

Initial Environmental Examination

August 2013

Viet Nam: Sustainable Rural Infrastructure
Development Project in the Northern Mountain
Provinces

Subproject 18: Improvement of Thanh Luong Irrigation
Facilities, Luong Son District, Hoa Binh Province

Prepared by the Ministry of Agriculture and Rural Development for the Asian Development Bank.

CURRENCY EQUIVALENTS

| | | |
|---------------|--------------------------------------|-----------------------|
| | (as of June 11 th , 2012) | |
| Currency Unit | - | Vietnamese Dong (VND) |
| 1 VND | - | USD |
| USD 1.00 | = | VND 20,828 |

ABBREVIATIONS

| | | |
|-------|---|--|
| ADB | - | Asian Development Bank |
| AP | - | Affected persons |
| CPC | - | Commune People Committee |
| CPMU | - | Central Project Management Unit |
| DARD | - | Department of Agriculture and Rural Development |
| DCARB | - | District Compensation, Assistance and Resettlement Board |
| DIA | - | Direct Impact Area |
| EARF | - | Environmental Assessment and Review Framework |
| EIAR | - | Environmental Impact Assessment Report |
| EMP | - | Environmental Management Plan |
| EPU | - | Environmental Protection Undertaking |
| HH | - | Households |
| IEE | - | Initial Environmental Examination |
| ESA | - | Environmental Study Area |
| IIA | - | Indirect Impact Area |
| LIC | - | Loan Implementation Consultant |
| MARD | - | Ministry of Agriculture and Rural Development |
| MONRE | - | Ministry of Natural Resources and Environment |
| PC | - | Peoples Committee |
| PPMU | - | Provincial Project Management Unit |
| REMDP | - | Resettlement and Ethnic Minority Development Plan |
| RF | - | Resettlement Framework |
| SIA | - | Secondary Impact Area |

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I. INTRODUCTION

A. Subproject Rationale

1. The Sustainable Rural Development Project in Northern Mountain Provinces (SRIDP) is funded by the Asian Development Bank (ADB) covering 15 provinces: Ha Giang, Cao Bang, Bac Kan, Tuyen Quang, Lao Cai, Yen Bai, Thai Nguyen, Lang Son, Bac Giang, Phu Tho, Dien Bien, Lai Chau, Son La, Hoa Binh and Vinh Phuc. The total investment for the project is USD 138 million. The project began 2/2011 and is expected to end on 6/2017.

2. The Ministry of Agriculture and Rural Development (MARD) is the Executing Agency for the sector loan. The Project is to meet two main objectives as follows:

+ Upgrade the rural infrastructural works including:

- (i) Rural roads and rural markets;
- (ii) Rehabilitation of potable water supply, irrigation, drainage and revetment works;
- (iii) Support measures that help the poor to benefit equitably from, and efficient utilization of the sub-project.

+ Improve the project management capacity of subproject implementors in the building, management and exploitation of sustainable rural infrastructure;

3. As part of the project, the sub-project “**Improvement of Thanh Luong irrigation Facilities, Luong Son District**” will be implemented in Thanh Luong commune, Luong Son district, Hoa Binh province.

B. Sub-project objectives

4. The sub-project shall ensure the irrigation demand for 4 communes – Thanh Luong, Hop Chau, Cao Duong and Cao Thang with total irrigation area of 647 ha of agricultural lands under cultivation (stable irrigation water supply for 535.2 ha and expansion in irrigation water services for 111.8 ha of new rice field), and mitigate flooding for 525 ha of both residential and agricultural land.

5. This Initial Environmental Examination (IEE) document has been prepared to meet the environmental safeguard requirements of the ADB¹ and Vietnamese government.

C. Report Contents

6. The IEE for project in Category B classification contains the following information:

- (i) Section I: Introduction;
- (ii) Section II: Description of the subproject;
- (iii) Section III: Description of environmental conditions in the subproject areas;
- (iv) Section IV: Description of potential environmental impacts of the subproject;
- (v) Section V: Outline environmental management plan
- (vi) Section VI - Community consultation and Subproject disclosure;
- (vii) Section VII: Grievance Redress Mechanism
- (viii) Section VIII – Conclusion and Recommendations;

¹ Environmental policy (2009)

II. PROJECT DESCRIPTION

Table 1: General data of subproject

| Items | Subproject datas |
|--|---|
| 1. General information | |
| 1.1. Subproject name | Improvement of ThanhLuongIrrigation Facilities, Luong Son District |
| 1.2. Subproject type | Irrigation improvement and drainage facility installation |
| 1.3. ADB Environment Category | Category B Classification |
| 1.4. Project owner | PPMU IRDPCP – HoaBinh province |
| 1.5. Address of Suproject owner | HoaBinhCity, HoaBinh province |
| 1.6. Name and Title of Head of Project owner | Nghiem Van Nghia Position: Director |
| 1.7. Telephone, fax and email details of Project owner | 02183.857.754 - 0913.001.668 – nghiahb60@gmail.com |
| 1.8. Full name of PPMU Environmental officier | Tran TrungKien |
| 1.9. Telephone, fax and email details of PPMU Environmental officier | 02183.897.671 - 0973.246.966 – kiensnn@gmail.com |
| 1.10. Geographic location (refer the attached map of the sub-project area) | 04 communes of Luong Son district 1. ThanhLương 20°38'56"North 105°39'52"East 2. Hop Chau 20°42'31"North 105°37'09"East 3. Cao Duong 20°43'31"North 105°39'20"East 4. Cao Thang 20°40'34"North 105°39'49"East |
| 2. SUBPROJECT DESCRIPTION | |
| Irrigation component | |
| 2.1. New project or rehabilitation project | Rehabilitating and upgrading irrigation system. The subproject entails to upgrade the existing facility by replacing the inefficient earthen weirs with concrete ones, desilting and concrete lining of irrigation canals, as well as building additional ones |
| 2.2. Surface water or groundwater source to be affected | Surface water source |
| 2.3. Determination of water source | The water sources in the commune are mainly from Bui river, Co river and branches of Da River |
| 2.4. For irrigation subproject, is there enough water for domestic activities? | The sub-project will not affectto current water sourcesused for domestic purposes |
| 2.5 Irrigation area | Irrigation area: 647 ha |
| 2.6. Number of newly constructed and upgraded weir | The subproject seeksto upgrade three earthenweirs of Hop Chau and Cao Thang communes Current situation: These earthen weirs constructed by local people, are used to divert stream water to irrigate nearby agricultural lands, are currently in seriously degraded condition and so are unable not meet the current water requirements of their servicearea. |

| Items | Subproject datas |
|--|--|
| | <p>The subproject proposes to upgrade these 3 earthen weirs to concrete weirs. The dimentions of the 3 weir are described as follows:</p> <p>Dam weir – Hop Chau commune: Btr = 35m; H=1.20 m</p> <p>Dai Caoweir – Hop Chau commune: Btr = 5.2m;H=0.55m</p> <p>Ve An weir – Cao Thang commune: Btr = 33m; H=1.9m</p> |
| 2.7. Length and width of upgraded canal | <p>The subproject proposes to upgrade 20,027 m of earth canal to concrete-lined canal. The length and width of upgraded canal are described as follows:</p> <p>ThanhLuong commune:</p> <ul style="list-style-type: none"> - Length: 5,893 m; Width: 30-40 cm; Heigth: 30 - 50 cm <p>Hop Chau commune:</p> <ul style="list-style-type: none"> - Length: 2,740 m; Width: 30-40 cm; Heigth: 30 - 70 cm <p>Cao Duong commune:</p> <ul style="list-style-type: none"> - Length:6,094 m; Width: 30-70 cm; Heigth: 30 - 90 cm <p>Hop Chau commune:</p> <ul style="list-style-type: none"> - Length: 5,354 m; Width: 30-40 cm; Heigth: 30 - 50 cm |
| 2.8. Description of works on canal system | <p>Road crossing culvert :</p> <p>Concrete culverts will be constructed at the intersections between the subproject canal system and local roads.</p> <p>Water control gates:</p> <p>Allgateswill have a concrete foundation, brick walls and reinforced concrete plate.</p> <p>Covers:</p> <p>Reinforced concreteslabs will be used as covers for the section of subprojectcanalcrossing local earth paths.</p> |
| Drainage component | |
| 2.9. New project or rehabilitation project | <p>Installation of2 new drainage facilities.</p> <p>The subproject also will install two new pumping stations at ThanhLuong commune that seeks to regulate the flood waters that periodically inundates a 525 ha of agricultural lands that have scattered and isolated residences.Drainage water will be discharged to the adjacent Bai Him river.</p> |
| 2.10. Surface water or groundwater source to be affected | Surface water source |
| 2.11 Drainage area | Drainage area: 525 ha |
| 2.12. Construction of new pumping station | <p>Background: The construction of the Ho Chi Minh highway through, and several dikes within the subproject commune, had caused a daming effect such that flood waters from the natural waterways are prevented from entering the service area. However, these water detention structures also prevent rain water that fall into the area from draining out.During the rainy season the inundation within the service area may get deep enough such such that farmers are unable to plant paddy rice. There may be season that no crop can be planted resulting in loss of income for the farmers.</p> <p>Currently:There are no pump station for draining flood waters within the target service area ofThangLuong commune. The subproject proposes to construct 02 new drainage pump station for this purpose and the details are as follows:</p> <p>I. Xuan Him pumping station – ThanhLuong commune</p> |

| Items | Subproject datas |
|--|--|
| | <p><u>Pumphouse:</u> Dimension (lot size): LxW: 7.95x4.25 m. Submersible pumps will be used. The pump house have three rooms, of which one is for maintenance activities. The house has concrete foundation, brick wall, steel plateroof with heat-resistant materials. There is an electric chain hoist with the capacity of 15 tons used for lifting pumps during maintenance work.</p> <p><u>Suction tank</u> Dimension: LxWxH: 5x4.3x2.5 m</p> <p><u>Drainage tank</u> Dimension: WxL: 4.3-1.9x4m</p> <p><i>II. Go Mu pumping station – ThanhLuong commune</i></p> <p><u>Pump house:</u> Dimension (lot size): LxW: 12.85x4.25 m. The pumps are submerged type. There will be five rooms in the pumphouse, of which one is for maintenance activities. The house has a concrete foundation, brick walls, steel plate roof built with heat-resistant materials. There is an electric chain hoist with the capacity of 15 tons for use in lifting pumps during maintenance work.</p> <p><u>Suction tank</u> Dimension: LxWxH: 5x4.3x2.5 m</p> <p><u>Drainage tank</u> Dimension: WxL: 4.3-1.9x4m (See the technical drawings figure 2 for details)</p> |
| 3. CONSTRUCTION ACTIVITIES | |
| 3.1. Construction commencement date (month/year) | Nov 2013 |
| 3.2. Construction completion date (month/year) | Feb 2015 |
| 3.3. Number of construction workers | 50 – 80 workers (as expected) 10-20 workers for drainage component 40-60 workers for irrigation component |
| 3.4. Construction tents required (Yes/No) | Yes, 4-5 camps are expected to be installed. At least a camp for each commune |
| 3.5. Construction in rainy season (Yes/No) | Yes (if possible) |
| 3.6. Number and state of construction equipment and machines | Irrigation component : 02 Excavators, 02 Hammer drills, 08 Trucks (10 tons capacity), 02 mobile concrete mixers Drainage component : 01 Crane 10 (10 tons capacity) ; 01 Excavator, 03 Trucks |
| 3.7. Description of material source | Materials such as steel, sand, gravel, stone, and cement shall be purchased at the centre of Luong Son town or surrounding areas. The distance from the material sources to the construction location is about 10 km. The sources of material is various, some can be purchased directly within subproject area such as special bricks, and stones. |
| 3.8. Material gathering location | - For irrigation canal network: material storages shall be located in the CPC owned lots, beside the worker's camp, and along the main canal. - For weirs: material storages shall be arranged at the empty ground |

| Items | Subproject datas | |
|---|---|----------------------------------|
| | about 20-30m from construction sites. | |
| 3.9. Description of waste soil and treatment methods | Solid waste will come from two main sources as below: - Construction solid waste: Soil, sand, broken stone - Silt and debris dredged from canal improvement activities Estimated total amount of excavated soil is 3,200 m ³ | |
| 3.10. Measures to manage and balance excess excavation soil | i) Subproject Design solutions: Reuse of most excavated soil for the improvement of canal, and construction of concrete weirs, ii) Construction solutions: reuse of remaining excavated soil to level up low-lying areas, repair access roads used during construction of subproject facilities. | |
| 4. OPERATION & MAINTENANCE ACTIVITIES | | |
| 4.1. Subproject capacity (households or hectare) | Supplying irrigation water for 775 ha (total of all irrigation schemes) of agricultural land Draining flooding water for 525 ha of both residential and agricultural lands. | |
| 4.2. Water treatment process | No water treatment is required by the subproject. | |
| 4.3. Periodical canal dredging, maintenance | After the cropping season, the Irrigation Work Management and Exploitation Company will provide budget for maintenance activities for the next cropping season. 300,000,000 VND for maintenance activities. | |
| 5. RESETTLEMENT AND LAND ACQUISITION² | | |
| 5.1. Number of affected persons (APs) | 55 households of four communes | |
| 5.2. Number of severely affected persons | None | |
| 6. Number of APs that must relocate | None | |
| 7. Total land area to be acquired (ha) | Temporary : 0 | Permanent : 1,935 m ² |
| 7.1. Rice land area to be acquired (ha) | Temporary : 0 | Permanent : 1,935 m ² |
| 7.2. Vegetable land area to be acquired (ha) | Temporary : 0 | Permanent : 0 |
| 7.3. Aquatic raising land to be acquired (ha) | Temporary : 0 | Permanent : 0 |
| 7.4. Other land to be acquired (ha) | Temporary : 0 | Permanent : 0 |
| 8. SUBPROJECT COST | | |
| 8.1. Total subproject cost | 39,852,000,000 VND (In equivalent with 1.915.961,5 USD) | |

² This information is from the Subproject Resettlement Plan

Figure 1. Maps of the subproject

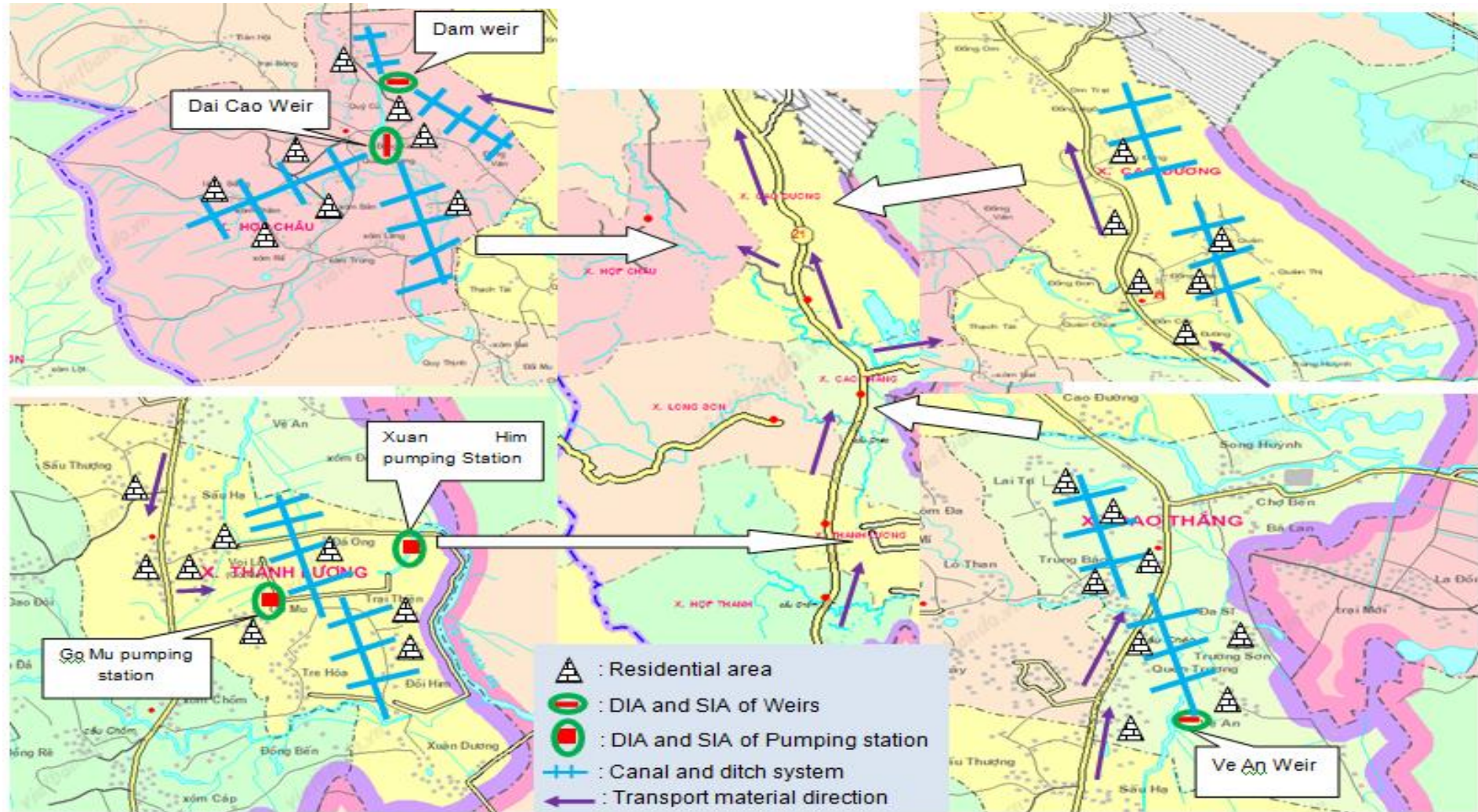
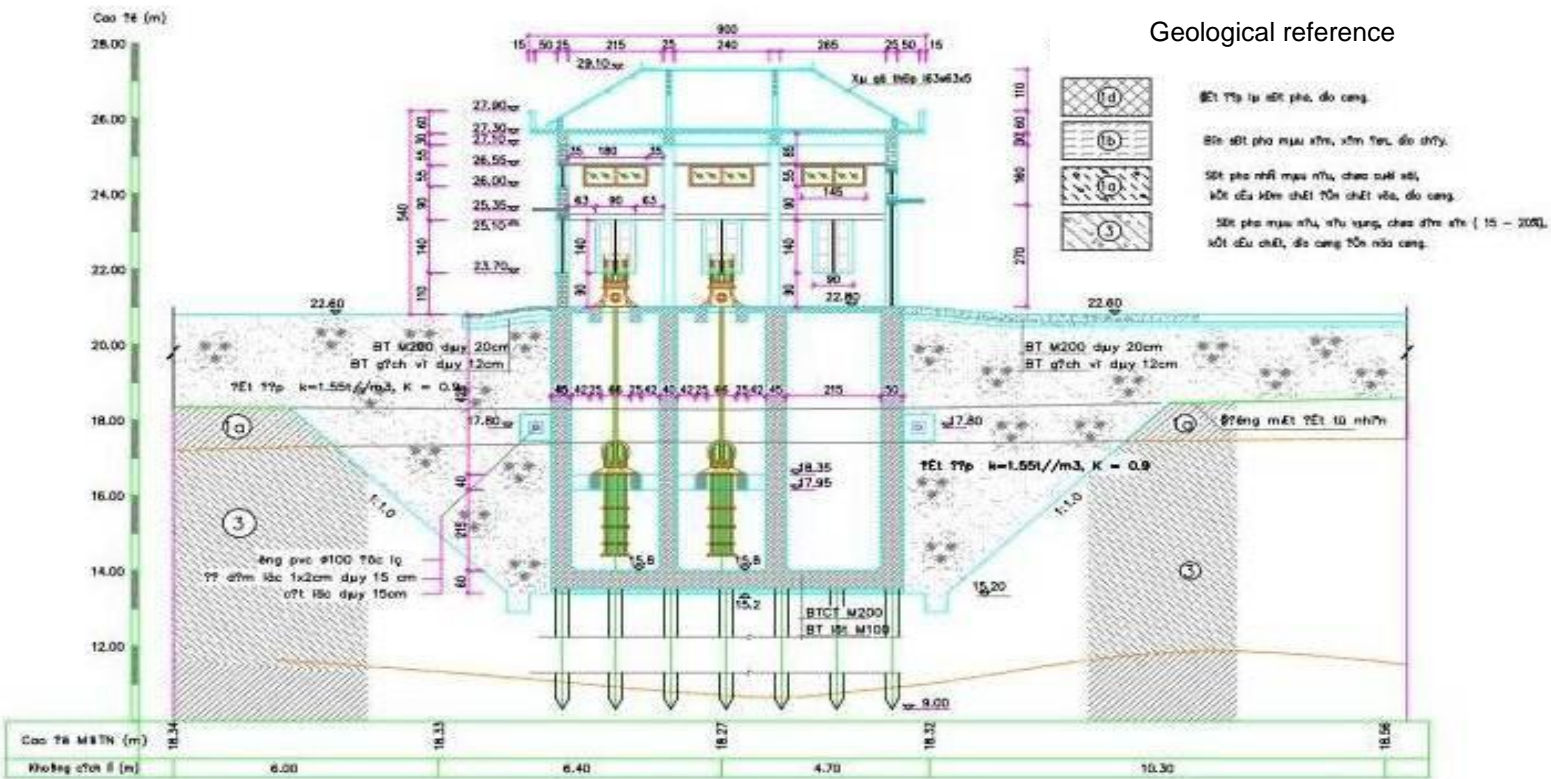


Figure 2. Pumping station's technical draw

Typical cross-section of Xuan Him pump house



Note

- 1- Bùn và nước thải cấp áp lực có thể sinh ra 1/500
- 2- Kịch bản trong ảnh vẽ theo quy mô, các hình vẽ
- 3- Bùn và nước thải cấp áp lực có thể sinh ra 1/500

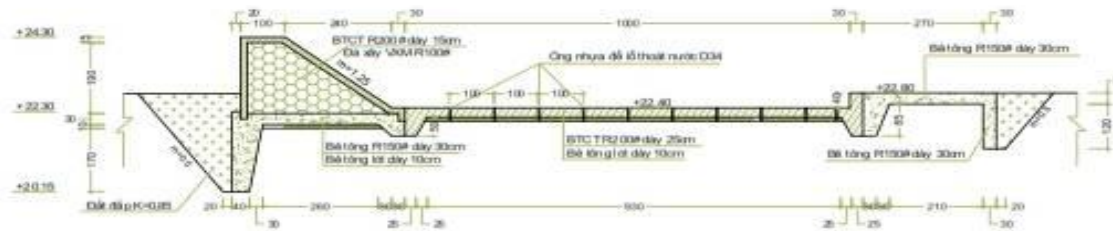
Dimension



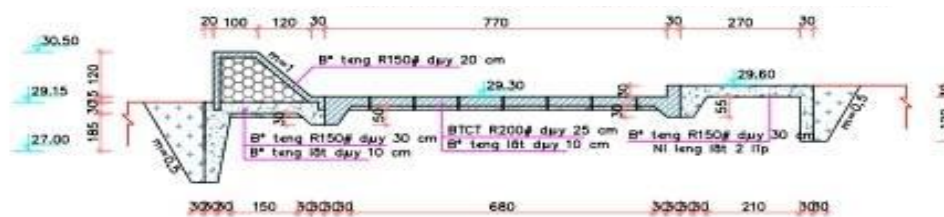
Figure 3. Technical draws of weirs and typical irrigation canal

Typical cross-section of wiers and canal

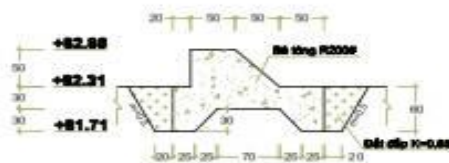
Typical horizontal cross-section of Cao Thangwier



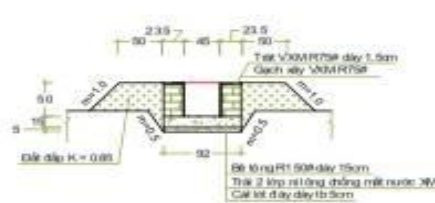
Typical horizontal cross-section of Hop Chauwier



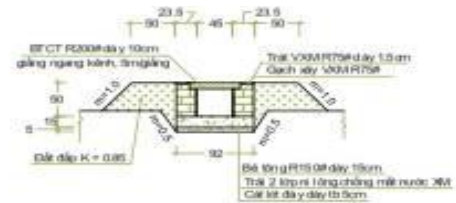
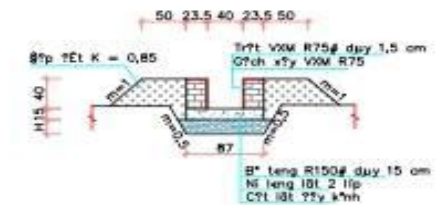
Typical horizontal cross-section of Dai Cao wier



Typical cross-section of canal



Typical horizontal cross-section of a canal



III. DESCRIPTION OF EXISTING ENVIRONMENT

7. The environmental study area includes: i) Direct impact areas: the areas on which the three weirs, and irrigation canal (20,027m) are upgraded, and two new pumping stations are installed; ii) Secondary impact areas: is the area within 50 m surrounding the structures to be built/upgraded, the service area of the drainage facility and discharge point of drainage facility; iii) Indirect impact area: four beneficiary communes (Thanh Luong, Cao Duong, Cao Thang and Hop Chau).

Table 2: Description of existing environment

| DATA ITEM | SUBPROJECT DATA |
|--|--|
| 1. Project location | |
| 1.1. Commune(s): | Irrigation Component: Thanh Luong, Cao Duong, Cao Thang, Hop Chau Drainage Component: Thanh Luong |
| 1.2. District: | Luong Son district |
| 1.3. Province: | Hoa Binh province |
| 2. Natural environmental conditions | |
| Irrigation Component | |
| 2.1. Air quality | Irrigation Component: There are no signs of elevated dust and emissions level in the DIA and SIA since: (i) the subproject is located in rural area at which there is no industrial zone, or on-going construction works; (ii) activities in the subproject areas are mainly agriculture activities which do not cause much dust nor gaseous emission. |
| 2.2. Noise and vibration | The project area lies mainly in paddy cultivated areas of the local residents. The noise occurs during the rice harvesting days (using rice harvesting and rice milling machines) and during the farm preparation days prior to planting (i.e. plowing of field using tractor). Apart from these periods, the subproject area is very quiet. |
| 2.3. Climate and natural disasters | RIA is on the tropical monsoon climate (North West) with two distinct seasons: summer is hot and humid; winter is cold and dry; autumn has heavy rains and flooding and spring is often damp. The average temperature varies from 16.6 to 17°C in January with the lowest temperature is under 2°C; The average temperature averaging from 28.5 to 29°C in July with the highest temperature is 41.5°C. And the average temperature is some 25°C between May and September). Rain: The annual rainfall varies from 1,500 to 1,900 mm/month of which the rainy season lasts in 6 months (May to October); the dry season whose rainfall varies from 20 to 50 mm/month lasts 3 months (December to February) Seismic: Through the literature and factual surveys – IIA is relatively stable without seismic activity. |
| 2.4. Topography and soils | The topography of IIA has both mountainous and plain characteristics. The weirs are surrounded by rolling hills and the irrigation canal system for upgrading are located in relatively flat areas. The soil of IIA has two layers, the upper layer consisting of silt, clay and organic matter which is suitable to agricultural activities with the thickness varying from 5 to 7m. The rest is sandstone mixed with sedimentary granite stone. |
| 2.5. Water bodies | Within IIA, water bodies are stream, mountain spring, lake and pond. There are no water bodies that are exploited for domestic or hydroelectric purposes. Dai Cao weir is tapped by a mountainous spring that only is used for irrigation purposes. Dam weir is tapped by Cai stream, a big one going through Dam village is only used for irrigation purposes. |

| DATA ITEM | SUBPROJECT DATA |
|-------------------------------------|--|
| | <p>VeAn weir is tapped by Kep stream that is only used for irrigation purposes.</p> <p>There is no any conflict in water-use once the subproject scheme becomes more efficient and therefore divert more water from these streams.</p> |
| 2.6. Water quality | <p>All the water sources that are tapping the subproject weirs including Cai, Kep streams and a mountainous spring are almost all the same in good quality with no noticeable suspended solid, no bad odor and do not be used for drinking purposes</p> <p>The groundwaterresources within subproject areas is relatively stable with good quality. Local people are using this water sources for domestic purposes (Throughtpuplic consultation, underground water supplies to 80% population for domestic purposes)</p> |
| 2.7. Flooding | <p>The construction of the Ho Chi Minh highway through, and several dikes within the subproject commune, had caused a daming effect such that flood waters from the natural waterways are prevented from entering the service area. However, these water detention structures also prevent rain water that fall into the area from draining out. During the rainy season the inundation within the service area may get so deep such that farmers are unable to plant paddy rice.</p> <p>In July, August, September and October, there are heavy rains that make inundation on local agricultural areas.</p> |
| 2.8. Terrestrial flora and fauna | <p>i) - Terrestrial flora in IIA: paddy rice, corn, acacia v.v..., Eucalyptus trees used for paper material are planted on the hills surroundingthe weirs; the brushes, bushes covers over on hill slopes</p> <p>ii) - Terrestrial fauna:</p> <ul style="list-style-type: none"> - There is no wildlife within the DIA and SIA. Only domestic animals such as pig, chicken, duck, cow, etc...within SIA <p>iii) - No species listed in Vietnam Red Book in IIA.</p> |
| 2.9. Aquatic flora and fauna | <p>+ Aquatic fauna: mainly insects (i.e. mosquitoes, etc.) and some freshwater aquatic fauna such as crustecians (i.e. shrimps, crabs, etc.), snails, aphibians (i.e. frogs, toads, etc.).</p> <p>+ Fisheries:</p> <ul style="list-style-type: none"> - Includes freshwater fish living in natural streams flowing through the area(i.e. scouts, perch, catfish, etc.) - There are also other kinds of freshwater fish that are farmed (i.e. silver carp, grass carp, tilapia, etc) by local people. <p>+ There are no aquatic flora and faunain the subproject area present in the Vietnam's Red Data Book.</p> |
| 2.10. Protected areas | In subproject area, there are no cultural and historical relics. |
| Drainage component | |
| 2.11. Air quality | The study area (DIA and SIA) are located within a flat agricultural area with no industrial zones. However adjacent to the service area is a brick factory. Also the SIA is traversed by the Ho Chi Minh Highway where significant vehicular traffic pass through, which serve as the main source of air pollutants within the study area. In addition, there is a old pumping station adjacent to the subproject site but this station has stopped working since three years ago. |
| 2.12. Noise and vibration | The project area lies mainly in paddy cultivated areas of the local residents. The noise arises in somehastingdays (rice plucking machine) and in a few days of plowing (tractor). In addition, the drainage works are located not so far the HCM highway, a brick factory and a old pumping station such that the operation activities of these facilities will cause the noise of subproject area to rise. |
| 2.13. Climate and natural disasters | RIA is on the tropical monsoon climate (North West) with two distinct seasons: |

| DATA ITEM | SUBPROJECT DATA |
|---|---|
| | <p>summer is hot and humid; winter is cold and dry; autumn has heavy rains and flooding and spring is often damp.</p> <p>The averagetemperature varies from 16.6 to 17oC in January with the lowest temperature is under 2°C; The average temperature averaging from 28.5 to 29oC in July with the highest temperature is 41.5oC. And the average temperature is some 25oCbetween May and September).</p> <p>Rain: The annual rainfall varies from 1500 to 1900 mm/month of which the rainy seasonlasts in 6 months (May to October);the dry season whose rainfallvaries from 20 to 50mm/month lasts 3 months (December to February)</p> <p>Seismic: Through the literature and factual surveys –IIA is relatively stable without seismic effects</p> |
| 2.14. Topography and soils | <p>The drainage works are located in relatively flat areas.</p> <p>The soil of IIA has two layers,the upper layer is suistable to agricultural activities with the thickness varying from 5 to 7m. The rest is sandstone mixedwith sedimentary granite stone</p> |
| 2.15. Water bodies | Bai Him river is the water source that receives water for the two pumping houses |
| 2.16. Water quality | The quality of surface water is quite good with no noticeable strange color and no bad odor. These water resources are primarily used only for irrigation purposes. |
| 2.17. Flooding | Floodings occur regularly every year.Deep stagnantwaters affect localagricultural areas, specially, after heavy rains in July, August, September and October. |
| 2.18. Terrestrial flora and fauna | <p>i) - Terrestrial flora in SIA: paddy rice and brush</p> <p>ii) - Terrestrial fauna:There is no wildlife within the DIA and SIA. Only domestic animals such as pig, chicken, duck, cow, etc...within SIA</p> |
| 2.19. Aquatic flora and fauna | <p>+ Aquatic fauna: mainly insects (i.e. mosquitoes, etc.) and some freshwater aquatic fauna such as crustecians (i.e. shrimps, crabs, etc.), snails, aphibians (i.e. frogs, toads, etc.).</p> <p>+ Fisheries:</p> <p>- Includes freshwater fish living in natural streams flowing through the area(i.e. scouts, perch, catfish, etc.)</p> <p>+ There are no aquatic flora and faunain the subproject area present in the Vietnam's Red Data Book.</p> |
| 2.20. Protected areas | In subproject area, there are no cultural and historical relics. |
| 3. Social environmental conditions | |
| 3.1. UXO | Consultation with local people in the subproject area indicate no reports of UXO foundin this area. for the last 10 years. |
| 3.2. Land use | <p>Land use of 4 beneficiary communes is presented as below</p> <p>Agricultural and forest land accounts for 80% of the total natural land</p> <p>Residential land accounts for 19% of the total land area</p> <p>Unused land accounts for 1% of the total land</p> |
| 3.3. Nearest residential land | <p>The three weirs and two pumping station are located relatively far from residential areas. The distance to nearest residential areas (Dai Cai weir – Dong Ke village; Dam weir – Quy Cu village; Vean weir – Ve An village; Go Mu station – Go Mu village; Xuan Him station – Doi Him village) varies from 300 m to 600 m.</p> <p>The irrigation system is located along local inter-village roads and within agricultural areas of four communes. The nearest distance of a residential area to a construction site is about 100 m</p> |
| 3.4. Rural Infrastructure works | <p>Within SIA of the Irrigation component, rural infrastructure includes:</p> <ul style="list-style-type: none"> - A 0.4KV power line,and a comunication line that run along a |

| DATA ITEM | SUBPROJECT DATA | | | | | |
|---------------------------------------|--|-------------|----------|-----------|-----------|-------|
| | nearby access road. - Domestic water supply pipes from springs on the mountain. - Concrete inter-villages road and earth paths for domestic purposes. Within SIA of the drainage component, the existing rural infrastructure is only a concrete inter-villages dike road. The Ho Chi Min Highway is more than 100 m away from the nearest pumping station. | | | | | |
| 3.5. Agriculture and aquaculture | For both irrigation and drainage component + Agriculture: mainly paddy rice, corn, cassava, bamboo and industrial trees (i.e. Acacia mangium, Eucalyptus camaldulensis); + Aquaculture: freshwater-fish (i.e. silver carp, tilapia, catfish, etc.). | | | | | |
| 3.6. Number of beneficiary households | Content | Thanh Luong | Hop Chau | Cao Duong | Cao Thang | Total |
| | Beneficiary HH number | 749 | 541 | 374 | 358 | 2022 |
| | Beneficiary people number | 3363 | 2289 | 1535 | 1532 | 8719 |
| | Total population | 4068 | 4074 | 4511 | 4734 | 17287 |
| 3.7. Ethnic minorities | In the four communes of the project area, population are mainly ethnic minorities, of which the Muong is most numerous, accounting for 85 %, and then the Kinh accounting for 13 %, and some other ethnic minorities. All affected households are Muong people. Income of 100% of ethnic minority households is from agriculture | | | | | |
| 3.8. Livelihoods | The livelihood of the 4 beneficiary communes are agriculture, animal breeding, aquaculture and forestry. The dominant livelihoods is agriculture such as rice paddy, corn | | | | | |
| 3.9. Physical and cultural heritage | There are no historical or cultural heritages within subproject area; | | | | | |
| 3.10. Public health | + There are some reported waterborne diseases, gynecological diseases, and skin diseases within the subproject area. + Summer diseases include diarrhea, and petechial fever + Respiratory diseases such as sore throat, and sinusitis. | | | | | |

IV. ENVIRONMENTAL IMPACT SCREENING

8. An environmental impact assessment is a study of the possible positive or negative impact that a proposed subproject may have on the environment, consisting of the physical, biological and, social and economic aspects. To identify and evaluate the impacts of any one project, there are various methods commonly used for environmental impact assessment such as checklist method; matrix method; the Battelle environmental evaluation system; and cost-benefit analysis method. The checklist method was used, which is widely used and generally sufficient for small scale projects having Category B classification.

Table 3.a. Environmental impact screening for irrigation component

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|---|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|---|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| 1. Pre-Construction Stage Impacts | | | | | |
| 1.1. Disturbance of UXO | No | | | | The subproject facilities is to be constructed in an area where there had been no reported incidence of accidents related to explosion of unexploded ordnance for the last 20 years. |
| 1.2. Loss of residential land,agricultural land and other private assets. | Yes | Minor | Negative | Long-term | According to the REMDP inventory of loss (IOL) surveydata, no affected householdwill loose more than 10% of their affected lands, nor require relocation resulting from land acquisitionactivities. The sub-project works mainly follows the existing works thus this impact is minor (see the previous section). The involuntary resettlement impact is analyzed and evaluated more thoroughly in the REMDP report of sub-project. |
| 2. Construction Stage Impacts | | | | | |
| 2.1 Sedimentation caused by dredging and earthworks | Yes | Minor | Negative | Temporaray | During earth work activities including weir upgrading and canal desilting, excavated soil are likely fall off or get wash off by rain, from the worksite or transport trucks into the water ways or canal system that cause sedimentation. The impact will obstruct the flow of water, slow down the flows and may even block the waterways thereby stopping the delivery of irrigation water to the existing service area. The water quality may even by affected by the increase turbidity of the water sources caused by the fine sediments in the water. However, desiling and concrete lining of the irrigation canals are done mostly by manual methods. In this regard, the amount of soil that can accidentally thrown into the irrigation canal can be limited. One of the weirs (Dai Cao) is located on a hill which is at a relatively higher elevation as compared to the other schemes. Irrigation canal will run down the slopes towards the service area. For this case, the spoils uncollected in the higher groundswill get washed off by surface water run-off to the lower water bodies In addition, the level of sedimentation that can be |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|--|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|--|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | <p>caused by earthwork activities is minor due to the small quantity of excavated soil (3,200 m³ over on the areas of four communes)</p> <p><u>Location:</u> The water sources (CaiKep streams), Local irrigation canal within DIA</p> <p><u>Duration:</u> Irrigation component: 12 months of construction phase</p> <p><u>Affected objects:</u> People use the water sources for irrigation purposes</p> |
| 2.2. Pollution of water ways, aquatic environment due to soil and waste water or spilled oil and other petroleum products from construction equipment and vehicles | Yes | Minor | Negative | Temporary | <p>Washing equipment, vehicles (see the type and number in item 3.6 of table 1) in water bodies may cause water pollution due to oil, grease or lubricant and other petroleum products (i.e. fuel, spent engine oil, lubricants, hydraulic fluid, etc..). These equipment may not be many in view of predominantly manual type of construction method appropriate for the works. Estimated volume of wastewater from worker camp is about 5m³ per day (50 workers with the consumption of 110 l/day). This amount (waste water) if untreated, can cause water pollution if discharged directly into the receiving water (i.e. stream, reservoir or irrigation canal).</p> <p>Excavated soil, and construction materials are likely to increase the turbidity of water sources.</p> <p>Water pollution may cause some problems on aquacultural and agricultural activities such as slow reproductiveness and growth or even death of fish and crops.</p> <p>Prevention of water pollution related to accidental discharge of petroleum products during construction phase, are manageable activities which only requires close supervision, and proper handling of the collected liquid waste and disposal using DONRE accredited companies.</p> <p>This impact by the construction activities of irrigation components is minor due to: i) few number of construction vehicles/equipment needed for construction activities (see the item 3.6 table 1); ii) short timing of construction; iii) The construction activities will be mostly carried out by manual methods; iv) handling of domestic waste is manageable following Ministry of Health standard designs for toilet and other sanitation facilities.</p> <p>Location:</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|---|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|--|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | <p>Cai,Kep streams and local irrigation canal system and other water source close to worker's quarters</p> <p><u>Duration:</u></p> <p>Irrigation component: 12 months of construction phase</p> <p><u>Affected objects:</u>People use the water sources for agricultural and aquaculture purposes.</p> |
| 2.4. Making sensitive flora disappeared and deteriorated | No | | | | <p>Improvement activities will occur within the cultivation area and/or planted forest areas.</p> <p>Land clearing will only affect on commercial trees such as acacia, ecataptus, brush or rice paddy. There are no critical flora in the DIA or SIA</p> |
| 2.5. Dust, noise and exhaust fumes from construction activities | Yes | Minor | Negative | Temporary | <p>During entire improvement process of irrigation system, the activities as below will cause negative impacts such as dust, noise and gaseous emissions on local residents due to:</p> <ul style="list-style-type: none"> - The operation of construction equipment and vehicles (such as Excavators, hammer drill, truck and mobile concrete mixer for irrigation component) - Transport of materials and waste (about 06 trucks capable of 10 tons per day); and - Earthwork activities. <p>High amount of resuspended dust and exhaust gases can cause respiratory or lung disease in humans.</p> <p>Noise can disturb normal living activities of local people such as lunch sleeping, watching of television, chatting, working, learning ...</p> <p>The impact is minor due to;</p> <p>(i) The terrain in the subproject area is open and well ventilated so air pollutants can easily be dissipated by the wind; (ii) The supposed subproject facilities will be constructed within isolated areas, the closest residential areas are 100-600 m away from construction sites , (iii) the number of vehicle/equipment is few. (iv) short construction period of 12 months.</p> <p><u>Location:</u> (i) the areas within 50m surrounding construction sites, (ii) the strips of land that run along bothside of transportation routes</p> <p><u>Duration:</u></p> <p>Irrigation component: 12 months of construction phase</p> <p><u>Affected objects:</u> Residential and institutional areas within the locations above.</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|--|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|--|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| 2.7. Increasing flooding time and magnitude | Yes | Minor | Negative | Temporary | <p>The improved irrigation system also function as flooding regulation. The irrigation canal will lead flood waters to farmlands or idle areas avoiding causing inundation to residential areas. However, the facility's improvement activities if done during the rainy months may make this function temporarily ineffective most especially if the irrigation canal system is blocked by sediments. If the heavy rains occur at the time when the construction of the weirs is not completed, then it is possible that the unfinished structure will be destroyed, workers caught in the work area at the time of the strong rain may be injured, flash floods may also be created that can damage nearby residential areas, crop lands and public infrastructures.</p> <p>However, the impact is assessed as minor due to the following reasons:</p> <ul style="list-style-type: none"> a) Subproject design prescribe that most construction activities will be carried out during the dry season; b) The residential areas are located far from the weirs at least 200 m away; c) The construction period is short lasting only 12 months. <p><u>Location:</u> the low-land areas of four commmues Cao Duong, Cao Thang, Hop Chau and ThanhLuong</p> <p><u>Duration:</u> Rainy months (April-Octorber) for one year construction time</p> <p><u>Impact receptors:</u> Cultivated fields within service area</p> |
| 2.8. Obstruction to local vehicular traffic or access to provate asset | Yes | Minor | Negative | Temporary | <p>The Construction vehicles and trucks will use the existing rural roads to transport building materials and waste. Overloaded transport (beyond road capacity) can cause the degradation of rural infrastructure such as road, bridges, and culvert, as well as cause traffic congestions at sensitive areas such as markets, schools, medical station, CPC office, etc</p> <p>The impact can be considered as minor due to the following:</p> <ul style="list-style-type: none"> a) Few number of trucks (8 units) that will transport construction materials using the public roads as transport route; b) Low traffic volume using the local roads; c) Most of excavated materials will be reused as backfilling of upgraded irrigation canals, and concrete weirs. d) Short construction period of only 12 months. |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|--|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|--|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | <p><u>Location:</u> Markets, schools, residential areas along material transporting routes</p> <p><u>Duration:</u> 12 months of construction phase</p> |
| 2.9. Employment or livelihood benefits from employment of local people | Yes | Minor | Positive | Temporary | <p>If local people will be employed, construction contractors have some benefits as follows:</p> <p>a) Direct hiring of local labor will provide livelihood opportunities to the people most of which may be agriculture seasonal labor (planting and harvesting of crops);</p> <p>b) Provides opportunity to local entrepreneurs/people to provide goods and services supportive of the construction works (i.e. house rental for workers, catering, laundry, transport services, etc.);</p> <p>c) Income gained from the short-term income due to subproject construction, if properly handled can be used as seed capital for business expansion or for investment in household children's advance education.</p> <p>d) The relationship between contractor and local people will be more closer.</p> <p>It is for these reasons that contractors are encouraged to employ local labour during construction to perform such work as: land excavation, collecting construction waste and material, and cleaning. Likewise, qualified local women should be given priority for livelihood opportunities to improve their income.</p> <p><u>Location:</u> beneficiary areas (Cao Duong, Cao Thang, Hop Chau and Thanh Luong communes)</p> <p>Duration: 12 months of construction phase</p> <p><u>Affected objects:</u> Local people and contractors</p> |
| 2.10. Social issues resulting from the presence of migrant workers at construction site to local communities | Yes | Minor | Positive and Negative | Temporary | <p>When construction contractor employs mostly local labor to work in the construction site; and patronize local suppliers of construction materials and/or services.</p> <p>The positive impact can be considered minor due to the following reasons: a) Direct hiring of local labor will provide livelihood opportunities to the local people most of which may be agriculture seasonal labor (planting and harvesting of crops); b) provides opportunity for local entrepreneurs/people to provide goods and support services for the construction works (i.e. house rental for workers, catering, laundry, transport services,</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|---|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|--|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | <p>etc.); c) Income gained from the short-term employment/sale from the subproject construction, if properly handled can be used as seed capital for business expansion or for investment in household and/or children's advance education. It is for this reason that contractors are encouraged to employ local labor during construction to perform such work as: land excavation, collecting the waste and material, cleaning. Likewise, local women should be given priority for livelihood opportunities to improve their income.</p> <p>For the negative impact, social evils such as theft, illegal drug use and prostitution might occur in subproject area, as a result of the presence of migrant workers within the nearby communities. The negative impact can be considered minor since the behavior of personnel can be managed by good administrators, and proper recruitment process.</p> <p><u>Location:</u> beneficiary areas (Cao Duong, Cao Thang, Hop Chau and Thanh Luong communes)</p> <p>Duration:</p> <p>12 months of construction phase</p> <p><u>Affected objects:</u> Local people and workers</p> |
| 2.12. Generation of Desilting soil/materials that require proper disposal | Yes | Minor | Positive | Temporary | <p>The total volume of excess desilted soil, canal and weir foundation excavation spoils is about 3,200 m³ out of 20,027 m total. These spoils if not properly disposed of, can get washed off to irrigation canal, and stream bed; and decrease the aesthetic value of the landscape. But the impact is considered as minor due to the small volume of excess materials which can be reused for improvement activities of the sub-project area such as filling materials for low lying areas such as residential sites that periodically experience inundation.</p> <p><u>Location:</u> Whole Irrigation canal system and stream section where the existing earth weirs for upgrading, are located.</p> <p><u>Duration:</u></p> <p>6 months of desilting activities</p> <p><u>Affected objects:</u> irrigation canal system and stream sections which are the site of existing weirs of the four beneficiary communes Cao Duong, Cao Thang, Hop Chau and Thanh Luong</p> |
| 2.13. Generation and disposal of solid waste by | Yes | Minor | Negative | Temporary | <p>The construction activities will require about 50 workers that may generate an amount of solid</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|--|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|---|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| construction activities and worker camps | | | | | <p>domestic waste. If this waste is not properly treated and disposed of, it will run the risk of poor sanitation that may compromise the health of construction workers.</p> <p>- There will be four worker's quarters able to accommodate 40-50 workers and so the estimated amount of waste generated daily is around 8 or 10 kg which is not much. In addition, there are the local groups responsible for collecting solid domestic waste so the construction contractors can use these services to handle their own domestic waste. The septic sludge from toilet with harmful bacteria is another source of pollution that needed to be treated during construction period</p> <p>- Construction solid wastes include among others concrete pieces, crushed stone, broken wood, brick, etc. that cannot be used for the works. Other waste may be in the form of packaging, cans and debris.</p> <p>The solid wastes listed above can affect the local landscape, make fertile agriculture soil polluted as well as deteriorate worker's camp sanitation</p> <p>While solid waste are generated during the construction process, these are manageable using available standard engineering and sanitation practices. The duration of the impact is short to last for most of the 12 months construction period. It is for these reasons that the impact is considered as minor.</p> <p><u>Location:</u> Worker camps, construction sites</p> <p><u>Duration:</u> 12 months of construction time</p> <p><u>Affected objects:</u> workers and local people</p> |
| 2.14. Disruption in irrigation water services may affect crop production of local farmers. | Yes | Minor | Negative | Temporary | <p>The improvement works which includes the replacement of the existing earth weirs, desilting and concrete lining of irrigation canals, will require the temporary disruption of irrigation water supply to the service areas.</p> <p>A prolonged suspension of irrigation water supply may seriously affect crop production most especially paddy rice and vegetables that are greatly dependent on moisture.</p> <p>The impact can be considered as minor due to the following reasons: a) As part of subproject design, the upgrading works will mostly be done during the dry months when the streams on which the weirs are installed are almost dry thus, allowing weir construction and canal improvement works to proceed; b) Water diversion works can likewise be employed when necessary, to allow</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|--|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|---|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | <p>passage of irrigation water thru the sections under upgrading, to farms downstream; and will be felt for a short duration (2 months)</p> <p><u>Location:</u> 647 ha of cultivation area</p> <p><u>Duration:</u> Two month (Jan, Feb)</p> <p><u>Affected objects:</u> local people of four beneficiary communes cultivate on the area in the location above</p> |
| 2.15. Risks to public or construction worker health and safety | No | | | | The residential areas are far from the irrigation schemes, the pumping station sites are beside the road, there are only few vehicles and equipment, and most of the works are manual in nature |
| 2.16. Other impacts in quarries for material construction on dust, noise, working safety and water or soil pollution by exploitation activities | No | | | | <p>Construction materials will be supplied by companies licensed by government authorities. The licence and other environmental documents such as EIA, EPC will be checked by PPMU/Contractors before supplying contracts are signed.</p> <p>The subproject do not required to open new any quarry for construction materials.</p> |
| 3. Impacts in operation stage | | | | | |
| 3.1. Vegetation covers and areas at downstream and upstream get flooded by operation of weir/dam. | No | | | | <p>Operation of weir, pumping houses and irrigation canal will not cause flooding situation because:</p> <p>(i) Weirs are designed following to technical standards on the basis of calculation of highest and lowest water level of streams</p> <p>(ii) The improved irrigation system itself has regulation facilities such as gates for inlets, outlets and other controlling systems.</p> |
| 3.2. Excessive exploitation of surface water and groundwater will make water supply capacity cannot catch up with demands and/or cause conflicts among households. | No | | | | <p>I) Underground water is not used for the sub project</p> <p>II) No irrigation system with groundwater pumping station is built.</p> <p>iii)-The canal system is concreted to avoid leaks, sedimentation and blocking so the ability to provide water to fields in downstream areas is better</p> |
| 3.3. Water is exploited at sensitive ecological places/or reservation areas. | No | | | | There is no sensitive ecological area/ or conservation area located in and/or close to RIA |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|---|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|--|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| 3.5. Productivity is improved by increase of irrigation capacity | Yes | Significant | Positive | Long-term | <p>The subproject seeks to restore water services to all parts of the original service area, as well as expand to adjacent areas. At present unserved farmlands get irrigation water from the rain during rainy season, however, these cannot be used during the dry months thus limited productivity. When the subproject is completed, the whole 674 ha of cultivation area (consisting of 535,2 ha of original service area and 111,8 ha of an additional area), can get irrigation water sufficient for 2 croppings even during the dry season. This means increase agriculture productivity, leading to increase farm produce that will raise farm incomes and may result to better socio-economic conditions for beneficiaries and reduction of poverty within the subproject and neighboring areas. In view of this positive impact, it is considered significant and long term, so long as the irrigation facility is properly maintained.</p> <p><u>Location:</u> 674 ha of cultivation area of four communes</p> <p><u>Affected objects:</u> Local people.</p> |
| 3.6. Cultivation habits will be changed due to the increase in farm productivity. | No | | | | <p>There is no change of cultivation habits of local people. The service area including those that have not received irrigation water are still used for crop production, with some only operating during the rainy months. So the availability of water to these unservice area will not cause a change in landuse, nor affect the cultivation habits of the local people</p> |
| 3.7. Soil erosion and land slide in canal | No | | | | <p>The canal system is located within relative flat area, in addition, it is reinforced by concrete so the risks of canal bank erosion and sedimentation in the canal system are not likely to occur</p> |
| 3.8. Affecting water quality due to the increased quantity of fertilizer or pesticide | Yes | Minor | Negative | Long term | <p>Adequate and sustainable irrigation water supply will encourage the increase in agriculture production. To do this, additional farm inputs such as good quality seeds, increase farm chemicals (i.e. fertilizers, pesticides and fungicides) will be applied in the farm lots.</p> <p>Since only a portion of the farm chemicals can be absorbed by the crops, the residual fertilizers and pesticides will be washed out by run-off water that will be drained into Bai Him river by gravity. This may make a section of Bai Him river polluted and</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|--|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|--|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | <p>affect the aquatic organisms living in the river. As stream water flows downstream, the pollutants in the water will further spread out contaminate other areas.</p> <p>The impact may be considered minor for the following reasons: a) the local ethnic minority farmers still practice the traditional type of agriculture that do not use commercial chemical fertilizers; b) the DARD has agriculture extension programs that promote alternative environment-friendly farming methods; and c) this impact is manageable depending mostly on the awareness of local farmers to the issue, and the management of local authorities</p> <p>Location: Four communes Cao Duong, Cao Thang, Hop Chau and ThanhLuong</p> |
| 3.10. Congested irrigation canal causes flooding | Yes | Minor | Negative | Occasional | <p>During the operations of the irrigation system, rubbish, earth, and weeds which grow on the service canals can get into the canal system and block the flow of water and decrease the conveying capacity of main canal.</p> <p>Under the subproject design, Operations and Maintenance mechanisms are put in place thereby ensuring that the canals will function properly. So if the O&M mechanism will be properly followed, then this impact can be considered as minor.</p> <p><u>Location:</u> along the main canal</p> |
| 3.12. Affects on employment and livelihood | Yes | Significant | Positive | Long-term | <p>With the expected increase in farm incomes, the additional amount can be invested by local farmers into other productive endeavors (i.e. dry goods stores, transport facilities, post harvest facilities, etc.) thereby creating more diversified employment and job opportunities</p> <p>Location: Four communes Cao Duong, Cao Thang, Hop Chau and ThanhLuong</p> |

Table 3.b.Environmental impact screening for drainage component

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|-----------------------------------|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|--|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| 1. Pre-Construction Stage Impacts | | | | | |
| 1.1. Disturbance of UXO | No | | | | The subproject facilities is to be constructed in an area where there had been no reported incidence of accidents related to explosion of unexploded ordnance for the last 20 years. |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|--|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|--|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| 1.2. Loss of residential land, agricultural land and other private assets. | Yes | Minor | Negative | Long-term | According to the RP inventory of loss (IOL) survey data, the subproject only requires 180 m ² for constructing two new pumping stations. This acquired area belongs to Thanh Luong commune. The involuntary resettlement impact is analyzed and evaluated more thoroughly in the RP report of sub-project. |

2. Construction Stage Impacts

| | | | | | |
|---|-----|-------|----------|-----------|---|
| 2.1 Sedimentation caused by dredging and earthworks | Yes | Minor | Negative | Temporary | <p>During earth work activities including the construction of pumping station foundation, embankments, housing and other appurtenances, excavated soil are likely to fall off or get wash off by rain, from the sites or transport trucks into Bai Him river that cause sedimentation. The Bai Him water quality may even be affected by the increase turbidity of the water sources caused by the fine sediments in the water.</p> <p>The impact of sedimentation that can be caused by earthwork activities to the Bai Him river is minor due to the following: a) small quantity of excavated soil (total excavation soil: 358 m³; re-used soil: 178 m³ and excess excavation soil: 180 m³) involved in the construction of the pumping station with the area of 20m². Given all of the above arguments, the impact is assessed to be minor.</p> <p><u>Location:</u> Drainage component: Bai Him river</p> <p><u>Duration:</u> Drainage component: 6 months of construction phase</p> <p><u>Affected objects:</u> People use the water sources for irrigation purposes</p> |
| 2.2. Pollution of water flows, aquatic environment due to soil and waste water or spilled oil and other petroleum products from construction equipment and vehicles | Yes | Minor | Negative | Temporary | <p>Washing equipment and vehicles (see the type and number in item 3.6 of table 1) in water bodies may cause water pollution due to contamination by spilled oil, grease or lubricant and other petroleum products (i.e. fuel, spent engine oil, lubricants, hydraulic fluid, etc.). These equipment may not be many in view of small construction works. Estimated volume of wastewater from worker camp is about 1m³ per day (10 workers with the consumption of 110 l/day). This volume is so small that can affect on the quality of local water bodies.</p> <p>Excavated soil, construction material are likely to increase the turbidity of water sources.</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|---|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|---|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | <p>Water pollution may cause some problems on aquacultural and agricultural activities such as slow reproductiveness and growth or even death of fish and crops</p> <p>Prevention of water pollution related to accidental discharge of petroleum products during construction phase, are manageable activities which only requires close supervision, and proper handling of the collected liquid waste and disposal using DONRE accredited companies.</p> <p>This impact by the construction activities of drainage components is minor due to: i) few number of construction vehicles/equipment needed for construction activities (see the item 3.6 table 1); ii) short duration of construction works (6 months); and iii) small amount of excess excavation soil that need to be disposed.</p> <p>Location: Drainage component: Bai Him river Duration: Drainage component: 6 months of construction phase Affected objects: Local people who use the water sources for agricultural and aquacultural purposes.</p> |
| 2.4. Making sensitive flora disappeared and deteriorated | No | | | | <p>Improvement activities will occur within flat cultivation areas planted to paddy rice. Land clearing will only affect standing rice crops should the actual land clearing works will be done prior to the harvest season. There are no critical flora in the DIA or SIA</p> |
| 2.5. Dust, noise and exhaust fumes from construction activities | Yes | Minor | Negative | Temporary | <p>During entire the construction of pumping stations, the activities as below will cause negative impacts such as dust, noise and gaseous emissions on local residents due to:</p> <ul style="list-style-type: none"> - The operation of construction equipment and vehicles (such as crane, excavator and trucks for drainage component) - Transport of materials and waste (about 03 trucks capable of 10 tons per day); and - Earthwork activities. <p>High amount of resuspended dust and exhaust gases can cause respiratory or lung disease in humans that may be exposed to these emissions for an extended period;</p> <p>Noise can disturb normal living activities of local people such as lunch sleeping, watching of</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|--|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|---|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | <p>television, chatting, working, learning in school, The impact is minor due to;</p> <p>(i) The terrain in the subproject area is open and well ventilated so air pollutants can easily be dissipated by the wind; (ii) The planned subproject facilities will be constructed within isolated areas, the closest residential areas are 500 m away from construction sites, and (iii) the number of vehicle/equipment is few.</p> <p><u>Location:</u> (i) the areas within 50m surrounding construction sites, (ii) the strips of land run along both side of transportation routes</p> <p><u>Duration:</u></p> <p>Drainage component: 6 months of construction phase</p> <p><u>Affected objects:</u> Residential and institutional areas within the locations above.</p> |
| 2.8. Obstruction to local vehicular traffic or access to private asset | Yes | Minor | Negative | Temporary | <p>Two pumping house are located on the side of rural roads thereby the mobilization of excavator, crane will affect on the traffic convenience. During construction phase, there are, on the average, 03 trucks (10 ton capacity) per day needing to be used for material transportation. These trucks can obstruct to local vehicular traffic in some specific times such as during harvest season.</p> <p>This impact can be considered minor due to: a) few number of vehicles (3 trucks/day) needed to transport materials; and few number of construction equipment (see item 3.6 table 1) b) Short construction time; and c) the subproject sites are located within areas that has very low traffic volume.</p> <p><u>Location:</u> the rural road where two pumping station are located, and along material transporting routes</p> <p><u>Duration:</u></p> <p>Drainage component: 6 months of construction phase</p> |
| 2.9. Employment or livelihood benefits from employment of local people | Yes | Minor | Positive | Temporary | <p>If local people will be employed, construction contractors have some benefits as follows</p> <p>a) Direct hiring of local labor will provide livelihood opportunities to the people most of which may be agriculture seasonal labor (planting and harvesting of crops);</p> <p>b) Provides opportunity to local entrepreneurs/people to provide goods and services supportive of the construction works (i.e. house rental for</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|--|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|---|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | <p>workers, catering, laundry, transport services, etc.);</p> <p>c) Income gained from the short-term income due to subproject construction, if properly handled can be used as seed capital for business expansion or for investment in household children's advance education.</p> <p>d) The relationship between contractor and local people will be more closed</p> <p>It is for these reasons that contractors are encouraged to employ local labour during construction to perform such work as: land excavation, collecting constructionwaste and material, and cleaning. Likewise, qualified local women should be given priority for livelihood opportunities to improve their income.</p> <p><u>Location:</u> beneficiary areas (Cao Duong, Cao Thang, Hop Chau and ThanhLuong communes)</p> <p>Drainage component: 6 months of construction phase</p> <p><u>Affected objects:</u> Local people and contractors</p> |
| 2.10. Social issues resulting from the presence of migrant workers at construction site to local communities | Yes | Minor | Positive and Negative | Temporary | <p>When construction contractor employs mostly local labor to work in the construction site; and patronize local suppliers of construction materials and/or services.</p> <p>The positive impact can be considered minor due to the following reasons: a) Direct hiring of local labor will provide livelihood opportunities to the local people most of which may be agriculture seasonal labor (planting and harvesting of crops); b) provides opportunity for local entrepreneurs/ people to provide goods and support services for the construction works (i.e. house rental for workers, catering, laundry, transport services, etc.); c) Income gained from the short-term employment/sale from the subproject construction, if properly handled can be used as seed capital for business expansion or for investment in household and/or children's advance education. It is for this reason that contractors are encouraged to employ local labor during construction to perform such work as: land excavation, collecting the waste and material, cleaning. Likewise, local women should be given priority for livelihood opportunities to improve their income</p> <p>For the negative impact, social evils such as theft, illegal drug use and prostitution might occur in subproject area, as a result of the presence of</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|--|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|--|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | <p>migrant workers within the nearby communities. The negative impact can be considered minor since the behavior of personnel can be managed by good administrators, and proper recruitment process.</p> <p><u>Location:</u> Thanh Luong commune</p> <p>Drainage component: 6 months of construction phase</p> <p><u>Affected objects:</u> Local people and workers</p> |
| 2.12. Generation of solid waste from construction activities that need to be properly disposed | Yes | Minor | Positive | Temporary | <p>Drainage component</p> <p>The total volume of excavated soil is about 358 m³ of which 178 m³ can be re-used and the excess materials is 180 m³ will require proper disposal. This excess soil can be reused to level up low-land areas adjacent to construction sites</p> <p>This impact is considered as minor considering that the volume of excess excavated materials is small at only 180 m³ which can easily be used as backfill for isolated low lying residential areas needing elevation of their present grounds to avoid further inundation in the future.</p> <p><u>Location:</u> The construction sites</p> <p><u>Duration:</u> 1 months of excavated activities</p> |
| 2.13. Generation of domestic solid waste from construction activities and from worker camps that need to be properly disposed. | Yes | Minor | Negative | Temporary | <p>The construction activities will require about 20 workers that can generate an amount of solid domestic waste. If this waste is not properly treated and disposed of, it may cause sanitation and health problems, as well as deterioration of the site aesthetic.</p> <p>- There will be worker's quarters provided, able to accommodate 10-15 persons at one time, and so the estimated amount of domestic waste generated daily is around 2 or 4 kg which is not much. In addition, there are the local groups responsible for collecting solid domestic waste so the construction contractors can use the services to handle their own domestic waste. The septic sludge from toilet with harmful bacteria is another source of pollution that needed to be treated prior to disposal, during construction period.</p> <p>- Construction solid wastes include among others concrete pieces, crushed stone, broken wood, brick etc. that cannot be used for the works. Other waste may be in the form of packaging, cans and debris.</p> <p>The solid wastes listed above can affect the local landscape, pollute soil where these will be disposed of, as well as degrade the local</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|---|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|---|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | <p>landscape aesthetics.</p> <p>While solid waste are generated during the construction process, these are manageable using available standard engineering and sanitation practices such as the installation of Ministry of Health standard design toilets at the construction site and workers camp. The impact due to solid waste from worker's domestic activities as well as minor construction solid waste production, can be considered as minor.</p> <p><u>Location:</u> Worker camps, construction sites</p> <p><u>Duration:</u> 6 months of construction time</p> <p><u>Affected objects:</u> workers and local people</p> |
| 2.16. Other impacts in quarries for material construction on dust, noise, working safety and water or soil pollution by exploitation activities | No | | | | <p>Construction materials will be supplied by companies licensed by government authorities. The licence and other environmental documents such as EIA, EPC will be checked by PPMU/Contractors before supplying contracts are signed.</p> <p>The subproject do not required to open new any quarry for construction materials.</p> |
| 3. Impacts in operation stage | | | | | |
| 3.1. Deterioration of surface water quality due to the increased application of farm chemicals (i.e. fertilizer, pesticide, fungicides, etc.) to stimulate higher agriculture production. | Yes | Minor | Negative | Long term | <p>The subproject can provide sustainable supply and stable water level within the service area and can encourage the increase in agriculture production. To make the increase agricultural production level, additional farm inputs such as good quality seeds, increase farm chemicals (i.e. fertilizers, pesticides and fungicides) will be applied by the beneficiaries in the farm lots.</p> <p>Since only a portion of the farm chemicals can be absorbed by the crops, the residual fertilizers and pesticides will be washed out by run-off water that will be drained into Bai Him river by gravity. This may make a section of Bai Him river polluted and affect the aquatic organisms living in the river. As stream water flows downstream, the pollutants in the water will further spread out and contaminate other areas.</p> <p>The impact may be considered minor for the following reasons: a) the local ethnic minority farmers still practice the traditional type of agriculture that do not use commercial chemical fertilizers; b) the DARD has agriculture extension programs that promote alternative environment-friendly farming methods; and c) this impact is manageable depending mostly on the awareness of local farmers to the issue, and the management</p> |

| IMPACTS | POTENTIAL IMPACTS | | | | BRIEF DESCRIPTION OF IMPACT LOCATION AND SCOPE |
|--|-------------------------------------|-----------------------------|-----------------------------|--------------------------------|--|
| | Is impact likely to occur yes / no? | Is it minor or significant? | Is it positive or negative? | Is it temporary or permanent ? | |
| | | | | | of local authorities. Location: Bai Him river, the section cross thru ThanhLuong commune |
| 3.2. Generation of noise and vibration that may disturb adjacent residential and institutional areas | No | | | | The operation of pumps (02 pumps of 37 KW in Xuan Him station and 02 pumps of 55 KW in Go Mu station) used to drain excessflood water,and maintain water level in the service area to desire elevation, can cause noise that may disturbadjencentresidential areas. Howeverthe two pumping stations are located far away from residential areas (at least 500 m). |
| 3.2. Risks of natural hazards | Yes | Minor | Positive | Longterm | Two drainage facilities are actually flood mitigationmeasures, that seeks to remove excess flood waters from the service area, and retain a small amount just enough for the irrigation requirements of planted paddy rice. The drainage facilities itself are built high beside the dike road and so may not be affected by periodic flooding. Location: ThanhLuong commune |
| 3.3. Affects on employment and livelihood | Yes | Minor | Positive | Longterm | With the expected increase in farm incomes, the additional amount can be invested by local farmers into other productive endeavors (i.e. dry goods stores, transport facilities, post harvest facilities, etc.)thereby creating more diversified employment and job opportunities Location: Four communes Cao Duong, Cao Thang, Hop Chau and ThanhLuong |

V. OUTLINE ENVIRONMENT MANAGEMENT PLAN (EMP)

A. Environmental Mitigation Plan

Table 4.Environmental management plan

| Potential impacts | Mitigation measures | Responsibility | Cost |
|---|---|----------------|--|
| 1. Pre-construction stage for both irrigation & drainage component | | | |
| 1.1. Loss of residential and/or agricultural land | Implement mitigation measures outlined in the subproject resettlement plan | PPMU | 1,007,440,000 VND/ 48,434.6 USD |
| 2. Construction stage | | | |
| Irrigation component | | | |
| 2.1. Sedimentation caused by desilting and earthworks | <ul style="list-style-type: none"> + Implement desilting work in canals during the dry months; + As much as practicable use desilted materials meeting technical standards as fill materials. | Contractor | Included in the contract with the Contractor |
| 2.2. Pollution of water ways, aquatic environment due to soil and waste water, waste oil and other petroleum products from construction equipment | <ul style="list-style-type: none"> + Store hazardous materials (i.e fuel, oil, grease, other petroleum products) in safe areas with dry concrete floor and waterproof roof; + Ensure construction equipment and vehicles are maintained in good working conditions; + Supply 02 latrines following standard of Health Ministry for each construction site as well as for a worker's quarters; + Regularly collect discarded soil to avoid causing sedimentation waterways (i.e. weir, canal, receiving stream); + Discharge of waste materials directly to water source is forbidden. | Contractor | Included in the contract with the Contractor |
| 2.3. Dust, and exhaust fumes from improvement activities | <ul style="list-style-type: none"> + Cover the cargo of all trucks carrying dispersible construction materials and waste; + Cover temporary construction materials stockpiles (i.e. canvas, plastic, etc.) that can be resuspended as dust such as silt, fine sand, and fine soil; + Ensure vehicles and construction equipment are maintained in good working condition and promptly repair for any damage or oil leaks; + Spray water on the access roads, increase water spraying frequency along residential areas crossed; + Drivers of construction vehicles and trucks to observe speed limits (15 kph) most especially when passing residential and institutional areas; + Avoid using concrete mixing plants within the radius of 100m away from residential areas | Contractor | Included in the contract with the Contractor |
| 2.4. Noise caused by construction equipment and machinery | <ul style="list-style-type: none"> + Ensure vehicles and construction equipment are maintained in good working condition and promptly repair for any damage or oil leaks; + | Contractor, | Included in the contract with the Contractor |

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| 2.5. Obstruction to local vehicular traffic as well as property access | <ul style="list-style-type: none"> + Inform local peoples & communities in subproject area about construction schedule most especially the transport route of trucks bringing construction materials and waste. + For portions of upgraded canals along public road, construction activities should be limited at harvesting time or planting season + Provide temporary access to obstructed access to private properties, and restore the permanent access after construction works is completed. | Contractor | Included in the contract with the Contractor |
| 2.6. Social impacts by workers at construction site to local communities | <ul style="list-style-type: none"> + Orient migrant workers on ways of communicating with the local community as well as information on local culture; + Orient workers on personal health and sanitation, as well as prevention of contagious diseases; + Exploitation of local natural resources are prohibited; + Orient workers on the prevention of communicable diseases such as HIV/AIDS, and social evils like smuggling, prostitution, violence and stealing. | Contractor | Included in the contract with the Contractor |
| 2.7. Creating a quantity of solid waste | <ul style="list-style-type: none"> + Dumping domestic solid waste outside of areas identified is prohibited + Use local services for collecting domestic solid waste + As much as practicable, maximize the reuse of excavated materials as backfill; + Provide receptacles for use as temporary waste collection bins, and situate them in strategic location within the construction site and worker's camp. + Collect solid wastes and store them at temporary safe areas not susceptible to flooding, before transporting them to the approved disposal site. | Contractor | Included in the contract with the Contractor |
| 2.8. Disruption of irrigation water supply to service areas | <ul style="list-style-type: none"> + Conduct major construction activities during the dry months + Construct temporary water diversion works along irrigation canal sections undergoing upgrading works if construction is done during the rainy months; + In the unlikely event that water supply due to construction works is still necessary, Commune's irrigation staff, Irrigation management enterprise or relevant authorities should beforehand inform households and contractor on water supply schedule so that they can plan their own farming activities; | Contractor Weir management unit, water exploitation unit; | Included in the contract with the Contractor |
| 2.9. Other impacts in quarries for material construction on dust, noise, working safety and water or soil pollution by exploitation activities | <ul style="list-style-type: none"> + Whenever practicable, maximize the use excavated soil meeting technical standards for backfilling; + Contract local business with appropriate licence to supply construction materials for the sub-project; + The license and other environmental documents will be checked before the supplying contract signed. | Contractor | Included in the contract with the Contractor |
| Drainage component | | | |
| 2.1 . Loss of livelihood source resulting from land acquisition of farm land for use as pumping station site | <ul style="list-style-type: none"> + Implement approved RP. + Post information materials on the subproject at the CPC bulletin board; + Implement grievance redress mechanism and inform local people on how to avail of this system thru public meetings, posting information materials at CPC bulletin | PPMU | Included in the RP cost. |

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| | board and loud speakers. | | |
| 2.2. Sedimentation caused by earthworks | <ul style="list-style-type: none"> + Construction of two pumping house during the dry months; + As much as practicable maximize the use of excavated materials meeting technical standards as fill materials. | Contractor | Included in the contract with the Contractor |
| 2.2. Pollution of water ways, aquatic environment due to soil and waste water, waste oil and other petroleum products from construction equipment | <ul style="list-style-type: none"> + Store hazardous materials (i.e fuel, oil, grease, other petroleum products) in safe areas with dry concrete floor and waterproof roof; + Ensure construction equipment and vehicles are maintained in good working conditions; + Provide 2 laterines following standard of Ministry of Health for each construction site, as well as worker's camp; + Regularly collect discarded soil to avoid causing sedimentation waterways(receiving stream); + Discharge of waste materials directly to water source is forbidden. | Contractor | Included in the contract with the Contractor |
| 2.3. Dust, noise and exhaust fumes from improvement activities | <ul style="list-style-type: none"> + Cover the cargo of all trucks carrying dispersible construction materials and waste; + Ensure vehicles and construction equipment are maintained in good working condition and promptly repair for any damage or oil leaks; + Drivers of construction vehicles and trucks to observe speed limits (15 kph) most especially when passing residential and institutional areas; + Ensure vehicles and construction equipment are maintained in good working condition and promptly repair for any damage or oil leaks; | Contractor | Included in the contract with the Contractor |
| 2.5. Affects on traffic or conditions for property access | <ul style="list-style-type: none"> + Inform local peoples & communities in subproject area about construction schedule most especially the transport route of trucks bringing construction materials and waste. | Contractor | Included in the contract with the Contractor |
| 2.6. Social impacts by workers at construction site to local communities | <ul style="list-style-type: none"> +Orient migrant workers on ways of communicating with the local community as well as information on local culture; + Orient workers on personal health and sanitation, as well as prevention of contagious diseases; + Exploitation of local natural resources are prohibited; + Orient workers on the prevention of communicable diseases such as HIV/AIDS, and social evils like smuggling, prostitution, violence and stealing. | Contractor | Included in the contract with the Contractor |
| 2.7. Creating a quantity of solid waste | <ul style="list-style-type: none"> + Dumping solid waste outside of areas identified is prohibited + As much as practicable, reuse excavated materials as backfill; + Collect solid wastes and store them at temporary safe areas not susceptible to flooding, before transporting them to the approved disposal site. | Contractor | Included in the contract with the Contractor |
| 2.9. Other impacts in quarries for material construction on dust, noise, working | <ul style="list-style-type: none"> + Whenever practicable, maximize the use excavated soil meeting technical standards for backfilling; +Contract local business with appropriate licence to supply construction materials for the sub-project; + The license and other environmental documents will be checked before the supplying contract signed. | Contractor | Included in the contract with the Contractor |

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|---|--|---|-----------------------|
| safety and water or soil pollution by exploitation activities | | | |
| 3. Operation stage | | | |
| Irrigation component | | | |
| 3.1. Deterioration of water quality due to the increased quantity of farm chemicals (i.e. fertilizers, pesticides, etc.) used in the farms. | + Coordinate with DARD to provide agriculture extension seminar to local farmers on the proper use of farm chemicals (i.e. fertilizers, pesticides, fungicides, etc.); + Coordinate with DARD to provide agriculture extension seminar to local farmers on Integrated Pesticide Management (IPM) | CPC, DARD | Local budget |
| 3.2. Risks of natural hazards | + Irrigation management enterprise closely coordinate with Natural disaster & Flooding Prevention Committee in the local area to find timely assistance on natural disaster mitigation planning matters such as: fight against drought, and flash flooding. | Irrigation management enterprise, Provincial Natural Calamity & Flooding Prevention Committee | Without marginal cost |
| 3.3. Congested irrigation canal causes flooding | + Implement appropriate Operations and Maintenance activities as prescribed in the Subproject Investment Report (SIR); these include regular desilting of canals, periodic to emergency repair of irrigation facilities. | District/provincial Irrigation Exploitation Enterprise. | Local budget |
| 3.4. Weir safety in rainy season | + Monitoring the stability of the earthweirs, and providing competent authorities with information on signs of weaknesses on the structure for immediate rehabilitation/upgrading; + Irrigation system maintenance crew to be trained to among others spot possible failure in the weir, provide proper maintenance work to keep the structures working properly. | Commune authority, District Irrigation Exploitation Enterprise | Local budget |
| Drainage component | | | |
| 3.5. Deterioration of water quality due to the increased quantity of fertilizer or pesticide use in the service area. | + Coordinate with DARD to provide agriculture extension seminar to local farmers on the proper use of farm chemicals (i.e. fertilizers, pesticides, fungicides, etc.); + Coordinate with DARD to provide agriculture extension seminar to local farmers on Integrated Pesticide Management (IPM) | CPC, DARD | Local budget |
| 3.6. Generation of noise and vibrations. | + Implement appropriate Operations and Maintenance activities as prescribed in the Subproject Investment Report (SIR) | CPC | Local budget |

B. Environmental Monitoring Plan

1. Environmental Impact Monitoring

9. Monitoring the environmental impact was conducted to assess project impacts related to the ambient conditions.

Table 5. Monitoring plan for environmental affects

| Mitigation Measure | Parameters | Locations | Methods | Frequency | Responsibility | Cost |
|---|--|--|--------------------------|---|----------------|---|
| 1. Pre-Construction stage | | | | | | |
| 1.1 Implement approved Resettlement Plan | Number of Complaints filed and resolved | Affected areas | Observation Interview | Monthly or in response to community's complaint | PPMU | Included in the RP budget |
| 2. Construction stage | | | | | | |
| Irrigation component | | | | | | |
| 2.1. Control of sedimentation and surface water quality | <ul style="list-style-type: none"> ▪ Siltation ▪ Turbidity ▪ Trash, grease and other visible pollutants | Three weirs of subproject, Cai river, Kep stream and subproject Irrigation canals | Observation Interview | Weekly | contractor | Included in the Contract signed with the contractor |
| 2.2. Minimization of dust generation | Dust level | In the residential areas along material transport route; | Observation Interview | Weekly or in response to community's complains | contractor | Included in the Contract signed with the contractor |
| 2.3. Minimization of noise generation | Noise level | In the residential areas along material transport route; | Observation Interview | Weekly or in response to community's complaint | contractor | Included in the Contract signed with the contractor |
| 2.4 Traffic management | Number of vehicular accidents, and reason | Along the transport route especially along residential and institutional areas | Observation Interview | Monthly or in response to community's complaint | Contractor | Included in the Contract signed with the contractor |
| 2.5. Proper Personnel Management | Number of complaints against subproject workers | On construction sites; On residential areas nearest construction site | Observation Interview | Weekly | contractor | Included in the Contract signed with the contractor |
| 2.6 Solid waste control | Volume and composition of solid waste | <ul style="list-style-type: none"> • Construction sites • Workers camp | Observation Interview | Weekly | Contractor | Included in the Contract signed with the contractor |

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| 2.7. Cleanliness of workers camps | Clean water tanks with appropriate covers Waste bins for domestic solid waste Contract/Agreement for transporting domestic waste | Worker's quarters, | Observation Interview | Weekly or in response to community's complaint | contractor | Included in the Contract signed with the contractor |
| 2.8. irrigation water supply management | Number of complaints and those resolved | 647 ha of cultivation land of four communes | Interview | Weekly or in response to community's complaint | Contractor Irrigation Exploitation Enterprise | Included in the Contract signed with the contractor |
| 2.9 Implementation of Health and Safety Measures | Number of construction related accidents | <ul style="list-style-type: none"> • Subproject construction site • Residential areas along transport route | Interview | Weekly or in response to community's complaint | Contractor | Included in the Contract signed with the contractor |
| 2.10. Verification of material quarries | Licences and other environmental documents | Material quarries | Verification | Once before construction time | Contractor | Included in the Contract signed with the contractor |
| Drainage component | | | | | | |
| 2.1. Control of sedimentation and surface water quality | <ul style="list-style-type: none"> ▪ Excavated soil ▪ Turbidity ▪ Trash, grease and other visible pollutants | Bai Him river | Observation Interview | Weekly | contractor | Included in the Contract signed with the contractor |
| 2.2. Minimization of dust generation | Dust level | In the closest residential areas to the material transport route; | Observation Interview | Weekly or in response to community's complains | contractor | Included in the Contract signed with the contractor |
| 2.3. Minimization of noise generation | Noise level | In the closest residential areas to the material transport route; | Observation Interview | Weekly or in response to community's complaint | contractor | Included in the Contract signed with the contractor |
| 2.4 Traffic management | Number of vehicular accidents, and reason | Along the material transport routes especially along residential and institutional areas, the areas near the construction sites | Observation Interview | Monthly or in response to community's complaint | Contractor | Included in the Contract signed with the contractor |
| 2.5. Proper Personnel Management | Number of complaints against subproject workers | On construction sites; On residential | Observation Interview | Weekly | contractor | Included in the Contract |

| | | | | | | |
|--|---|--|-----------------------|--|--|---|
| | | areas nearest construction site | | | | signed with the contractor |
| 2.6 Solid waste control | Volume and composition of solid waste | <ul style="list-style-type: none"> Construction sites Worker's camps | Observation Interview | Weekly | Contractor | Included in the Contract signed with the contractor |
| 2.7 Implementation of Health and Safety Measures | Number of construction related accidents | <ul style="list-style-type: none"> Subproject construction site Residential areas along transport route | Interview | Weekly or in response to community's complaint | Contractor | Included in the Contract signed with the contractor |
| 3. Operation stage | | | | | | |
| Irrigation component | | | | | | |
| 3.1. Monitoring the use of farm chemicals | Amount of farm chemical used ▪ Number of farm technology adopters. | Three weirs of subproject | Observation Interview | Once every 6 months | DARD; District Irrigation Exploitation Enterprise; | Provincial budget |
| 3.3. Implementation of Operations and Maintenance Activities | Siltation of canals, breakage in canal lining, incidence of canal overlapping, breakage in weir | Canal system, Three weirs of subproject | Observation Interview | Once every 6 months | DARD, District Irrigation Exploitation Enterprise, commune irrigation official, households | Provincial budget |
| Drainage component | | | | | | |
| 3.1. Implementation of Operations and Maintenance Activities | Incidence of pumping stoppage; number of pumps operational | Two pumping houses of subproject | Observation Interview | Once every 6 months | DARD, District Irrigation Exploitation Enterprise, commune irrigation official, households | Provincial budget |

2. Environmental Compliance Monitoring

10. Environmental compliance monitoring is carried out to test compliance with operating procedures, technical standards and/or contractor specifications in the EMP.

Table 6. Environmental Compliance Monitoring

| Mitigation Measure | Parameters | Locations | Methods | Frequency | Responsibility | Cost |
|--|---|-----------------------|-----------------------|--|----------------|-----------------|
| Pre-Construction stage for both irrigation and drainage component | | | | | | |
| 1.1 Implement approved RP | <ul style="list-style-type: none"> Information materials posted at the CPC bulletin board Affected persons fully paid compensation and other benefits prior to displacement | Implement approved RP | Observation Interview | Monthly or when compensation and other | PPMU | Part of RP cost |

| | | | | | | |
|--|--|---|-----------------------|--|---|--|
| | <ul style="list-style-type: none"> Grievance mechanism in place | | | benefits payments are made to APs | | |
| 2. Construction stage | | | | | | |
| Irrigation component | | | | | | |
| 2.1. Control of sedimentation of surface water ways | <ul style="list-style-type: none"> Desilting works of canals done during the dry months; When practicable desilted materials used for construction works | Irrigation canals, weirs of Subproject | Observation Interview | Monthly | Construction Supervision Consultant (CSC) | Included in the Contract |
| 2.2. Control of water quality | <ul style="list-style-type: none"> Hazardous properly stored in secured place away from waterways; Cleaning and maintenance of construction equipment and vehicles done in secured place outside of waterways Sanitary facilities provided at workers camp which includes toilets compliant with Health Ministry standards. Solid waste are temporarily stored in non-water logged areas away from waterways and promptly disposed to dump site. | Three weirs; worker's camp | Observation Interview | Weekly or after heavy rain events or when complaints are received from communities | CSC | Included in the contract |
| 2.3 Implementation of dust and emissions reduction measures | <ul style="list-style-type: none"> Water spraying of open and unpaved transport routes; Cargo of transport trucks covered and load of trucks limited to within public road capacity; Construction vehicles and equipment properly maintained; Drivers of construction vehicles to observe speed limits (15 kph) when passing through residential and institutional areas along transport route. | Construction site | Observation | Weekly | Contractor | Included in the contract with the PPMU |
| 2.4. Minimization of noise generation | <ul style="list-style-type: none"> All construction vehicles and equipment are regularly maintained in good working condition; Construction activities limited to regular working hours; Local residents are informed of construction schedules thru information materials posted at CPC bulletin boards, loud speakers or letters. | In the closest residential areas to construction sites and material transport routes; | Observation Interview | Monthly | (CSC) | Included in the Contract |
| 2.5. Maintenance of accessibility to private properties and social | <ul style="list-style-type: none"> Information drive conducted to inform local people about construction activities and schedule as well as transport route of trucks Upgrading works on canals alongside public roads to avoid planting or harvest season. | Private lands within the SIA. | Observation | Monthly | CSC | Included in the Contract |

| | | | | | | |
|--|--|------------------------------------|------------------------|--|---|---------------------------|
| facilities | | | | | | |
| 2.6. Proper Management of personnel most especially migrant workers | <ul style="list-style-type: none"> House-rules developed for construction personnel Orientation held for construction workers on relationship with local population, health and sanitation; and prevention of communicable diseases, HIV/AIDS. | Worker's Camp | Observation Interview | Monthly | CSC | Included in the Contract |
| 2.7. Control of irrigation water supply | <ul style="list-style-type: none"> Major construction activities conducted during the dry months as much as practicable; Temporary water diversion work constructed to bypass canal sections being upgraded, where works during the rainy months are unavoidable; Local people informed early of scheduled irrigation water service interruptions (if unavoidable) | 3 irrigation schemes | Interview | Weekly | CSC | Included in the Contract |
| 2.8 Occupational health and safety of Workers and local residents living or working near subproject area | <ul style="list-style-type: none"> Health and Safety Orientations held for workers; Provision of Personal Safety Equipment and training on their use; Provision of first aid station and arrangements with local health facility for treatment of workers and residents - Provision of sanitary facilities at worker's camp and its cleanliness. Commune PC and local residents informed on the construction activities and schedule; | Workers Camp and Construction area | Observation, interview | Monthly | CSC | Included in the Contract |
| 2.9. Verification of construction material source environmental licenses | The licenses and other environmental documents of construction material suppliers are legitimate and updated. | Quarry sites | Verification | Once before construction time | CSC | Included in the Contract |
| Drainage component | | | | | | |
| 2.1 Implement approved RP | <ul style="list-style-type: none"> Affected AH paid compensation and other benefits as per approved RP; Information materials on subproject are posted in CPC bulletin board; Grievance redress mechanism put in place and local people are informed on how to use the system. | Affected areas | Observation, Interview | Monthly or when there are complaints received from AHs | PPMU, DCARB | Included in the RP budget |
| 2.1. Control of sedimentation of surface water ways | <ul style="list-style-type: none"> Desilting works of canals done during the dry months; When practicable desilted materials are used for construction works | Bai Him river | Observation Interview | Monthly | Construction Supervision Consultant (CSC) | Included in the Contract |
| 2.2. Control of water | <ul style="list-style-type: none"> Hazardous materials properly stored in secured place away from waterways; | Bai Him river Construction | Observation Interview | Weekly or after heavy rain events | CSC | Included in the contract |

| | | | | | | |
|--|--|---|------------------------|--|------------|--|
| quality | <ul style="list-style-type: none"> • Cleaning and maintenance of construction equipment and vehicles done in secured place outside of waterways • Solid waste are temporarily stored in non-water logged areas away from waterways and promptly disposed to dump site. | on site | | or when complaints are received from communities | | t |
| 2.3 Implementation of dust and emissions reduction measures | <ul style="list-style-type: none"> • Water spraying of open and unpaved maintenance roads conducted; • cargos are covered and truck loads are limited to within public road capacity; • Construction vehicles and equipment properly maintained based on manufacturer's manual; • Drivers of construction vehicles to observe speed limits (15 kph) when passing through residential and institutional areas along transport route. | Construction site | Observation | Weekly | Contractor | Included in the contract with the PPMU |
| 2.4. Minimization of noise generation | <ul style="list-style-type: none"> • All construction vehicles and equipment are regularly maintained in good working condition; | In the closest residential areas to construction sites and material transport routes; | Observation Interview | Monthly | (CSC) | Included in the Contract |
| 2.5. Proper Management of personnel most especially migrant workers | <ul style="list-style-type: none"> • House-rules developed for construction personnel • Orientation held for construction workers on relationship with local population, health and sanitation; and prevention of communicable diseases, HIV/AIDS. | Construction site | Observation Interview | Monthly | CSC | Included in the Contract |
| 2.6 Occupational health and safety of Workers and local residents living or working near subproject area | <ul style="list-style-type: none"> • Health and Safety Orientations held for workers; • Provision of Personal Safety Equipment and training on their use; • Provision of first aid station and arrangements with local health facility for treatment of workers and residents • Contractor had informed local communities on the construction activities and their schedules; • Construction site are restricted from local communities and pets by establishing fence around the construction site and lighting. | Construction area | Observation, interview | Monthly | CSC | Included in the Contract |
| 2.9. Verification of construction | The licenses and other environmental documents of construction material suppliers are legitimate and updated. | Quarry sites | Verification | Once before construction time | CSC | Included in the Contract |

| | | | | | | |
|--|---|--|-----------------------|---------------------|--|-------------------|
| material source environmental licenses | | | | | | |
| Operation phase | | | | | | |
| Irrigation component | | | | | | |
| 3.1. Surface water quality management | <ul style="list-style-type: none"> ▪ Agriculture extension seminars held on proper use of farm chemicals; and Integrated Pest Management | Subproject beneficiary communes | Observation Interview | Once every 6 months | DARD; District Irrigation Exploitation Enterprise ; | Provincial budget |
| 3.2. Implementation of Operations and Maintenance Activities | <ul style="list-style-type: none"> ▪ Operations and Maintenance Activities are properly planned and implemented in the subproject area | Subproject facilities in the subproject communes | Observation Interview | Once every 6 months | DARD, District Irrigation Exploitation Enterprise, commune irrigation official, households | Provincial budget |
| Drainage component | | | | | | |
| 3.3. Implementation of Operations and Maintenance Activities | <ul style="list-style-type: none"> ▪ Planned Operations and Maintenance Activities properly implemented in the 2 drainage facilities; | Subproject facilities in ThanhLuo ng commune | Observation Interview | Once every 6 months | DARD, District Irrigation Exploitation Enterprise, commune irrigation official, households | Provincial budget |

C. EMP Implementation (EMP)

Table 7.EMP implementation

| Organization | Roles and responsibilities | | |
|--------------|---|--|---|
| | Subproject preparation | Subproject implementation | Subproject operation |
| CPMU | <ul style="list-style-type: none"> - Guide Safeguard consultants during the preparation of IEE report. - Review and provide comments on IEE submitted by Safeguard consultants. | <ul style="list-style-type: none"> - Guidance to PPMU safeguards officer on implementation of EMP during construction period. - Monitoring progress during construction time. - Prepare 6 month monitoring report and submit to ADB and DONREs/DPCs for review. | <ul style="list-style-type: none"> - Guidance to PPMU safeguards officer on implementation of EMP in the first operation year. - Monitoring progress in the first operation year. - Prepare Semi-annual Project environmental compliance report based on progress reports submitted by PPMU. |
| PPC | Not applicable | The Project owner with supreme responsibility for environmental | The project employer is responsible for environmental |

| Organization | Roles and responsibilities | | |
|--|--|---|---|
| | Subproject preparation | Subproject implementation | Subproject operation |
| | | activities of sub-project during construction. | activities in the operation stage, including implementation of EMP during operation stage. |
| PPMU | <ul style="list-style-type: none"> - Assist safeguard consultants hired by CPMU to prepare IEE, Ensuring PPMU staff are well trained in environmental management. | <ul style="list-style-type: none"> - Responsible for EMP implementation during pre-construction and construction stages; - Ensure that details of contracts and bidding invitation documents include environmental requirements; - Implement inspection and monitoring of environmental issues during construction stage; - Coordinate with CPMU on environmental monitoring report preparations. | <ul style="list-style-type: none"> - Responsible for EMP implementation during first year of operation; - Undertake investigation and monitoring of environmental issues during first years of operation; - Support the project employer to incorporate the environmental requirements into O&M procedures. - |
| DPC | Integrate recommendations and contributions of DONRE in EMP | Monitor EMP implementation through their own internal monitoring system | Monitor EMP implementation through their own internal monitoring system |
| Commune Supervision Board and local community members (CSBs ³) | <ul style="list-style-type: none"> - Involve in consultation and participate in the identification and preparation of sub-project feasibility study; - Contribute ideas on environmental assessment document once they receive it. | <ul style="list-style-type: none"> - Involve in environmental monitoring activities as directed; - Participate in findings solution to environmental problems if any. | Involve in environmental monitoring activities as directed. |
| Contractor | Not applicable | <ul style="list-style-type: none"> - Prepare Site EMP acceptable to Project owner to meet subproject EMP general requirements ; - Allocate sufficient resources to meet the requirements and obligations in site EMP. - Prepare monthly progress report in the EMP implementation, and whenever directed by the PPMU. | Not applicable |
| CSC | Not applicable | - Ensure CSC staff are well trained in | Not applicable |

³ CSBs, established under Decree 80/2005/QĐ-TTg Regulation for Participatory investment supervision, dated on 18/04/2005. Article 8 of Decree 80 provides the community with opportunities to inspect the compliance, monitor implementation and evaluate results of investments in commune, including environmental impacts.

| Organization | Roles and responsibilities | | |
|--------------|----------------------------|--|----------------------|
| | Subproject preparation | Subproject implementation | Subproject operation |
| | | environmental monitoring; - Carry out the EMP monitoring depending on construction progress as stated in contract with PPMU. - Prepare regular quarterly Monitoring reports and submit them to the PPMU. | |

D. D. Monitoring and reporting system

Table 8. Monitoring and reporting system

| Project Phase | Type of Report | Frequency | Responsibility | Submitted to Whom |
|---------------|---|---|----------------|-------------------|
| Construction | - Site Environmental Performance Report indicating the compliance with the Site EMP and monitoring results | Monthly | CSC | PPMU |
| | - EMP Compliance Report indicating compliance with subproject EMP and monitoring results. The report will include: (i) main impacts during the construction; (ii) proposed mitigation measures; (iii) assess operation effect of the subproject environmental management system; (iv) proposals and suggestions on the system operation, mitigation of environmental impacts in next construction periods | Monthly | CSC | PPMU |
| | EMP Implementation Report indicating the compliance with the subproject EMP and monitoring results | Bi-annually or twice during construction depending on construction duration | PPMU/CPMU | ADB/MONRE/PPC |
| | Subproject Environmental Report indicating the overall subproject environmental performance and EMP compliance | At completion of subproject | CPMU | ADB/MONRE/PPC |
| Operation | EMP Operation Report: indicating the compliance with the subproject EMP commitments during the operation | Semi-annual for first 5 years of operation. | PPMU | CPMU/ADB |

E. E. Budget for EMP Implementation

Table 9. Budget for EMP Implementation

| Items | Pre-Construction | Construction stage | Operation stage | Total |
|--|------------------|--|-----------------------------|--|
| Implementation of approved Resettlement Plan | | The Contractor takes responsibility (in case of arising affects) | None | Various |
| Environmental monitoring | n/a | Included in the Contract with | Local and provincial budget | Included in contracts or other operation |

| Items | Pre-Construction | Construction stage | Operation stage | Total |
|---|--------------------------------------|--|----------------------|--|
| | | Contractor and CSC as well as in PPMU's management cost | | capital sources |
| Community monitoring | n/a | Local commune budget | Local commune budget | Local commune budget |
| Training on capacity enhancement on environmental monitoring capability | n/a | Included in CPMU training cost Total: 34,000,000 VND ((detail in APPENDIX 1, table 13) | n/a | |
| Public disclosure | Defined in consultancy contract | The Contractor takes responsibility (part of contract) | n/a | |
| Community consultation | As stated in the consultant contract | In the implementation cost of CSC | Not applicable | Included in contract among investor, stakeholders and other sources of capital |

VI. PUBLIC CONSULTATION AND DISCLOSURE ACTIVITIES

A. Description of Activities to Date

Table 10. Community consultation and Information disclosure

| CONSULTATION METHOD | DETAILS OF ACTIVITIES | |
|--|--|--|
| Correspondence and meetings with local authorities (District and Commune PCs, Commune Fatherland Front, Women's Union, Youth Union and others) | Date of correspondence | Before 6/5/2012 |
| | Dates of meetings (if requested) | 6/5/2012 |
| | Minutes of meeting attached (Yes / No) | Yes |
| Newspaper notification or public/radio announcement | Date(s) of notice | Before 6/5/2012 |
| | Name of newspaper | Official letter from PPMU to the communes. |
| Public meeting | Date(s) held | 7/5/2012 |
| | Location(s) held | Commune PC |
| | Invitees | Households are under environmental affects/impacts in the project area; |
| | Methods of invitation | Official Letter and Notice following commune management system (head of villages will inform to households). Coordinate with Women Union and appeal the participation of women into meetings |
| | Agenda attached (Yes / No) | Yes |
| | Minutes of meeting attached (Yes / No) | Yes |
| | Number of participants | |

B. Outcomes of Public Consultation to Date

Table 11. Community consultation results

| Description of Issue Raised | By Whom? | Reference in IEE | Required Follow-up Actions? |
|--|-----------------|--|--|
| Affects of dust, noise and traffic safety during material transport to residential areas in adjacent to the main canal | Local residents | Dust and noise from construction equipment | The Contractor should follow requirements on environmental protection during construction, including: (i) periodically spray water on routes adjacent to residential areas; (ii) cover transport vehicles; (iii) install traffic safety signs on site and the approaching road to the site |
| During construction, residents should implement irrigation activities | Local residents | Risk of conflicts between agriculture water supply demands and construction water supply stop demand | The Contractor should ensure water supply requirements of the main canal during construction; Implement water supply and construction at reasonable time; The Contractor; irrigation staff (of the main canal) and cultivation households should coordinate together to ensure the dissemination on construction plan and water supply schedule; |
| Rubbish in canal during operation process | Local residents | Rubbish on canal | Periodically dredge and collect rubbish (before cultivating and after harvest time) and after heavy rain events |

C. Future Public Consultation Activities

Table 12. Expected community consultation activities

| Activity | Participants | Expected Outcomes | Schedule | Cost Estimate |
|---|---|---|---|--|
| Kick-off meeting prior to construction commencement | PMU, the Contractor, CMC, community representatives at project area | <ul style="list-style-type: none"> - Publicize construction contents and plan - Reach agreement on detailed mitigation alternatives (especially the time of water supply stop for construction) | 1 week prior to construction commencement | Already estimated in EMP budget |
| Periodical meetings | The Contractor, CMC and representatives of local authority, organizations and community at project area | <ul style="list-style-type: none"> - Periodically check mitigation activities and arising problems - Propose treatment alternatives and reach agreement on implementation | Once a month from construction commencement | Included in the contract signed with parties |

VII. GRIEVANCE REDRESS MECHANISM

1. The CPMU has developed a grievance redress and resolution mechanism for environment to address grievances and complaints related to EMP implementation in a timely and satisfactory manner for the on-going similar projects (Figure 4).
2. Every attempt should be made to establish a rapport between the affected communities and the implementing agencies through frequent interactions and transparency thereby maximizing the resolution of grievances at commune level. A three-stage procedure for redress of grievances is proposed based on practice as follows:
 - (i) **Stage 1:** Complaints from affected people on any environmental damage caused by the project implementation will be lodged verbally or in written form by the affected people (refer to Appendix 8 for sample complaint form). The staff from commune/Commune Supervision Board will assess the level of environmental damage and report to the PPMU within 15 days of the complaint is received.
 - (ii) **Stage 2:** If no resolution can be reached or if no response is received from the liaison officer within 15 days of registering the complaint, the affected people can take their complaint to the District People Committee who will conduct a site investigation to assess the damage and discuss with a contractor during the construction stage to determine and immediately take the appropriate remedial measures within 30 days of the complaint is received.
 - (iii) **Stage 3:** If the affected people are not satisfied with the decision of District People Committee or in the absence of any response, the affected people can appeal to the DONRE or Provincial People's Committee (PPC). The DONRE/PPC will provide a decision on the appeal within 45 days but not exceeding 60 days⁴, from the day it is received by the PPC. In this stage, DONRE/PPC will enforce PPMU to take the strong corrective action to resolve the problems either through enforcement of contractor's duties under the signed contract or providing necessary additional actions under its overall duties of project implementation.
3. A complaint or a case to the Court of Law may be done separately or independently from the Project level Grievance Redress mechanism filing process. Implementers of the mechanism should be guided by appropriate government decrees related to complaints such as: Law on Complaints No. 02/2011/QH13; Article 64 of Government Decree 84/2007/ND-CP; Clause 2, Article 40 of Decree 69/2009; and regulation on grievance at Government Decree 75/2012/ND-CP dated 20/11/2012.

⁴ Law on Complaints, Article 28, Law No. 02/2011/QH13 dated November 11, 2011

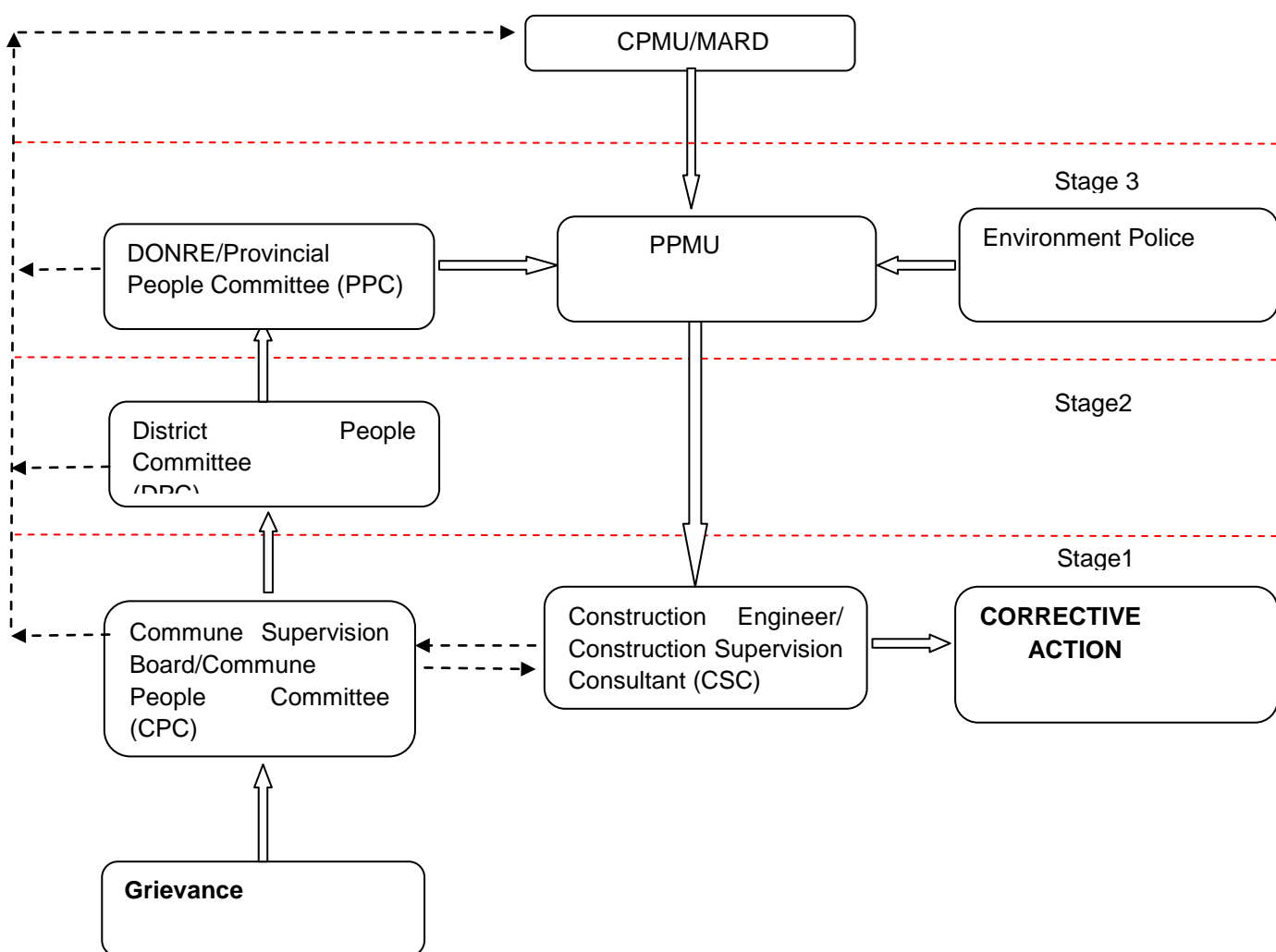


Figure 4. Grievance Redress and Resolution Mechanism

VIII.CONCLUSION AND RECOMMENDATIONS

11.The **Irrigation Ensemble Upgrading Subproject in ThanhLuong Commune** will be implemented by the PPMU of the Integrated Rural Development Project in Northern Provinces, HoaBinh province at 4 communes, namely as: Cao Thang, Cao Duong, Hop Chau and ThanhLuong of Luong Son district.

12.Subproject environmental assessment was conducted and the main potential environmental impacts identified during the preconstruction and construction stage are summarized as follows:

Irrigation Component

- The construction activities may cause sedimentation of the canals due to earth works such as backfilling of excavation works before concrete lining of canals. Excavated soils may fall into canal causing sedimentation, and hindering the distribution of water to the irrigation service areas;
- Suspension in irrigation water supply services may occur as a result of the upgrading works of the earth weir, irrigation canals and other appurtenances. The construction is preferred to be done in dry seasons when the lake water level is low, thereby reducing the amount of dewatering to allow works on the structure to proceed. In this process, irrigation water services may need to be disrupted which in turn may affect the farming activities of the local farming community.

Drainage Component

- Loss of income by AHs that are cultivating the lot owned by the CPC that will be acquired by the subproject, to be used as the site for installing the 2 pumping stations;
- Sedimentation of the adjacent receiving water caused by earthworks;

Operation stage

Irrigation Component

- Incidents arising from operations of the upgraded weir facilities such as soil erosion and sedimentation of irrigation canals, and blockage of water gate valves. These incidents lead to inefficient systems operations and non-attainability of irrigation potentials.
- Deterioration of surface water quality due to excess use of farm chemicals (i.e. fertilizers, pesticides, fungicides, etc.) by local farmers that may opt to increase their agriculture production.

Drainage Component:

- During the operation phase, Drainage component will cause relative high noise level to adjacent areas (within 50 m surrounding pumping stations) by the operation of pumps
- The pumping stations require regular proper maintenance to help ensure efficient operations and reduce the risks of accidents.

13.Mitigation measures and construction monitoring for subproject, including the following main activities:

Construction stage:

Irrigation Component

- Downstream sediment and deposition: Tidy up the construction site; Periodic dredge mud, soil sedimentation of the canal before the supply of water from the main canals into the branch canals, avoiding sedimentation to branch canals; Dredge, clean up mud which affects the cultivation and local roads;
- The Contractors should take appropriate material transport measures to minimize impact on the road structure as: (i) Repair of communal road structures if the process of construction damages the commune road system, (ii) Do not use heavy trucks on the road surface, (iii) Material overloaded trucks are forbidden for transportation on local roads, and minimize the risks of construction activities to the current structures such as soil dams: (1) Heavy trucks are forbidden to transport construction materials along the centerline of the existing earth weir crest, (2) Limit the impact of motor transport, gathering materials by heavily trucks that significantly affect the structure at the construction weir spillway locations;
- To minimize the disruption to irrigation water services; and the reduction of water level to allow the weir upgrading works, the Contractors should: (i) Implement water diversion works that will help ensure continued irrigation water supply to the service area despite weir upgrading works; (ii) inform the local affected farming community on the possible water service interruption as a consequence of the weir upgrading works as well as the mitigation measures that will be implemented to minimize water service interruptions.
- To minimize the impact of the main canal construction on the water supply schedule of the crop cultivation areas downstream, the Contractors need such counter-measures as: (i) construction of canal in dry season; (ii) install water diversion works to allow irrigation water to bypass canal sections under construction thereby allowing continued irrigation services; (ii) in combination with irrigation management units (Irrigation Management Enterprise, communal irrigation officials, farming households in the water supply region of the main canal) to identify the water supply schedule (stop construction), construction time (when there is no need of watering or in drying rice field period), (iii) announce the water supply schedule soon to farming households to help them be proactively schedule in their farm work.

Drainage Component:

- Implement the approved RP that will provide compensation to affected farmers that will lose their opportunity to earn from crops planted on the CPC owned lot that will be acquired for use as the 2 pumphouse site.
- To minimize the impact of sedimentation caused by earthworks, the contractors need mitigation as follows: (i): Construction of two pumping house during the dry months; (ii): As much as practicable use excavated materials meeting technical standards as fill materials

Operation stage:

Irrigation Component:

- Implement regular operations and maintenance work on the canal system is a major activity is the cleaning and proper disposal of waste materials that would otherwise clog the system which will render it ineffective if left unchecked.
- Provision of agriculture extension services to farmer beneficiaries most especially on Integrated Pest Management (IPM).

Drainage Component:

- Similarity to Irrigation component, Implement regular operations and maintenance work on the two pumping stations is a major activity.
- Also, the conduct of agriculture extension services to farmer beneficiaries especially on IPM may lessen the amount of residual farm chemical in the surface water that will be drained into the receiving river.

Implementation Arrangements

- The winning contractors should prepare a site EMP acceptable to the PPMU based on the approved IEE and EMP; and provide sufficient personnel and resources to implement the plan;
- The construction monitoring consultant (CSC) is tasked to do the external monitoring of the EMP implementation, and prepare regular monitoring reports on the progress of the contractor's compliance to the approved EMP; .
- In operation stage, the local authorities are tasked to enforce traffic laws and properly maintain the road to help insure the safety of pedestrians and motorists using the subproject road.

Conclusion and recommendations

14. Based on the findings of the environmental assessment and EMP set out in this report, the following conclusions can be made:

- (i) The Sub-project is a Environment Category B classification
- (ii) The Sub-project is not located in Environmentally sensitive areas;
- (iii) Report fully prepare an Environmental Management Plan incorporating the mitigation measures, time frame, responsible parties and assurances;
- (iv) An Environmental monitoring system has been setup to help the Decision makers receive updated information on Subproject EMP Implementation;
- (v) The EMP will be incorporated as an integral part of the construction bidding documents. The contractor will determine the workload and give the total cost for these mitigation measures. This cost will be known as the Environmental and safety costs, these costs will be paid when the mitigation measures committed have been implemented effectively by the Contractor.
- (vi) Recommending the IEE to be approved so that the subproject approval process can proceed to the next step.

APPENDIX

APPENDIX 1. THE COST ESTIMATION FOR THE EMP IMPLEMENTATION

Table13. Cost estimation for implementation of enhancing capacity training

| Contents | | Trainees | Number of trainees | Cost rate (VND) | Source of cost |
|--|--|--|--|---|--|
| Training on food hygiene, occupational safety and environmental protection | | Workers and technicians of contractors | All workers and construction staff on site | 50 persons x 200,000 VND /person = 10,000,000 VND | Included in the contract between contractor and the stakeholders |
| Training on environmental management | Waste sources control | PPMU staff | 3 persons | 500,000 VND/person x 3 person = 1,500,000 VND | Included in the contract between contractor and the stakeholders |
| | Impact assessment, environmental risk control | PPMU Staff | 3 persons | 500,000 VND/person x 3 person = 1,500,000 VND | Included in the contract between contractor and the stakeholders |
| | Environmental monitoring | PPMU staff CSC Staff | 8 persons include 3 persons in PPMU and 5 persons in CSC | 500,000 VND/person x 8 person = 4,000,000 VND | Included in the contract between contractor and the stakeholders |
| | Enhancing awareness and access to environmental legal system | PPMU staff CSC Staff | 8 persons include 3 persons in PPMU and 5 persons in CSC | 500,000 VND/person x 8 person = 4,000,000 VND | Included in the contract between contractor and the stakeholders |
| | Training for enhancing capacity of environmental monitoring | CSC Staff | 5 persons | 5 persons x 1,000,000 VND/person = 5,000,000 VND | Included in the contract between contractor and the stakeholders |
| Training for CSB | | CSB Staff | 2 persons/1 commune x 4 communes = 8 persons | 8 persons x 1,000,000 VND/person = 8,000,000 VND | Included in the contract between contractor and the stakeholders |
| Total (VND) | | | | 34.000.000 | |

1.4. Cost for Information disclosure

Local authorities and community representatives who are likely to be affected by the project will be informed of subproject on construction plan, environmental impacts and their mitigation measures as well as Environmental System Management that will be applied into this subproject.

Cost the Information disclosure will consist of: (i) cost for holding a meeting in each communal and (ii) cost for document, photos supporting Information disclosure. Total estimated cost for 4 commune: 4 commune x 1,000,000 = 4,000,000 VND;

Table 14.Total Estimated Cost

| Contents | Cost (VND) |
|---|------------|
| Cost for capability building and training | 34,000,000 |
| Cost for public disclosure | 4,000,000 |

| | |
|--------------|-------------------|
| Total | 38,000,000 |
|--------------|-------------------|

APPENDIX2. THE STATUS OF CANAL AND ENVIRONMENT BASELINE



The existing status of weir



The existing status of weir



Existing soil canal



Existing soil canal



Discharging canal of Ve An pumping station



Proposed area for Ve An pumping station

APPENDIX3. PUBLIC CONSULTATION ACTIVITIES



**MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT
CENTRAL PROJECT MANAGEMENT UNIT**

**Sustainable Rural Development Project in the Northern Mountain Provinces
(ADB Loans 2682/2683-VIE)**

DOCUMENTATION OF PUBLIC CONSULTATION

I. SUBPROJECT:

Improvement of irrigation Facilities in ThanhLuong commune, Luong Son district, HoaBinh province

II. DATE, TIME, AND VENUE / LOCATION

Communes PC: 07/05/2012

III. ATTENDANCE:

| Communes | Total Attendance | | Ethnic Minority Attendance | |
|------------|------------------|--------|----------------------------|--------|
| | Male | Female | Male | Female |
| ThanhLuong | 19 | 9 | 19 | 9 |
| Cao Thang | 15 | 10 | 15 | 10 |
| Hop Chau | 14 | 10 | 14 | 10 |

IV. PROGRAM:

| Topic / Activity | Responsible Person / Entity |
|---|---|
| Introduction participants of the commune, and objectives the consultation meeting | A representative of the Commune People's Committee |
| Presentation the project origin, reasons for consultation, the composition of consultants | Representatives of the Provincial Project Management Unit |
| Presentation detailed specifications of the subprojects: road length, width, road grades, road types, and etc... | Project designer |
| Presentation ADB resettlement policies, the policy framework of the Government of Vietnam, provincial policies and the policy framework of subprojects: the conditions of eligibility for compensation and resettlement assistance if state revenues land. | Safeguard consultants |
| Consultation on: The compensation and resettlement plan for the subproject, replacement cost, measures to support relocation and resettlement required by the subproject; The project implementation plan The environmental impacts and mitigation measures. | Safeguard consultants |
| Consultation on the grievances and grievances redress | Safeguard consultants |
| Consultation on issues related to gender. | Safeguard consultants |
| Consultation on issues related to ethnic minorities. | Safeguard consultants |

V. ISSUES AND CONCERNS

Table 15: Matrix of issues and concerns

| No. | Issue Raised | | Response on Issue Raised | |
|-----|--|----------------------------------|---|--|
| | Issue | Who Raised the Issue/ Suggestion | Response | Person / Sector Who Responded to the Issue/ Suggestion |
| 1 | Affects of dust, noise and traffic safety during material transport to residential areas in adjacent to the main canal | Local people | The Contractor will follow requirements on environmental protection during construction, including: (i) periodically spray water on routes adjacent to residential areas; (ii) cover transport vehicles; (iii) install traffic safety signs on site and the approaching road to the site | Safeguard consultant |
| 2 | During construction, residents should implement irrigation activities | Local people | The Contractor will ensure water supply requirements of the main canal during construction by executing construction activities at appropriate time; The Contractor, irrigation staff (of the main canal) and cultivation households will coordinate together to ensure the dissemination on construction plan and water supply schedule; | Safeguard consultant |
| 3 | Rubbish in canal during operation process | Local people | This issue depends on local authorities as well as local people | Safeguard consultant |



Pulic consultation at ThanhLương commune Pulic consultation at Cao Thang commune



Pulic consultation at Hop ChaucommunePulic consultation at site.

MINUTES OF PUBLIC CONSULTATION

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự Do - Hạnh phúc

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Hoa Bình, Ngày 02 tháng 7 năm 2012

DỰ ÁN PHÁT TRIỂN CSHT NÔNG THÔN BỀN VỮNG CÁC TỈNH MIỀN NÚI PHÍA BẮC

**BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG,
TÁI ĐỊNH CƯ VÀ PHÁT TRIỂN DÂN TỘC THIỂU SỐ**

Tiểu dự án: Nông nghiệp công nghệ sinh học, Thủy điện, Thanh lương
Xã Thanh Lương, huyện Lương Sơn, tỉnh Hòa Bình

I. Thành phần tham dự

- | | |
|---|-----------------------------------|
| - Ông/Bà... Quách Văn Thịnh..... | Chức vụ ... Trưởng Đoàn |
| - Ông/Bà... Bùi Văn Ngai..... | Chức vụ ... Phó Đoàn trưởng |
| - Ông/Bà... Đặng Thị Hòa..... | Chức vụ ... C.Đ.T. Văn |
| - Ông/Bà..... | Chức vụ |
| - Ông/Bà..... | Chức vụ |
| - Ông/Bà..... | Chức vụ |
| - Đại diện những người bị ảnh hưởng:người (chi tiết xem danh sách đính kèm) | |

II. Nội dung tham vấn

Chuyên gia môi trường trình bày những tác động môi trường bao gồm tác động lên môi trường tự nhiên và xã hội của khu vực dự án và những biện pháp giảm thiểu các tác động tiêu cực.

Chuyên gia tái định cư trình bày về những tác động khi thu hồi đất và các tài sản trên đất, những chính sách của Chính phủ nước Cộng hòa xã hội chủ nghĩa Việt Nam và địa phương, chính sách của dự án trong vấn đề bồi thường thiệt hại khi Nhà nước thu hồi đất đai và các tài sản trên đất.

Chuyên gia về cộng đồng, dân tộc thiểu số trình bày về Khung chính sách dân tộc thiểu số của dự án, các tác động xã hội trong quá trình thực hiện dự án. Giới thiệu với cộng đồng về những chính sách của Chính phủ nước Cộng hòa xã hội chủ nghĩa Việt Nam và địa phương về dân tộc thiểu số.

III.1 Về các tác động môi trường tiêu cực và biện pháp giảm thiểu

Xã có 4 thôn hưởng quyền nộp ứng là Cổ Mụ, Xuân Hùn, Thanh Xuân, Sầu Hạ

Đặt ở khu vực ~~đo~~ giải quyết tình trạng nộp ứng tại xã

Thị trấn dựa vào nền tính toán hợp lý, đã giảm xong trước tháng 1 + 2, và chỉ còn vài mùa lúa

Nên có các biện pháp giảm thiểu các vấn đề về ô nhiễm môi trường, tiếng ồn

Mong muốn của chính quyền và người dân xã là các nhà thầu thi công sử dụng công nhân địa phương

III.2 Về các vấn đề thu hồi đất và các tài sản trên đất và các chính sách

Kinh doanh: chủ yếu là năng cấp tiền tuyến đường ở xã và nên không gây nên ảnh hưởng hay phải thu hồi đất

Trạm bơm + đất bị ảnh hưởng chủ yếu là đất nông nghiệp của người dân (đất liền là khoảng 5 ha) (Thôn Cổ Mụ)

+ thôn ~~Cổ Mụ~~ Xuân Hùn: chủ yếu bị ảnh hưởng đất phân đất ao của thị trấn (đất 1000 xã thôn)

III.3 Về các vấn đề về dân tộc thiểu số

- Dân tộc thiểu số 'tên địa bàn xã chủ yếu' là dân tộc Mường
- Nghề nghiệp chính là nông nghiệp

IV. Kết luận

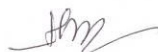
Người dân luôn đoàn kết, ủng hộ dự án, mong dự án nhanh chóng triển khai

Đại diện Chủ đầu tư

Đại diện cộng đồng

Đại diện tư vấn

Đại diện UBND xã


T.T. Kà



CHỦ TỊCH
Quê hương Bình

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự Do - Hạnh phúc

Hòa Bình, Ngày 3 tháng 7 năm 2012

DỰ ÁN PHÁT TRIỂN CSHT NÔNG THÔN BỀN VỮNG CÁC TỈNH MIỀN NÚI PHÍA BẮC

**BIÊN BẢN HỢP THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG,
TÁI ĐỊNH CƯ VÀ PHÁT TRIỂN DÂN TỘC THIỂU SỐ**

Tiêu đề dự án: *Nam cấp cum cộng đồng tỉnh thuy' l'oi*
Xã: *Cao Dương*, huyện....., tỉnh *Hòa Bình*

I. Thành phần tham dự

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| - Ông/Bà <i>Nguyễn Quốc Hưng</i> | Chức vụ <i>PGT UBND xã</i> |
| - Ông/Bà <i>Hàng Thị Kha</i> | Chức vụ <i>Ch. UBND xã</i> |
| - Ông/Bà..... | Chức vụ |
| - Ông/Bà..... | Chức vụ |
| - Ông/Bà..... | Chức vụ |
| - Ông/Bà..... | Chức vụ |
| - Ông/Bà..... | Chức vụ |
| - Đại diện những người bị ảnh hưởng: người (chỉ tiết xem danh sách đính kèm) | |

II. Nội dung tham vấn

Chuyên gia môi trường trình bày những tác động môi trường bao gồm tác động lên môi trường tự nhiên và xã hội của khu vực dự án và những biện pháp giảm thiểu các tác động tiêu cực.

Chuyên gia tái định cư trình bày về những tác động khi thu hồi đất và các tài sản trên đất, những chính sách của Chính phủ nước Cộng hòa xã hội chủ nghĩa Việt Nam và địa phương, chính sách của dự án trong vấn đề bồi thường thiệt hại khi Nhà nước thu hồi đất đai và các tài sản trên đất.

Chuyên gia về cộng đồng, dân tộc thiểu số trình bày về Khung chính sách dân tộc thiểu số của dự án, các tác động xã hội trong quá trình thực hiện dự án. Giới thiệu với cộng đồng về những chính sách của Chính phủ nước Cộng hòa xã hội chủ nghĩa Việt Nam và địa phương về dân tộc thiểu số.

III. Ý kiến thảo luận

III.1 Về các tác động môi trường tiêu cực và biện pháp giảm thiểu

- Cần có các biện pháp giảm thiểu ô nhiễm môi trường, giảm thiểu bụi và tiếng ồn trong suốt quá trình thi công dự án
- Nếu có thủ, nhà thầu thi công nên thuê các lao động sống ở tại địa phương

III.2 Về các vấn đề thu hồi đất và các tài sản trên đất và các chính sách

- Di dân tích anh hương không lớn
- Người dân ủng hộ dự án
- Chấp thuận các chính sách của quy định của DĐG từ ra về GPMB

IV. Kết luận


Người dân hoàn toàn nhất trí, ủng hộ dự án, mong được
nhanh chóng triển khai

Đại diện Chủ đầu tư

Đại diện cộng đồng

Đại diện tư vấn

Đại diện UBND xã


T.T. Lê




PHÓ CHỦ TỊCH
Nguyễn Quốc Hùng

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự Do - Hạnh phúc

Hồ Chí Minh, Ngày... 3... tháng... 7... năm 2012

DỰ ÁN PHÁT TRIỂN CSHT NÔNG THÔN BỀN VỮNG CÁC TỈNH MIỀN NÚI PHÍA BẮC

**BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG,
TÁI ĐỊNH CƯ VÀ PHÁT TRIỂN DÂN TỘC THIỂU SỐ**

Tiêu đề dự án: *Mạng cấp nước công tính thủy lợi thành công*
Xã: *Hợp Châu*, huyện: *Kim Sơn*, tỉnh: *Khánh Hòa*

I. Thành phần tham dự

- | | |
|--|---|
| - Ông/Bà <i>Nguyễn Như Sơn</i> | Chức vụ <i>Chủ tịch UBND xã</i> |
| - Ông/Bà <i>Trần Thị Kéo</i> | Chức vụ <i>Chủ tịch xã</i> |
| - Ông/Bà..... | Chức vụ |
| - Ông/Bà..... | Chức vụ |
| - Ông/Bà..... | Chức vụ |
| - Ông/Bà..... | Chức vụ |
| - Ông/Bà..... | Chức vụ |
| - Đại diện những người bị ảnh hưởng: | người (chỉ tiết xem danh sách đính kèm) |

II. Nội dung tham vấn

Chuyên gia môi trường trình bày những tác động môi trường bao gồm tác động lên môi trường tự nhiên và xã hội của khu vực dự án và những biện pháp giảm thiểu các tác động tiêu cực.

Chuyên gia tái định cư trình bày về những tác động khi thu hồi đất và các tài sản trên đất, những chính sách của Chính phủ nước Cộng hòa xã hội chủ nghĩa Việt Nam và địa phương, chính sách của dự án trong vấn đề bồi thường thiệt hại khi Nhà nước thu hồi đất đai và các tài sản trên đất.

Chuyên gia về cộng đồng, dân tộc thiểu số trình bày về Khung chính sách dân tộc thiểu số của dự án, các tác động xã hội trong quá trình thực hiện dự án. Giới thiệu với cộng đồng về những chính sách của Chính phủ nước Cộng hòa xã hội chủ nghĩa Việt Nam và địa phương về dân tộc thiểu số.

III. Ý kiến thảo luận

III.1 Về các tác động môi trường tiêu cực và biện pháp giảm thiểu

- 2 vụ cây cầu vượt đứt tại vào tháng 1-2, 6-7
- Đường làng xã có thể đáp ứng xe hàng tải < 10 tấn
- Cần có các biện pháp giảm thiểu các vấn đề ô nhiễm môi trường, bụi, tiếng ồn
- Mạng nhà dân thi công đến thi công thuê nhân công cần có tại địa phương

III.2 Về các vấn đề thu hồi đất và các tài sản trên đất và các chính sách

- Đất bị ảnh hưởng là phân đất tốt như đất nông nghiệp của người dân
- Ảnh hưởng đến nơi ở của người dân

1. ý kiến của người dân: ...

IV. Kết luận


Người dân luôn luôn nhất trí, ủng hộ dự án,
Mong dự án nhanh chóng triển khai

Đại diện Chủ đầu tư

Đại diện cộng đồng

Đại diện tư vấn

Đại diện UBND xã


D.T. Kieu




PHÓ CHỦ TỊCH
Nguyễn Như Đàm

LIST OF PARTICIPANTS MEETING

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự Do - Hạnh phúc

DANH SÁCH NHỮNG ĐẠI BIỂU THAM DỰ CUỘC HỌP THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG, TÀI CHÍNH CƯ VÀ PHÁT TRIỂN DÂN TỘC THIỂU SỐ.

| STT | Họ và tên | Chức vụ | Chữ ký | Ghi chú |
|-----|------------------|-------------------|---|---------|
| 1. | Nguyễn Văn Kỳ | PGT-HRM xã |  | |
| 2. | Nguyễn Việt Hùng | Cán bộ địa phương |  | |
| 3. | Nguyễn Thành Tô | CĐ hội CCB |  | |
| 4. | Nguyễn Văn Thanh | CHT hội ND |  | |
| 5. | Nguyễn Văn Long | Chủ tịch hội ND |  | |
| 6. | Ngô Thị Mai | Hội phụ nữ |  | |
| 7. | Nguyễn Thị Hằng | Hội phụ nữ |  | |
| 8. | Ngô Thị Khai | CHPN xã |  | |
| 9. | Lê Thị Minh | Hội Phụ nữ |  | |
| 10. | Nguyễn Thị Loan | Trưởng thôn |  | |
| 11. | Ngô Văn Hợp | Chủ tịch xã |  | |
| 12. | Bùi Văn Xương | Chủ HMD |  | |
| 13. | Nguyễn Thị Loan | CHPN |  | |
| 14. | Lê Thị Hà | CHPN |  | |
| 15. | Ngô Thị Huệ | CHPN |  | |
| 16. | Bạch Thị Nga | CHPN |  | |
| 17. | Bùi Thị Dục | Mi' thị ĐTN |  | |
| 18. | Nguyễn Văn Bội | Cán bộ năng lượng |  | |
| 19. | Nguyễn Văn Long | Trưởng thôn |  | |

| STT | Họ và tên | Chức vụ | Chữ ký | Ghi chú |
|-----|-------------------|-----------------|--------------------|---------|
| 20. | NGUYỄN TRUNG TUẤN | TRƯỞNG THỦ | <i>[Signature]</i> | |
| 21. | NGUYỄN VĂN TIẾN | CHIEU HUYỀN | <i>[Signature]</i> | |
| 22. | Nguyễn Văn Hùng | phó CT UBND | <i>[Signature]</i> | |
| 23. | Nguyễn Văn Béo | Chủ tịch QL. TL | <i>[Signature]</i> | |
| 24. | Nguyễn Văn Tiến | Chủ tịch | <i>[Signature]</i> | |
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Clan không ngày 3 tháng 7 năm 2012
 Xác nhận của địa phương



PHÓ CHỦ TỊCH
 Nguyễn Văn Hùng

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự Do - Hạnh phúc

DANH SÁCH NHỮNG ĐẠI BIỂU THAM DỰ CUỘC HỌP
THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG, TÀI ĐỊNH CƯ VÀ PHÁT TRIỂN DÂN TỘC THIỂU SỐ.

| STT | Họ và tên | Chức vụ | Chữ ký | Ghi chú |
|-----|-----------------|-----------------|------------|---------|
| 1. | Nguyễn Nhật Đan | Phó CT UBND | | |
| 2. | Nguyễn Văn Sỹ | Chủ tịch Hội ND | | |
| 3. | Ng. Thái Mạnh | Chủ tịch Hội PT | Mạnh | |
| 4. | Ng. Văn Ân | Văn phòng UBND | | |
| 5. | Ng. Duy Long | Cán bộ GTTL | Long | |
| 6. | Ng. Nhật Kết | Chủ tịch Hội | Kết | |
| 7. | Ng. Đức Vương | Chủ tịch Hội | Đức Vương | |
| 8. | Ng. Văn Lực | Chủ tịch Hội | Lực | |
| 9. | Ng. Xuân Tú | Chủ tịch Hội | Xuân Tú | |
| 10. | Ng. Ngọc Đăng | Chủ tịch Hội | Ngọc Đăng | |
| 11. | Ng. Thái Cảnh | Chủ tịch Hội | Thái Cảnh | |
| 12. | Ng. Thái Tuyên | Chủ tịch Hội | Thái Tuyên | |
| 13. | Ng. Thái Di | Chủ tịch Hội | Thái Di | |
| 14. | Bà Minh Thù | Chủ tịch Hội | Minh Thù | |
| 15. | Ng. Văn Mạnh | Chủ tịch Hội | Văn Mạnh | |
| 16. | Ng. Văn Bình | Bí thư Đảng ủy | | |
| 17. | Ng. Văn Tân | Chủ tịch Hội | Văn Tân | |
| 18. | Ng. Văn Bình | Chủ tịch Hội | Văn Bình | |
| 19. | Ng. Mạnh Hùng | Chủ tịch Hội | Mạnh Hùng | |

| STT | Họ và tên | Chức vụ | Chữ ký | Ghi chú |
|-----|---------------|---------------|--------|---------|
| 20. | Ngô Thị Thuận | Nghĩa Kép | Phan | |
| 21. | Ngô Thị Dương | Nghĩa Kép | Đào | |
| 22. | Ngô Văn Ngà | Nghĩa Kép | Trần | |
| 23. | Trần Việt Hải | Nghĩa Kép | | |
| 24. | Ngô Thị Hải | Phó CT Phường | | |
| 25. | Ngô Thị Kim | Viện Chấn D | Khôn | |
| 26. | Ngô Văn Hương | Nghĩa Kép | Trần | |
| 27. | Ngô Văn Trọng | Nghĩa Kép | Vinh | |
| 28. | Trần Thị Xuân | Nghĩa Kép | Vân | |
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Họ, họ tên: ... tháng ... năm 2012

Xác nhận của địa phương






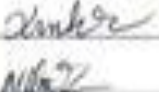
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PHÓ CHỦ TỊCH
ỦY BAN NHÂN DÂN

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự Do - Hạnh phúc

**DANH SÁCH NHỮNG ĐẠI BIỂU THAM DỰ CUỘC HỌP
THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG, TÀI CHÍNH CƯ VÀ PHÁT
TRIỂN DÂN TỘC THIỂU SỐ.**

| STT | Họ và tên | Chức vụ | Chữ ký | Ghi chú |
|-----|-----------------|----------------|---|---------|
| 1. | Cao Xuân Ki | CT. UBND |  | |
| 2. | Nguyễn Văn Đỗ | KT. UBND |  | |
| 3. | Ngô Xuân Đăng | KT. UBND |  | |
| 4. | Vũ Trường Thành | KT. UBND |  | |
| 5. | Mai Xuân Kiên | CB-TX-KH |  | |
| 6. | Ngô Bắc Thọ | CB-Hà Chính |  | |
| 7. | Ngô Thế Thuận | CT. UBND |  | |
| 8. | Bùi Ngọc Bình | CT. UBND |  | |
| 9. | Phạm Văn Cảnh | Bí. BTH Xã |  | |
| 10. | Nguyễn Văn Thái | TT. Ban 1 |  | |
| 11. | Bùi Ngọc Châu | Bí. Ban 1 |  | |
| 12. | Nguyễn Thị Tỷ | HP. N. Trại K. |  | |
| 13. | Nguyễn Văn Hải | TT. Ban 2 |  | |
| 14. | Nguyễn Văn Cánh | Bí. Trại SH |  | |
| 15. | Ngô Mạnh Hùng | TT. Sg. K. |  | |
| 16. | Ngô Tấn Cảnh | KT. PN. SH |  | |
| 17. | Bùi Mai Thanh | CT. TW. VP |  | |
| 18. | Ngô Thế Dung | KT. ND. SH |  | |
| 19. | Ngô Hùng Thái | Bí. Trại VP |  | |

| STT | Họ và tên | Chức vụ | Chữ ký | Ghi chú |
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| 20. | Nguyễn Văn Thái | TT. Viên |  | |
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Chốt bản này 04 tháng 7 năm 2012
 Xác nhận địa phương



CHỦ TỊCH
 Cao Xuân Thi

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự Do - Hạnh phúc

DANH SÁCH NHỮNG ĐẠI BIỂU THAM DỰ CUỘC HỌP
THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG, TÀI CHÍNH CƯ VÀ PHÁT TRIỂN DÂN TỘC THIỂU SỐ.

| STT | Họ và tên | Chức vụ | Chức vụ | Ghi chú |
|-----|-----------------|----------|----------|----------|
| 1. | Bach Mai Anh | Thủy văn | Thủy văn | Thủy văn |
| 2. | Bach Mai Anh | Tổng hợp | Tổng hợp | |
| 3. | Bach Mai Anh | Thủy văn | Thủy văn | |
| 4. | Nguyễn Văn Bình | Thủy văn | Thủy văn | |
| 5. | Nguyễn Văn Bình | Thủy văn | Thủy văn | |
| 6. | Nguyễn Văn Bình | Thủy văn | Thủy văn | |
| 7. | Nguyễn Văn Bình | Thủy văn | Thủy văn | |
| 8. | Nguyễn Văn Bình | Thủy văn | Thủy văn | |
| 9. | Nguyễn Văn Bình | Thủy văn | Thủy văn | |
| 10. | Bach Mai Anh | Thủy văn | Thủy văn | |
| 11. | Nguyễn Văn Bình | Thủy văn | Thủy văn | |
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| 15. | Nguyễn Văn Bình | Thủy văn | Thủy văn | |
| 16. | Nguyễn Văn Bình | Thủy văn | Thủy văn | |
| 17. | Nguyễn Văn Bình | Thủy văn | Thủy văn | |
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| STT | Họ và tên | Chức vụ | Chữ ký | Ghi chú |
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Thỏa thuận, Ngày 3 tháng 8 năm 2012

Xác nhận chủ địa phương



Chủ tịch

Quách Lăng Thịnh

APPENDIX 4. SAMPLE COMPLAINT FORM

Sample: 32 (issued together with Decision No. 1131/2008/QĐ-TTCT dated 18.06.2008 of the General inspector)

Socialist republic of Vietnam
Independence – Freedom – Happiness

.....,date....month..... Year...

COMPLAINT

Address to:.....(1)

Full name:.....(2); Code of document.....(3)

Address:.....

Complaint.....(4)

Content of complaint.....(5)

.....

(Documents, evidences attached if any)

The complainant

(signature&write the full name)

(1) names of agencies, organizations and individuals competent to settle complaints

(2) Full name of complainant,

- If a representative for the agency, organization, title name agencies they represent.

- Authorized if the complaint shall specify on the authorization of agencies, organizations and individuals.

(3) This content is recorded by complaint resolved agency.

(4) Complaint for the first time (second time) with whose decision/ action?

(5) Content of complaint

- Brief description about the situation;

- Request (suggest) of the complainant (if any);

APPENDIX5. LIST OF DATA SOURCE USED FOR IEE PREPARATION

- a. Subproject investment report– Irrigation Ensemble and Anti-landslide Embankment Upgrading Subproject in ThanhLuong Commune
- b. Basic design statement – Irrigation Ensemble and Anti-landslide Embankment Upgrading Subproject in ThanhLuongCommune
- c. Resettlement report;
- d. Investigation data collected from communes in 2011 – 2012