participation

The subproject has helped communes strengthen and established 11 WUOs (03 new, 08 strengthened) functioning on the basis of hydraulic boundaries. All WUOs have completed their rehabilitation in accordance with agreed regulations, ensuring: (i)all WUOs have full legal status, their own seals and bank accounts; (ii) irrigation management's operation regulations of each WUO were consulted and approved by all users and the commune people's committee; and (iii) irrigation management teams of each WUO operate on the basis of hydraulic boundaries, and have appropriate labours and specific operation regulations.

WUOs' duties are: (i) maintaining a separate financial accounting system for irrigation/drainage activities; (ii) signing irrigation contracts with IMEs & water users; (iii) proposing onfarm structure development needs suitable for each own particular irrigation system, sending participants to onfarm structure design missions, and (iv) organizing onfarm construction.

The subproject has purchased management equipment/facilities for IMCs and WUGs with a cost of VND415 billion and VND346 million respectively, including: office tables, chairs, closets, computers, printers.

#### 1.3 Onfarm Development

Participatory onfarm development was encouraged. For that reason, onfarm canals were constructed on the basis of people's selection and local labour participation. WUOs were encouraged to sign onfarm construction contracts.

The total subproject cost was VND29,300 million. The subproject has upgraded and constructed 223 onfarm canals with total length of 44.6km (42km of concrete and 2.6km of PVC), equivalent to nearly 40% of canal length compared with project's requirement. Irrigated area is 2,117 ha. Investment unit was VND13.8 million per ha of cultivated area.

#### 1.4 Project Performance Monitoring System (PPMS)

PPMS based on information management software in connection with GIS functioned with support from MWH consultants. The IMC and PPMU were trained how to manage and update the PPMS. Staff of the IMC and PPMU can basically use the PPMS. PPMS/GIS built the subproject map (rate 1/10,000, using ArcGis software) for 9 communes with database as follows:

- Water resources structures: locations of structures, graphical sizes, technical parameters, design capacity, and images;
- Livelihood – economic: population, area, productivity, crop capacity, land use situation, etc.;
- Infrastructure: schools, health stations, historic vestiges, markets, temples, pagodas, etc.

#### 1.5 GAP and HIV/AIDS Awareness Program

The subproject has conducted GAP, HIV/AIDS Awareness Program, SSP, and Gender as subproject activities. It has organized: 02 training-of-trainers courses on GAP, HIV/AIDS,

SSP (in Quang Ngai and Quy Nhon cities) for 30 participants (18 women - 60%). PPMU Binh Dinh has organized: 10 training classes on advanced HIV/AIDS awareness, O&M skill, rice and fish models for 400 participants (206 women - 52%); 02 field trips, 07 training classes for 246 participants on water use plan, and O&M.

## 2. Component B: Irrigation Infrastructure Improvement

### 2.1 Procurement

#### a) Contracts awarded

The subproject has awarded 74 contracts with the total cost of VND283,364 million (2% lower than estimated cost). However, at the time of final acceptance, all contract prices were adjusted due to price escalation and additional works. As a result, the total contract cost after price-adjustment is VND311,610 million (10% higher than the awarded cost).

**Table 2-1. Procurement Summary**

| No. | Items | No. of packages | Estimated Cost (VND million) | Cost (VND million) | | | Additional cost (VND million) | Cost after adjustment (VND million) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Total | ADB | Counterpart | | Total | ADB | Counterpart |
| I | Consulting Services | 10 | 7,990 | 7,749 | 5,307 | 2,442 | 960 | 8,709 | 6,181 | 2,528 |
| II | Vehicles & Equipment | 6 | 2,057 | 1,985 | 1,787 | 199 | - | 1,985 | 1,787 | 199 |
| III | Civil works | 36 | 240,226 | 236,480 | 201,008 | 35,472 | 29,202 | 265,682 | 225,829 | 39,852 |
| IV | Onfarm canals | 17 | 30,590 | 30,440 | 25,874 | 4,566 | (1,126) | 29,314 | 24,917 | 4,397 |
| V | Others | 5 | 7,559 | 6,692 | 3,960 | 2,732 | (772) | 5,920 | 3,304 | 2,616 |
| **Total** | | **74** | **288,422** | **283,346** | **237,935** | **45,410** | **28,264** | **311,610** | **262,018** | **49,592** |

#### b) Contracts awarded by year

By 2009, 44 contracts have been awarded with the cost of VND232,505 million, equivalent to 75% the total contract cost. Remaining contracts, mainly onfarm construction, were implemented in 2010 and 2011.

**Table 2-2: Contracts awarded by year**

| Year | Number of Packages | Cost after price-adjustment (VND million) | Cumulative | |
|---|---|---|---|---|
| | | | Number of Packages | Cost after price-adjustment (VND million) |
| 2007 | 4 | 4,130 | 4 | 4,130 |
| 2008 | 5 | 2,752 | 9 | 6,882 |
| 2009 | 35 | 225,623 | 44 | 232,505 |
| 2010 | 10 | 48,897 | 54 | 281,402 |
| 2011 | 20 | 30,208 | 74 | 311,610 |
| 2012 | 0 | - | | |
| **Total** | **74** | **311,610** | | |

### 2.2 Construction Results

- Rehabilitated emergency road to Hoi son lake and strengthened Suoi Tre lake spillway basin;
- Rehabilitated Cay Gai weir gate, reconstructed Cay Ke weir to replace the old, unused one;
- Rehabilitated and constructed 140.7 km of canal and canal structures,

including: 66.9km of main and primary canals; 29.3 km of secondary canal, and 44.6 km onfarm structure which has 2.6 km of PVC canal (an additional unit in comparison with initial project plan);
- Rehabilitated 25 km of La Tinh river basin canal.

All subproject constructions were completed by 31 March 2012. Measurements for final acceptance and hand-over procedures were also completed. Volume and amount of irrigation infrastructure works was higher than required.

### 2.3 Irrigation Service Results

Command Area: 3,521 ha. In June 2012, irrigated area: 3,521 ha, equivalent to 100% of the command area. *(Source: AM of Final Project Review Mission, 15-27 June 2012).*

## 3. Resettlement and Compensation

Resettlement plan of the subproject started in September 2008 and basically completed in April 2009. ADB issued a "no-objection" document on 05 October 2009. Total affected households are 2,229, of which: 02 were relocated and have built houses for new lives, 129 were acquired ≥ 10% of agricultural land. Total permanent acquired-land area is 545,399 $m^2$, temporarily borrowed-land area is 45,285 $m^2$.

Total compensation cost is more than VND13 billion. All 2,229 households (100%) received compensation. Highly affected households received full compensation as well as other supports. The subproject also had support policies for 62 vulnerable households (poor, no-land, female-headed, senior-headed, etc…). Compensation completed in 2011.

## 4. Subproject Cost

**Table 4-1: Subproject cost**

| No. | Items | Total (VND million) | ADB (VND million) | Counterpart funds (VND million) | |
|---|---|---|---|---|---|
| | | | | Central | Local |
| 1 | Civil Works | 294,996 | 250,746 | - | 44,250 |
| 2 | Vehicles and Equipment | 1,985 | 1,786 | - | 199 |
| 3 | Project Management | 3,544 | 2,304 | - | 1,240 |
| 4 | Consulting Services | 6,693 | 4,127 | - | 2,566 |
| 5 | Resettlement, Compensation | 13,500 | - | - | 13,500 |
| 6 | Other | 10,226 | 5,856 | - | 4,370 |
| 7 | Contingency | 23,450 | - | - | 23,450 |
| 8 | CPO management | 28,171 | 26,023 | 2,148 | - |
| | **Total** | **382,565** | **290,842** | **2,148** | **89,575** |

# Appendix 4. Costs and Disbursements

**Table 1-1: Disbursements by project year**

| No. | Project Year | Disbursement ($)[30] |
|---|---|---|
| 1 | **Year 2007** | **3.000.000** |
| 2 | **Year 2008** | **485.648** |
| 3 | **Year 2009** | **17.121.556** |
| | Q1 | |
| | Q2 | 3.324.456 |
| | Q3 | 1.060.227(*) |
| | Q4 | 12.736.873 |
| 4 | **Year 2010** | **18.370.540** |
| | Q1 | 3.572.549 |
| | Q2 | 5.732.913 |
| | Q3 | 5.525.421 |
| | Q4 | 3.539.657 |
| 5 | **Year 2011** | **22.330.308** |
| | Q1 | 5.759.983 |
| | Q2 | 2.477.543 |
| | Q3 | 5.827.691 |
| | Q4 | 8.265.091 |
| 6 | **Year 2012** | **18.920.533** |
| | Q1 | 5.893.562 |
| | Q2 | 6.087.281 |
| | Q3 | 6.939.689 |
| | **Total** | **80.228.584** |

[30] Until 30 September 2012

**Table 2-2. Cumulative Costs and Disbursements**

| Month | IV-05 | I-06 | II-06 | III-06 | IV-06 | I-07 | II-07 | III-07 | IV-07 | I-08 | II-08 | III-08 | IV-08 | I-09 | II-09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project Implementation Time | 1% | 4% | 8% | 12% | 16% | 20% | 24% | 27% | 31% | 35% | 39% | 43% | 46% | 50% | 54% |
| Cumulative Contract cost (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 1% | 1% | 8% | 8% | 8% | 15% |
| Cumulative Disbursement (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 4% | 4% | 4% | 4% | 4% | 4% | 5% | 5% |
| Cumulative Contract cost (USD million) | | | | | | | | 0 | 1.2 | 1.2 | 1.1 | 6.1 | 6.2 | 6.2 | 11.8 |
| Cumulative Disbursement (USD million) | | | | | | | | 3 | 3.0 | 3.0 | 3.0 | 3.5 | 3.5 | 4.0 | 4.0 |

| Month | III-09 | IV-09 | I-10 | II-10 | III-10 | IV-10 | I-11 | II-11 | III-11 | IV-11 | I-12 | II-12 | III-12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project Implementation Time | 58% | 62% | 66% | 69% | 73% | 77% | 81% | 85% | 89% | 92% | 96% | 99% | 100% |
| Cumulative Contract cost (%) | 22% | 64% | 68% | 70% | 68% | 72% | 73% | 79% | 82% | 93% | 95% | 99% | 100% |
| Cumulative Disbursement (%) | 10% | 25% | 30% | 37% | 37% | 49% | 55% | 59% | 66% | 77% | 84% | 89% | 99% |
| Cumulative Contract cost (USD million) | 17.8 | 52.1 | 54.1 | 54.9 | 55.4 | 58.1 | 57.0 | 64.9 | 66.5 | 75.4 | 77.4 | 80.5 | 80.5 |
| Cumulative Disbursement (USD million) | 7.9 | 20.8 | 24.4 | 29.0 | 30.2 | 39.5 | 45.2 | 47.9 | 53.7 | 62.3 | 68.2 | 73.1 | 80.2 |

## Appendix 5. Status of Compliance with Loan Covenants

| No. | Covenant | Status of Compliance |
|---|---|---|
| 1 | **a. Counterpart Funding:** The Borrower shall ensure that counterpart funds are provided in a timely manner during each year of project implementation and, to such end; it shall make submissions of annual budgetary appropriation requests and shall disburse funds to the Project Provinces in a timely manner. | Complied with. However, some provinces were lately funded. |
| 2 | **b. Regulatory Framework:** The Borrower shall adopt, within thirty-six months of the Effective Date, necessary regulatory framework with revised institutional arrangements for management of irrigation systems at provincial and commune levels to enable achievement of the Project objectives more effectively. In particular, the Borrower shall take necessary measures to restructure IMCs, WUOs and WUAs and transfer the management of irrigation assets to IMCs, and WUOs/WUAs, as appropriate. The restructuring of IMCs shall include the establishment and full implementation of (a) technical and economic norms, including the quantities and assessed value of water provided which will depend on the size of area irrigated the crops being irrigated and the season in which the irrigation takes place; and (b) PPC-IMC contracts using the order-placing mechanism. | Complied with. Since 2009, all 06 IMCs has transformed to irrigation management one-member limited liability companies, functioning under Enterprise Law (No. 60/2005/QH11) |
| 3 | **c. Business Plans:** The Borrower shall, through MARD and the PPCs, ensure that each IMC develops its own business plan for achieving financial sustainability through organizational changes. Each IMC shall define its key functions, services, equipment and skills requirements, budgets, information flows, accounting procedures, performance monitoring, water pricing strategy, and financing plan. Business plans shall set out annual targets and milestones the achievement of which shall trigger release of Project funds to IMCs and beginning of civil works. Each business plan shall need to be approved by a respective PPC, and be satisfactory to ADB. | Complied with. In 2009, IMCs prepared business plans in support of project consultants. These plans were agreed by ADB and MARD, then approved by PPCs (May, June 2009) |
| 4 | **d. WUOs/WUAs:**The Borrower shall ensure through MARD and PCCs that each WUO under the Project is set up as legal entity on the basis of a combination of hydraulic and | Complied with. The project has established/ strengthened 136 WUOs (19 new and 117 |

| No. | Covenant | Status of Compliance |
|---|---|---|
| | administrative boundaries. WUAs shall be set up to ensure official representations of WUOs for canal serving multiple WUOs to operate and maintain the canals effectively, including fair sharing of water resources from the canal. At least 40 percent of participants of WUOs/WUAs shall be women. | strengthened) in compliance with proposed criteria. 50% of WUO's members are women |
| 5 | **e. Financial Viability:** The Borrower shall ensure through MARD and the PPCs that, by end of Project implementation, funding for operation and maintenance is determined and established in accordance with plan technical and economic norms issued by MARD to achieve and maintain the financial viability of IMCs and WUOs/WUAs (i.e., full funding of O&M costs), subject to compliance with the Borrower's applicable laws and regulations. | Complied with. In 2009, PPCs approved O&M plans for IMCs for period 2009-2012, ensuring fund for O&M activities of irrigation system. Water fees ensured WUO's expense for onfarm O&M. |
| 6 | **f. Resettlement:** (a) The Borrower shall ensure that all land acquisition and resettlement activities under the Project are implemented in accordance with the applicable laws and regulations of the Borrower, *ADB's Policy on Involuntary Resettlement (1995),* and the Resettlement Plan. In particular, the Borrower shall ensure (i) the timely provision and disbursement of counterpart funds to cover the actual replacement costs, (ii) compensation to affected persons at full replacement cost without deduction of depreciation or salvageable materials prior to their relocation and possession of land and assets; (iii) establishment of effective mechanisms for resolving grievances. In case of any discrepancies between the Borrower's laws, regulations and procedures and *ADB's Policy on Involuntary Resettlement,* the ADB's Policy shall apply.<br><br>(b) Prior to the start of land acquisition and resettlement activities with respect to any Subproject, the Borrower shall, through MARD and the PPCs, have (i) updated the respective Resettlement Plan in full consultation with affected persons based on the detailed design for the Subproject concerned, (ii) disclosed to affected persons and submitted to ADB for approval the updated Resettlement Plan, and (iii) engaged an independent monitoring agency, acceptable to ADB, to conduct independent external monitoring and evaluation of the resettlement process and impacts. Reports of the independent monitoring | Complied with. Details in Appendix 10. |

| No. | Covenant | Status of Compliance |
|---|---|---|
| | agency shall be submitted to ADB | |
| 7 | **g. Environment:** The Borrower shall ensure that (a) the Project facilities are designed, constructed, operated and maintained in compliance with applicable environmental laws and regulations of the Borrower, *ADB's Environment Policy (2002),* IEE and SIEE; (b) each EMP is updated, based on the detailed design for the Subproject concerned, and submitted to ADB for approval prior to final approval of the Subproject's detailed design; (c) all mitigation measures detailed in each EMP are implemented and monitored to a satisfactory standard, and (d) implementation of EMPs is reported to ADB. | Complied with. Details in Appendix 9. |
| 8 | **h. Social Issues:** (a) The Borrower shall ensure that the GAP is fully implemented throughout the Project implementation period. This shall include, among other things, training of the CPMU and PPMU staff, approximately 1,600 female farmers, and approximately 100 commune and Vietnam Women's Union officials at the local level to ensure gender mainstreaming through a participatory process.<br><br>(b) The Borrower shall ensure that the EMDPs are implemented in accordance with applicable laws and regulations of the Borrower, ADB's Policy on Indigenous Peoples (1998), and the EMDF. The Borrower shall update the EMDP for Tra Cau Subproject in Quang Ngai province.<br><br>(c) The Borrower shall also ensure that the Project facilities are designed, constructed, operated, and maintained in strict conformity with all applicable laws and regulations of the Borrower, including those with respect to social development, health, labour, child protection and occupational safety regulations and standards. | Complied with. Details in Appendix 8. |
| 9 | **i. Project Performance Monitoring System**: The Borrower shall ensure that PPMS, based on management information software linked to a geographic information system, is adopted for monitoring and evaluating implementation performance and development impacts at various stages of the Project cycle. | Complied with. PPMS/GIS was established and operated in CPO PPMUs. |
| 10 | **j. Accounting, Auditing, and Reporting:** (a) Without prejudice to the generality of Section | Complied with. |

| No. | Covenant | Status of Compliance |
|---|---|---|
| | 4.02 of this Loan Agreement, the Borrower shall ensure that (i) CPO, assisted by the CPMU, prepares separate accounts for the Project as a whole, monitors and consolidated accounts of each PPMU; (ii) within 12 months after the Effective Date, the CPMU establishes a simple computerized management information system suited to the financial management, and reporting needs of the Project; and (Ni) the CPMU prepares and submits to ADB annual audit report, progress and project completion reports in a timely manner.<br><br>(b) For the purpose of complying with the provisions of this Loan Agreement with respect to annual submission of audited accounts and financial statements, proceeds of the Loan may be used to finance expenditures of independent auditors acceptable to ADB. | |
| 11 | **k. Anticorruption Measure:** During Project implementation, MARD shall ensure that *ADB's Anticorruption Policy* is followed, it being understood that ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive or coercive practices relating to the Project. | Complied with. |

## Appendix 6. Analysis on Poverty

The project objective is to achieve poverty rate in project area of 5% from 12.1% at baseline time (conducted by VICA consultants) in June 2009.

Poverty standards issued by the government for 2001–2005, 2006–2010, and 2011–2015 periods are different. Exchange rate between US Dollar and Vietnam Dong is periodically different. Poverty standard for rural region is presented in Table 1.

**Table 1. Poverty standard from 2001 to 2015**

| Poverty standard | For rural regions[31] | | | |
|---|---|---|---|---|
| | VND/per./month | Exchange rate $/VND | $/per./month | $/per./day |
| 2001 – 2005[32] | 100,000 | 14,168[33] | 7.06 | 0.24 |
| 2006 – 2010[34] | 200,000 | 15,746[35] | 12.70 | 0.42 |
| 2011 – 2015[36] | 400,000 | 20,803[37] | 19.23 | 0.64 |

Poverty status of households in project area in 2005 (before the Project) was 38% in terms of poverty standard defined as household's average income below VND150,000/per./month[38], equivalent to $0.32/per./day. ADB states that poverty standard of VND150,000/per./month precisely reflects poverty status in comparison with that of VND100,000/per./month used by Ministry of Labour, Invalids, and Social Affairs (MOLISA) at the same time.

With international comparison on the basis of expense rate, calculated by $/day versus expense rate in the USA calculated by PPP (Purchasing Power Parity), commonly used standard is $1(PPP) and $2(PPP) per day. Because goods, services in the US are more expensive than developing countries, $1(PPP)/day in the USA are much less than $1(PPP)/day in developing countries[39]. Based on the WB data, exchange rate to PPP in 2001, 2006, and 2011 in Vietnam is presented in Table 2[40]:

**Table 2. PPP Conversion rate**

| | 2001 | 2006 | 2011 |
|---|---|---|---|
| Conversion rate | 0.2720 | 0.3061 | 0.3820 |
| $PPP | 3.68 | 3.27 | 2.62 |

[31] Poverty standard for urban is not presented as unrelated.
[32] Decision No. 1143/2000/QD-LDTBXH on 01 November 2000 by MOLISA about poverty standards for 2001 – 2005.
[33] The exchange rate USD/VND in 2000. Source : http://www.exchange-rate.org
[34] Decision No. 170/2005/QD-TTg on 08 July2005 by PM about poverty standards for 2006–2010.
[35] The exchange rate USD/VND 2005. Source: CIA World Fact Book, http://www. indexmundi.com
[36] Decision No. 09/2011/QD-TTg on 30 January 2011 by PM about poverty standards for 2011–2015.
[37] The exchange rate USD/VND 2010. Source : http://www.exchange-rate.org
[38] RRP
[39] Poverty, 2004 Vietnam Development Report. Report of Donors for Vietnam, Ha Noi, December 2003.
[40] WB.

Poverty standard converted to PPP is shown in Table 3**.**

**Table 3. Poverty standard converted to $(PPP)**

| Poverty Standard | Poverty standard by month at rural area in VND | Exchange Rate $ ~ VND | Poverty standard by month at rural area in ($) | Poverty standard by day at rural area in ($) | Conversion Rate | $PPP/day ($/day) |
|---|---|---|---|---|---|---|
| 2001 - 2005 | 100,000 | 14,725 | 6.79 | 0.23 | 0.2720 | 0.83 |
| 2006 - 2010 | 200,000 | 15,983 | 12.51 | 0.42 | 0.3061 | 1.36 |
| 2011 - 2015 | 400,000 | 20,803 | 19.23 | 0.64 | 0.3820 | 1.68 |

Table 3 shows, if calculated by $(PPP), in comparison with 2001 – 2005 period, poverty standard in 2006 – 2010 and 2011 – 2015 periods have respectively increased by 1.64 and 2 times. Current poverty standard of Vietnam is approaching close to that of international of 2 $/day.

Inflation rates of Vietnam from 2001 to 2011 are as follows:

| Year | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inflation rate (%) | -0.3 | 4.1 | 3.3 | 7.9 | 8.4 | 7.5 | 8.4 | 23.1 | 6.7 | 9.2 | 19.8 |

*Source: IMF*

Cumulative inflation rates over periods are as follows:

| | 2001 - 2011 | 2006 - 2011 | 2009 - 2011 |
|---|---|---|---|
| Cumulative inflation rate | 98.1% | 74.7% | 35.7% |

Poverty standard conversion to current rate included cumulative inflation rate:

**Table 4. Poverty standard conversion in VND**

| | Poverty standard by month at rural area (VND) | Cumulative inflation rate until 2011 (%) | Poverty standard conversion to 2011 (VND) |
|---|---|---|---|
| 2001 - 2005 | 100,000 | 98.1 | 198,100 |
| 2006 - 2010 | 200,000 | 74.7 | 349,400 |
| 2011 - 2015 | 400,000 | - | 400,000 |

If calculated by $(PPP), in comparison to 2001 – 2005, poverty standards of 2006 – 2010 and of 2011 – 2015 have respectively increased by 1.76 and 2 times. Therefore, poverty standard, in comparison of 2001 – 2005 and 2011 – 2015, by/on either $PPP or VND, has increased by 2 times. But poverty standard, in comparison of 2006 – 2010 and 2011 – 2015 on either $PPP or VND, has respectively increased by 1.23 and 1.15 time.

Using conversion rate of 1.23% under $PPP, poverty reduction in project area is shown in table 5**.**

**Table 5. Poverty reduction in project area**

| Subproject | Poverty rate in 2009 (Baseline year) (%) | Poverty rate in 2011 | Poverty rate of conversion in 2009 | Poverty rates increase/decrease (+/-) compared to 2009 (%) |
|---|---|---|---|---|
| Thach Thanh | 14,0 | 30,4 | 24,7 | 10,7 |
| Thuong My Trung | 13,2 | 15,8 | 12,8 | -0,4 |
| Nam Thach Han | 13,2 | 17,5 | 14,2 | 1,0 |
| Tay Nam Huong Tra | 8,3 | 9,7 | 7,9 | -0,4 |
| Tra Cau | 12,9 | 14,5 | 11,8 | -1,1 |
| La Tinh | 11,0 | 15,4 | 12,5 | 1,5 |
| **Project** | **12,1** | **17,4** | **14,1** | **2,0** |

Source: VICA Consultant

Poverty rate in 2011 shows Thach Thanh subproject had the highest rate, followed by Nam Thach Han, Thuong My Trung, La Tinh, Tra Cau, and Tay Nam Huong Tra subprojects. Poverty rate reduced in Thuong My Trung, Tay Nam Huong Tra, and Tra Cau subprojects. Poverty rate increased in Thach Thanh, Nam Thach Han, and La Tinh subprojects.

Overall, poverty rate in the whole project area increases by 2% compared to the baseline year. Because subprojects have just completed and not efficiently operated, poverty impact was not efficient. The project is expected to fully, efficiently operate by 2015.

# Appendix 7. Economic Re-evaluation

## A. Introduction

The Centre Irrigation Project has been implemented in the 6 central provinces including Thanh Hoa, Quang Binh, Quang Tri Thua Thien Hue, Quang Ngai, and Binh Dinh provinces from 2007 to 2012. The project is designed to reduce the poverty at the project sites. The detailed project objectives consist of (i) the improved management of irrigation systems; (ii) newly built and upgraded irrigation infrastructure, measures for the mitigation of natural disaster; and (iii) the sustainable environment management and protection. The total project investment is VND2,079 million, funded by ADB and the counterpart fund of Government of Vietnam.

This re-evaluation is prepared in order to provide different assessments to measure the project effectiveness. The report uses the appraisal methodology with minor modifications, and bases on data provided by the RRP, PPTA reports. Subproject performance information is provided by the PPMUs and local authorities.

## B. Methodology and Assumptions

The re-evaluation applies the exchange rate of VND20,800/USD at the date of June 30, 2012. Foreign investment costs were converted into Vietnamdong using the above exchange rate to count out the total project investment in local currency. The price of agricultural products in the international market is accounted based on the World Bank's commodity price forecast with tariff adjustment and needed expenses. The price of goods those are not exchanged in the international market depends on the actual price in the project sites which is identified through surveys.

The project costs include costs of construction, equipment purchase, consulting, project management, and costs relating to resettlement and land compensation.

Similar to the methodology used in the RRP and PPTA report, the re-evaluation uses with and without principle in evaluating the project incremental benefit. It is different from before and after principle. This principle is conducted by comparing incremental benefits gained in the subprojects and the sites nearby with similar social economic conditions without investment.
The project is expected to last 30 years with no residual value, based on the expected life of major project investments.

The net present value was calculated with the discounted rate of 12%. This rate is relevant to the RRP, PPTA reports, as well as the Decision 14TCN 112-2006 regarding Guidelines of economic evaluation for irrigation projects.

Rice is the core agricultural product of the project. The differences in terrain and land quality lead to the various portions of spring paddy in the agriculture crop structure. The additional outcomes in some subprojects are maize, groundnut, sugar-cane and aqua cultural products (mainly shrimp). Because of the insufficient statistics, the other plants and breeding products are not mentioned in this report without creating any significant impact on the results of the re-evaluation due to their small portions.

The PPTA report mentioned a number of non-agricultural benefits such as domestic water supply, power saving, and flood protection. Given the fact that these benefits are real, there is not a clear basis for evaluation. Besides, these benefits are small for a significant impact of the analysis results.

## C. Project benefit

**Benefited areas and households**: The project covers 6 central provinces using the services-oriented approach to manage the irrigation system. The users and provincial authorities are empowered to deeply involve in the management of irrigation system in their localities. This will be done by making the irrigation companies to be financial autonomy entities, establishing the group of irrigation system users; upgrading and constructing the irrigation infrastructure at the project sites. By the end of 2011, the total number of project beneficiaries was 400,000 persons accounting for 101,19% compared to the plan. The total irrigated area under the project was 28,079 ha, increased by 20% in comparison to the project pre-implementation.

**Table 1-1. Number of beneficiaries, cultivation area and serving area**

| Item | Unit | Total | Thach Thanh | Thuong My Trung | Nam Thach Han | Tay Nam Huong Tra | Tra Cau | La Tinh |
|---|---|---|---|---|---|---|---|---|
| Beneficiary (2002) | Person | 400,485 | 39,190 | 44,336 | 136,017 | 50,269 | 94,639 | 36,034 |
| Beneficiary (2011) | Person | 405,251 | 39,600 | 44,864 | 137,694 | 50,872 | 95,775 | 34,446 |
| Potential cultivation area | hectare | 33,441 | 4,022 | 4,188 | 13,867 | 3,167 | 4,250 | 3,947 |
| Existing cultivation area | hectare | 30,141 | 3,932 | 4,188 | 11,142 | 3,108 | 4,250 | 3,521 |
| Cultivation area (*) with support from project | hectare | 47,044 | 5,898 | 5,444 | 18,752 | 3,108 | 6,800 | 7,042 |
| Cultivation area without support from project | hectare | 55,419 | 6,291 | 8,376 | 19,440 | 5,284 | 7,225 | 8,803 |
| Irrigation area with support from project | hectare | 23,520 | 3,009 | 2,697 | 10,441 | 1,452 | 3,104 | 2,817 |
| Irrigation area without support from project | hectare | 28,079 | 3,761 | 3,853 | 10,990 | 2,074 | 3,800 | 3,521 |

*Sources: provided by PPTA, PPMU and the estimation of PCR consultants*
*Note: (*) estimate for the whole year (2-3 crops), (**) Time of figures collected 30/6/2012.*

The major benefit from the project was gained by improving the productivities of the plants, increasing the cultivation area and the price of agricultural products.

There has been a remarkable increase in the productivity of plants with the supports provided by the project. This is the result of timely and sufficient supply of water at the project site, especially during the dry season.

**Table 1-2. The productivity of the plants supportedand non-supported by the project**

| Subproject | Spring-Winter crop | | Summer-Autumn Crop | | Groundnut | | Maize | | Sugar-cane | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Supported by project | Non-supported by project | Supported by project | Non-supported by project | Supported by project | Non-supported by project | Supported by project | Non-supported by project | Supported by project | Non-supported by project |
| Thach Thanh | 5,500 | 4,000 | 5,700 | 5,500 | | | - | - | 75,000 | 65,000 |
| Thuong My Trung | 5,500 | 3,500 | 5,700 | 5,200 | | | | | | |
| Nam Thach Han | 5,500 | 4,800 | 5,700 | 5,300 | 2,500 | 1,500 | | | | |
| Tay Nam Huong Tra | 5,500 | 4,200 | 5,500 | 4,500 | 2,600 | 1,500 | | | | |
| Tra Cau | 5,500 | 4,000 | 5,700 | 5,000 | | | | | 70,000 | 60,000 |
| La Tinh | 5,500 | 4,000 | 5,500 | 5,000 | | | 55,000 | 40,000 | 70,000 | 60,000 |

## D. Evaluation of economic profit

**1. Investment and recurrent expenses**. The investment costs of the project are based on the statistics provided by the central project management unit and the subproject management units. The recurrent expenses are estimated applying the same method in the preparation of technical assistance report to facilitate the consistent cooperation of economic indicators.

**2. Economic value**. Analysis shows that all the projects gain profit. The Economic Interior Return Rates of the subprojects vary from 13% to 23% (See the following table).

**Table 1-3. The economic indicators of the subprojects**

| No. | Subprojects | NPV (VND billion) | EIRR | BCR |
|---|---|---|---|---|
| 1 | Thach Thanh | 83,284 | 18% | 1.43 |
| 2 | Thuong My Trung | 180,619 | 21% | 1.66 |
| 3 | Nam Thach Han | 103,215 | 16% | 1.30 |
| 4 | Tay Nam Huong Tra | 8,737 | 13% | 1.04 |
| 5 | Tra cau | 162,038 | 23% | 1.83 |
| 6 | La Tinh | 104,210 | 18% | 1.40 |

The above table shows that all the subprojects make economic benefits. The EIRRs of the projects with outcomes are sugar-cane and shrimp are much higher than those with rice, maize and groundnut. The subprojects of Thuong My Trung, Tra Cau and La Tinh have large areas of shrimp breeding so their EIRRs are also highest.

Tra Cau subproject has satisfactory economic indicators with current net value is VND162,038 billion and the EIRR is 23%. This has been reached by expanding the area of sugar cane and shrimp breeding (increased by double and trip respectively) comparing to the period before the project implementation. Besides, the sugar cane productivity increased by 15% compared to other areas which are not supported by the project, leading to major economic benefits for Tra Cau subproject. In addition, the report must also mention the substantial benefits which are brought by the increase in the rice volume of winter-spring crop from 4.0 tons / ha to 5,5 tons / ha and the summer-autumn crop of 5.0 tons/ ha to 5,7 tons/ ha. The increase in productivity will not only bring economic benefits but also contributes to food security and poverty reduction of the province.

Similar to the Tra Cau, La Tinh has significant economic benefits from the project investment. Economic benefit of La Tinh has been mainly made thanks to a large increase of the maize crop and two – crop rice.

The subproject which has the least positive economic indicators is Huong Tra with current net value is 8,737 million and EIRR is 13%. Huong Tra made only two crops of rice and groundnut production. Although the yields of these crops increased significantly with the support of the project, especially groundnut, the total benefits are not signification due to the low economic value of these agricultural products.

**Attachments:**

- Attachment 7-1. Prices of goods
- Attachment 7-2. Economic indicators of subpojects

# Attachments

## Attachment 7-1. Price of goods

**Table 1. The identification of rice price in project sites**

| No | Item | Unit | Forecasted price in 2012 |
|---|---|---|---|
| 1 | The 5% price of rice in Bangkok in 2012 | USD/ton | 550.00 |
| 2 | Quality adjustment | USD/ton | 22.00 |
| 3 | Freight and Insurance Cost to Hai Phong port | USD/ton | 30.00 |
| 4 | FOB applied at Hai Phong port | USD/ton | 498.00 |
| 5 | Convert into Vietnam dong (1USD=20,800) | VND Billion/ton | 10.36 |
| 6 | Port charges, loss and profit of the importer (10%) | VND Billion/ton | 1.04 |
| 7 | Export price at Hai Phong port | VND Billion /ton | 9.32 |
| 8 | Goods conveying from project sites to Hai Phong | VND Billion/ton | 1.00 |
| 9 | Economic price applied at the border of project sites | VND Billion/ton | 8.32 |
| 10 | Milling cost (exclude of bran collected) | VND Billion/ton | |
| 11 | Economic price applies at the border of project sites | VND Billion/ton | 8.32 |
| 12 | Convert to raw rice (0.68) | VND Billion/ton | 5.66 |
| 13 | Transportation and maintenance costs at project sites | VND Billion/ton | 0.20 |
| **14** | **Economic price at field** | **VND Billion/ton** | **5.46** |

**Table 2. The identification of price of shrimp at the project sites**

| No | Item | Unit | Forecasted price in 2012 |
|---|---|---|---|
| 1 | Price of Mexican shrimp | USD/ton | 1,015.00 |
| 3 | Freight and Insurance Cost to Hai Phong port | USD/ton | 30.00 |
| 4 | FOB at Hai Phong port | USD/ton | 985.00 |
| 5 | Convert into Vietnam dong (1USD=20,800) | VND Billion/ton | 20.49 |
| 6 | Port charges, loss and profit of the importer (15%) | VND Billion/ton | 3.07 |
| 7 | Export price at Hai Phong port | VND Billion/ton | 17.41 |
| 8 | Goods conveying from project sites to Hai Phong | VND Billion/ton | 2.00 |
| 9 | Economic price applies at the border of project sites | VND Billion/ton | 15.41 |
| 13 | Transportation and maintenance costs at project sites | VND Billion/ton | 2.00 |
| **14** | **Economic price at field** | **VND Billion/ton** | **13.41** |

**Table 3. Price of maize at the project sites**

| No | Item | Unit | Forecasted price in 2012 |
|---|---|---|---|
| 1 | Packed goods with FOB price in Europe | USD/ton | 280.00 |
| 2 | Freight and Insurance Cost to Hai Phong port | USD/ton | 30.00 |
| 3 | CIF applied at Hai Phong port | USD/ton | 310.00 |
| 4 | Convert into Vietnam dong (1USD=20,800) | VND Billion/ton | 6.45 |
| 5 | Port charge | VND Billion/ton | |
| 6 | Storage cost | VND Billion/ton | 0.13 |
| 7 | Cost for Transportation to project sites | VND Billion/ton | 1.00 |
| 8 | Economic price at the border of project sites | VND Billion/ton | 7.58 |
| 9 | Convert into corn | VND Billion/ton | 3.03 |
| 10 | Cost for transportation to the field | VND Billion/ton | 0.20 |
| **11** | **Economic price at field** | **VND Billion/ton** | **3.23** |

**Table 4. Price of nitrogenous fertilizer at the project sites**

| No | Item | Unit | Forecasted price in 2012 |
|---|---|---|---|
| 1 | Packed goods with FOB price in Europe | USD/ton | 450.00 |
| 2 | Freight and Insurance Cost to Hai Phong port | USD/ton | 30.00 |
| 3 | CIF at Hai Phong port | USD/ton | 480.00 |
| 4 | Convert into Vietnam dong (1USD=20,800) | VND Billion/ton | 9.98 |
| 5 | Port charge | VND Billion/ton | |
| 6 | Storage cost | VND Billion/ton | 0.13 |
| 7 | Cost for Transportation to project sites | VND Billion/ton | 1.00 |
| 8 | Economic price at the border of project sites | VND Billion/ton | 11.11 |
| 9 | Cost for transportation to the field | VND Billion/ton | 0.20 |
| **10** | **Economic price at field** | **VND Billion/ton** | **10.91** |

**Table 5. Price of Kali fertilizer at the project sites**

| No | Item | Unit | Forecasted price in 2012 |
|---|---|---|---|
| 1 | Packed goods with FOB price in Europe | USD/ton | 475.00 |
| 2 | Freight and Insurance Cost to Hai Phong port | USD/ton | 30.00 |
| 3 | CIF applied at Hai Phong port | USD/ton | 505.00 |
| 4 | Convert into Vietnam dong (1USD=20,800) | VND Billion/ton | 10.50 |
| 5 | Port charge | VND Billion/ton | |
| 6 | Storage cost | VND Billion/ton | 0.13 |
| 7 | Cost for Transportation to project sites | VND Billion/ton | 1.00 |
| 8 | Economic price at the border of project sites | VND Billion/ton | 11.63 |
| 9 | Cost for transportation to the field | VND Billion/ton | 0.20 |
| **10** | **Economic price at field** | **VND Billion/ton** | **11.43** |

**Table 6. Price of Phosphate fertilizer at the project sites**

| No | Item | Unit | Forecasted price in 2012 |
|---|---|---|---|
| 1 | Packed goods with FOB price in Europe | USD/ton | 185.00 |
| 2 | Freight and Insurance Cost to Hai Phong port | USD/ton | 30.00 |
| 3 | CIF at Hai Phong port | USD/ton | 215.00 |
| 4 | Convert into Vietnam dong (1USD=20,800) | VND Billion/ton | 4.47 |
| 5 | Port charge | VND Billion/ton | |
| 6 | Storage cost | VND Billion/ton | 0.13 |
| 7 | Cost for Transportation to project sites | VND Billion/ton | 1.00 |
| 8 | Economic price at the border of project sites | VND Billion/ton | 5.60 |
| 9 | Cost for transportation to the field | VND Billion/ton | 0.20 |
| **10** | **Economic price at field** | **VND Billion/ton** | **5.40** |

## Attachment 7-2. Economic indicators of the subprojects

### Table 1. Economic efficiency of Thach Thanh subproject

| Year | Investment cost | Maintenance cost | Total cost | Incremental benefit | Total Incremental benefit | Net cash flow |
|---|---|---|---|---|---|---|
| 2007 | 3,914 | | 3,914 | | - | (3,914) |
| 2008 | 5,196 | | 5,196 | | - | (5,196) |
| 2009 | 42,374 | | 42,374 | | - | (42,374) |
| 2010 | 79,575 | | 79,575 | | - | (79,575) |
| 2011 | 89,923 | | 89,923 | | - | (89,923) |
| 2012 | 44,484 | | 44,484 | 60,274 | 60,274 | 15,790 |
| 2013 | | 5,309 | 5,309 | 60,274 | 60,274 | 54,965 |
| 2014 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2015 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2016 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2017 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2018 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2019 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2020 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2021 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2022 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2023 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2024 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2025 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2026 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2027 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2028 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2029 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2030 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2031 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2032 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2033 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2034 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2035 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2036 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2037 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2038 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2039 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2040 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2041 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| 2042 | | 7,964 | 7,964 | 60,274 | 60,274 | 52,310 |
| | **265,466** | | **501,731** | | **1,868,493** | **1,366,762** |
| | | | | | **NPV** | **83,284** |
| | | | | | **EIRR** | **18%** |
| | | | | | **BCR** | **1.43** |

**Table 2. Economic efficiency of Thuong My Trung subproject**

| Year | Investment cost | Maintenance cost | Total cost | Incremental benefit | Total Incremental benefit | Net cash flow |
|---|---|---|---|---|---|---|
| 2007 | 2,591 | | 2,591 | | - | (2,591) |
| 2008 | 8,711 | | 8,711 | | - | (8,711) |
| 2009 | 76,344 | | 76,344 | | - | (76,344) |
| 2010 | 99,846 | | 99,846 | | - | (99,846) |
| 2011 | 91,554 | | 91,554 | | - | (91,554) |
| 2012 | 99,012 | | 99,012 | 99,040 | 99,040 | 28 |
| 2013 | | 7,561 | 7,561 | 99,040 | 99,040 | 91,479 |
| 2014 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2015 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2016 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2017 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2018 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2019 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2020 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2021 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2022 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2023 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2024 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2025 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2026 | | 1,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2027 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2028 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2029 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2030 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2031 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2032 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2033 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2034 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2035 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2036 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2037 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2038 | | 11,342 | 1,342 | 99,040 | 99,040 | 87,698 |
| 2039 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2040 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2041 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| 2042 | | 11,342 | 11,342 | 99,040 | 99,040 | 87,698 |
| | **378,058** | | **714,530** | | **3,070,237** | **2,355,707** |
| | | | | | **NPV** | **180,619** |
| | | | | | **EIRR** | **21%** |
| | | | | | **BCR** | **1.66** |

**Table 3. Economic efficiency of Nam Thanh Han subproject**

| Year | Investment cost | Maintenance cost | Total cost | Incremental benefit | Total Incremental benefit | Net cash flow |
|---|---|---|---|---|---|---|
| 2007 | 1,500.00 | | 1,500 | | - | (1,500) |
| 2008 | 11,457.00 | | 11,457 | | - | (11,457) |
| 2009 | 88,350.00 | | 88,350 | | - | (88,350) |
| 2010 | 104,885.00 | | 104,885 | | - | (104,885) |
| 2011 | 107,031.00 | | 107,031 | | - | (107,031) |
| 2012 | 169,704.00 | | 169,704 | 97,409 | 97,409 | (72,295) |
| 2013 | | 9,658.54 | 9,659 | 97,409 | 97,409 | 87,751 |
| 2014 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2015 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2016 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2017 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2018 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2019 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2020 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2021 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2022 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2023 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2024 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2025 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2026 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2027 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2028 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2029 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2030 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2031 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2032 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2033 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2034 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2035 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2036 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2037 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2038 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2039 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2040 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2041 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| 2042 | | 14,487.81 | 14,488 | 97,409 | 97,409 | 82,922 |
| | **482,927** | | **912,732** | | **3,019,694** | **2,106,962** |
| | | | | | **NPV** | **103,215** |
| | | | | | **EIRR** | **16%** |
| | | | | | **BCR** | **1.30** |

**Table 4. Economic efficiency of Tay Nam Huong Tra subproject**

| Year | Investment cost | Maintenance cost | Total cost | Incremental benefit | Total Incremental benefit | Net cash flow |
|---|---|---|---|---|---|---|
| 2007 | 1,920.00 | | 1,920 | | - | (1,920) |
| 2008 | 6,976.00 | | 6,976 | | - | (6,976) |
| 2009 | 33,362.00 | | 33,362 | | - | (33,362) |
| 2010 | 82,574.00 | | 82,574 | | - | (82,574) |
| 2011 | 69,643.00 | | 69,643 | | - | (69,643) |
| 2012 | 133,237.00 | | 133,237 | 51,856 | 51,856 | (81,381) |
| 2013 | | 6,554.24 | 6,554 | 51,856 | 51,856 | 45,301 |
| 2014 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2015 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2016 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2017 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2018 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2019 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2020 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2021 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2022 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2023 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2024 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2025 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2026 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2027 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2028 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2029 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2030 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2031 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2032 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2033 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2034 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2035 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2036 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2037 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2038 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2039 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2040 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2041 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| 2042 | | 9,831.36 | 9,831 | 51,856 | 51,856 | 42,024 |
| | **327,712** | | **619,376** | | **1,607,525** | **988,149** |
| | | | | | **NPV** | **8,737** |
| | | | | | **EIRR** | **13%** |
| | | | | | **BCR** | **1.04** |

**Table 5. Economic efficiency of Tra Cau**

| Year | Investment cost | Maintenance cost | Total cost | Incremental benefit | Total Incremental benefit | Net cash flow |
|---|---|---|---|---|---|---|
| 2007 | 1,290 | | 1,290 | | - | (1,290) |
| 2008 | 16,778 | | 16,778 | | - | (16,778) |
| 2009 | 52,049 | | 52,049 | | - | (52,049) |
| 2010 | 40,373 | | 40,373 | | - | (40,373) |
| 2011 | 95,337 | | 95,337 | | - | (95,337) |
| 2012 | 64,311 | | 64,311 | 77,992 | 77,992 | 13,681 |
| 2013 | | 5,403 | 5,403 | 77,992 | 77,992 | 72,590 |
| 2014 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2015 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2016 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2017 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2018 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2019 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2020 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2021 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2022 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2023 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2024 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2025 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2026 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2027 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2028 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2029 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2030 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2031 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2032 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2033 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2034 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2035 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2036 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2037 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2038 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2039 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2040 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2041 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| 2042 | | 8,104 | 8,104 | 77,992 | 77,992 | 69,888 |
| | **270,138** | | **510,561** | | **2,417,762** | **1,907,201** |
| | | | | | **NPV** | **162,038** |
| | | | | | **EIRR** | **23%** |
| | | | | | **BCR** | **1.83** |

**Table 6. Economic efficiency of La Tinh**

| Year | Investment cost | Maintenance cost | Total cost | Incremental benefit | Total Incremental benefit | Net cash flow |
|---|---|---|---|---|---|---|
| 2007 | 1,500.00 | | 1,500 | | - | (1,500) |
| 2008 | 9,345.00 | | 9,345 | | - | (9,345) |
| 2009 | 66,164.00 | | 66,164 | | - | (66,164) |
| 2010 | 115,451.00 | | 115,451 | | - | (115,451) |
| 2011 | 118,517.00 | | 118,517 | | - | (118,517) |
| 2012 | 44,234.00 | | 44,234 | 79,563 | 79,563 | 35,329 |
| 2013 | | 7,104.22 | 7,104 | 79,563 | 79,563 | 72,459 |
| 2014 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2015 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2016 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2017 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2018 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2019 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2020 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2021 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2022 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2023 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2024 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2025 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2026 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2027 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2028 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2029 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2030 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2031 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2032 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2033 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2034 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2035 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2036 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2037 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2038 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2039 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2040 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2041 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| 2042 | | 10,656.33 | 10,656 | 79,563 | 79,563 | 68,907 |
| | **355,211** | | **671,349** | | **2,466,455** | **1,795,107** |
| | | | | | **NPV** | **104,210** |
| | | | | | **EIRR** | **18%** |
| | | | | | **BCR** | **1.40** |

# Appendix 8. Social Support Program, Gender Action Plan and HIV/AIDS Awareness Program

## 1. INTRODUCTION

The purposes of Social Support Program (SSP), Gender Action Plan (GAP), HIV/AIDS Awareness Program, are to support gender equality, to cope with and mitigate HIV/AIDS infection threat in the community.

The project requires each subproject to have one GAP in order to ensure that benefits of the project are equally distributed, and to support women participation in O&M. GAP will be conducted through gender awareness improvement programs for local staff and IMC. It also encourages and creates conditions for women in project areas to participate in leadership training, agricultural extension services, and business management capacity building. The project will train staff in Vietnam Women's Union (VWU) at different membership levels as trainers; support training of trainers (TOT), HIV/AIDS Awareness Program for people, construction workers in project areas in order to cope with HIV/AIDS infection risks among migrant workers. Along with HIV/AIDS infection reduction in project-area community, the HIV/AIDS awareness program will focus on high-risk groups like constructors, construction workers, and immigrants.

## 2. RESULTS

### 2.1 Gender Action Plan (GAP), HIV/AIDS Awareness Program, and Social Support Program (SSP)

PPMUs in subprojects organized GAP, HIV/AIDS Awareness Program, and SSP. Predominant activities are: to organize gender training for trainers, gender awareness for communal staff, WUGs, water users in project areas. Subprojects also conducted trainings on canal & drain system, O&M, production plan, irrigation techniques, raising techniques, aquacultural techniques, etc. The project has organized 138 classes: 45 classes on GAP and HIV/AIDS for 1,944 participants, 93 classes on SSP for 4,653 participants. Rate of women participating in these classes is 46% on average, higher than the project's requirement. Details of GAP, HIV/AIDS, and SSP trainings conducted by PPMUs are shown in Table 2-1.

**Table 2-1. GAP, HIV/AIDS, and SSP trainings conducted by PPMUs**

| Contents | Participants | | | |
|---|---|---|---|---|
| | Classes | Participants | Women | Rate of Women |
| **1. Thach Thanh Subproject** | **28** | **1,828** | **779** | **43%** |
| – GAP Trainings for communal staff, WUO Boards, water users | 6 | 292 | 150 | 51% |
| – HIV/AIDS Trainings for water users, workers | 14 | 1.223 | 532 | 43% |
| – Fresh water fish raising techniques, production plan for households | 8 | 313 | 97 | 31% |
| **2. Thuong My Trung Subproject** | **22** | **960** | **296** | **31%** |
| – GAP, HIV/AIDS Trainings for communal staff, WUO Boards, water users, PPMU and contractors | 13 | 568 | 222 | 39% |
| – O&M, fish raising techniques | 9 | 392 | 74 | 19% |

| Contents | Participants | | | |
|---|---|---|---|---|
| | Classes | Participants | Women | Rate of Women |
| **3. Nam Thach Han Subproject** | **58** | **2.625** | **1.443** | **55%** |
| – GAP, HIV/AIDS Trainings | 37 | 1.660 | 912 | 55% |
| – O&M for irrigation system, onfarm structures, fish raising, etc. | 21 | 965 | 531 | 55% |
| **4. Tay Nam Huong Tra Subproject** | **12** | **472** | **148** | **31%** |
| – GAP, HIV/AIDS Trainings | 10 | 390 | 125 | 32% |
| – O&M for irrigation system, onfarm structures, fish raising, etc. | 2 | 82 | 23 | 28% |
| **5. Tra Cau Subproject** | **8** | **312** | **186** | **60%** |
| – GAP, HIV/AIDS Trainings | 6 | 240 | 174 | 73% |
| – O&M for irrigation system, onfarm structures, fish raising, etc. | 2 | 72 | 12 | 17% |
| **6. La Tinh Subproject** | **10** | **400** | **206** | **52%** |
| – GAP, HIV/AIDS Trainings | 7 | 280 | 159 | 57% |
| – O&M for irrigation system, onfarm structures, fish raising, etc. | 3 | 120 | 47 | 39% |
| **Total** | **138** | **6.597** | **3.058** | **46%** |

### 2.2 Gender in Water User Group (WUG) establishment, and Participatory Irrigation Management (PIM) capacity building

In accordance with gender in water user cooperatives, groups approved, 40% of people participating in WUOs must be women. In addition, women must be encouraged to stay in leader positions in WUOs. Rate of women in WUOs established/strengthened was 50%, higher than project's requirement. Details are showed in Table 2-2.

**Table 2-2. Rate of Women participating in WUOs/WUGs**

| Subproject | Total of WUO/WUGs | WUO Members | |
|---|---|---|---|
| | | Total person | Rate of women |
| Thach Thanh | 16 | 14,725 | 50% |
| Thuong My Trung | 24 | 16,685 | 50% |
| Nam Thach Han | 52 | 14,689 | 50% |
| Tay Nam Huong Tra | 13 | 25,320 | 50% |
| Tra Cau | 20 | 22,362 | 50% |
| La Tinh | 11 | 18,110 | 50% |
| **Total** | **136** | **111,892** | |

Rate of women participating in management/leadership of WUOs was only 3.1%. Rate of women in administration of WUOs/WUAs was 51.7%; rate of irrigation women was 1.3%. On average, rate of women involved in WUOs/WUAs and water delivery was 8.2%. The rate of women involved in management, operation was limited because of hard irrigation work and unusual working time. To get a higher rate, local authorities must issue support policies and continue encouraging their participation. Details are showed in Table 2-3.

**Table 2-3. Rate of women participating in management of WUOs/WUAs and water delivery**

| Subproject | Total of WUOs | Management Staff of WUO (Person) | | Staff of WUO (Person) | | Irrigation Team (Person) | |
|---|---|---|---|---|---|---|---|
| | | Total | Women (%) | Total | Women (%) | Total | Women (%) |
| Thach Thanh | 16 | 96 | 17,7 | 29 | 55,2 | 362 | 3,9 |
| Thuong My Trung | 24 | 89 | - | 48 | 100 | 226 | 0,0 |
| Nam Thanh Han | 52 | 168 | - | 102 | 2,9 | 390 | 1,0 |
| Tay Nam Huong Tra | 13 | 54 | - | 17 | 100 | 160 | 0,6 |
| Tra Cau | 20 | 84 | - | 21 | 100 | 142 | 0,0 |
| La Tinh | 11 | 55 | - | 44 | 68,2 | 129 | 14,0 |
| **Total** | **136** | **546** | **3.1** | **261** | **51,7** | **1,409** | **1,3** |

The project, with support from PIM consultants and PPMUs, has organized many capacity building trainings for WUOs. PIM consultants conducted trainings on PIM capacity buildings, irrigation management, environmental management, gender in water resources/agriculture and rural development, and O&M. Rate of women participating these trainings was 47.3%, higher than expected. Except La Tinh subproject, other subprojects achieved target rate of 40%; in particular Thach Thanh and Thuong My Trung subprojects have high rate of women of 54.2% and 49.1% respectively.

PPMUs also conducted trainings for WUOs/WUAs on GAP, HIV/AIDS, rice fish model, onfarm canal management skills, and organized study tours to learn about onfarm structures, cooperatives, etc. The rate of women participating in these activities was 42.3% - higher than expected. Thuong My Trung, Tay Nam Huong Tra, Tra Cau and La Tinh subprojects had the rate lower than 40%. Thach Thanh and Nam Thach Han had higher rate than expected. Nam Thach Han had a very high rate of 54.9%, contributing to the project's average rate higher than required.

Gender index from capacity building for WUOs/WUAs conducted by both PPMUs and PIM consultants was 44.3% - higher than expected. Details are showed in Table 2-4.

**Table 2-4: Rate of women participating in capacity building for WUOs**

| Subproject | By PIM consultants | | | By PPMUs | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Partici-pants | Women (%) | Total | Partici-pants | Women (%) | Total | Partici-pants | Women (%) |
| Thach Thanh | 16 | 718 | 54,2 | 33 | 2,009 | 40,3 | 49 | 2,727 | 30,3 |
| Thuong My Trung | 18 | 1,006 | 49,1 | 24 | 965 | 28 | 42 | 1,971 | 38,8 |
| Nam Thach Han | 32 | 1,312 | 46,1 | 59 | 2,655 | 54,9 | 91 | 3,967 | 46,9 |
| Tay Nam Huong Tra | 18 | 740 | 47,3 | 12 | 472 | 31,4 | 30 | 1,212 | 50,2 |
| Tra Cau | 11 | 502 | 44 | 10 | 420 | 29,5 | 21 | 922 | 30,2 |
| La Tinh | 8 | 320 | 36,3 | 18 | 646 | 35 | 26 | 966 | 33,6 |
| **Total** | **103** | **4,598** | **47,3** | **156** | **7,167** | **42,3** | **259** | **11,765** | **44,3** |

### 2.3 Gender in other activities

As the project's requirements, compensation & resettlement committees at communal level must have representatives from communal VWUs. Subprojects must ensure participation of village/district's VWU representatives in compensation and resettlement.

## 3. EVALUATION OF RESULTS

### 3.1 Advantages

During GAP implementation, HIV/AIDS program was positively supported by related agencies like VWU, HIV/AIDS prevention centres, forestall/agricultural extension centres, DWRs and IMCs. Activities also received strong cooperation from national Gender Equality and HIV/AIDS prevention programs in project areas.

Prompt financial distribution and strong collaboration of CPO, PPMUs, and MWH have helped enforce timely GAP, HIV/AIDS, and SSP implementation. This helped meet basic requirements on gender index in project activities. Some project activities have reached and passed gender targets mentioned in GAP and SSP, e.g. rate of women participating in WUG capacity building, or in HIV/AIDS and gender awareness training.

### 3.2 Constraints

GAP, SSP and Gender are new activities of the project. Lack of human resources, especially social-specialized staff, is a constraint for subprojects.

Because of traditional gender prejudices or limited gender awareness in water users or local officers, gender-index improvement issue in institutions, PIM or O&M was not or less cared about. Gender equality/participation indices were still low. Women's roles and skills in water resources activities at project areas have not been improved very much.

### 3.3 General Evaluation

- GAP, HIV/AIDS and SSP were efficient; rate of women participating in GAP and SSP activities of subprojects have passed the proposed rate.
- These results much depended on the strict collaboration of CPO, PPMU, MWH consultants, and related partners like provincial VWUs, Department of Health, agricultural extension centres, and other provincial agencies. The participation of CPO, PPMUs in monitoring and management of GAP, HIV/AIDS, and SSP was very important for the efficiency. In addition, the collaboration, supervising of ADB gender, social officers also strongly contributed to the project's satisfactory results.
- Gender index in Component A's other activities was still low. Particularly, Gender in WUG capacity building, rate of women was 47.3%; however, rate of women involved in WUG steering committee (involved in making decision) was not high enough. Rate of women in O&M capacity building and environmental impact assessment was also at low level.
- Women's participation in WUG steering committees was low partly because of traditional labour-assignment at project areas, and partly because of unchanged gender awareness in local authorities.

## 4. CONCLUSIONS AND RECOMMENDATIONS

### 4.1 Conclusions

- Gender index in GAP, SSP and HIV/AIDS awareness improvement of the project has reached and passed its targets. Upon ADB initial assessment in Hanoi, gender and social support activities were satisfactory.
- GAP was implemented through gender capacity building for local staff and IMCs. Encourage and create conditions for women in project areas to participate in leadership training, agricultural extension services, and business management skill building. The

project has trained staff in different membership levels of VWU as trainers; supported training of trainers, HIV/AIDS Awareness Program for people, construction workers in project areas in order to cope with HIV/AIDS infection risks among migrant workers and communities. HIV/AIDS Awareness Program satisfactorily focused on high-risk groups like constructors, construction workers, and immigrants.

- Gender in other activities of Component A was not satisfactory. Within PIM, O&M and Resettlement & Compensation, rate of women participating in WUGs' steering committees, O&M classes and Resettlement & Compensation committees of subprojects was not quite high.

**4.2 Recommendations**

- For better efficiency in gender action, social support in general water resources projects, CPO and PPMUs need to have specialized gender/social officers, create conditions for them to work as PPMUs' and departments' official members responsible for gender and social issues.
- For WUO's sustainable building and development, CPO and PPMUs must enforce more Gender in PIM, particularly in increase of women's participation in WUG Steering Committees.
- Institutionally, WUOs need to clearly define benefits, participation of women and female-headed water use households in an effort to ensure gender equality in water resources management and usage in the community.

# Appendix 9. Implementation of Environmental Management Plan

## 1. Introduction

For the project's sustainability in compliance with environmental protection requirements of ADB and the GOV prior to subproject implementation, PPMUs have prepared Environmental Management Plan (EMP) institutionalizing environmental management agreements, responsibilities and duties which will be implemented before and during subproject construction and operation.

During project implementation, EMP was step-by-step followed and implemented by PPMUs, Environmental Monitoring Consultants and Construction Contractors as addressed in EMP.

## 2. EMP Implementation Results

### 2.1 EMP Approval Process

Before subprojects' construction period, the environmental consultants from the MWH consultant team, in collaboration with PPMUs, have prepared the EMP whose contents and structures complied with ADB's Initial Environmental Examination (IEE).
EMP of subprojects includes:

1. EMP Brief Introduction
2. Potential impacts
3. Proposed mitigation measures
4. Proposed environmental monitoring
5. Proposed community consultation
6. Responsibilities and duties in implementation, mitigation and monitoring
7. Responsibilities in Reporting and Evaluation
8. Work Plan
9. Proposed Procurement
10. Integrated Cost Estimate
11. Feedback and Adjustment Mechanisms

Due to technical design changes in Liet Son – Chop Vung component, EMP of Tra Cau subproject was separated into 2 EMPs: (i) Environmental Management Plan of Dien Truong – Nui Ngang component, and (ii) Environmental Management Plan of Liet Son – Chop Vung component. All EMP subproject reports have been approved by ADB, as shown in Table 2-1:

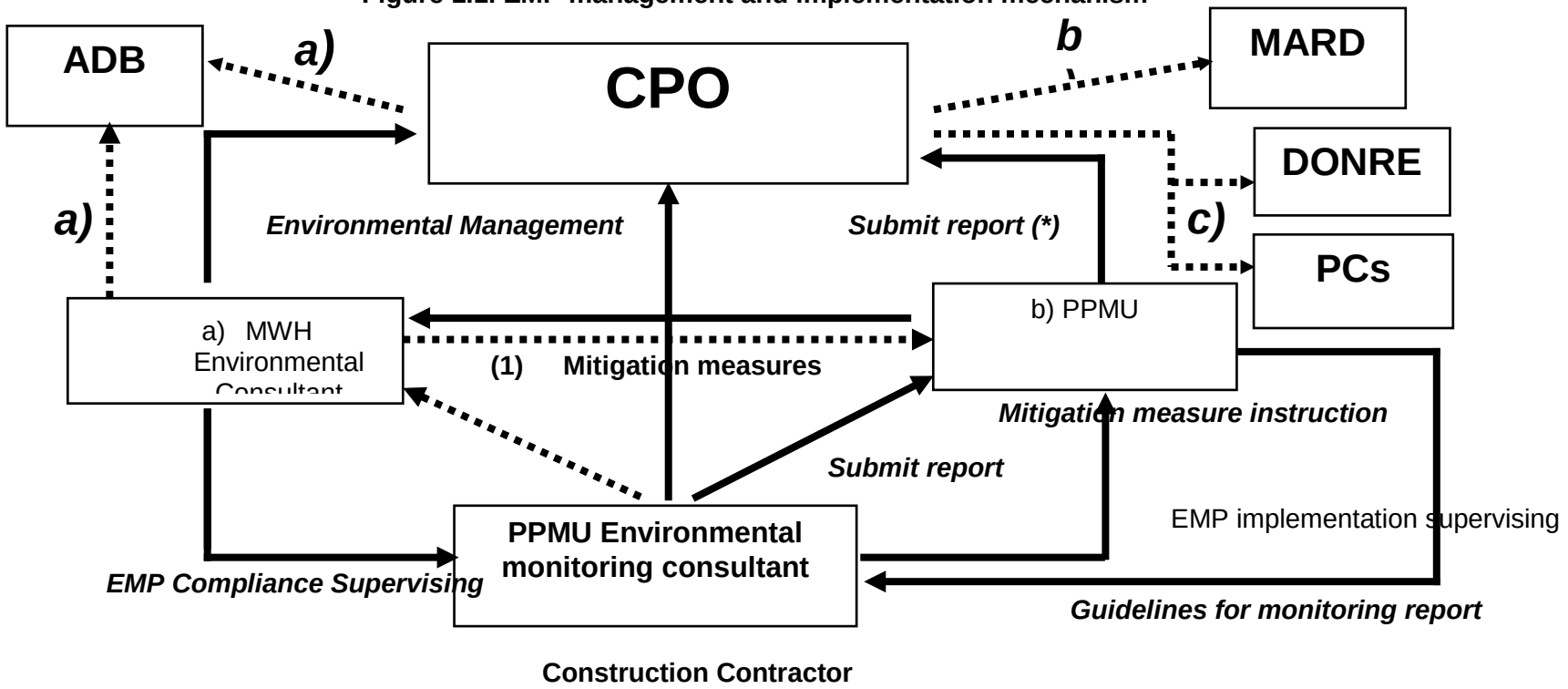
**Table 2-1. ADB approval of EMP**

| No. | Subproject | ADB approval |
|---|---|---|
| 1 | Thach Thanh | 5 August 2009 |
| 2 | Thuong My Trung | 24 August 2009 |
| 3 | Nam Thach Han | 31 August 2009 |
| 4 | Tay Nam Huong Tra | 25 September 2009 |
| 5 | Tra Cau | |
| 5.1 | Dien Truong– Nui Ngang Component | 14 December 2009 |
| 5.2 | Liet Son– Chop Vung Component | 6 October 2010 |
| 6 | La Tinh | 14 September 2010 |

### 2.2 Environmental Management Plan Implementation

EMP Management was carried out with the process in the following figure:

**Figure 1.1. EMP management and implementation mechanism**




***a) Present environmental management (if necessary)***
***b) Discuss environmental management (if necessary)***
***c) Report environmental situation and mitigation measures (if necessary***

**(*) Report:**
1: Report on EMP implementation status (6-month report)
2: Report on environmental monitoring, supervising, and result analysis (quarterly report)
3: Unexpected report (if available)

### 2.3 EMP Capacity Building and Training

a) **Capacity Building and Training of MWH's consultants**

Since the project's civil works started its construction period in September 2009, Capacity Building for staff members of PPMUs and construction contractors on environmental protection as well as EMP implementation was necessary.

In accordance with the project work plan, CPO and MWH organized an EMP Implementation Training Workshop on 01-02 February 2010 in Quang Binh province with participants and contents as follows:

- Participants: environmental specialists from ADB, CPO, MWH; PPMUs' management staff and environmental monitoring consultants.
- Contents: Purpose of the workshop is to instruct monitoring process as well as necessary contents for best efficiency on EMP implementation, particularly: environmental impact mitigation measures, monitoring programs. ADB environmental specialists therefore instructed environmental protection polices and ADB's requirements on EMP implementation. Environmental specialists from CPO and the MWH consultant team also prepared materials and instructed the implementation process of EMP monitoring program: Monitor environmental impact mitigation measures, implement monitoring program, etc.

Results: PPMUs' management staff and environmental monitoring consultants understood EMP's necessary contents for implementation as well as solved the project's environmental protection related issues. Afterward, these staff can train contractors' safeguard and sanitation staff.

**b) Capacity Building and Training of Subprojects**

EMP Capacity Building and Training is one of the environmental monitoring consultant's missions carried out by PPMUs. However, these activities were only carried out in the following subprojects:

- Tay Nam Huong Tra Subproject: June 2011
- Tra Cau Subproject: March 2011
- La Tinh Subproject: November 2010

Participants: PPMU's environmentalstaff, contractor's construction monitoring consultant and environmental management staff. After being trained, all participants' environmental protection awareness and capacity were improved; and they could definitely take care of environmental management and protection in coming time.

### 2.4 Environmental Quality Supervising and Monitoring Program

Upon EMP approval by ADB, PPMUs have built TORs, selected environmental consultants for the environmental quality monitoring program.

PPMUs, in coordination with environmental monitoring consultants, conducted periodic environmental quality monitoring programs in order to follow environmental impacts' development trends during subproject formulation.

Monitoring frequency (1 time per 3 months), sampling method, analysis, reports complied with National Environmental Monitoring System (NEMS), in association with National technical norms on ambient air quality for residential areas (QCVN 05:2009/BTNMT; QCVN 06:2009/BTNMT), Standards on levels of noise for public and residential areas (TCVN 5949 - 1995); Vibration caused by factories, construction (TCVN 6962 - 2001); QCVN 08:2008/BTNMT on surface water quality control and QCVN 08:2008/BTNMT for ground water. Results are shown in Table 2-2.

**Table 2-2: Periodic environmental quality monitoring in subprojects**

| Subproject | Date of signing contract for EMP monitoring | Monitoring times | Results |
|---|---|---|---|
| Thach Thanh | 31 October 2009 | 7 | Completed |
| Thuong My Trung | 5 March 2010 | 6 | Completed |
| Nam Thach Han | 18 September 2009 | 8 | Completed |
| Tay Nam Huong Tra | 25 May 2010 | 7 | Completed |
| Tra Cau | 8 June 2010 | 7 | Completed |
| La Tinh | 5 June 2010 | 7 | Completed |

**a) Environmental quality during construction**

- Surrounding atmosphere, noise and vibration: At supervising time, almost all monitoring positions had no sign of being polluted with dust, toxic ($SO_2$, $NO_2$, CO), noise and vibration, except the dust amount at Bo Mun area (La Tinh – Binh Dinh). The reasons were communal transportation road at measuring points was not concretized and vehicles passed by frequently.
- Surface and ground water: Most analysed parameters satisfied A2 limit of QCVN 08:2008/BTNMT on surface water quality and QCVN 09:2008/BTNMT on ground water quality. At some areas, TSS, organic content, coliform and Ecoli content in surface and ground water are higher than standards: Thach Thanh – Thanh Hoa; Tay Nam Huong Tra – Thua Thien Hue; Tra Cau – Quang Ngai; La Tinh – Binh Dinh.

**b) Mitigation measures**

- Dust, noise and vibration mitigation measures were carried out by contractors: raw material storage pits were covered and set up away from canals and drains; watering roads frequently helped prevent dust from spreading out to the atmosphere; concrete mixing stations were mostly away from residential areas, schools, offices, and were put along canals. Machines simultaneously functioning around residential areas were also limited; Construction machines and equipment were frequently checked and upgraded every 3 months.
- Surface water's environmental impact mitigation: Collected unused materials; Construction sites were pretty clean.
- Land's environmental impact mitigation: Construction units have made use of uninhabited land or lands along canals for temporary barracks or concrete making. This helped limit environmental impacts to land
- Barrack system for workers was constructed properly; safeguard equipment and fire distinguishers were also provided by PPMUs and contractors.
- Although construction happened during flooding period (October-November of 2010 and 2011), minor-flood ("tieu man"-flood) period (April 2011), there was no sanitary or firing problem.

**c) Constraints**

- Watering transportation roads for dust reduction was not implemented frequently.
- Most of subprojects have not established wastewater drains, equipment maintenance sites, waterproof floor for petroleum containers. Fuel containers were put in unsafe areas: Thach Thanh , La Tinh, Nam Thach Han.
- Waste from barracks, construction sites were not collected properly, waste

littering was common: La Tinh, Tra Cau; Tay Nam Huong Tra. Although PPMU and contractor issued littering regulations, workers from Khe Ngang, Tho Son reservoirs still littered improperly at some construction sites.
- In most subprojects, workers were supplemented with safeguard facilities; but, in fact, some workers did not actually use them during construction: Tay Nam Huong Tra, Nam Thach Han.
- Restrooms for workers were set up at construction sites, but were not appropriately installed for proper view and sanitation: Nam Thach Han , Tay Nam Huong Tra

### 2.5 Community Consultation

Community Consultation is one of the main factors to ensure long-term meaning and sustainability of the project. Through consultations with local authorities and residents, project stakeholders suggest solutions for negative impact reduction measures during implementation, and enforce positive impacts.

While Thuong My Trung and Nam Thach Han subprojects have not officially carried out community consultations, community consultation of the project was put in action by PPMUs at initial construction period. This activity was conducted by environmental monitoring consultants and PPMU environment staff periodically through environmental quality monitoring (3 month/time) or unofficially through other activities like GAP, HIV/AIDS and SSP. During consultation, the project received much support from local authorities and residents in project area: 100% of people living in the project area did not have any complaint about disturbance of construction activity to their lives.

Consultation components: Legal authorities (people's committees in project communes) and local people.

### 2.6 Reporting

Environmental quality and mitigation measures of subprojects were reviewed in every 3 months by PPMUs' environmental consultants. In each supervising time, all results from environmental quality monitoring and mitigation measure application's evaluation in subprojects were reported and submitted to PPMUs by environmental consultants. Through supervision and monitoring, PPMUs got updated environmental quality at construction sites as well as unexpected environmental issues, and immediately executed recommendations from consultants.

In addition, MWH environmental consultants in coordination with CPO periodically formulated 6-month report on EMP implementation evaluation for ADB approval. The content of the 6-month project report was combined and evaluated based on PPMUs' 6-month reports.

The purposes of EMP 6-month report are as follows:

- Review the application of environmental protection measures as mentioned in ADB-approved EMP as well as in GOV's environmental protection regulations.
- Evaluate progression and efficiency of EMP implementation of subprojects within 6 months, and recommend solutions for constraints in the coming time.
- Evaluate community consultation.

MWH environmental consultants have conducted 6-month-report for 3 times:

- 1st time: EMP implementation report - from 01 January 2010 to 30 June 2010
- 2nd time: EMP implementation report - from 01 July 2010 to 31 December 2010
- 3rd time: EMP implementation report - from 01 January 2011 to 30 June 2011

### 2.7 Environmental protection

Overall, rehabilitation at construction sites was good and clean. People have restarted cultivation on loaned land after construction (Tra Cau – Quang Ngai).

At barracks, uninstallation, waste collection, and rehabilitation were done quite well. Some waste at particular areas was not completely removed. However, once reminded, construction units have cleaned up properly.

12 material pits (2 at Cat Hanh, 3 at Cat Tam, 1 at Cat Minh, 3 at My Hiep, 2 at My Tai, 1 at My Chanh, 1 at My Cat) in La Tinh subproject have stopped exploration; and the contractor has cleaned up, rehabilitated thoroughly.

The material pit at Hung Nghia village, Pho Phong commune (Tra Cau subproject) has stopped exploration and started planting for land restoration and erosion prevention.
At material pit at Dien Truong, and material pit No.06, material was explored carefully which created little impact to the surrounding area.

### 2.8 Compliance of PPMUs, contractors, and environmental monitoring consultants during construction

**a) Compliance of PPMUs**

PPMUs have complied with environmental protection under 2005 Vietnamese environmental protection laws as well as the EMP approved by ADB, particularly:

- Ensured general regulations on environmental sanitation and labour safety combined in bidding documents and construction contracts
- Kept and supplied necessary information for related partners.
- Met with local authorities and people in project area, got information from local authorities and people at different levels, and coordinated with related partners in order to solve unexpected problems. All feedbacks from local authorities and residential community about environmental impacts were conceived and dealt with prompt solutions by PPMU. Hence, environmental impact level of the project has been well improved, and positively evaluated by the community.

**b) Compliance of the contractors**

In bidding documents, all contractors mentioned and guaranteed to implement environmental sanitation and labour safety measures, environmental impact mitigation measures. Contractors assigned staff responsible for environmental and safeguard issue.

c) **PPMU Independent environmental monitoring consultants**

- Complied with PPMU regulations mentioned in consultation contracts: trained, carried out periodic monitoring and supervision, and conducted community consultation in subproject areas.
- Updated information, reminded construction contractors to implement environmental pollution mitigation measures, and promptly noticed PPMUs unexpected issues for solutions.
- Completed initial report, mid-term supervision report, and submitted to PPMUs with detailsabout: monitoring staff, monitoring measures, work and reliable results. Reports have mentioned and promptly evaluated results plus suggested line of solution.

Overall, during EMP implementation, PPMUs, construction monitoring consultant, environmental monitoring consultant, and construction contractors were frequently and well-coordinated. Stakeholder's supervisor, construction monitoring consultant, and

environmental monitoring consultant have frequently checked and supervised the environmental sanitation implementation.

## 3. CONCLUSIONS AND RECOMMENDATIONS

### 3.1 Conclusions

The EMP has mentioned fully and clearly impacts happened during construction as well as mitigation measures for subprojects, and was approved by the ADB. Hence, EMP became a baseline for relevances like environmental monitoring consultant, construction monitoring consultant, and contractor to execute and supervise the compliance. The project was always supported by local people and authorities: 100% of people living in project areas had no complaint on disturbance to their lives due to construction.

During EMP implementation, MWH environmental consultant in strict coordination with ADB's and CPO's environmental staff conducted on-site periodic supervision as well as promptly conducted PPMUs, their environmental consultants, construction monitoring consultants and contractors to well execute EMP's work in compliance with ABD's and GOV's safeguard policies.

Due to long, stretch terrain of construction site, construction under unusual weather (sometimes in long-hot, dry weather, sometimes in rainy, flood weather), construction progress and environmental quality were highly impacted: floods in construction sites, canal stuck due to rain & mugs, etc. Hence, for a better quality in upcoming activities, it is necessary to pay attention to the following issues:

- Most environmental staff from PPMUs and contractors is technical officers so that environmental protection knowledge is limited. EMP was not informed to contractors, construction monitoring units; then the compliance was limited and not fully implemented. EMP implementation efficiency in subprojects were not quite high;
- Due to infrequent EMP implementation monitoring of MWH environmental consultant and its of PPMU environmental consultant (every 3 months), consultants hardly updated partly-happened-environmental issues in a short-time;
- Environmental awareness of construction consultants and contractors were simple and limited; EMP implementation compliance of several contractors were temporary, simple; Construction monitoring consultant only awarded actual, easily recognized issues, like: dust, labour safety, etc.; work assignment for construction monitoring consultants at construction sites was not complete; Reporting on environmental mitigation measure implementation was limited; and
- Workers at construction sites were normally local people and did simple work based on daily payroll, so that compliance with safety was limited.

### 3.2 Recommendations

Once civil works are completed, PPMUs in coordination with environmental monitoring consultants, construction monitoring consultants must check construction sites, and require contractors to fully implement environmental rehabilitation: collect waste at barracks and construction sites, rehabilitate environment at material pits, etc.

# Appendix 10: Resettlement and Compensation

## 1. Background

Total Project cost is $98.99 million ($74.3 million from loan, $24.69 million from counterpart fund). Resettlement and compensation, estimated $4.8 million (5.5% of the total investment fund), was paid by each province.

During implementation, the project complied with ADB's safeguard and GOV's resettlement policies. The project has organized community consultations, conducted Detailed Measurement Survey (DMS), inventory making and valuation of affected assets, disclosed information after completion of detailed designs, and updated 08 RPs which were then approved by ADB, between April 2009 and August 2010 (Table 1-1). After approval, the project has conducted detailed compensation options for subprojects in accordance with national and provincial policies and requirements. Detailed compensation options were approved by communal people's committees to become fundamentals for compensation and support. Compensation payment, civil works handover, complaint resolutions were also approved.

**Table 1-1: Resettlement Plan's Updating Process**

| No. | Subproject | Submit to CPO | ADB approval |
|---|---|---|---|
| 1 | Thach Thanh | 01 April 2009 | 29 April 2009 |
| 2 | Thuong My Trung | 23 June 2009 | 24 July 2009 |
| 3 | Nam Thach Han | 23 June2009 | 24 July 2009 |
| 4 | Tay Nam Huong Tra | 24 August 2009 | 04 January 2010 |
| 5 | La Tinh | 15 July 2009 | 01 October 2009 |
| 6 | Tra Cau | | |
| 6.1 | Nui Ngang | 23 April 2009 | 5 June 2009 |
| 6.2 | Dien Truong | 4 May 2009 | 5 June 2009 |
| 6.3 | Chop Vung | 15 July 2010 | 27 August 2010 |

## 2. Resettlement and Compensation

### 2.1 Thach Thanh Subproject

Thach Thanh Subproject covers 16 communes in Thach Thanh district. Resettlement plan of the subproject has completely supplemented on 01 April 2009. The ADB issued a "no-objection" document on 29 April 2009. Total affected households are 2,392, of which: 11 were relocated (05 in Thach Cam, 05 in Thanh Tam, 01 in Thanh Van) and rebuilt houses, 191 lost equal to more than 10% of agricultural land. Total permanent acquired-land area is 569,934 $m^2$, temporarily borrowed-land area is 2,459 $m^2$.

Total compensation cost is VND13.79 billion. All 2,443 households (100%) received compensation; highly affected households received full compensation and supports. Besides, Muong highly affected households were supported with VND2,000,000 each in accordance with the subproject's policy. Compensation completed in 2009.Until now, the subproject has completed its construction.

Independent monitoring agency has supervised resettlement and compensation implementation of the subproject, and reported to CPO and ADB.

### 2.2 Thuong My Trung Subproject

Resettlement plan of the subproject has completely supplemented. The ADB issued a "no-objection" document on 24 July 2009. Total affected households are 3,380. Total acquired-land area is 2,166,921m$^2$, of which: 1,218,933m$^2$ is used for transportation, water resources, water reservoirs, and was not compensated; 947,988m$^2$ was compensated. 36 households were highly affected due to ≥10% of agricultural land acquisition.

Total compensation cost is VND26,531 billion. All households received compensation as well as other supports in accordance with current regulations, agreements and ADB's resettlement guidelines. Compensation completed in 2009.

Independent monitoring agency has supervised resettlement and compensation implementation of the subproject, and reported to CPO and ADB.

### 2.3 Nam Thach Han Subproject

Total permanent acquired-land area is 146,859m$^2$; temporary borrowed-land area is 144,817m$^2$. Total compensation cost is VND5,119 million. All 509 households (100%) received compensation; highly affected households received full compensation as well as other supports. Compensation completed in 2011.

Independent monitoring agency has supervised resettlement and compensation implementation of the subproject, and reported to CPO and ADB.

### 2.4 Tay Nam Huong Tra Subproject

Khe Ngang – Tho Son reservoir and irrigation system are components of Tay Nam Huong Tra (Thua Thien Hue) subproject. The subproject covers 8 communes of Huong Tra district and Hue city.

Resettlement plan of the subproject was completed, and ADB issued a "no-objection" document on 04 January 2009. Total affected households are 2,419, of which: 14 were relocated and have built houses for new lives, 30 were acquired ≥ 10% of agricultural land. Total acquired-land area is 766,776m$^2$, temporarily borrowed-land area is 0m$^2$.

Total compensation cost is VND 30 billion. All 2,419 households (100%) received compensation; highly affected households received full compensation as well as other supports. Compensation completed in 2011.

Independent monitoring agency has supervised resettlement and compensation implementation of the subproject, and reported to CPO and ADB.

### 2.5 Tra Cau Subproject

Tra Cau subproject comprises 3 components which have 3 separate reports: (i) Nui Ngang Reservoir Irrigation System, (ii) Dien Truong Reservoir Maintenance and Upgrade System, and (iii) Liet Son - Chop Vung Irrigation System.

Resettlement plan of the subproject has completely supplemented, and finished in May 2009 (for Nui Ngang and Dien Truong components) and in August 2010 (for Liet Son – Chop Vung component). The ADB issued a "no-objection" document to Nui Ngang and Dien Truong components on 05 June 2009, and to Liet Son – Chop Vung component on 27 August 2010.

Total affected households are 2,392, none of them was relocated or acquired, equivalent to more than 10% of agricultural land. Total permanent acquired-land area is 230,739m$^2$,

temporarily borrowed-land area is 168,760m$^2$.

Total compensation cost is VND17,804 million. All 2,392 households (100%) received compensation, none is minority. The subproject completed compensation in 2010.

Total land area used for the subproject is 567,983 m$^2$, including 168,760 m$^2$ (20.7%) of temporary-used land and 399,223 m$^2$ (70.3%) of permanently acquired land. Within 399,223 m$^2$: 241,106 m$^2$ (60.4%) was compensated, and 158,116 m$^2$ (39.6%) are unused/non-compensated. Acquired land was mainly agricultural land (221.395 m$^2$ – 91.8%) and garden land (19,711 m$^2$ – 8.2%).

The subproject predominantly maintained and upgraded headworks, constructed some irrigation canals, so that all households were slightly affected; none was relocated or lost ≥10% of agricultural land. However, all agricultural acquired-land households received training assistance whichwas calculated based on affected land area. Assistance depends on communes, ranging from VND8,000/m$^2$ to VND10,000/m$^2$.

### 2.5.1. Nui Ngang Reservoir Irrigation System

The component covers 5 communes: Pho Phong, Pho Thuan (Duc Pho district), Duc Lam, Duc Phong, Mo Duc (Mo Duc district, Quang Ngai province*).*

Total number of AHs is 1,099, of which garden-land affected households are 106 (9.6%).
Total land area used for this component is 305,663 m$^2$, including 121,437 m$^2$ (39.7%) of temporary-used land and 184,226 m$^2$ (60.3%) of permanently acquired land. Permanently acquired land includes: 119,301 m$^2$ (64.7%) of agricultural land, 13,237 m$^2$ (7.2%) of garden land and 51,688 m$^2$ (28.1%) of unused land.

All AHs received compensation of VND6.3 billion in total. The PPMU has handed-over all construction sites of the 2 components to construction units in June 2009 and January 2010. Independent monitoring agency has supervised resettlement and compensation implementation (of the subproject), and reported to CPO and ADB.

### 2.5.2. Dien Truong reservoir maintenance and upgrade

The component is in Pho Khanh commune, Duc Pho district, Quang Ngai province.The total number of AHs is 477, of which garden-land AHs are 81 and agricultural-land AHs are 396. Total land area used for this component is 118,979 m$^2$, including 43,323 m$^2$ (39.8%) of temporary-used land and 71,656 m$^2$ (60.2%) of permanently acquired land. Permanent land includes: 27,844 m$^2$ (38.9%) of agricultural land, 3,871 m$^2$ (5.4%) of garden land and 39,941 m$^2$ (55.7%) of unused land.

Total compensation amount is VND3.1 billion. All households have received their compensation and assistance.

### 2.5.3. Liet Son - Chop Vung Irrigation System

The component covers 5 communes (Pho Cuong, Pho Ninh, Pho Vinh, Pho Hoa and Pho Minh) at Duc Pho district, Quang Ngai province.The total number of AHs is 816 of which garden-land AHs are 29 and agricultural-land AHs are 787.

Total permanently acquired land of this component is 143,341 m$^2$, including 74,250 m$^2$ (51.8%) of agricultural land and 2,603 m$^2$ (1.8%) of garden land, and 66,487 m$^2$ (46.4%) of unused land.

Total compensation amount is VND8.4 billion. By July 2011, all households have received

their compensation and assistance.

### 2.6 La Tinh Subproject

La Tinh subproject covers 9 communes of 2 districts, namely Phu Cat and Phu My. Resettlement plan of the subproject started in September 2008 and basically completed in April 2009. RP draft was supplemented and completed in June 2009. ADB issued a "no-objection" document on 05 October 2009.

Total affected households are 2,229, of which: 02 were relocated and have built houses for new lives, 129 were acquired ≥ 10% of agricultural land. Total permanent acquired-land area is 545,399m$^2$, temporarily borrowed-land area is 45,285m$^2$.

Total compensation cost is more than VND13 billion. All 2,229 households (100%) received compensation. Highly affected households received full compensation as well as other supports. The subproject also had support policies for 62 vulnerable households (poor, no-land, female-headed, senior-headed, etc.). Compensation completed in 2011.

### 2.7 Summary of the whole project

Statistically, the total number of AHs of the project is 13.372 households. 27 households were relocated (equivalent to 0.2% of the total AHs), 386 households lost ≥10% of agricultural land (equivalent to 3% of the total AHs). Total compensation from provinces' budgets was VND106,239 million, which is equivalent to about VND8 million per household. Details are showed in table 2-1 below.

**Table 2-1: Summary of Resettlement and Compensation of the Project**

| Subproject | Affected households (AHs) | | | | Areas | | Compen-sation (VND million) |
|---|---|---|---|---|---|---|---|
| | Total | Details | | | Permanent Acquisition (m$^2$) | Borrowed (m$^2$) | |
| | | Relo-cation | Affected ≥10% of agricultural land | Slightly AHs | | | |
| Thach Thanh | 2,443 | 11 | 191 | 2,241 | 569,934 | 2459 | 13,790 |
| Thuong My Trung | 3,380 | 0 | 36 | 3,344 | 2,166,921 | | 26,531 |
| Nam Thach Han | 509 | 0 | 0 | 509 | 146,859 | 144,817 | 5,118 |
| Tay Nam Huong Tra | 2,419 | 14 | 30 | 2,375 | 766,776 | | 30,000 |
| Tra Cau | 2,392 | 0 | 0 | 2,392 | 399,223 | 168,760 | 17,800 |
| La Tinh | 2,229 | 2 | 129 | 2,098 | 545,399 | 45,285 | 13,000 |
| **Total** | **13,372** | **27** | **386** | **12,959** | **4,295,112** | **361,321** | **106,239** |

## 3. Conclusions and Recommendations

Until June 2011, resettlement and compensation of the project has been implemented by PPMUs and Resettlement and Compensation Department in accordance with ADB's resettlement policy and construction-site-plan handovers. All 6 subprojects have compensated all AHs. Complaints were promptly and completely solved. Most complaints related to precision of detailed data and were therefore revised by statistic groups.

**Recommendations:**
It's necessary to adjust and accelerate property certification's issuing process for all AHs.

**4. Lessons Learned**

(i) Early evaluation of affected areas, property and compensation rates could help define and distribute compensation fund properly and promptly;

(ii) It's necessary to organize meetings, hand-out policies to all AHs so that they can understand their rights, benefits in order to proactively support the project;

(iii) Immediately problem solving at commune level might help ensure affected people's satisfaction toward resettlement and compensation & construction work go smoothly;

(iv) Appointing and selecting one PPMU specialist in charge of resettlement and compensation would help fasten the process and ensure communal people's committees' approved detailed-compensation options in compliance with ADB's compensation plans; and

(v) Communes' compensation officers and PPMUs' staff need to frequently approach ADB, WB funded-projects and policies for capacity building/development on resettlement.

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