THANH HOA PROVINCIAL PEOPLE COMMITTEE

DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT

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REPORT

ON

ENVIRONMENTAL AND SOCIAL ASSESSMENT (ESIA)

DAM REHABILITATION AND SAFETY IMPROVEMENT PROJECT (WB8)

SUB-PROJECT: DONG BE DAM REHABILITATION AND SAFETY IMPROVEMENT, XUAN DU COMMUNE, NHU THANH DISTRICT, THANH HOA PROVINCE

THANH HOA - 2015

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CONSULTING FIRM

THANH HOA - 2015

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Abbreviations

AP	Affected person
CPO	Central Project Office
CPC	Communal People's Committee
DARD	Department of Agriculture and Rural Development
DMS	Detailed Measurement Survey
DPC	District People's Committee
DRC	District Resettlement Committee
DRASIP	Dam Rehabilitation and Safety Project
EIA	Environment Impact Assessment
EMPF	Ethnic Minorities Policy Framework
EMDP	Ethnic Minorities Development Plan
ESIA	Environmental and SocialImpact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
GOV	Government of Vietnam
HH	Household
IOL	Inventory of Losses
IMA	Independent Monitoring Agency
WB	World Bank
LAR	Land Acquisition and Resettlement
LURC	Land Use Right Certificate
MARD	Ministry of Agriculture and Rural Development
MOF	Ministry of Finance
MOLISA	Ministry of Labors – Invalids and Social Affairs
NGO	Non-government Organization

OP	Operating Policy
PAD	Project Appraisal Documents
PPC	Provincial People's Committee
PPMU	Provincial Project Management Unit
PRA	Participatory Rapid Assessment
REA	Rapid Environment Assessment
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
TOR	Terms of Reference
USD	United States Dollar
VND	Vietnamese Dong
WB	World Bank

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SUMMARY

1. "Dong Be dam rehabilitation and safety improvement, Xuan Du commune, Nhu Thanh district, Thanh Hoa province" is one of the sub-projects proposed to be funded by the World Bank under the Dam Rehabilitation and Safety Improvement Project (DRSIP). The objectives of the subproject are: (i) to ensure the long-term viability of the dam and reservoir; (ii) to ensure safety of 500 people within the immediate downstream of the dam and protection of 1,000 ha of agricultural and natural area, and downstream infrastructures particularly community buildings and the exposed segments of the Provincial Road 506; (iii) to ensure stable water source for irrigation of 200 ha of rice, 55 ha of upland crops and aquaculture. This environmental and social impact assessment (ESIA) was implemented to comply with the World Bank's Environmental Assessment Policy and the Vietnam's Law on Environment Protection.

2. Dong Be reservoir is located at Xuan Du commune, Nhu Thanh district that is 40 km away from Thanh Hoa city to the southwest. It was built in 1989 and the last rehabilitation of the reservoir was done in 2003 by the fund of Song Chu Irrigation Company. Its basin area is 9.4 km^2, reservoir capacity is 1.97 million m^3. The headworks and its auxiliary structures includes the following items:

- ***Dam:*** The dam was built of homogeneous soil with height of 10.95 m, length of 714.18 m. The dam crest elevation is 42.3 m with width of 5.0 m;
- ***Spillway:*** has width of Btr = 50 m; made of reinforced concrete; its downstream part is a slope connected to a dissipation basin;
- ***Intake:*** is located at the right side of the dam, made of reinforced concrete with steel thickness of Fi = 0.8 m. It is a circle culvert with control valve at its upstream;
- ***Management road:*** (i) From road 506 to Dong Be reservoir is an asphalt road with width of B = 3 m and length of L = 200m, another road on the right side is made of earth with length of 100 m; (ii) From Trieu Thanh junction to the dyke and spillway on the left side of main dam is an earth road with length of L = 700 m. It is difficult to go on this road in the rainy season.

3. ***Status of headworks facilities:*** Because this 25 year-old reservoir had some impairs when it was constructed and it has been affected by the weather through a long time, the dam safety is not secured. Along the length of the dam, there are many seepages, rock in the upstream side is broken and fragmented. At the middle of the dam foot, 80 m from the intake to the left, dam surface is sag down that making unsafe condition of the dam. The intake has an impair of valve gate in the construction process so that water leaks through the gate and it is difficult to move the gate. The concrete pipe culvert itself was badly damaged, the concrete strength decreases due to erosion, reinforced steel exposes in some points. There is no management house for the intake operation. Concrete surface of the spillway is damaged partially, many dissipation ridges are broken. Although some structures were recovered, but they are too old to be able to regulate water and keep safety of the reservoir during operation.

4. There are about 500 people, 1000 ha of agricultural land, a segment of the Provincial Road 506in the immediate downstream (about 300m from the dam). The deteriorating condition of the dam also threatens safety of infrastructure as well as lives and assets of downstream communities. In the recent years, due to the deteriorating condition of the reservoir, the water supply capacity has been reduced, adversely affecting the economic development of Xuan Du and Trieu Thanhcommunes.

5. The activities of the subproject are as follows: treatment of seepage through body and foundation of dam, recovery of partial erosion; replacement of the intake; widening of the spillway; building of bridge over spillway; construction of managementroad. The project was designed and carried out in accordance with the Environment and Social Management Framework of the project (ESMF) and Dam Safety Framework of the World Bank, while complied strictly with regulation and standards of the Socialist Republic of Vietnam. The impacts arisen during the preparation and implementation of the project are fully identified, managed and monitored closely by the detailed plan and periodic reports to the managers.

6. Environmental and Social Screening: Based on the Environmental and Social Screening, the subproject is eligible for financing under DRSIP. The subproject is classified in Category B according to the World Bank's classification. It is not located within or near any sensitive environment or natural habitat and there are no structures or sites in the area of cultural and historical significance that will be impacted by the rehabilitation. There are also no ethnic minorities affected by the subproject in the area. The dam to be rehabilitated is categorized in small damaccording to the definition of project.

7. Environmental and Social Impacts: The subproject will improve dam safety, protect downstream infrastructure and the lives and assets of local people in the downstream of the dam. The rehabilitated works will also ensure stable and reliable supply of irrigation water for the 255 ha of rice, upland crops and aquaculture ponds;also supplement the existing groundwater for domestic use of local people in dry season. However, there will be some negative social and environmental impacts, including: (i) loss of land, crops and trees due to land acquisition for construction of the subproject; (ii) other temporary impacts associated with construction activities.

8. A survey of the area indicated that 0.57 hectare will be permanently acquired by the sub-project while 1.08 hectare will be temporarily acquired during construction. Acquired land areas are within the dam's protected area and belonged to Xuan Du Communal People's Committee (CPC). Two communes affected by sub-project are Trieu Thanh commune, Trieu Son district and Xuan Du commune, Nhu Thanh district. A total of 13 households (78 persons) will be affected trees and crops in the dam's protected area managed by the State. No household (HH) will be relocated or severely affected; no structure, business work of household will be affected; no heritage, landscape, temple, grave will be affected; no ethnic minority household will be affected. Affected people will be compensated and assisted in compliance with Resettlement Policy Framework (RPF); those will be presented in detail in Resettlement Action Plan (RAP) of sub-project.

9. The other impacts associated with construction activities include: possible land degradation within the vicinities of the construction and quarry sites due construction spoils, boulders, materials and rubbish; increased concentration of particulate matter (mostly dust); elevated noise; increased sedimentation and turbidity of surface water; traffic disruptions; possible damage to existing roadways by the heavy equipment traffic; and, a slight increase in health and safety risks for the workers and local population due to exposure to hazards at construction site.

10. Mitigation measures – An Environmental and Social Management Plan (ESMP) has been developed as part of this ESIA to address these impacts. The ESMP requires the adoption/implementation of the various other safeguards instruments which have been prepared for the sub-project such as Resettlement Action Plan, Gender Action Plan, Grievance Redress Mechanism, Chance Find Procedure. Specific measures in the ESMP include close consultation with the affected farmers for the optimal scheduling and timing of construction activities to minimize cropping disruptions, proper housekeeping at the construction site, disposal of construction spoils to a properly sited landfill, regular sprinkling of roads in residential areas during dry days, and the preparation and submission by

the Contractor of its own Environmental and Occupational Health and Safety Plan for the construction site, incorporating construction-related measures and standard construction EHS practices such as wearing of PPEs, provision of adequate water and sanitation facilities at campsite, medical screening of workers, installation of fences and warning signs at dangerous areas and good community relations.

11. Institutional arrangements: The Central Project Office (CPO) is responsible for the overall supervision of the sub-project implementation, including the implementation of environmental protection measures proposed in the ESMP. The Thanh HoaPPMU will be responsible for preparing detail bids/tenders information, selecting the contractor, preparing contracts and ensuring effective implementation and close supervision of ESMP. The contractors will be responsible for implementing the sub-project as planned including measures that are related to construction site management. The CPO will associate closely with local dam management agencies to ensure the effectiveness of stakeholder consultation and ensure compliance with the requirements and measures. The Department of Natural Resources and Environment of Thanh Hoa province will be responsible for supervising the implementation of environmental policies as per regulated by Vietnam Government. After project completed, the operation organization will take responsibility of maintenance and periodic inspection of works.

12. Budget allocation: The estimated cost of the implementation of the ESMP, including monitoring activities is1,396,000,000 VND. The total estimated cost of the sub-project including implementation of the ESMP is 81,168,197,500VND.

PART I. INTRODUCTION

1.1 Project overview

The project objective of "Dam Rehabilitation and Safety Improvement Project" is to support the implementation of the Government dam safety program by improving the safety of prioritized dams and reservoirs as well as to protect people and assets of the downstream communities. The proposed project is intended to improve the safety of the dams and related works, as well as the safety of people and socio-economic infrastructure of the downstream communities as defined in Decree 72 governing the management of dam safety in Vietnam. It is proposed that the project consist of four principle components.

- Component 1: Dam Safety Rehabilitation (US$385 million)
- Component 2: Dam Safety Management and Planning (US$60 million)
- Component 3: Project Management Support (US$15 million)
- Component 4: Disaster Contingency (not exceed 20% of the total project cost)

Implementing Agencies

DRSIP will be implemented in 31 provinces in the North, Central and Highland regions. Up to 400 dams will be selected for consideration under the project with and will be based on an a priori agreed selection criteria aimed at prioritizing those interventions that address the risks within an explicit poverty and inequality framework.

The proposed project will be implemented over a period of six years – from December 01, 2015 to December 01, 2021. The draft Environmental and Social Impact Assessment (ESIA) of the first year subproject and the project Environmental Management and Social Framework (ESMF) will be ready by May 12, 2015 for disclosure. These safeguard documents need to be cleared by the Bank before the disclosure. The EIA of the subsequent years' subprojects will be prepared once the EMF has been agreed by the Government of Vietnam and the World Bank.

The Ministry of Agriculture and Rural Development (MARD) will be responsible for overall implementation and management of the project. The Central Project Office (CPO) within MARD would provide the support to all the three Ministries and responsible for overall coordination and monitoring of the project. The implementation of the rehabilitation works and preparation of dam safety plans, including safeguard and fiduciary, would be decentralized to the provincial level authorities. The provincial Department of Agriculture and Rural Development (DARD) would be lead agency at the provincial level. Provincial project management unit (PPMU) of DARD in each province will response to manage and monitor the sub-project under MARD supervision.

The project will support the physical rehabilitation of the existing irrigation dams most of which were built during the 1980s and 1990s. About 90%o f the dams to be rehabilitated are earthen structures and are considered as small dams with height of less than 15m and design volume of less than 3 million cubic meters (MCM). The proposed project is not intended to support significant structural modifications or expansions beyond what is needed to ensure safety. The rehabilitation will be limited to reshaping of the main and auxiliary dams, slope stabilization by either concrete slab or in-situ or stone paving, strengthening or expansion of existing spillways to increase the discharge capacity, refurbishment of existing intake structures, replacement of mechanical and electrical systems of intakes and spillways, grouting for seepage control and improvement of existing roads (access and management roads).

1.2 Approach and methodology for ESIA

The general objectives of ESIA is to carry out the environmental and social impact assessment of this sub-project, including preparation of the relevant safeguards documents required to meet the requirements of the Government of Vietnam and the World Bank.

Specific objectives are:

- Assess the environmental and social impact of the proposed sub-project.

- Develop an environmental and social monitoring plan (ESMoP) including appropriate monitoring and reporting regime.

- Creation of communication channels to allow local communities to participate in the decision making process.

a) Scope of ESIA divided into 2 affected areas:

The areas of construction site: The construction of the rehabilitation of dam, spillway, intake, construction road...

The areas benefited or affected by sub-project include Trieu Thanh, Hop Thanh communes, Trieu Son district and Xuan Du commune, Nhu Thanh district, Thanh Hoa province.

b) Scope of assessment by time

The report will review the environmental and social impact of sub-project during the preparation stage (survey, design, land acquisition ...),construction phase, and operation phase.

In addition, environmental impact assessment also considered to the incidents happened in the past (since the construction of reservoir) and environment and social impact and countermeasures.

c) The assessment objects:

The composition and environmental factors, social affected include: natural environment (climate, water, soil, minerals, ecosystems), socio-economic environment and socio-cultural.

Impact assessment should consider: a) physical environment (water resources, hydrology, air pollution/ water/ soil, erosion and sedimentation, drainage, safety stakeholders and infrastructure existing floor, taking into account the basic conditions such as climate, geography, topography, air quality), b) the issue of history, culture and archeology; c) biological systems such as flora and fauna, natural habitats, fisheries, etc. and d) (socio-economic aspects of society and the social environment such as social care and health, employment and income, gender, social security and a stable life, access to basic services such as water, energy, health and education, etc.).

1.2.1 Approach and methodology of social assessment

The purpose of social assessment (SA), conducted in an integral manner with environmental assessment for this subproject, is two-fold. First, it examined the potential impacts of the subproject – positive and adverse impact – on the basis of planned project activities. Second, its findings inform the design of measures addressing identified potential adverse impact and proposing community development activities that are relevant to the project development goal. For identified adverse impact that could not be avoided, consultation with local people, governmental agencies, project stakeholders, etc., were carried out to ensure affected peoples will be appropriately compensated for, and supported in a manner that their socio-economic activities will be promptly and fully restored to the pre-

project level, at least, and that their livelihoods will not be worsen off, in the long run, as a result of the subproject. Objective of this assignment is assessment of socio-economic situation and planning for implementation of safeguard policy of sub-project. The social assessment and preparation of the social safeguard documents required for project in the preparation phase to ensure that the interventions are taken into account the social issues Assembly and comply with the legal requirements of the Government of Vietnam and safeguard policies of the World Bank.

As part of the social assessment, where ethnic minority (EM) peoples are present in the subproject area –as confirmed by the EM screening (as per Bank's OP 4.10), consultation with them were carried out in a free, prior, and informed manner, to confirm if there is broad community support from affected EM peoples for the subproject implementation. EM screening was conducted as per Bank's OP 4.10, and was done the scope and coverage of the social assessment vis-à-vis the environmental assessment (OP 4.01). A gender analysis was also done as part of the SA to understand underlying gender dimensions (from project impact perspective) to enable gender mainstreaming to promote gender equality, and enhance further the development effectiveness of the subproject, and the project as a whole. Depending on the magnitude of the identified potential project impact, and the project development objective, a gender action plan and gender monitoring plan were prepared (please see these plans in the Annex B4 of this ESIA).

To ensure all potential impact could be identified during project preparation, the SA was conducted through series of consultations with various project stakeholders. A particular focus was maintained on households who are potentially affected (both positively and adversely). The research techniques employed for this SA include 1) review of secondary data, 2) field observations; 3) focus groups discussions/ community meetings, 4) key informant interview, and 5) households survey (Please see Annex B1 for how the Sampling Frame). A total of 235 of respondents participated in the SA exercise for this subproject, of which 120 people participated in the household survey (quantitative), and 115 people participated in focus groups discussions, community meetings, key informant interview (qualitative).

In Section 4.3, we will present briefly the SA results. Then, we will present the findings of the SA (positive and adverse impact) along with the recommendations on the basis of the SA findings, including the result of the gender analysis. Please note that a gender action plan and gender monitoring plan are presented at Annex B4 of this ESIA), and the public health intervention plan and public consultation and communication plan were presented at Annex B2 and B3, respectively).

1.2.2 Approach and methodology of environmental assessment

- ESIA must be combined with the economic analysis, financial, institutional, social and technical projects to ensure that environmental issues and social sufficient interest in the project selection, location and decisions regarding technology solutions.

- Forecasting and quantitative assessment of the sub-project's impact.

- Distinguish between pairs of positive – negative impacts, indirect – direct impacts, cumulative impacts, medium - long term impacts. Identify potential impacts that may occur during construction and the unavoidable and irreversible impacts.

Methods of field survey: survey the current state of environmental resources, the country sampling, rapid assessment indicators of water quality in the field to update and supplement the latest materials project area.

Method sociological survey: survey interviewed people, leaders of local and regional areas affected beneficiaries.

Analytic and synthetic method: Analyze and synthesize the impact of the project on the components of the natural environment and socio-economic at the operational area of the project.

Expert method: Consultancy unit participated and organized the meeting, the exposure to take comments on proposed measures to mitigate the negative impacts of the subproject of environmental experts, sociological experts, dam safety experts and gender experts.

Methods of analysis for report: analysis and synthesis of the impact of the project on the part of the natural environment and socio-economic areas of project implementation.

Rapid assessment method: use the pollution factor of the World Health Organization (WHO) to estimate the amount of waste and pollution forecasting.

Comparison method: the impacts are evaluated by comparison with the norms and standards for the quality of soil, water, noise, air and other relevant environmental standards.

Modeling methods: using models to calculate and forecast the average concentration of pollutants in the exhaust gas, waste water to assess the impact of pollutants on the environment.

Matrix method: To compare each activity of the project with each parameter or environmental and social component (air, water, health, economic, etc.) to assess the relationship of cause-consequences of the subproject implementation

PART II. SUBPROJECT DESCRIPTION

2.1 Sub-project overview

- Name of sub-project: Dong Be Dam Rehabilitation and Safety Improvement, Xuan Du commune, Nhu Thanh district, Thanh Hoa province.
- Objective of sub-project:

- Ensure stable irrigation for 255 ha of cultivated land in Trieu Thanh commune, Hop Thanh commune, Trieu Son district and Xuan Du commune, Nhu Thanh district; water supply for domestic use of people in the project area.

- Ensure reservoir safety, protect the life and property of downstream people, increase productivity and output; ensure food security, improve the lives of people in the project area, promote socio-economic development and environmental landscape of project area.

- Project owner:

- Project owner: Thanh Hoa Department of Agriculture and Rural Development;

- Representative unit: Thanh Hoa Water Resources Project Management Unit;

- Address: No. 6 - Hac Thanh - Thanh Hoa City;

- Tel: 0373.853406; Fax: 0373.850690

- Representative: Mr. Pham Cong Van; Position: Director.

- Location of sub-project

Dong Be reservoir is located at 40 km to the southwestern of Thanh Hoa City, in the territory of the three communes: Phuong Nghi, Xuan Du communes of Nhu Thanh district and Trieu Thanh commune of Trieu Son district.

Geographical coordinate: $19^0$47' North Latitude

$105^0$30' East Longitude

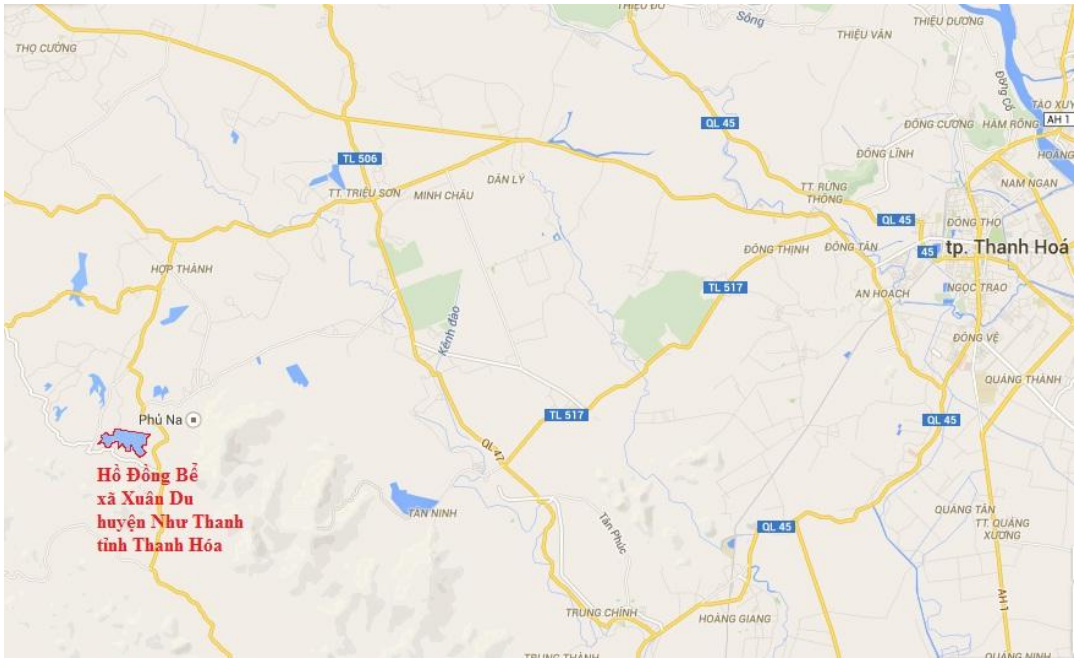

Figure 2.1: Location of Dong Be reservoir

Figure 2.2: Sub-project area

Figure 2.3: Location of headworks of Dong Be reservoir

- Total cost and cost division:

Content	ODA from WB (VND)	Counter budget (VND)	Total (VND)

Dong Be Dam Rehabilitation	73,051,377,750	8,116,819,750	**81,168,197,500**

Break-down of total cost:

No.	Cost item	Amount
1	Construction	58,964,496,549
2	Compensation for land acquisition (Gdb)	718,845,000
3	Project management	1,000,000,000
4	Construction consultancy (Gtv)	966,157,192
5	Others	6,782,682,761
6	Contingency	932,702,581
7	Provision expenses	10,407,313,417
8	The estimated cost of the implementation of the ESMP	1,396,000,000
	Total (rounded)	**81,168,197,500**

(Source: Report on investment of subproject, 2015)

2.2 The major works of the sub-project

Table 2.1: Main specification of the sub-project before and after rehabilitation

No.	*Item*	*Unit*	*Value*	
			Current status	*Rehabilitation*
I	**Dam grade**		III	III
II	**Reservoir**			
1	Total volume V_h	10^6m^3	1.974	1,974
2	Effective volume V_{hi}	10^6m^3	3.01	3,01
3	Dead volume Vc	10^6m^3	0.082	0,082
III	**Earth dam**			
1	Crest elevation	m	+41.40	+42,30
2	Height H_{max}	m	10.05	10,95
3	Length	m	714.18	714,18
4	Crest width	m	4.0	5,0
IV	**Spill way**			
1	Crest elevation	m	+39.40	+39,40

No.	*Item*	*Unit*	*Value*	
			Current status	*Rehabilitation*
2	Length of slope	m	49	62,76
3	Width	m	50	50
4	Designed flood discharge	m^3/s	123,83	123,83
V	**Intake**			
1	Diameter	m	0.8	0,8
2	Designed discharge	m^3/s	0.4	0,4
3	Elevation	m	+33.0	+33,0
4	Length	m	44.72	56,65
VI	**Auxiliary dam (flood embankment)**			
1	Crest elevation	m	+41.4	+42,3
2	Length	m	400	400
3	Height H_{max}	m	2.2	3,1
4	Crest width	m	3	5

a) Current status of component structures:

Dong Be reservoir was constructed from 1989 to 1991, then it started operation. After May 1991, the water level exceeded 70 cm higher than spillway that erode the slope of spillway at the downstream, seepage through the dam body, leak strongly through the intake. The whole Dong Bun village of Xuan Du was flooded.

The dam is filled by earth mixed with gravel at local site, when the water level reaches from (+38.50) m or more downstream dam seepage occurs 6 position from the engine high (+ 38.00) m or more (that did not previously have the infiltration occurs downstream from the + 36.0m higher or lower). 1st place 182m from left shoulder, head left a drainage ditch on the 30m downstream. This segment length 110m under the dam; No. 2 position 1 is a 106 m length of 40m. Next are 4 sections also appear saturated sugar high from the + 38.00m older but under the dam body length from (3 ~ 8) m. The whole section is in the middle of the dam permeability of about 350m (currently for handling temporary). But in the long run if no remedial measures, recovery will be very dangerous. Upper roof is tiled roof khan protection from upward elevation + 34.00m. This number dropped tiles, peeling mangled feet high from the roof downwards + 36.0m middle drain water from the dam to the left 80m, 150m length sunk sagging roofs, flat roofs than design.

Figure 2.4: Sliding on the dam side

Figure 2.5: Broken cover of dam side

Figure 2.6: Seepage at downstream side of dam

Figure 2.7: Seepage at downstream step of dam

Spillway: Reinforced concrete on slopes covered with 3 full array near the tooth deceleration was peeling off layer of protection. Seepage at bottom of spillway causes unsafe situation of the dam.

Figure 2.8: Seepage through body of spillway

Figure 2.9: Erosion in cover of spillway with exposed reinforced steel

Intake: Intake with diameter of 80cm, controlled by flat valve, operated by screw V10 disability during the construction, installation fade slot is not accurate and should be twisted bark park community watertight and very heavy. Concrete sewer pipe body length 44.72m, damaged

signs. Specifically, the face of the whole perimeter of the concrete pipe was humus, the intensity decreases, some sections were peeling steel highway. It is lack of managing tower.

Figure 2.10: Lack of managing tower

Figure 2.11: Manually controlled valve

Flood dike (auxiliary dam): Dikes are made of earth and gravel in place, the degree of compaction should uneven surface, uneven subsidence slope leading to the roof surface and not be flat, some lower elevation position 41.50m. At a location between the dike drain water down the drain by 40cm, and bring down inefficient irrigation should now be repaired or raging water thoroughly when large reservoir very unsafe for the dike.

Management road and rescuing road: Currently, 2 roads were not reinforced. On rainy season often muddy, causing difficulties for the rescue, rescue, troubleshoot and manage the operation of the reservoir.

Figure 2.12: Earth management road is muddy in rainy season

There is no monitoring system and reservoir safety warnings, no management building.

The construction components of the sub-project are as follows:

b) Rehabilitation items

Table 2.2: List of rehabilitation items

Items	Rehabilitation	Construction measures
Main dam	Exalted expanded downstream face of the dam embankment compaction gain coefficient k>=0,97, ;Crest elevation + 42,30m , beating surface width b = 5 m, reinforced concrete dam face M200 situ 20cm. Top of the dam wall reinforced concrete breakwater M200 h = 0,7m high. Breaking the old stone roof down from a crest elevation of + 36,00m, reinforced roof upstream dams with precast concrete slabs in-situ thickness of 15cm, size 0.8x0.8m; Downstream slope reinforcement in the form of grass and storm drains.Mechanical dam downstream in the + 38,00m high, b = 4 m wide, dam upstream slope coefficient m = 2,75, downstream = 2,5 m. How permeable drainage device type pile dam drainage and downstream pressure. Waterproof body and dam foundation seepage at the location in the form of drilling grouting cement.	- Excavation work: Peel weathering dam used bulldozers, excavators and combined transport by car to landfill. - Working up: Excavator mining land in the pits, used cars shipped to 2 abutments. - Using bulldozers to peel a layer of organic soil surface pits, excavator digging down into the soil auto transport into the face of the dam. - The parts of the machine that is not constructed (foot tray, handle at the side adjacent) using handmade dress toad. - Reinforce the roof downstream mainly used for construction craft. - The user manually setting slices combined with the motor.
Spillway	How to spot new overflow old spill, overflow section pragmatic reinforced concrete M250, spill reaches the threshold elevation + 39,40m, $B_{threshold}$ = 50m. Redo side walls, sloping overflow with reinforced concrete M250. Links between the components by KN - 92 PVC coupling; 2 sides to bring up the spill with soil compaction techniques to achieve k = 0,9; How to pitch absorption and absorption section backyard pool in reinforced concrete M250. Build bridges downstream overflow to serve the people living and checking for flood and storm prevention.	- Excavation used excavators poured into a car shipped to landfill. - Training for rock-motorized users to manually combine construction - Use concrete mixer volume of 500-700 liters, down by trolley or bridge put in plots poured concrete.Concrete Dam by combining handmade dress factory - Land cover is mined in pits to fill.Dam spill on land combined with motorized craft.
Intake	Breaking the old drain water. Construction of new sewer drain water from the old location 3m, structural steel culvert pipe diameter	- Construction of mechanical excavation by combining crafts, dress by dress toad on land drains.

	8mm D80cm coated outer layer of reinforced concrete 30cm thick M250, opens with still lower, flat- valve layout located in the upper tower, operated valve with electrical systems.	- The built slice by hand.
Flood dike (auxiliary dam)	Apply exalted flood protection dike crest level +42.30 m earthen embankment, top width of 5m , the upstream slope 2.5, 2.5 downstream. Front concrete flood control dike M200 20cm wide by 3.5m to combine welfare and traffic management. Heng drain thoroughly under flood protection dike was broken and the new sewer.	- Excavation work: Peel weathering dam used bulldozers, excavators and combined transport by car to landfill. - Working up: Excavator mining land in the pits, used cars shipped to 2 abutments.
Road inside reservoir for rescuing from flood and storm	Reinforcement managed to hit the road and the reservoir to serve management and livelihoods. Structural concrete pavement M200 20cm, width B = 3,5m. Build 3 a new sewer line under the reservoir with reinforced concrete regulated.	- Use concrete mixer volume of 500-700 liters, down by trolley or bridge put in plots poured concrete.Concrete Dam by combining handmade dress factory. - The built slice by hand.
Observation system	Installation of monitoring equipment infiltration, observation and measurement shifting tide.	- The installation of monitoring equipment by hand.
Management station	Construction of a lead management standard 4 fences house and site. Installation of equipment service management.	- The built slice by hand. - Use concrete mixer volume of 500-700 liters, down by trolley or bridge put in plots poured concrete.Concrete Dam by combining handmade dress factory.

c) The auxiliary works

Table 2.3: The auxiliary works

Item	Location	Quantity (capacity)	Description
Land mines	Buy at Minh Son commune land mines.	- Mine Area: 3.08 hectares. - The depth of exploitation: 10,0m. - The volume is exploited: 80,000	Land mines Minh Son CPC of Thanh Hoa province mining license for Investment Co. building in the North-South Trade and license number 16/GP-UBND 01/15/2015. This area is productive forest land, was compensated clearance. Transport distance to the center of the dam is 18

		m3.	km
Landfill	02 countries of the village pond 4, 5 village in Xuan Du commune	- Landfill area: 10.815m ^{2} - Depth disposal: 1.5 ÷ 2 m.	Disposal areas is 02 roadside pond between 4 and 5 villages of Xuan Du, Nhu Thanh district. 4km away from the foot dam, sparsely populated area, Xuan Du center 1km. This area of land management Xuan Du commune. Had memorandum waste area between investors and Xuan Du commune.
Where the building materials	- Zone 1: road construction adjacent downstream. This is the meeting place for construction of the dam and drain ground water. - Zone 2: Located on the flood overflow, collecting construction materials spill.	- Area of 1: 500 m ^{2} - The area 2: 500 m ^{2}	- Zone 1 location from the construction of 100 m. Currently the garden deserted roadside reservoir management, the 01 residents living immediately after the dam. - Zone 2 spills from construction location 100 m. We crops, farmers do not have to live.
Camp ground	- Zone 1: road construction adjacent downstream. This camp is arranged to earth dam construction and water drain. - Zone 2: Located on the flood overflow, side yard full of construction materials.	- Area of 1: 500 m ^{2} - The area 2: 500 m ^{2}	- Zone 1 location from the construction of 100 m. Currently the garden deserted roadside reservoir management, the 01 residents living immediately after the dam. - Zone 2 spills from construction location 100 m. We crops, farmers do not have to live.

Figure 2.13: Location of earth mine

Figure 2.14: Earth mine in Minh Son commune

Figure 2.15: Earth mining in Minh Son commune

Figure 2.16: Location of dumping area in hamlet 4, Xuan Du commune

Figure 2.17: Location of dumping area in hamlet 4, Xuan Du commune

Table 2.4: Quantities of main construction items in the subproject

Item	Cement (m3)	Stone (m3)	Sand (m3)	Disposal (m3)	Dug soil for filling (m3)	Earth fill (m3)	Iron (m3)
Dam	958.0	8958.1	2661.0	5946.8	1124.1	34.766.4	11.9
Spillway	272.3	1847.7	763.7	0	8064.5	1.541.1	12.1
Intake culvert	90.3	480.3	271.8	442.4	7298.7	8.591.2	2.3
Dike	73.4	374.9	211.7	1911.2		6.157.7	
Road	183.5	936.9	529.0			3.600.0	
Management house	7.7	42.7	34.6		465	6.7	0.4
Anti-seepage drilling	369.1						
Total	**1954.2**	**12640.6**	**4471.8**	**8300.43**	**16952.3**	**54663.0**	**26.7**

- Cement, sand, stoneandsteelare purchasedatagentsinTrieu Sontown, is transported tothe construction siteby506provincial roadswitha total length of20km.

- LandbuyuplandminesinMinh Son commune, wastransported tothe construction

siteby506provincial roadswitha total length of18km. The volume oflandboughtup: 37710.8m3.

Table 2.5: List of machine *(main types of machine)*

Machine	Function	Quality	Quantity
5T dump truck	Transportation of earth, materials		10
Excavator 1.25m^3	Excavation and filling	Good	6
Bulldozer 110CV	Flatting	Good	6
Concrete mixer 250l	Concrete mixing	Good	6
Concrete compactor	Concrete compacting	Good	4
Soil compacting machine	Soil compacting	Good	4
Pump	Supply water for construction	Good	3
Welder	Steel processing	Good	4
Steel processor	Steel processing	Good	6
Drill	Concrete breaking	Good	3
Generator 110KVA	Power supply in case of grid cut-off	Good	3

2.3. Construction schedule of sub-project

Since starting a project, in addition to the construction period in the dry season to take full advantage of the sunny days during the rainy season, but attention to construction problems roof avalanche training in the rainy season to ensure safety. This is the steep mountains, narrow construction site contractors should be focused manpower and construction equipment and construction methods closely overlap.

Time of construction is expected in two years. The order of diversion and construction as follows:

Table 2.6: Construction schedule

No.	Item	Construction time (month)	Start time	End time
1	- Stage 1: Preparation of construction + San board, luminescent surfaces for public schools, camps and storage of materials. + Develop infrastructure for construction services: road construction, power supply, water	1	September 2015	October 2015
2	- Phase 2:	4	October	February

	+ Remove the water tank to the + 33.00m high + Apply upstream cofferdam in position sewer drain. Diversion through the old sewer. + Construction of sewer water, dam construction.		2015	2016
3	- Stage 3: + Construction of flood overflow + Construction of flood protection dikes, roads reservoir.	3	February 2016	May 2016
4	- Stage 4: + Complete headworks. + Breaking the cofferdam, refund status quo.	2	May 2016	July 2016
5	- Stage 5: + Construction of road operation. + Construction of managers	3	July 2016	October 2016
6	- Stage 6: + Grouting waterproofing and foundation of the dam itself. + Construction and installation of monitoring systems. - From May to October: To improve delivery of the works.	5	November 2016	April 2017

PART III. POLICY, INSTITUTIONAL FRAMEWORK AND REGULATIONS

3.1 Applicable national law and regulations

a) Legal framework relating to environmental impact assessment

Law on environmental protection no.55/2014/QH13, on Regulating Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment. Environmental report should be carried out simultaneously with the establishment of investment projects (Feasibility study report). Requesting time for EA report making, delivery and appraisal are specified in section no.2 of Article no.13 of Decree no.21/2011/ND-CP. Environmental screening steps (typical environmental assessment to the project) should be done in accordance with the list of projects type in Annex 2 of the Decree No.18/2015/ND-CP.

Environmental impact assessment (EIA). In chapter 4 of Decree no.18/2015/ND-CP on date 14/02/2015, from the article 12 to article 17 were specified in the formulation, evaluation and approval of environmental impact assessment reports, the implementation of projects and the designed mitigation measures to protect environment before and after a project officially operation. In the article 12 of this Decree also regards on environmental impact assessment process to the project implementation, the project owner have to organize meetings to public consultants, such as Provincial People's Committees, local authority (Commune People's Committees level- CPC), affected (direct or indirect) people or committees in the local by the project implementation, mandatory; analysis the feedbacks, comments obtained from the affected groups, and consider advantage or disadvantage the impacts of the project to community and to design the mitigation measures to reduce the negative impacts on natural environment, biodiversity, community. According to the annex no.2 of the Decree, the project has to make EIA if the reservoir capacity is of 100,000m3 or more.

Environmental protection plan. Chapter 5 of Decree no.18/2015/ND-CP on date 02/14/2015, from Articles no. 18 and no.19 and the Annex II of this Decree defined that a new project implementation, or scale extension, increasing capacity have to identify the affecting objects and have to make a plan of environmental protection

According to the regulations of Vietnam Government, the subproject "Dong Be dam rehabilitation and safety Improvement - Thanh Hoa province" have to perform the report of Environment Impact Assessment.

b) Dam safety regulations

Decree no. 72 /NĐ-CP on date 07/05/2007 of the government of Vietnam on dam safety management. According to the decree, a big dam is the dam with the height calculating from the floor face to the top of the dam equal to or greater than 15 meters or dam of water reservoirs with the scale of capacity equal to or greater than 3,000,000 m3 (three million cubic meters). Small dam is the dam with the height calculating from the floor face to the top of the dam smaller than 15 meters. Dam owners are organizations and individuals owning dams to harness the benefits of water reservoirs or assigned to manage, operate and harness water reservoirs by the competent state agencies. Ministry of Agriculture and Rural Development takes responsibility before the Government for the implementation of state management of dam safety. The Ministry of Industry presides over and coordinates with ministries, branches and relative localities to appraise, approve or submit to the Prime Minister for approval of the process of operating hydropower reservoirs. The provincial-level People's Committees implement its state management on dam safety in the areas.

c) Land acquisition by the State and Resettlement policies

Land Law no. 45/2013/QH13, effected on 07.01.2014, this law prescribes the regime of land ownership, powers and responsibilities of the State in representing the entire-people owner of land and uniformly managing land, the regime of land management and use, the rights and obligations of land users involving land in the territory of the Socialist Republic of Vietnam. The law also gives the guidance on Land acquisition, recovery and compensation, resettlement and the requirement to ensure safety of dam corridor and reservoir, irrigation works, etc.

3.2 Triggered safeguard policies of WB

The safeguards policies of World Bank given in the form of operational policies (OPs), which includes 10 triggered policies, included the important policy OP 4:01 environmental assessment. Here are a summary of World Bank's policies that's related to the sub-project:

Table 3.1. Environmental and legal safeguard policies of WB related to the sub-project

Policy	*Objective*
OP 4.01 Environmental Assessment	- To ensure the environmental and social soundness and sustainability of investment projects. - To provide decision makers with information on potential environmental and social impacts related to the project. - To enhance the transparency and participation of affected communities into the decision making process.
OP4.11 Physical Cultural Resource	- To ensure that the potential impacts on known physical cultural resources (PCR) are avoided or mitigated - The Project will not affect any known PCR, however, as the project involves significant amount of earthwork, this policy is triggered and include a Chance Find Procedure
OP 4.37 Safety of Dams	- To ensure that dam safety issues are adequately addressed, especially for high and/or risky dam. - The policy involve to new dams construction. - The issues occurs by the existing dams and dams under construction. - The other important issue: dam height, reservoir capacity, suitability of safety standards
OP 4.12 Involuntary Resettlement	- To ensure that the following policies will be applied: - Avoid or minimize involuntary resettlement and impacts on economic activities, including loss of livelihoods - Provide transparent compensation procedures during involuntary taking of land and other assets - Provide sufficient investment resources to enable the persons displaced by the project to share in project benefits (implemented through the Resettlement Action Plan) - Restore and improve the standards of living of persons affected by the

	project - Provide prompt and effective compensation at full replacement cost for losses of assetsattributable directly to the project. Development of Resettlement Plan and mitigation measures must be carried out based on consultation with affected populations and participatory approaches.

PART IV. ENVIRONMENTAL AND SOCIAL STATUS OF PROJECT AREA

4.1 Physical environment

4.1.1 Natural conditions

Climate, hydrology

Dong Be reservoir is located in the tropical monsoon climate with four distinct seasons.

- Average annual rainfall is about 1600-2300mm, every year - approximately 90-130 days of rain. Relative humidity from 79% to 92%, the average number of hours of sunshine around 1600 to 1800 hours. The average temperature is 23.1 ° C, the temperature decrease as high up the mountains.

- Popular winter wind direction is northwest and northeast, summer is East and south.

Features climate and weather with heavy rainfall, high temperatures, abundant natural light are favorable conditions for the development of agriculture, forestry, and aquaculture.

Documents used meteorological stations Nhu Thanh document, listing some calculations from 1962.

The temperature:

- The temperature in ° C Σt = 8455; The average annual temperature: t = 23.1 ° C, the temperature range in the average day: Δt = 7.2 ° C.

Humidity:

- The average annual relative humidity ranged from Thanh Hoa (79-92%), the difference between the humidity is relatively low. In Thanh Hoa low humidity markedly in the first month of summer, hot dry wind that destroyed newly established water balance in the soil, vegetation, drought has caused the most severe of the year strong west wind blowing, the rain season to late.

Wind Storm:

- The wind is a factor affecting precipitation and evaporation, the general direction of the wind in Thanh Hoa is east and southeast winds, due to the monsoon circulation to the wind direction changes over seasons.

- In winter the prevailing wind direction is from the northwest to northeast during the early season, then gradually shift east during the late season, March to the wind direction across the province moved to the east or northeast to southeast.

- In the summer season, the prevailing wind direction is east and southeast, and west to September northwest wind makes up a higher frequency.

- Maximum wind speed (P = 10%): $V_{max\ 10\%}$ = 21.0 (m / s)

- Maximum wind speed Average (P = 50%): V_{max} = 14.0 $_{TB}$ (m / s)

- Hurricane affect Thanh Hoa starting from scratch VI months to the end of November, most of the storms hit the mainland usually carry a heavy rainfall (200 - 500mm) long and wide. Maximum wind storms up to 30-40 (m / s) in the coastal plain, 30 (m / s) midland plains and over 20 (m / s) in the mountains.

The rainfall regime:

- Rain is the most important factor in the climate factor for mountain directly affect the hydrological factors, for no document basin hydrological calculations when designing buildings usually based on financial rainfall data.

- One year is divided into two rainy season and dry season, the rainy season from May to October, the dry season from November to April 4. In the month rainy season irregular rainfall is concentrated in the largest August, and October 9, in the month of rain, the heavy rainfall concentrated in a few specific days and often causing major flooding.

- Start and end date, as well as the peak period of the late rainy season tends to gradually from north to south and from the mountains to plains. Rainy season is here divided into two periods: the period of sub-chronic and rainy periods.

- Sub-chronic rain usually occurs in late May 5. From July to November to the tropical convergence zone moves through the region, along with weather disturbances such as storms, cyclones, causing grooves ... heavy rains.

- Rain from Sept. 12 to April next year at the tropical atmosphere full control of the north, making smaller rainfall. Monthly rainfall of this month to about 1/10 to 1/20 of the monthly rainfall is greatest. The annual rainfall in the region is distributed unevenly, often focusing on August until December 10. The total amount of rain this month about 60% to 70% of rainfall throughout the year. Rainfall from December to April next year ranges between 150 mm.

Hydrological conditions:

- Dong Be has flow mode together with the flow regime of Thanh Hoa, the largest flow occurs in periods of heavy rain occurs. The rainy season starts from May to October. The flow at least in the period of rain from December to April next year.

Table 4.1: Estimated rainfall at Nhu Thanh station

$X_{1\ day\ max\ 2\%}$ (mm)	X_{year} (mm)	$C_{V\ year}$
467,5	1816,3	0,3

Source: Hydrological calculation of the works

- Dong Be is a small creek Forestry Action Figure from the slot length short and steep, poor vegetation cover, less aquatic resources.

- Distribution of annual flow: The flow in the frequency corresponding to 75%:

$Q_{year75\%}$ = 0,0204 (m^3/s);

$W_{year\ 75\%}$ = 645.787,0 m^3.

Table 4.2: Table of flow distribution in the frequency corresponding to 75%

Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Year
Q75% (m3/s)	0.0087	0.0064	0.0065	0.0047	0.0052	0.0191	0.0134	0.0636	0.0500	0.0333	0.0214	0.0125	0.0204
W75% (m3)	23302	15483	17409	12182	13928	49507	35890	170346	129600	89191	55469	33480	645787

Source: Hydrological calculation of the works

Flood flow frequency corresponding to 2% is characterized as follows:

$Q_{max\ 2\%}$ = 30,5 (m^3/s);

$W_{max\ 2\%}$ = 557,2. 10^3 (m^3).

Flood flow frequency corresponding to 1% is characterized as follows:

$Q_{max\ 1,0\%}$ = 33,2 (m^3/s);

$W_{max\ 1,0\%}$ = 612,94. 10^3 (m^3).

Table 4.3: Sediment Flow

Year	1 year	10 years	20 years	30 years	40 years	50 years
$\sum$ W (m^3)	178	1780	3560	5340	7120	8900

Source: Hydrological calculation of the works

Topography

- The Dong Be reservoir is a valley located in the mountainous area is surrounded by low hills. Height of the reservoir changes from + to + 38.00m 31.00m. The entire reservoir area is within Phuong Nghi commune, Nhu Thanh district.
- Location Figure irrigation area is relatively flat (between + + 20,0m to 30,0m), the area of arable land: 225 million ha of Trieu Thanh commune, Trieu Son district and Xuan Du commune, Nhu Thanh district.
- User slope of the project area from the southwest - northeast, toward the downstream stream Dong Be the main axis around the construction area.
- Vegetation of the basin in the form of forest regeneration.
- Area camps, parking area and beach casting components are arranged in the old managers and shoulder downstream of the dam organic, local Figure relatively flat road from Provincial Road 506 on the road Concrete 3m wide, 200 m long, is located in the Xuan Du commune, Nhu Thanh district.
- Land dam was purchased land mines Minh Son commune, a position the construction of 18 km. This is a land mine operators licensed by decision of Thanh Hoa province. Quality and yield perfectly suited to the requirements of the project. Location Figure land mine area is the land of low hills, a land mine shaft position provincial road ... 1 km, very convenient for transport operators to the construction.

Geology

Geological conditions of the route: The hills surrounding the reservoir are strongly weathered rock hill, no phenomenon cutter, reservoir rock is sedimentary.

In general, the geological conditions of the dam has on the bedrock, however due to the construction process has not previously treated thoroughly weak sediments downstream so dam seepage occurred Department of forming the dam base mud and clogging the drainage system in the dam body.

When drilling through the gravel with strong water seepage loss (especially in the position please old slot). This is the cause of the dam seepage losses.

In the area of research and development of common geological phenomena such as motivation weathering, erosion and accumulation:

- The process of weathering continuous heat generated quite thick weathering crust in the region; the weathered bedrock weathering thoroughly to fully meet the project area reaches over 5m.

- The survey found that, at present, due to the vegetation cover on the slopes well developed speed up the process of soil erosion signs of slowing down.

- No sliding phenomenon in the region as well as in the reservoir.

4.1.2 Water environment

a) Surface water

Surface water service to the agricultural activities in the project area are taken mainly from the reservoir Dong Be: through culverts under the dam and irrigation system N1 and N2. The area is irrigated by irrigation systems Dong Be responsible for the following:

- Water supply for irrigation of 255ha, arable land area of social and communal Trieu Thanh and Xuan Du commune.

Details irrigated areas listed in the following table:

Table 4.4: Statistics for the irrigated area under cultivation

Irrigation Area	Winter-Spring		Summer		Winter
	Paddy	Upland crops	Paddy	Upland crops	Upland crops
Dong Be	125	70	200	55	0

- Provide water for domestic and industrial areas with a total amount requested as follows: 2592m 3 / day, equivalent to 30l / s.

- In addition, the time limit was reached against term extension of irrigation canal system C6 Bai Thuong commune Hop Thanh Trieu Son Wins Contract from (25 ~ 60) ha.

To assess the status of surface water quality in the project area, the unit has conducted consulting ESIA took 30 samples of surface water, the criteria of evaluation, physical and chemical.

Table 4.5: Location of sampling base environment - surface water samples

Sign	Sampling Location	Coordinates
NM1	Area 3 fields hamlet, Xuan Du, Nhu Thanh district, where affected by the transport and disposal of materials in the construction process.	19°46′12,0″N; 105°33′21,3″E
Nm2	The area of the village fields 1, Xuan Du, Nhu Thanh district, where affected by the transport and disposal of materials in the construction process.	19°46′15,7″N; 105°33′09,2″E
Nm3	Ditch inland hamlet 2, Xuan Du, Nhu Thanh district, where affected by the transportation and disposal of materials in the construction process.	19°46′18,6″N; 105°33′33,7″E
Nm4	Inhabitants of the village pond Dongcheng, Trieu Thanh Trieu	19°46′30,4″N;

	Son, where are affected by the transportation of materials, earth dam.	105°33′19,5″E
Nm5	Channel N1 hamlet 11, Trieu Thanh Trieu Son, where are affected by the transport of materials, earth dam.	19°46′33,8″N; 105°33′29,2″E
Nm6	Common drain of 11 villages, Trieu Thanh Trieu Son, where are affected by the transport of materials, cost of cover, soil during construction waste in flood overflow and flood protection dike.	19°46′50,2″N; 105°33′35,7″E
Nm7	Inhabitants of the village pond Dien Binh Thanh Hop, Trieu Son, where are affected by the transportation of materials, earth dam	19°48′40,6″N; 105°53′11,1″E
Nm8	Ditch inland consumption of rural Forum Hoa Hop Thanh commune, Trieu Son is the place affected by the transport of materials, earth dam.	19°48′37,4″N; 105°55′31,3″E
Nm9	Ditch inland consumption of Middle Village Forum, Hop Thanh Commune, Trieu Son is the place affected by the transport of materials, earth dam	19°48′49,2″N; 105°33′36,7″E
NM10	Ditch inland consumption of subdivision 4, Trieu Son town, where Trieu Son is affected by the transport of materials, expensive dam.	19°49′18,9″N; 105°36′08,4″E
Nm11	Ditch criteria of subdivision 6, Trieu Son town, Trieu Son, where are affected by the transport of materials, expensive dam.	19°50′30,6″N; 105°37′11,5″E
Nm12	Ditch criteria of subdivision 6 million paints the town, Trieu Son, where are affected by the transport of materials, expensive dam.	19°50′29,3″N; 105°37′18,5″E
Nm13	N1 channel region of 11 villages, Trieu Thanh, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°48′66,2″N; 105°35′41,2″E
Nm14	The area of the village N1 channel 1, Trieu Thanh, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°48′56,0″N; 105°35′90,2″E
Nm15	The area along the canal fields N1 Trieu Thanh, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°48′72,4″N; 105°35′51,5″E
Nm16	N2 canal area in forest management station Xuan Du, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°49′22,0″N; 105°34′15,6″E
Nm17	Area fields in villages along the N2 channels 1, Xuan Du, where affected by the dike embankment construction of new sewers,	19°50′16,7″N; 105°33′80,2″E

	drained the reservoir to construction.	
Nm18	Area fields in villages along the N2 channel 2, Xuan Du, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°50′28,8″N; 105°35′61,3″E
Nm19	Along the reservoir water area between the main dam, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°45′36,0″N; 105°32′41,6″E
Nm20	Water reservoir area along the left shoulder of the main dam, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°45′35,2″N; 105°35′41,0″E
Nm21	Water reservoir property along the southern shoulder of the main dam, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°45′36,6″N; 105°34′44,2″E
Nm22	Top of the dam overflow area, where affected by the construction earthworks, construction spill.	19°45′30,1″N; 105°31′49,2″E
Nm23	Foot of the dam overflow area, where affected by the construction of earthworks, construction spill.	19°45′33,9″N; 105°32′65,5″E
Nm24	Area along the reservoir water left shoulder flood dykes, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°46′30,2″N; 105°38′71,8″E
Nm25	Water reservoir property along the southern shoulder flood dykes, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°46′30,2″N; 105°38′71,8″E
Nm26	Water reservoirs along the central area flood control dykes, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°46′83,2″N; 105°39′06,4″E
Nm27	The area downstream of the outlet, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°46′77,6″N; 105°40′13,2″E
Nm28	The central area landfill, Village 4, Xuan Du, where activities will be affected by the dumping of waste after the removal of organic in terms of key works.	19°46′26,6″N; 105°33′36,2″E
Nm29	Rural Area 4 fields, Xuan Du from landfill approximately 50m to the north, where the affected dumping waste from operations after the removal of organic in terms of key works.	19°46′79,2″N; 105°33′35,3″E
Nm30	Rural Area 4 fields, Xuan Du from landfill approximately 200m to the north, where the affected dumping waste from operations after the removal of organic ensemble clue.	19°47′28,5″N; 105°32′67,3″E

Surface water quality project area against NTR 08: 2008 / BTNMT: National technical regulation on surface water quality, level B1 - for irrigation irrigation purposes.

- PH: The surface water sample project area respectively pH value is 6.8 to 8.3, reaching QCCP;

- DO: The surface water sample project area respectively DO value is 4.3 to 6.4 mg / l, reaching QCCP;

- COD: Samples of surface water project area respectively COD value was 14.3 to 32.9 mg / l. COD value in excess regulation Nm29 position B1 level (30 mg / l) at times exceeded 1.09, but lower than the normative level B2 (50 mg / l);

- BOD5: The surface area of the sample projects BOD5 concentration is 7.8 to 16.2 mg / l. BOD5 values at the sampling location Nm29 value of 16.2 mg / l exceeding standards B1 level (15 mg / l) at a rate exceeding 1.05 times exceeded negligible and regulations remain in the B2 (25mg / l);

- Concentration of NO3-N in accordance with, in the analysis of water samples with values respectively from 0.3 to 2.9 mg / l. the results showed that levels of NO3-N in accordance with the sampling locations are within regulation levels B1 (10mg / l).

- NH4 + concentrations under N, in the analysis of water samples with values respectively 0.01 to 0.41 mg / l. the results showed that levels of NH4 + N in accordance with the sampling locations are within regulation levels B1 (0.5 mg / l).

- Concentration of heavy metals content of heavy metals such as arsenic in water samples taken in the project area are lower than QCCP.

- The water samples with concentrations reaching Colifom 1300-5900 MPN / 100ml lower QCCP.

Thus, surface water quality in the project area with the most fundamental parameters achieved QCVN 08: 2008 / BTNMT: National technical regulation on surface water quality, level B1.

The area of the reservoir upstream is the territory of the commune Phuong Nghi, with 87% of ethnic minorities, rural and mountainous areas, the industrial production is not available, sources of environmental pollutants Home mainly from agricultural production and animal husbandry. However, this source of emissions is negligible due to people living unfocused, reservoir areas are mainly forest regeneration, surface water quality in the project area can be quite good for entries For irrigation, irrigation or other uses require similar water quality.

b) Groundwater

According to the geological survey, groundwater is contained in the layer in the layers of rock and gravel. Currently the majority of households in the area use groundwater for the purpose of living and eating, a few use rainwater. The exploitation of groundwater Figure mainly wells drilled Unicef and investment by local people and use.

To assess the status of groundwater quality in the project area, the unit has conducted consulting ESIA 20 groundwater samples taken, the criteria of evaluation, physical and chemical.

Table 4.6. Location of sampling environment background - groundwater samples

Sign	Sampling Location	Coordinates
Nn1	Well off the Quang, Tan Lap village, Xuan Du Commune, Thanh district as	19°46′33,2″N; 105°33′81,7″E
Nn2	Mrs. Flowers wells, village Pig, Xuan Du Commune, Thanh district as	19°45′19,6″N; 105°33′92,8″E
Nn3	Born wells his home village Xuan Du Commune 3, Nhu Thanh district	19°45′27,7″N; 105°34′15,6″E
Nn4	Bored home Dung, Dongcheng Village, Trieu Thanh Commune, Trieu Son	19°46′96,2″N; 105°37′12,8″E
Nn5	She advised the wells, Dongcheng Village, Trieu Thanh Commune, Trieu Son	19°47′03,6″N; 105°36′19,3″E
Nn6	Touches her home village wells 11, Trieu Thanh Commune, Trieu Son	19°46′40,4″N; 105°36′28,8″E
Nn7	Bored home hero, Binh Dien Village, Hop Thanh Trieu Son	19°49′32,3″N; 105°52′11,4″E
Nn8	Ha wells his home village conditioning, Hop Thanh Commune, Trieu Son	19°49′26,2″N; 105°51′27,6″E
Nn9	Bored his house paint, Middle Village Forum, Hop Thanh commune, Trieu Son	19°48′90,8″N; 105°52′07,8″E
Nn10	Digging wells her home, subdivision 4, township Trieu Son, Son District million	19°50′16,4″N; 105°40′11,4″E
Nn11	Bored his house Binh, subdivision 6, Trieu Son town, district millions Son	19°50′73,4″N; 105°38′13,4″E
Nn12	He completed the drilling of wells, sub 6 Million Son town, Trieu Son	19°50′44,6″N; 105°38′17,3″E
Nn13	It was his home village wells 11, Trieu Thanh commune near canals N1	19°48′75,4″N; 105°35′03,9″E
Nn14	Her home village wells Snow 2, Trieu Thanh commune near canals N1	19°48′47,1″N; 105°36′38,8″E
Nn15	Three wells his home village 11 Trieu Thanh commune near canals N1	19°49′60,2″N; 105°35′80,3″E
Nn16	In his home village wells 2, Xuan Du commune near canals N2	19°51′22,0″N; 105°36′10,3″E

Nn17	Wells Hue her house, No. 3, Xuan Du commune, near the canal N2	19°50′44,8″N; 105°37′05,2″E
Nn18	His home village wells PhD 2, Xuan Du commune near canals N2	19°51′24,7″N; 105°36′18,2″E
Nn19	Three wells near his house flood overflow	19°45′88,4″N; 105°31′45,5″E
Nn20	Loan wells her house drain flood areas	19°46′51,3″N; 105°40′27,9″E

Results of analyzes of groundwater samples are shown in detail in Appendix 2.

Groundwater quality project area: Comparing the NTR 09: 2008 / BTNMT: National Technical Regulation on groundwater quality, shows:

- Hardness: Water samples analyzed hardness is 105-420 mg / l, QCCP is 500 mg / l, so the sample hardness value achieved in QCCP;

- Concentration of NO 2 - in the sample is 0.02 to 0.56 mg / l reached QCCP (1 mg / l).

- NH 4 + concentration in the sample is from 0.002 to 0.09 mg / l reached QCCP (0.1 mg / l).

- Concentration of sulfur (SO 4 2-) in the sample respectively 82-291 mg / l, reaching QCCP (400 mg / l).

- Concentration of arsenic (As) in the groundwater samples in the project area are lower than QCCP.

E. coli concentrations in colifom and groundwater samples in the project area results in QCCP analysis.

Thus, the groundwater in the project area with the fundamental parameters achieved QCVN 09: 2009 / BTNMT: National Technical Regulation on groundwater quality. This shows that the groundwater in the area is generally of good quality, can be used for the purpose of living of the people.

4.1.3 Air environment

To assess the current state of environmental air quality in the project area, unit ESIA consultants conducted 33 air samples taken, evaluation criteria microclimate, noise and toxic gases in the air.

Table 4.7: Location of sampling base environment - air samples

Sign	Sampling Location	Coordinates
MK1	Rural residential area 3, Xuan Du, Nhu Thanh district, where affected by the transport and disposal of materials in the construction process.	19°46′01,3″N; 105°33′16,7″E
Mk2	Rural residential area 1, Xuan Du, Nhu Thanh district, where affected by the transport and disposal of materials in the construction process.	19°46′10,7″N; 105°33′18,2″E

Mk3	Area 2 village, Xuan Du, Nhu Thanh district, where affected by the transport and disposal of materials in the construction process.	19°46′13,5″N; 105°33′21,7″E
Mk4	Area Dongcheng village, Trieu Thanh Trieu Son, where are affected by the transportation of materials, cost of cover, soil during construction waste flood overflow and flood protection dike.	19°46′35,6″N; 105°33′21,7″E
Mk5	Rural residential area 11, Trieu Thanh Trieu Son, where are affected by the transportation of materials, cost of cover, soil during construction waste flood overflow and flood protection dike.	19°46′37,2″N; 105°33′23,4″E
MK6	Rural residential area 11, Trieu Thanh Trieu Son, where are affected by the transportation of materials, cost of cover, soil during construction waste flood overflow and flood protection dike.	19°46′30,8″N; 105°33′26,5″E
Mk7	Area Binh Dien village, Hop Thanh Trieu Son, where are affected by the transport of materials, earth dam.	19°48′29,5″N; 105°53′07,6″E
Mk8	Area Forums Hoa village, Hop Thanh Trieu Son, where are affected by the transportation of materials, earth dam.	19°48′41,2″N; 105°55′12,3″E
MK9	Regional Forum Middle village, Hop Thanh commune, Trieu Son, where are affected by the transport of materials, earth dam.	19°48′45,3″N; 105°33′15,7″E
Mk10	Area residential subdivision 4, township Trieu Son, Trieu Son, where are affected by the transport of materials, earth dam.	19°49′19,3″N; 105°36′08,4″E
Mk11	Area residential subdivision 6, Trieu Son town, Trieu Son, where are affected by the transport of materials, earth dam.	19°50′23,7″N; 105°37′10,3″E
Mk12	Area residential subdivision 6 million paints the town, Trieu Son, where are affected by the transport of materials, earth dam.	19°50′20,4″N; 105°37′12,6″E
Mk13	The area of the village along the N1 channel 11, Trieu Thanh, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°48′66,2″N; 105°35′41,2″E
Mk14	The area of the village along the N1 channels 1, Trieu Thanh, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°48′56,0″N; 105°35′90,2″E
Mk15	The area along the canal fields N1 Trieu Thanh, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°48′72,4″N; 105°35′51,5″E
Mk16	N2 canal area in forest management station Xuan Du, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°49′22,0″N; 105°34′15,6″E
Mk17	Area fields in villages along the N2 channels 1, Xuan Du, where affected by the dike embankment construction of new sewers,	19°50′16,7″N; 105°33′80,2″E

	drained the reservoir to construction.	
Mk18	Residential areas in villages along the N2 channel 2, Xuan Du, where affected by the dike embankment construction of new sewers, drained the reservoir to construction	19°50′20,2″N; 105°35′58,4″E
Mk19	The central area of the main dam, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°45′36,0″N; 105°32′41,6″E
Mk20	Area to the left shoulder of the main dam, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°45′35,2″N; 105°35′41,0″E
Mk21	Organic southern shoulder of the main dam, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°45′36,6″N; 105°34′44,2″E
Mk22	Top of the dam overflow area, where affected by the construction earthworks, construction spill.	19°45′30,1″N; 105°31′49,2″E
Mk23	Foot of the dam overflow area, where affected by the construction of earthworks, construction spill.	19°45′33,9″N; 105°32′65,5″E
Mk24	Left shoulder area flood dykes, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°46′30,2″N; 105°38′71,8″E
Mk25	The shoulder area property flood dykes, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°46′30,2″N; 105°38′71,8″E
Mk26	The central area flood control dykes, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°46′83,2″N; 105°39′06,4″E
Mk27	The area downstream of the outlet, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°46′77,6″N; 105°40′13,2″E
Mk28	The central area, it caught Hop Win embankment, where affected by mining excavation and transportation of excavated earth.	19°49′60,2″N; 105°47′62,3″E
Mk29	First line beach area to exploit Hop Win embankment, where affected by mining excavation and transportation of excavated earth.	19°50′33,5″N; 105°46′52,1″E
Mk30	Residential areas from mining dumps 500m south embankment, where affected by mining excavation and transportation of excavated earth.	19°51′12,6″N; 105°45′52,9″E
Mk31	The central area landfill, Village 4, Xuan Du, where activities will be affected by the dumping of waste after the removal of organic in terms of key works.	19°46′26,6″N; 105°33′36,2″E

Mk32	Area 4 village, Xuan Du from landfill approximately 50m to the north, where the affected dumping waste from operations after the removal of organic ensemble clue.	19°46′74,2″N; 105°33′30,3″E
MK33	Area 4 village, Xuan Du from landfill approximately 200m to the north, where the affected dumping waste from operations after the removal of organic ensemble clue.	19°47′22,5″N; 105°32′68,3″E

Comment on ambient air quality and noise project area:

Dust concentration: To compare with NTR 05: 2013 / BTNMT: National Technical Regulation on ambient air quality, in the survey are suspended dust concentrations below QCCP TSP.

The chemical agents in the atmosphere: Values of parameters: CO, SO2, NO2 against NTR 05: 2013 / BTNMT: National Technical Regulation on ambient air quality, at the reference point monitoring the concentration of the chemical agents, the lower QCCP.

Noise: Comparing the NTR 26: 2010 / BTNMT: National Technical Regulation of noise which limits the maximum noise levels in the area of human lives, works and works and noise caused by the activities of man-made, irrespective of the type of noise source, a site of 70 dBA noise. Thus, in the survey area location space projects equivalent noise level in the range of 38-67 dBA lower than QCCP.

In general, environmental air quality project area measurement parameters analyzed achieve QCVN 26: 2010 / BTNMT, QCVN 05: 2013 / BTNMT and. This proves that environmental air quality in the project area is in good condition, without affecting the health of people living in the area.

4.1.4 Soil environment

According to data from the current use of the land in 2014, the entire project area Dong Be the reservoir has a total area of 7104 ha nature. Specifically as follows:

Table 4.8. The natural areas of the project area

No.	Commune	Total land area (ha)				
		The total area of natural land	**The total area of agricultural land**	**DT forest land**	**Land Area Aquaculture**	**DT residential land**
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Trieu Thanh	1092,06	452,21	211,12	56,77	420,09
2	Hop Thanh	668,08	405,63	19	5	121,47
3	Xuan Du	1708,74	535,35	590,26	16,80	100
4	Phuong Nghi	3634,8	419,83	2231,56	28,89	41,3

To assess the current state of environmental quality soil / sediment in the project area, the unit has conducted consulting ESIA take 33 acres / sediment, evaluating indicators of heavy metals in soil.

Table 4.9. Location of sampling base environment - soil / sediment

Sign	Sampling Location	Coordinates
MD1	The area of rural farmland 3, Xuan Du, Nhu Thanh district, where affected by the transport and disposal of materials in the construction process.	19°46′12,0″N; 105°33′21,3″E
MD2	The area of rural farmland 1, Xuan Du, Nhu Thanh district, where affected by the transport and disposal of materials in the construction process.	19°46′15,7″N; 105°33′09,2″E
MD3	Rural farmland area 2, Xuan Du, Nhu Thanh district, where affected by the transport and disposal of materials in the construction process.	19°46′18,6″N; 105°33′33,7″E
MD4	The area of rural farmland Dongcheng, Trieu Thanh Trieu Son, where are affected by transport processes and disposal of materials in the construction process.	19°46′30,4″N; 105°33′19,5″E
MD5	The area of rural farmland 11, Trieu Thanh Trieu Son, where are affected by transport processes and disposal of materials in the construction process.	19°46′33,8″N; 105°33′29,2″E
MD6	The area of rural farmland 11, Trieu Thanh Trieu Son, where are affected by transport processes and disposal of materials in the construction process.	19°46′50,2″N; 105°33′35,7″E
MD7	The area of agricultural land belonging to the village of Dien Binh Thanh Hop, Trieu Son, where are affected by the transport and disposal of materials in the construction process.	19°48′40,6″N; 105°53′11,1″E
MD8	The area of rural farmland Forum Hoa Hop Thanh commune, Trieu Son, where are affected by transport processes and disposal of materials in the construction process.	19°48′37,4″N; 105°55′31,3″E
MD9	The area of agricultural land belonging to rural Chinese Forum, Hop Thanh Trieu Son, where are affected by the transport and disposal of materials in the construction process.	19°48′49,2″N; 105°33′36,7″E
MD10	Area Sub-area land along the line 4, the town Trieu Son, Trieu Son, where are affected by the transport and disposal of materials in the construction process.	19°49′18,9″N; 105°36′08,4″E
MD11	Area of land along the road sub 6 Million Son town, Trieu Son, where are affected by transport processes and disposal of materials in the construction process.	19°50′30,6″N; 105°37′11,5″E

MD12	Roadside area under subdivision 6 million paints the town, Trieu Son, where are affected by the transport and disposal of materials in the construction process.	19°50′29,3″N; 105°37′18,5″E
MD13	The area of agricultural land belonging to the village along the N1 channel 11, Trieu Thanh, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°48′66,2″N; 105°35′41,2″E
MD14	Nghiepven land area of rural N1 channel 1, Trieu Thanh, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°48′56,0″N; 105°35′90,2″E
MD15	The area along the canal fields N1 Trieu Thanh, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°48′72,4″N; 105°35′51,5″E
MD16	N2 canal area in forest management station Xuan Du, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°49′22,0″N; 105°34′15,6″E
MD17	Area fields in villages along the N2 channels 1, Xuan Du, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°50′16,7″N; 105°33′80,2″E
MD18	The area of agricultural land in villages along the N2 channel 2, Xuan Du, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°50′28,8″N; 105°35′61,3″E
MD19	The central area of the main dam, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°45′36,0″N; 105°32′41,6″E
MD20	Area to the left shoulder of the main dam, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°45′35,2″N; 105°35′41,0″E
MD21	Organic southern shoulder of the main dam, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°45′36,6″N; 105°34′44,2″E
MD22	Top of the dam overflow area, where affected by the construction earthworks, construction spill.	19°45′30,1″N; 105°31′49,2″E
MD23	Foot of the dam overflow area, where affected by the construction of earthworks, construction spill.	19°45′33,9″N; 105°32′65,5″E
MD24	Left shoulder area flood dykes, where affected by the construction earthworks, construction spill.	19°46′30,2″N; 105°38′71,8″E
MD25	The shoulder area property flood dykes, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°46′30,2″N; 105°38′71,8″E

MD26	The central area flood control dykes, where affected by weathering processes peeled peaches, dam construction, reinforced roof.	19°46′83,2″N; 105°39′06,4″E
MD27	The area downstream of the outlet, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°46′77,6″N; 105°40′13,2″E
MD28	The central area, it caught Hop Win embankment, where affected the dumping of waste from operations after the removal of organic in terms of key works.	19°49′60,2″N; 105°47′62,3″E
MD29	First line beach area to exploit Hop Win embankment, where activity is affected from the dumping of waste after the removal of organic ensemble clue.	19°50′33,5″N; 105°46′52,1″E
MD30	The area of agricultural land from mining dumps 500m south embankment, where activity is affected from the dumping of waste after the removal of organic ensemble clue.	19°51′18,63″N; 105°45′55,9″E
MD31	The central area landfill, Village 4, Xuan Du, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°46′26,6″N; 105°33′36,2″E
MD32	Rural area of paddy land 4, Xuan Du from landfill about 50 meters to the north, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°46′79,2″N; 105°33′35,3″E
MD33	Rural area of paddy land 4, Xuan Du from landfill approximately 200m to the north, where affected by the dike embankment construction of new sewers, drained the reservoir to construction.	19°47′28,5″N; 105°32′67,3″E

Comments soil environmental quality project area: Reconciling with NTR 03: 2008 BTNMT- National Technical Regulation on maximum allowable limits of heavy metals in soil - soil for agricultural purposes shows :

- Arsenic: Arsenic concentrations in soil samples was 0.35 to 8.83 mg / kg lower QCCP (12 mg / kg);

- Cadmium: Cadmium concentrations in soil samples respectively from 0.10 to 1.84 mg / kg, lower QCCP (2 mg / kg);

- Bronze: copper content in soil samples respectively from 1.86 to 26.05 mg / kg lower QCCP (50 mg / kg);

- Lead: Lead concentrations in soil samples respectively from 2.44 to 41.15 mg / kg, lower QCCP (70 mg / kg);

- Zinc: Zinc content in soil samples respectively from 6.91 to 72.06 mg / kg, lower QCCP (200 mg / kg);

The analysis results showed that soil samples in the project area no sign of soil pollution by heavy metals, indicators of heavy metals are very low compared with the permissible limits.

4.2 Biological environment

4.2.1 Plant populations

The project area has 3052 hectares of forest land, accounting for 43% of total natural area.

The plants are relatively diverse, forest growth and normal development with a number of key species: bamboo, sienna ... However, around the reservoir Dong Be the planting forest cover, species composition, mainly those trees planted by people like eucalyptus, acacia, sometimes mixed with shrubs, grass and some fruits like Mango, Jackfruit, Lemon, Guava .... Most of the new plant should be small relative low less than 10cm in diameter and less than 5.0m, the value is not large. Natural vegetation cover only the lower species of grass or herbaceous plant native roadside bushes groups. Poor vegetation cover has no economic value.

To assess the biological diversity of phytoplankton, consulting units were sampled phytoplankton at the sampling site surface water, as presented above.

Results of soil analysis / sediment details are shown in Appendix 2.

Results of analysis of the algae was determined in the presence of 29 species of algae, 5 branches Bacillariophyta (diatoms), Chlorophyta (green algae), Cyanophyta (Apple), Euglenophyta (Algae Eyes) and Pyrrophyta (Algae two Trench).

Green algae industry has the largest number of species with 18 species accounted for 62.07%. Followed by 4 species of diatoms sector (13.79%), 3 species of blue algae industry (10.34%), industry and sector Algae Algae two free eye lowest two species (6.90%).

Table 4.10: Floating flora in Dong Be reservoir

No.	Species	Number of species	Percentage %
1	Bacillariophyta	4	13,79
2	Chlorophyta	18	62,07
3	Cyanophyta	3	10,34
4	Euglenophyta	2	6,90
5	Pyrrophyta	2	6,90
Total		**29**	**100**

The analysis results showed that the density of algae, algal cell density average 133,613 cells / liter, ranging from 110 700 to 152 300 cells / liter. N2 canal area in forest management station Xuan Du highest density 152 300 cells / liter. Organic southern shoulder of the main dam has the lowest density of 110,700 cells / liter.

Comment: The structure of phytoplankton species composition does not have the dominant species of the absolute, consistent with the characteristics of species of freshwater algae Vietnam. Water environment in the project area is not contaminated, not detected any species listed in the Red Data Book of Vietnam (2007).

4.2.2 The fauna

About forest animals: Through investigation, interviewing local people to see the rare animals in the project area as tigers, leopards, pythons, serow, bear, porcupine, Pangolin no, sometimes catch see reptiles (snakes), amphibians (frogs, imitation), rodents (rats, porcupines).

On land animals mainly some birds such as warblers, finches, hummingbirds, ... There are also a number of other species such as mice, reptiles (snakes water, drain snakes), amphibians (frogs copper, Annam tree frog), and domestic animals such as cattle, pigs, chickens ....

The natural species: Previously, due to the massive exploitation of forests throughout the basin for many years has led to the overfishing of species of economic value such as turtles, Baba makes them almost extinct . Currently the only species in the reservoir shrimp, crab, fish ball, carp, carp, carp ... is a species of high economic value, farming and fishing are popular.

The fish species: The reservoir area residents still fish ponds. The fish species mainly Sesame fish, carp, tilapia unisexual, carp ...

No species of rare animals, the red book that should be preserved within the project area.

To assess the biological diversity of zooplankton and benthic organisms in the region, consulting units were sampled zooplankton, benthic organisms in the sampling locations of surface water environment, as presented above.

Results of soil analysis / sediment details are shown in Appendix 2.

Zooplankton species composition project area mainly species in waters unpolluted water. The density of individual average level, there is no dominant species absolute. Unidentified species listed in the Red Data Book of Vietnam (2007).

Species composition of benthic organisms project area is diverse, individual density in the average level. This is a common species in fresh water and unpolluted. Unidentified species listed in the Red Data Book of Vietnam (2007).

General comments on the current state of biological resources: Results From the collection and identification of biological samples in the survey area shows the current status of biological resources in the project area on average, species composition relatively abundant vegetation. The species is distributed in the region is the most common species, with wide ecological spectrum, typical habitats of freshwater reservoir, no species listed in the Red Data Book of Vietnam (2007).

4.3 Socio-economic characteristics

4.3.1 Assessment of secondary data

The project area is mountainous rural region of two districts of Nhu Thanh and Trieu Son where local people still have many difficulties in their lives. Main industry is agriculture with low productivity. Conditions of health care, education, communication, traffic are under-developed.

a) Area and population

The project area includes 4 communes: Phuong Nghi, Xuan Du commune of Nhu Thanh district and Trieu Thanh, Hop Thanh communes of Trieu Son district. Natural area is 7103.68 ha; agricultural production area is 1813.02 ha; forest area is 3051.94 ha; aquaculture area is 107.46; residential area is 682.86 ha. The total population is 24,716 people.

The entire reservoir area is located in Phuong Nghi commune but it is not benefited from irrigation water of the Dong Be reservoir. Due to the project on dam rehabilitation, the water level in reservoir will not be raised and the impact on the environment and society is relatively small.

Hop Thanh commune is 6km away downstream from the dam where receives very little benefit from irrigation water supplied by Dong Be reservoir. In case of drought, Dong Be reservoir will help irrigation water for the remote area from (25 ~ 60 ha) of C6 canal in the Bai Thuong irrigation system where also in Hop Thanh commune, Trieu Son district.

There is no other environmental and social impact in these two communes than problems in traffic, transport of materials through the provincial road No. 506 that increase in the construction phase.

Therefore consultants selected sampling survey only in Trieu Thanh and Xuan Du communes with basic data of the area and population as follows:

Table 4.11: The area and population of the surveyed communes (February, 2015)

Commune	Natural land area (ha)	Population (people)	Number of households	Percentage of ethnic minorities (%)	Percentage of females (%)
Xuan Du	1708.74	7229	1602	35	49,2
Trieu Thanh	1092.06	5792	1544	30	53
Total	**2800.8**	**13021**	**3146**		

Aggregate data showed that the population of the two communes in the project area is not much different. The average population density is 475 people/km2, 1.5 times higher than the average population density of Thanh Hoa province of 312 people/km2 (GSO, 2013). The person per household of two communes is about 4.1 persons/household, similar as statistics of Thanh Hoa province of 4 people/household. Average percentage of ethnic minority (EM) of the two communes is 32.5%.

The area of average agricultural land of household in the two communes is approximately 0.3 ha / household. On the residential area, Xuan Du commune covers an area of residential land on average of 600 m2, lower than 2700 m2/household in Trieu Thanh commune. Xuan Du commune is the main benefited commune from Dong Be reservoir with command area of 225 ha, while Trieu Thanh commune has only 24 ha of irrigation from the reservoir.

Table 4.12: Land use in surveyed communes

Commune	**Natural land (ha)**	**Agricultural land (ha)**	**Forestry land (ha)**	**Aquaculture land (ha)**	**Residential land (ha)**
Trieu Thanh	1092.06	452.21	211.12	56.77	420.09
Xuan Du	1708.74	535.35	590.26	16.80	100.00

b) Infrastructure

- Transportation

In the project area roads associated rural roads is relatively developed, now has 100% of the communes motorways going to be the town center; most of the other technical infrastructures are automobile route to take place. The project area does not have any Highway running through, only 506 provincial roads run through the area of the town, the total length of 6.5 km, asphalt is relatively good.

There are 02 routes passing through areas of construction:

The road from the junction Trieu Thanh under the Provincial Road 506 1.7 km long and 1 rural concrete road 300m long, runs through the town center to shoulder Xuan Du existence of the main dam. The total route length: 2 km. This route will be used primarily for the transportation of materials in the construction phase of the dam and irrigation drains.

The road from the junction Trieu Thanh commune run way through flood overflow and flood protection dike connecting with Dong Be reservoir. Includes 2 km of rural roads and concrete road 700 m of land not upgraded. This route will be used primarily for the transportation of materials in the construction phase of the flood control dike (dam) and flood overflow.

- Electricity

Currently Electricity and Electricity As Trieu Thanh Son is the direct management of rural power grids in the project area. Recently, though electricity and district administration has made efforts to invest, upgrade, improvement, but the power system in rural areas are still not safe. Most of the electrical system has been used for 15-20 years so seriously degraded, especially the way zipper to the household. Meanwhile, people's perception of safety knowledge grid is very limited, so the risk of accident and loss of grid security is very high.

Sources and grid electricity supply in the region are operating normally. Overall grid area of the town on the project and the neighboring villages were covered over, basically meet the needs of the people's power consumption. Households near the construction sector has also used the national grid. However, in the case (headworks) basic population is so far outside the pulling power of the 0.4 KV schools can arrange independent generators in the field.

c) Culture

Phu Na, built in the early 19th century, situated in the Xuan Du commune, Nhu Thanh district. Phu Na created in the divine touch, charming with lots of natural temples worshiping gods and coordinate human spirit, but more striking is the church of templates: Lieu Hanh Princess.

Phu Na is 3 km from Dong Be dam to the north-east, 500 m from the provincial road 506.

Phu Na festival lasts throughout the day from January to March every lunar far nam. Early January, Phu Na has welcomed nearly 14 thousand passengers on spring travel, pilgrimage. According to festival organizers said, the Figure ensure security and hygiene, environmental focus and implementation closely. Especially the prevention of forest fires beside the festival is safe.

In these days where visitors from participating in the festival growing, but most were relieved when the Phu Na. In the Phu Na festivals, rituals also features the world worship sample are shown bold. Besides activities sacrifice, ritual activities, the arts and cultural activities, folk games are also local organizations and contribute to enliven the festivities. Negative festival features Na became the spiritual and cultural activities of the people of Thanh Hoa and tourists to the New Year, spring.

Figure 4.1: Phu Na festival in Xuan Du commune, Nhu Thanh district

d) Migration

Some features and similar in the two communes rate long-term migrants and seasonal migration is relatively large. Included all two types of migration, the migration of the population in the range of 15% - 30% of the population of each village. Especially as Xuan Du commune with over 1300 employees who travel outside the communes and 32 migrants have a term abroad brings significant source of income for the family. Migrant workers abroad to export tends to rise as the local authority has determined this is one way to effectively reduce poverty. The female workers often work as Hanoi, cooking, masonry, selling clothing, agricultural products. Many women in the social workers had to Taiwan to help the family, or as garment workers, factory assembled in the electronic components.

Migration has brought a significant source of income for families in the commune and that funds for agricultural development for many households by income from migration can average a month with average income within 6 months from agriculture. The field work such as plowing gradually mechanized and households with migrants lack of manpower used remittances to pay for plowing hired by machinery. However, migration also creates negative consequences such as burden of farm work and family set off on the shoulders of the woman in the back; or are elderly home care to children and this can profoundly affect the psychology of the child to live away from their parents long as families migrated to the south of both spouses, and to children for grandparents, relatives caring relatives.

e) Water use and management

Dong Be reservoir is used to store the water in the reservoir for irrigation for agriculture, water supply, fisheries and flood control. Ho Company Ltd. is a member exploit Chu River irrigation management and operation of water supply for irrigation of 255 hectares of Xuan Du, Trieu Thanh commune and The City. Also reservoir water also some aquaculture area of the commune. During operation, the reservoir is also the company combined Chu River flood control project.

At the station manager Dong Be the reservoir, there are three officers of the Company standing Chu river management and operation of the reservoir. The cost of operating and maintaining the Company's annual pool of about 350 million from the state's irrigation charge level. However, according to the records management staff, the only source of funding to meet the operational and maintenance, repair often, not enough to carry out major repairs while the reservoir was degraded after time long operation. Due to the structure of the current dam safety should not only keep the reservoir water level lower than ability, plus the amount of leaking water drains should not ensure the water supply for irrigation in late March and 4 dry season. The N1 and N2 irrigation brick building has long been due to serious degradation, erosion positions were dropped, very low hydraulic conductivity.

Every case, the scheduling communal agricultural production and water use requirements Song Chu sent to the Company to prepare operational plans. Each phase of the reservoir water level lasts about a week. During that time, the team of social irrigation in the irrigation layout operator opens the drain on the infield irrigation system to bring water to the fields. Irrigation force members are mostly elderly men and rural communities is proposed to undertake the infield irrigation.

f) Features of reservoir unsafety

The Dong Be dam is earth dam constructed since 1989, completed and put into operation in 1991.

In May 1991, the water runned high exceeds 70 cm to erode spillway, downstream flood overflow, seepage through the dam body, powerful probe doang open drain. Dong Bun village of Xuan Du commune was flooded then it was designed additional flood protection dike dam

300m from left shoulder and cut through the reservoir dam expansion, repair slopes spill itself, backyard with conventional concrete .

In 1996, major flood reservoir dam breaks, flooding and loss of 20 ha of rice and crops and property of the people in Trieu Thanh commune. In 1997, after this incident, the company invested Chu River irrigation repair flood overflow, additional wrap filled with concrete on concrete, lasting backyard filled, sealed manhole repair. In 2003, the company continues to make waves on the top of the dam wall, covering additional downstream of the dam body, which drains from the surface down to the foot of the dam and downstream drainage material combined filter bed feet downstream .

After 20 years of operation, the effects of weather over time affects the safety of the reservoir. Along the length of the dam location appears more permeable, roof tiles in the upper number is falling, peeling choppy. The upstream toe of the slope, the middle dam, sinking hammock, flat roof design than lead to unsafe work. Drain water is not guaranteed by construction should be open slots fade unsealed lead to water, valve problems. Concrete sewer pipe itself was badly damaged, the concrete was much mulch reduces the intensity, some sections of the reinforced openings. In flood overflow, overflow concrete face many seats were peeling, broken power consumption levels passages. Section from the managers to the foot of the dam are still dirt roads, often muddy, hard to go back in the rainy season and reduced ability to cope with the problem of operating personnel.

The investment in the repair of the unit's management should limit the work day a degraded. The residential area, irrigated area in downstream reservoir are vulnerable to unsafe work when crash. When the flood risk unsafe reservoirs, Trieu Thanh commune displaced about 100 households out of dangerous places.

4.3.2. Assessment of primary data

a) Economic structure and main income

In terms of economic structure, both two communes have proportion of agriculture higher than the handicraft industry and services (non-agricultural) as illustrated in figure 1 below. According to data in the socio-economic reports of CPCs, ratio of agricultural population of the Xuan Du and Trieu Thanh commune is 96% and 91%, which demonstrates the high economic proportion of agriculture. However, the income per capita of Xuan Du commune is 22.9 million/year higher than Trieu Thanh commune of 12.8 million/ year.

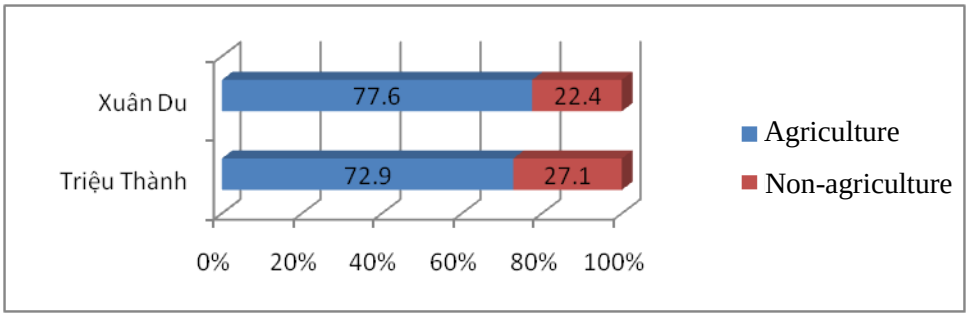

Figure 4.2: Economic structure

Interview results also show high proportion of households engaged in agriculture. Occupations that members of the interviewed households were gathered including (1) Laborless, (2) Agriculture, forestry and fisheries, (3) Business and services, (4) State's personnel, (5) Students, (6) State, industry, (7) Workers (8) Retirement, (9) Hired work, (10) Jobless. The figure below shows the percentage of people of agriculture, forestry and fisheries (2) was 46.7%. This rate is lower than the percentage of households agricultural commune in the statistics is due to agricultural households include those who do other jobs, such as students, accounting for 25.8% or employees or the retirement accounting for nearly 10%.

Percentage of people without jobs is very low, only one case in the sample, accounting for 0.2% rate. Percentage of vocational trade, services, capital, and industry is also very low, respectively, 1% and 0.2%.

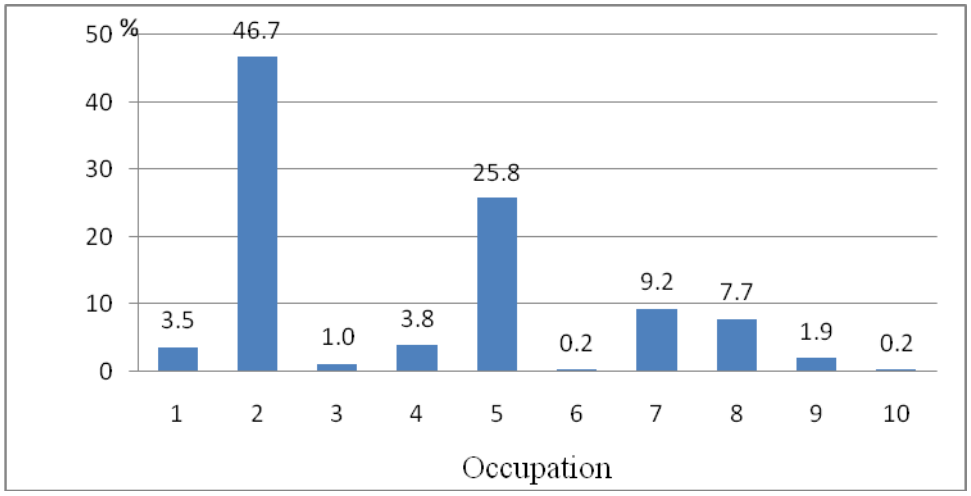

Figure 4.3: Ratio of occupation of household's members

The main income of almost people in project site is agriculture including crop cultivation and domestic husbandry. The main crops cultivated by the local people include paddy rice, maize, soybean, groundnut, sugarcane, vegetables and some fruit trees. Depending on locality and water resource, Farmers in the project area produce two (one rice + Up-land crop) to three (two rice + Up-land) crops per year. However, in the surveyed localities, a lot of people suppose that their current agricultural production is precarious because of depending too much on weather and operation of irrigation reservoir. It is special that Trieu Thanh commune has 19 small reservoir functioning irrigation for agricultural production.

Besides the income almost from rice farming, a lot of farmer HHs in the districts plant sugarcane to provide raw material to Lam Son sugar factory. The sugarcane area of Xuan Du and Trieu Thanh communes are 32 ha and 50 ha. It seems that the income from sugarcane is reflected by the negative reviews because of unstable sugarcane price of the sugar factory. In the group discussions in Trieu Thanh commune, it was said that, due to high sugar inventory, the factory doesn't buy HHs' sugarcane or in case of purchase, they underestimate value of the sugarcane to reduce price, that makes serious impacts on sugarcane farming HHs. Especially, Xuan Du commune has advantage of peach tree cultivation with high economic efficiency and big income for many households.

The domestic animals raised in the project area are cows, buffaloes, pigs and poultries. The cattle are raised for draught and for selling. Poultries are rarely sold and mainly for family consumption (daily food). Some households developed model of household's farm. Fluctuation of cattle prices also affect considerably farmers. The incomes from selling some cattle and pigs are used for purchasing household furniture, assets, etc.

Poverty is one issue in the group discussion with people in the communes. Xuan Du commune has poverty ratio of 3.2% while Trieu Thanh has higher ratio of 22.9%.

b) Education

Both are social survey system at three levels of education preschool, elementary and junior high school. Educational facilities, supplies of communal schools are equipped. Extension study was conducted in the commune is motivating students to achieve academic competition achievements, recommended for grade school, school, family, clan, village striving. Study Promotion Association organized gift giving encouragement of high-achieving students, students gain competitions at all levels and good teachers provincial and district levels. Each

commune also has community learning centers are often organized extension activities, dissemination of scientific, technical farmers in the village.

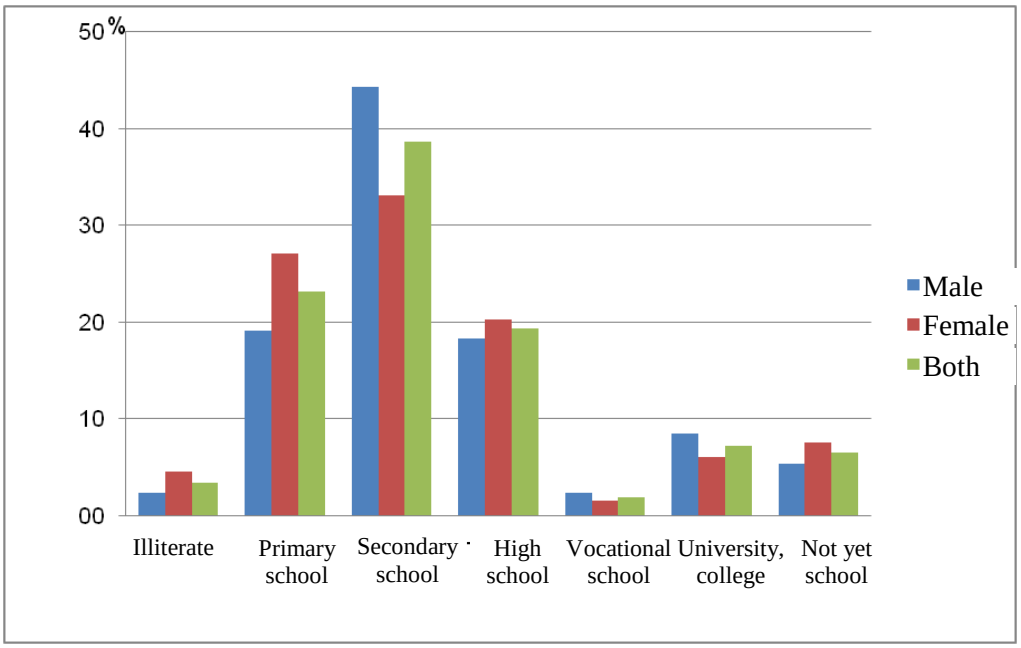

Figure 4.4: Education level of members

The chart shows the aggregate results of the educated people are members of the households surveyed by sex. The chart shows that nearly 40% of people with education junior high school level and the rate of men and women at higher levels. The illiteracy rate around 3% of that amount to more women. Percentage of people attending school or vocational secondary level is quite low, only 2%, but the rates were much higher university degree with 8% divided equally among both men and women. So, basically the people here have been compulsory education to all primary, most of them are literate.

8% of households with children in school age (5-17 years old) but was absent from school, including 16 boys and 10 girls. The cause of all these cases is due to economic hardship to families of children out of school to help employees work producing family.

c) Health care

As for manual labor of farmers, health is a very important factor to maintain production and life. In the past year, with 86% of the households surveyed have a sick person. Among them, 76% of colds, flu, 26% of people with respiratory diseases, and the rest of malaria, cholera, hepatitis, high blood pressure, accidents and injuries. With common illnesses such as colds, flu, cough, rhinitis, up to 65% of the people to health care in CHCs. Choice of health care people are second in district hospitals with 62% of respondents. And about 22% of people in the provincial hospital treatment, no treatment cases in the central hospital.

As reported by Xuan Du commune, number of households using water hygienic 92.5% of households have sanitary latrines is 82.5%. However, 60% of people said that the factors that adversely affect people's health such as foods, vegetables and unsafe drinking water sources contaminated. Especially near the households in the cemetery reflects their well water contaminated clearly seen. Thus, 75% of people have health insurance to reduce the likelihood that health care costs in the year.

When asked about the disease through sexual transmission (HIV / AIDS), only about 50% of people are aware of this problem. Most people (88%) is still the notion that AIDS is an incurable disease. However, 90% of people were aware of the precautions such as not sharing

needles and used condoms during sex. Mostly people absorb information through Figure broadcasts on television (92%) and others from the community meetings (25%).

In a commune in the project area have commune health stations with the basic information in the table below. Halls clinics are the 4 levels, built so long old. Each station can range from 11 to 14 beds, with rooms divided into as clinics, clinic, the room, pharmacy. Only station pages, minimal equipment to treat common diseases in the locality. Each station has 5 to 6 staff, including one doctor (head station), 2 doctors, 2 and 3 nurses.

Table 4.13: Infrastructure of clinic centres

Commune	Clinic centre	
	Number of staff	Number of patient bed
Xuan Du	6	14
Trieu Thanh	5	11
Total	**11**	**25**

Figure 4.5: Clinic centre of Trieu Thanh commune

d) Water supply and sanitation:

- Water supply

The majority of the project area households surveyed bathing water activities use water wells and water wells (90%), the rate of use of other water sources is 10%: households use water from the Dong Be reservoir.

Source of drinking water

If the notion of relatively clean water in rural areas, so the sources are included: water wells / dug, rain water 98% of people in the project area is relatively assured supply of water for

drinking. However, it must be noted that people in the project area do not use water ponds and reservoir used for drinking water.

Thus, in the project areas surveyed, water for drinking and domestic use are not being met in terms of quantity and quality thus keeping the water during a water shortage may work best meaningful solidarity with the people in the project area.

- Sanitation

There are 5 main reasons have a negative impact on the health Figure out the level from high to low is polluted water, polluted areas, food insecurity, disease and lack of water appears more activities.

Two of the five most important cause adverse impacts on public health issues related to water is polluted water and lack of water.

According to the survey results, survey shows that in the area surveyed to 82.5% of households use latrines. More than 90% of construction waste disposal oven at home.

4.3.3. Gender analysis

The group discussions in two communes involved a half of women consulted on gender and other issues related to the project. Some interviews with key informants such as President/ Vice president of Women Unions and CPC leaders were conducted.

- Women and the division of labor by gender:

Women account for more than a half of population (49.2% in Xuan Du and 53% in Trieu Thanh) and a significant percentage (near 60%) in labor force in two communes. The middle-aged women and men are the main labor force participating in agriculture activities in project area because almost young men go to work far from the localities. Information collected from group discussions shows that the phase of harrowing which is before undertaken by men. The activities such as seedlings transplanting, fertilizing and weeding have been still done by women. Many women and men who migrate to the northern areas often return home when the seasons come to more actively participate in the production stage. Men still play a decisive role in making the production investment direction of the household.

In the project area, women undertake about 80% the hard household chores and work more than men 10 to 12 hours per week. Housework division still remains as traditional. In family, women take the main responsibility of housework and taking care of children. Although a lot of men think that they should share housework with their wives, but in fact, average time of working of women is much longer than of men. As the result, women are too busy and have no time for relax. By estimate, in two communes, average time that a woman works per day reaches about 10 to 11 hours. Almost women are farmers but beside the income-generating activities, women are also overloaded with almost household chores and taking care of family's members.

The traditional concepts about gender and obstacle on time have hindered women's participation in decision-making at community. The gender analysis result also confirms that women's understanding on the proposed projects and their participation into community's monitoring activities are more limited than men. This means that the future training on gender of the project should more highlight and emphasize on that women need more share from their family's members in household chores to have more time for relax and health-care.

- Women and health-care:

Access to health clinics is important for women. It means that they and their children are able to recover more quickly. For women, this is especially important, not only because women

and children tend to fall ill more often but also because they do not have to stay home so long to tend to their sick children. Each commune has public health-care centre and each district has hospital. Most ethnic minority women give birth at the health care centre of the commune. The villagers presently could access easily to the commune health care centre or village's nurses.

However, results of the consultations and group discussion show that women with gynecological problems make up the high rate in almost localities. In the group discussions, it was said by lots of people that the reason for gynecological disease is related to environmental condition and working environment of women (unsafe water, lack of sanitary bathing places or flood). Moreover, many other opinions mention the limited knowledge on disease prevention and treatment of both men and women. A lot of men expressed that they have never heard or discussed about prevention of diseases of the reproductive organs and are not aware of that husband needs to have coordination activities with his wife in gynecological treatment. Therefore, there should be the programmed improving knowledge of both men and women including the ethnicity on reproductive health and gynecological treatment.

- Issues related HIV/ AIDs:

Construction for long times could increase the risk of HIV/AIDS infection with a greater influx of outsiders as construction workers. The Women Unions, in collaboration with health centres, should pay more attention and have to conduct regular awareness campaigns on HIV/AIDS at the commune level.

- Women and domestic violence prevention

Since the Law on Gender Equality and Domestic Violence Prevention was passed 2007, there are some progress recorded in the project area, especially in increasing awareness on gender issue and implementation of the capacity building program on gender and domestic violence prevention. Before, domestic violence was considered as the internal matter and then solved and kept secret in family without any interference of others.

The participants of group discussions expressed that the cases of domestic violence has much reduced compared with 5 years before thanks to various communication programs on gender equality promoted. In case of receiving any reports of domestic violence, the local authorities and neighbors will intervene to protect the victims or women. This is considered as a significant progress to the situation of community's indifference and carelessness to violence against women happening popularly in rural area before. However, the participants of group discussions expressed that a lot of men still beat their wives as being drunk. Although essence of ethnic minority people is fairly benign but due to drug addiction and poverty, they may feel sorrow, falling deep into drinking and cause more domestic violence.

- Women's participation in village's community

Women have more actively participated into the community's activities as village's meetings. According to group discussions, the women are generally active participating into training course on agricultural techniques at local dispel the current view of reality "men learn but women practice". The women union is considered as a dynamic mass organization at grass root level and plays an important role in economic development activities and environmental protection of localities. Commune Women Unions are the core member of various programs such as environment protection programs of village, new rural construction and propagation of HIV prevention, prevention of trafficking women and children, monitoring the resettlement programs and programs of new rural development.

Locals appreciate the role of women in the successful implementation of micro-credit program for families and they are in need of capital for economic development, construction

and repair of sanitary facilities. All commune governments have recognized the WU as one of the most active organizations in the community. However, women are just as undertaking forces who are actively involved in community activities, but don't have the corresponding voice and position in the decision-making at all levels involved.

- Gender equality and political participation

There are a lot of examples demonstrating the progress in gender equality issue in localities within project area since the Law on Gender equality issued in 2007. WU's members and leaders of communes and population generally state that, there are a lot of progresses in gender equality issue compared with 5 years ago. Currently, men, including EM men, have more shares with their wives in housework such as cooking, washing and taking care of children. The change of putting both name of husband and wife into LURCs is evaluated as an important legal foundation to protect women's rights in HHs. This becomes much more practically effective to protect their rights when the compensation on affected land or other assets will be implemented for these districts in future.

Women's position has been improved, although still slowly. There have been more women recruited in authority units. There have been more women participating into grass root level authority and party. Currently, women have better understanding on social, economic and cultural issues. Living quality (health, clothing, housing, transportation and cultural demand) has been being improved; birth ratio of commune has significantly reduced, from average of 3-4 children/ woman to 02 children/ woman.

However, there are a number of three children or more in a EM HH. Conditions for women to further study are not favorable due to the burden of production and family care. The commune conference commented psychological inferiority, limited communication skills and tight time budgets are these factors reduce the opportunities for advancement of women. In addition, they are faced with gender stereotypes. This is still the traditional concept "preference for boys over girls" and disregard for organizational capabilities of women because thinking that male leaders are always better than female leaders. Psychology of "preference for boys over girls" remains popular among populations of all communes.

PART V. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

5.1 Sub-project environmental and social screening

5.1.1 Environmental and social screening

Environmental and social impact screening is presented in Tables 1 and 2 of Annex A4. The main results of environmental and social impact screening of Sub-project: Dong Be Dam Rehabilitation and Safety Improvement, Xuan Du commune, Nhu Thanh district, Thanh Hoa is as follows:

Most of the environmental and social impacts of subproject are non-adverse effects or at low level that can be mitigated and recovered. According to list of impacts, documents are required to complete this sub-project as follows.

- ESIA report and its appendix:

+ Gender development plan

+ Community health protection plan

+ Media and community capacity building

+ Complaint solving mechanism

- Report of resettlement action plan

- Report of dam safety

5.1.2 Ethnic minority screening

The ethnic minority screening was carried out on the basis of the area of influence identified by the environmental and social impact assessment. Mostly Kinh people are living in areas affected directly/indirectly and benefited by the sub-project while ethnic minorities are living in the highland area. Within the project area, there are 145 ethnic minority households in Xuan Du commune, while no ethnic minority household lives in Trieu Thanh commune. Ratio of ethnic minority in the project area is 5% in total. There is no adverse impact of the sub-project to ethnic minorities in the project area. Moreover, all of them are beneficiaries in the irrigation command area of the sub-project.

The free, prior, and informed consultation (FPIC) was implemented with ethnic minorities in the Xuan Du commune. Almost EM communities living in the project area for long time are Muong groups. Although they have their own cultural identity presented through traditional festivals and languages, they still live together with Kinh people in the villages in the house style of Kinh people and communicate in Vietnamese. Therefore, it seems difficult to distinguish the Muong from Kinh people.

The Muong and Kinh people live together, have good solidarity and assistance with each other in production and daily life. Generally, a lot of EM people are not really good at doing business like Kinh people. They also lack investment capital for production. The main source of income derives from paddy rice and sugarcane, however, paddy rice is enough for domestic food demand and sugarcane is purchased in unstable price, the income of the HHs, especially EM HHs, is not improved.

All of ethnic minority people in the consultation meeting agreed to the dam rehabilitation and safety improvement. They acknowledged the project objective to ensure safety of people living in the downstream of dam and maintain stable water supply for agriculture. Influence of construction on water supply was also mentioned. However, people agreed to the application of appropriate construction methods without influence on water supply and emergency water supply planning during construction. They expected that rehabilitation of the reservoir would

improve irrigation service for their agricultural production. In addition, they proposed to project to support agricultural extension with demonstration of high-income agricultural models combined with training on advanced techniques for farmers.

Results of the EM screening confirmed a low proportion of EM (5%) in the area affected by sub-project and no adverse impacts on EM. However, due to the time constraint of the field survey while it was carried out near the Lunar New Year Holiday (people are busy with festival activities), it was difficult to gather full number of ethnic minority households in the project area to have comprehensive consultation with them. Additional studies on situation of EM and their demand in the project will be conducted in the upcoming time of the project. Its results will be useful to prepare an Ethnic Minorities Development Plan for the sub-project.

5.2Environmental and social positive impacts

a) Dam safety

During the operational phase of risk management, incident occurs mainly due to dam break flood or flooding downstream reservoir.

The cause may break in operation:

There are four main causes birth dam failure include: Bleeding overtopping the dam; Leakage flow through the dam; Because the foundation is unstable; Due to the unstable slope (sliding roof).

- The incident happened dam failure caused by water overtopping the dam is the phenomenon when the flow of water to the rapid and large reservoir beyond the capacity of the overflow discharge and water storage capacity of the reservoir. When water overtopping the dam, at the weakest point soil will erode and form cracks and then expand across the dam body.

- Incident dam failure due to leaks in the dam when the flow through the dam leaks eroding growing, washed material particles in the dam forming cracks. The flow is increasing as more and larger cracks. When cracks can grow led to the collapse of the upper layers of material to create a flow openings like in the case of open channel flow overtopping the dam.

- Incident dam failure due to unstable foundations often occurs when large shocks such as earthquakes or the dam body weight greater stamina foundation.

- The fixed roof dam failure due to instability occurs when the shear force of the material of the roof dam imbalance than the weight as well as other pressures generated (water pressure, earth pressure,)

The major effect when the incident:

- Flooding downstream will directly affect residential areas downstream. Although headworks pool renovation was to reduce the risk of dam failure, but the increase over the overflow discharge downstream design flow for a short time will make the downstream water level rises.

- The impact on the health of people, flooding, soil erosion, contamination of water sources for living, cause the diseases related to water and sanitation, and damage to property and plantations agricultural people .

Therefore, the reinforcement and rehabilitation of the reservoir will increase dam safety, reduce the threat to life and property of the residents. Specifically, 100 households (about 500 people) in the residential areas of two communesin the downstream of dam (Dong Bun village ofXuan Du commune and village 9, 10, 11 of Trieu Thanh commune) and the yield on 20 hectares in the Trieu Thanh commune will be secured.

b) Positive impact on the socio-economy

The project will bring many benefits to the people, namely increased productivity and agricultural output, increased services, aquaculture development through enhanced irrigated area, disaster risk reduction. Industry after the construction of irrigation will ensure stability for 255 hectares of irrigated rice production under the current area of Trieu Thanh commune, Trieu Son district and Xuan Du commune, Nhu Thanh district; Limiting the negative impact on the environment, landscape and downstream reservoir. Increased production and non-agricultural business development through agriculture, increase income and improve living standards. Creating more jobs, especially for the group hired as the main occupation or sideline, reduced harvest time and contributes to poverty reduction.

The positive impact includes large parts of disadvantaged groups benefit. Those who have benefited land produce most directly affected by irrigation.

The subproject will not only ensure dam safety but also ensure adequate water storage for irrigation water supply in the field, to improve the situation in the dry months due to lack of water and the resulting increasing productivity of crops. Agricultural productivity is improved (or at least stable) in some areas by reducing the risk of flooding or water shortages in the dry season.

Attractive employment opportunities will reduce the unemployment of women and men, increasing their level of participation in the labor force in all other occupations and incomes of families and increase revenue society. With rising incomes, household spending will be more comfortable and it promotes the production to supply meets demand more spending for households in the project area.

c) Impact on agricultural production

Thanh Hoa Province is the provincial agriculture, to agricultural development in conditions of limited land and water resources declining in quality as well as quantity, with the situation of the world food crisis like the current Now, see that as more pressing. Therefore need to improve the efficiency of land use and water resources in the service of agricultural production, development of multi-purpose. This requires not only technical solutions, but also need to address the economic - social environment and with the active participation, directly from farmers in the management and utilization of the system irrigation investment.

Investment consolidate, improve and modernize Dong Be dam project will gradually contribute to improve infrastructure, improve livelihood of the people.

d) Positive impact to the local economy

During the construction phase sub-projects will have a positive impact on the economy at the local society, contributing to the idle labor and temporary income for workers. This is the premise stimulate development of some types of food services, activities, other entertainment to cater to the needs of workers living in the sub-project area. The purchase of food, personal goods locally led to a series of indirect economic benefits for the local economy. The ability of local can fully meet the needs of all aspects of the work. Cultural and spiritual life of the population sub-project is to improve efficiency by clear and enjoy the benefits of sub-project level improved by contact with staff and workers with the degree, skilled.

e) Impact on capacity development, operation of irrigation systems

The DRaSIP will be implemented to reinforce the safety of reservoirs, besides helping the management body of the province in the project build script, New Rural development in the long term, taking into account the climate change scenario, realization of activities to implement the National Target Program to mitigate and adapt to climate change; Irrigation Development Strategy 2020 and Vision 2050; National Strategy for water supply and rural sanitation by 2020; The socio-economic development of mountain areas by 2020; The national target of new rural construction.

Due to the design goals and identify objects of community involvement projects, these activities or gender minorities will create opportunities for capacity building for residents of communal participation, household increase the understanding of social and community attachment, increased ability to organize, manage, monitor and increase the status of women as well as the level of community associations. They will have the opportunity to learn about the gender policy and social security of the international organizations as well as the Government of Vietnam. The ethnic minority women will have the opportunity to become familiar with the issues relating to community management, community monitoring the formation of user groups, to preserve water resources and irrigation systems infield. Women and men will have more knowledge regarding the production, or new skills to create products through rehabilitation programs in the community. The inclusion of men involved in community activities of the project will make men more aware of their rights and responsibilities to the community.

5.3 Environmental and social negative impacts

5.3.1 Historical negative impacts

a) The historical incidents

Dong Be reservoir with main structure of earth dam was constructed in 1989, completed in 1991 and came into operation and management. So far, there have been two incidents caused by large storm, causing flood and damage to property and crops of people in the region in 1991 and 1996.

b) The environmental and social impacts

After completion of construction in May, 1991, the water level rose 70 cm higher than top of spillway causing damage of slope, downstream of spillway, strong seepage through the dam body, leakage through the intake. Inundation occurred in the entire of Dong Bun village, Xuan Du commune.

In 1996, large flood causes break of auxiliary dam, flooding and loss of 20 ha of rice, crops and property of the people in Trieu Thanh commune.

c) Implementedmeasures

After the storm in May, 1991, a flood protection dike was built at 300 m away from the left edge of dam, auxiliary dam was removed to expand reservoir bed. The slope of spillway was rehabilitated, downstream side was covered by concrete.

In 1997, after the incident in 1996, the Song Chu IMC rehabilitated the spillway with additional cover of reinforced concrete on spillway, expansion of stilling basin, tightening intake structure. In 2003, the IMC continued to build wave protection wall on the top of the dam, filling additionally dam body in downstream, drains at the downstream side of dam to the bottom and downstream drainage materials combined with filter layer at the bottom of downstream.

d) The existing problems

After 20 years of operation, it has been affected by the weather through a long time, the dam safety is not secured. Along the length of the dam, there are many seepages, rock in the upstream side is broken and fragmented. At the middle of the dam foot, 80 m from the intake to the left, dam surface is sag down that making unsafe condition of the dam. The intake has an impair of valve gate in the construction process so that water leaks through the gate and it is difficult to move the gate. The concrete pipe culvert itself was badly damaged, the concrete strength decreases due to erosion, reinforced steel exposes in some points. There is no management house for the intake operation. Concrete surface of the spillway is deformed partially, many dissipation ridges are broken. Road from the management station to the dam is

still dirty road, often muddy, hard to go in the rainy season and reduced ability to respond with the problem of operators.

5.3.2Impactsduringpre-construction phase

5.3.2.1 Sources ofimpacts

a. Sources of solid waste

Leveling, luminescent layer of vegetation: Volume demolition tools estimated 442.4 m3 of soil organic: 7.858,0 m3, waste land: 8.300,4 m3

b. Sources of liquid waste

Oil and grease disposal;

Grease born from the point of repair, car wash, washing facilities;

Domestic wastewater of construction workers at the site.

c. Sources of emissions

Tap the vehicle, machinery

Road construction, road management.

Operation of truck transport system.

d)Impacts sources on society

- Location of construction: Obstacles in active transportation, manufacturing, transportation of people.

- The land acquisition compensation: Causing disturbance, disorder and social gatherings

- Acquisition of land by permanently repair the dam, road construction: Changing the landscape, natural shorelines, lost agricultural land and hilly land

- Temporary Land Acquisition: How to change the purpose of the temporary use of land, affecting topsoil

- Demining and explosives: Can the incident explosion and damage to humans, causing the loss of people, destroying buildings

5.3.2.2 Environmental impacts

a) Impact on the water environment

The texture smashed bricks, concrete and transportation of materials such as cement, brick, stone, plastic, wood items, ... as well as solid waste and waste, domestic waste water of workers if not handled properly defined can follow rainwater into the water to increase environmental pollution load of water;

b) Impact on air environment

During the preparation of the activities are likely to cause air pollution, the main pollutants from vehicles transporting materials and construction equipment. Source pollution is dust generated from these materials; dust generated by the friction between the vehicle and the road surface, emissions from construction equipment. The dismantling works (weirs, sluices watering ...) can give rise to dust, noise at small;

c) Impact on soil environment:

When the clearance will be demolished part of the existing works, such as demolishing the old overflow, drain the old irrigation. So make sure to create a solid waste and may include

municipal waste generated by workers and construction machinery. If not collected and treated well will increase the load of pollutants soil environment;

This phase focuses not many workers, vehicles, machinery and so the impact is not significant.

Do not large range of fields and farmers do not have to be relocated to the clearance, project preparation can be deployed quickly, while the impact on the environment naturally short.

d) Impact on biological environment

Dams on the roof, including the upstream slope and downstream there are many green trees grow well. The trees are mostly bamboo, acacia, banana and some shrubs. This is the nesting place, residents of some organisms such as hummingbirds, sparrows, crickets, mice ... When the project to upgrade the dam repair items especially upgrade the dam roof vegetation growing on two dam roof will be cleaned, the animals living within the roof dam will be affected.

However, small animals can move about other areas, in the garden of household trash or clearing vegetation also has similar characteristics to live.

In addition, the reservoir with fish farming. The cleanup, clearance noise will affect the fish species in the reservoir.

For area temporarily revoked, approximately 0,2ha vacant land used for camping, yard materials and disposal, so biodiversity is not affected. However, at the end of the project communes have planted compensation plan for the land should be withdrawn temporarily affect biodiversity in the project area is not large.

5.3.2.3 Social impacts

a.The impact of land acquisition

At this stage of the sub-project, the impact of socio-economic environment takes place mainly in the reservoir area. The implementation of sub-projects will have to acquire land and property in the land of the project area. Because the subproject will only rehabilitate the existing works, it will not affect much local people.

Table 5.1: Land acquisition

Commune	Agricultural land (ha)	Upland crop (ha)	Forestry land (ha)	Aquaculture land (ha)	Temporary land (ha)	Total (ha)
Xuan Du	0.154	0.057	0	0.031	1.0815	1.322
Trieu Thanh	0.150	0.130	0.05	0	0	0.330
Total	0.304	0.187	0.05	0.031	1.0815	1.652

Permanent land use: The sub-project will acquire permanently 5,721 m2 of public land people using in the dam's protected area, including 3,039 m2 agriculture land, 1,872 m2 of upland crops land, 310 m2 of aquaculture land and 500 m2 of hilly land.

Temporarily occupied land: The temporary land acquired for dumpsite is 10,815 m2 of aquaculture land that the Communal People's Committee (CPC) owns and contracts with HHs.

Losses of crops and trees with total quantity of 2,140 include 10 banana trees, 500 bamboos, 20 eucalyptus, 1,610 acacias; and 1,872 m2 of rice and upland crops.

13 households (78 persons) will be affected and 1.65 ha of aquaculture land (public land) of Xuan Du commune will be acquired. No household (HH) will be relocated; no vulnerable HH will be affected; no HH will be affected severely because their land taken constitutes less than 20% of the total productive area; no grave will be affected. All of affected households (AHs) are belonged to Kinh ethnic group which is not ethnic minority.

b. Impacts on the safety of workers and the community:

- Material fall during dismantling can cause accidents.

- Transportation bulk materials prone to accidents during transportation, especially when passing the road traffic density is relatively high or near schools.

- The process of demolition, site clearance, excavation may reveal toxic substances were previously buried in the project area or hazardous substances in new waste directly affect public health workers and citizens.

c. Impacts on local transport, infrastructure:

Clearance process will increase the traffic flow movement (due to transport solid waste disposal), the increase in traffic flow will affect the risk of system infrastructure and road safety information.

However, the volume of solid waste is dumped in many large pondsin hamlet 4 and 5 of Xuan Du commune, approximately 4 km from the site, traffic impact, but the time that short clearance can control this effect.

d. Demining operations

In the process of demining, the lack of experience in the work of demining, no reasonable mitigation measures can also lead to the unfortunate mine explosion. In addition, when the mine exploded materials will cause loud noise, ground vibration and generate toxic gases affect the environment, animals and human health.

The activities in preparation RPBM can also impact due to demining affect the natural environment areas. However, the probability of incidents is very low, the impact is negligible. In addition, the excavated during RPBM cause morphological changes of land surface and affect soil quality.

5.3.3 Impacts during construction phase

5.3.3.1 Sources of impacts

Sources of solid waste
- Exploitation of building materials such as sand, gravel, gravel, soil, rocks.
- Domestic waste of construction workers at the site.

Sources of liquid waste
- Water wash stone, sand and gravel.
- Oil and grease disposal.
- Wastewater of construction workers at the site.

Sources of emissions
- The blasting, digging and leveling.
- Make road construction, road management.
- Mining, transport and handling of materials.
- Mix concrete, mortar.
- Activities of truck transportation system.
- Operation of construction equipment such as bulldozers, excavators, cranes, drilling machines, saws, pavers, etc.

Impacts on society

- Sources of conflict between construction workers and locals.
- The risk of accident to workers and communities in the construction phase.
- The impact on people's health and construction workers.
- Transport activity can disrupt transport, roads and the risk of accident.
- The impact on water supply and production during the construction works.

5.3.3.2Environmental impacts

a. Impact on the water environment

- Domestic wastewater

Domestic wastewater: During the construction phase of the works will have 100 people, but the garbage is arranged in four works. Domestic wastewater is generated from the personal hygiene of the curve as: cooking, eating, personal hygiene, etc.

According TCXDVN 33: 2006 for areas Trieu Son and Nhu Thanh district - mountainous districts, the amount of water per capita is about 80 liters of water a day. Therefore, the amount of water equal to 80% of the waste water should average a day will produce 64 liters of waste water. With 100 employees / day of wastewater generated is 6.400lit / day, equivalent to 6.4 m3.

Ingredients wastewater effluent containing mainly organic matter, suspended solids and microorganisms.

Table 5.2: Load domestic wastewater discharged in the construction phase

Load calculation for 100 people

No.	Parameter	Emissions targets (*g/person/day*)	Loading (kg/day)
1	BOD_5	45 - 54	4,5 – 5,,4
2	COD	72 - 102	7,2 – 10,2
3	Suspended solids	70 - 145	0,7 – 1,45
4	Total Nitrogen	6 - 12	0,6 – 0,12
5	Total Phosphorus	0,8 – 4,0	0,08 - 0,4
6	Total coliform	$10^6 – 10^8$ MPN/100ml	-

(Source: Report on the current state of urban waste water - Institute of Science and Environmental Technology - University of Science and Technology)

Table 5.3: Estimated concentrations of pollutants in domestic wastewater of 100 workers stage of construction

No.	Parameter	Loading (kg/day)	Concentration (mg/l)	QCVN14:2008/BTNMT (Cmax value, column B)
1	BOD_5	4,5 – 5,4	45 – 54	**50**
2	COD	7,2 – 10,2	72 – 102	**-**
3	TSS	0,7 – 1,45	7,2 – 14,5	**100**
4	Total Nitrogen	0,6 – 0,12	6,1 – 12,2	**50**
5	Total Phosphorus	0,08 – 4,0	0,8– 4	**10**
6	Total coliform	-	-	**5000 MPN/100ml**

During construction, approximately 4,000 m3 of domestic wastewater of 100 workers on site. Without measures to collect and treat waste water can be poured over the surface runoff and pollutants to the underground construction site soil and groundwater flow into the river or pollutants.

Domestic wastewater flowing into the river when the risk will increase the concentration of the substance in the water causing water pollution. Specifically, the amount of waste water streams At the pool is taken down 6,4m3 / day (equivalent to 2000 m3 / year); the amount of suspended solids least 2kg / day (equivalent to 730 kg / year), the average concentration of suspended solids in domestic wastewater discharged into streams after very small, can be controlled by measures minimize.

b. Waste water from construction activities

- In the process of building the cause of water pollution mainly oil leaks from equipment, process equipment repairs, dust in the air, the dust settles, the surface soil ,, mud field.

- Wastewater construction: construction waste water from the grinding station, screening, washing stone, building materials, concrete mixing plant, concrete area containing cement, sand, though few, but very dense. If not concentrate treated before discharge will cause turbidity and water pollution caused by alkaline concrete. According to calculations by design consultants effluent approximately 1m3 / day, the load of pollutants during construction (540 days) as follows:

Table 5.4: The amount of pollutants in waste water construction

Pollutants	Norms (mg/l)	Pollutant load (kg)
COD	625	0,3375
BOD_5	303	0,1636
SS	6.800	3,672

oil	44	0,2376

[Source: Calculated according to documents Economopoulos, WHO, Geneva 1993]

- Oil leaks, sludge is disposed of motor vehicles and machinery.

Lubricant mainly arising from the facility maintenance and repair machinery. The amount of oil used for an average of about once instead 18lit / lan.xe, the average number of times a year instead of 4 times / car / year. With around 10 vehicles operating in the amount of oil discharged construction time will be about 720lit. This is a source of pollution to surface water and groundwater in the area (groundwater and reservoir and streams At the pool), so it is necessary to take measures to collect and treat appropriately to minimize this impact.

c. Rainfall runoff

Rainwater entail building materials, sand will also be sources of contamination to water sources in the area. Construction period of the important items are concentrated in the dry season, however, does not exclude the possibility freshes (May, June VI), the impact is inevitable. Premises of the project area is 20,000m2 average rainfall of the region is 1816,3mm / year, total rainfall runoff on site will be 2.906,1m3 / year (20% of the rainwater will soak into the ground) . When it rains, rainfall runoff through the construction area will lead to soil, sand, scum, grease ... According to statistics from the World Health Organization (WHO), the concentration of pollutants contamination of rainfall runoff usually around 0.5-1.5 MGN / l; 0.004 to 0.03 MGP / l; 10 - 20 mg COD / l and 20 mgTSS / l. Receiving water is rainfall runoff Ho Dong tanks and canals in the region. Load cells rain water runoff during construction is shown in the following table:

Table 5.5: The amount of pollutants in rainfall runoff

(Construction time of 24 months)

No.	Parameter	Load units according to WHO (mg/l)	Rainfall (Littre)	Construction time (year)	The total pollution load	
					(10^3mg)	(kg)
1	TSS	20	290.610	2	11624,4	11,62
2	COD	10 - 20	290.610	2	5.812,2 – 11624,4	5,812 – 11,62
3	Total Nitrogen	0,5-1,5	290.610	2	290,61- 817,83	0,29 – 0,87
4	Total Phosphorus	0,004-0,03	290.610	2	2,32 - 17,44	0,002 – 0,017

Rainwater flows through the ground some areas such as fuel tank area, parking area, mechanics, warehouse additives, etc ... or areas containing garbage is not shielding techniques can make the water oil pollution and organic contaminants, chemical. Measures to mitigate the impact of rainfall runoff will be proposed in section 6.

d) Impact on air environment

Pollution due to dust

During grading and compaction during construction of the dam craft; process of unloading building materials from the transport; the transportation of spoil from the active surface exfoliation, excavation to waste area.

- The total volume of construction period of about 99.009 m3 as follows: San soil compaction and crafts: about 54.663 m3; transportation of construction materials, including sand, crushed stone, cement, ... about 19.093 m3 (see Table 2.3. The volume of the project) transport excess excavated materials to landfill: 8.300,4 m3;

According to the method of the WHO rapid assessment can predict the amount of dust generated during construction in accordance with the table below:

Table 5.6: Estimate the amount of dust generated during construction

No.	Item	Emission coefficients	The volume of transport, m^3	Estimate the amount of dust generated, gam
1	Activity manually leveling	1-100	54.663	5.466.300
2	Dust generated by the process of loading and unloading of construction materials in machinery and equipment.	0,1-1	16.952	16.952
3	Dust generated by concrete	0,1-1	19.093	19.093
4	Soils trucks on the road dropping arising dust.	0,1-1	8.300	8.300
	Total		**99.008**	**5.510.645**

[Source WHO: Assessment of the sources of pollution of soil, water, air]

The calculation results in the table above shows the amount of dust is not much, only arise in the construction area should only affect the health of construction workers. In addition, during material handling, transport distances of building materials to the construction site and far from 7-20km project area away from the center, the density of large trees, the possibility diffuse large dust. Time does not often disturbed during construction, which can mitigate this effect.

e) Pollution Emissions

** Emissions from vehicles using diesel*

Emissions from vehicles containing gas: SO2, CO2, CO, NOx, VOC ... Type polluting environmental impact of air depending on the number of construction vehicles, machinery and methods of construction. In order to transport 117.775tons of rock out in the field, to turn the car around 23.555 (5 ton dump truck), an estimated average of 37 plays Driveway construction area in one day. Forecast load for pollutants with cars using diesel as follows:

Table 5.7: Emission coefficients by a vehicle in traffic load from 3.5 to 16 tonnes

Indication	**Coefficient (kg/1000km)**	**Distance (km)**	**Time (minute)**	**Number of vehicles (in/out)**	**Emissions (g/minute)**

Dust	0,9	2,5	12	1	0,1875
SO_2	4.15*s	2,5	12	1	0,0085
NO_X	14,4	2,5	12	1	3,0000
CO	2,9	2,5	12	1	0,6042
HC	0,8	2,5	12	1	0,1667

[Source WHO: Assessment of the sources of pollution of soil, water, air - Tap1, Generva, 1993]

Table 5.8: And dust emissions corresponding to the regional transportation

Number of vehicles	Dust (g/minute)	SO2 (g/ minute)	NOx (g/ minute)	CO (g/ minute)	HC (g/ minute)
37	6,9375	0,15725	111	22,35429	6,16679

We have the formula for calculating the average concentration of emissions:

The average concentration (mg / m^3) = load (kg / day) x10^6 / 8 / V (m^3).

- On working 8 hours; the affected area as transport costs and the implementation of the project:

+ The area of transport costs: S_1 = d x R.

Where: d = 7 km (average length for transporting soil, sand, stone and other materials of all kinds), R = 10 m (average width of the road): S_1 = 7.000m x 10m = 70,000m^2.

+ The area of the project: S_2 = 20,000m^2.

The total area affected: = S_1 + S_2 = ΣS 90.000m^2.

We have: ΣS = 90.000m^2, H = 10m (average height distributions of meteorological parameters within 10m).

V = S x H = 90.000m^2 x 10m = 900,000 (m^3).

Table 5.9: Emission estimates generated (in theory)

due to the transport process

No.	Pollutants	Emissions (mg/m^3)	QCVN 05:2013/BTNMT TB 1 hour (mg/m^3)
1	TSP	0,003	0,3
2	SO_2	0,014	0,35
3	NO_x	0,035	0,2
4	CO	0,014	30
5	VOC	0,011	-

Through concentration estimates in Table 5.9 and compared with NTR 05: 2013 / BTNMT the concentration of TSP, CO, SO_2 and NO_x estimates arising from transport processes in the construction phase are within the permissible limits. Particularly VOC concentration was 0.029 mg / m^3 and not defined in QCVN 05: 2013 / BTNMT.

f) Noise pollution

Noise arises mainly from the excavation operation with equipment, transport ... In the process of repairing and upgrading works to use more machinery and construction equipment (tables 2.4). Noise can adversely affect workers at the site and cause discomfort for people living in the neighborhood. Exposure to high noise in a long time hearing will decrease, causing fatigue, stress, insomnia, reduced labor productivity; if people take too big noise continuously for 8 hours and lasts for many years may increase blood pressure, affects the nervous system and occupational deafness disease ...

According QCVN 26: 2010 / BTNMT, noise and public areas are residential areas: 55 - 70dBA (from 6 to 21 h).

When spread in the air environment, noise environment will be absorbed in the model (**) below and decreasing intensity with distance.

$L_P (X) = L_P (X_0) + 20.\lg (X_0 / X)$ (**)

In that:

- $L_P (x)$: the noise level at the position calculation (dBA);

- $L_P (x_0)$: a source noise level 1m (dBA);

- X_0: $x_0 = 1$ m;

Table 5.9: Noise from motor vehicles and construction machinery

No.	Type of machine	The noise level at a distance of 1 m		Noise level corresponding to the distance					
		Approximately	Average	5m	10m	20m	50m	100m	200m
1	Truck	82-94	88	74,0	68,0	62,0	54,0	48	42
2	Concrete mixers	75-88	81,5	67,5	61,5	55,5	47,5	41,5	35,5
3	Excavator	75-98	86,5	72,5	66,5	60,5	52,5	46,5	40,5
4	Excavators	75-86	80,5	66,5	60,5	54,5	46,5	40,5	34,5
5	Compaction machines	75-90	82,5	68,5	62,5	56,5	48,5	42,5	36,5
QCVN 26: 2010/BTNMT: 70 dBA (6-21h); 55 dBA (21-6h)									

(Source: Prof. Dr. Pham Ngoc Dang, air environment, Publisher of Science and Technology, Hanoi - 1997)

The calculation results show that the noise level decreases with the distance to the source point. In the 50m range, the noise level will be approximately 26 QCVN: 2010 /

BTNMT, so in this range of workers are only allowed working continuously for 21 hours. However, according to the calculations, while construction on the site has about 10 vehicles operate alternately to the possibility of high noise resonance.

Higher noise level standards will affect the health of workers as well as insomnia, fatigue, cause psychological discomfort. High noise level reduces labor productivity, health workers, construction workers on site. Exposure to intense noise for a long time will make the hearing decline, leading to occupational deafness.

The above calculation results show that the largest radius of influence of noise emitted from the operation of machinery, equipment and vehicles is 50 meters (outside this range are less affected people and may live, active for 21 hours). Therefore, the impact of noise only affects the workers on site. In addition, the project is far from residential areas (outside radius) and population density in areas of low density and large trees so the noise will not affect the people. This effect can be controlled by the mitigation measures in chapter 4.

g) Impact on soil environment

The mining construction materials: quarrying, mining ...; construction activities; active transportation, gathering materials ... will adversely impact soil environment, breaking the surface structure, altering the fertility of the soil surface (where topsoil stripping). Domestic waste of workers, waste from construction activities, oil and grease from equipment ... waste directly into the soil will contaminate the local soil. The impact will lose vegetation cover, partly influenced ecosystems field, if no measures of restoration of properly. The area of land occupied temporarily for construction of ancillary items about 0,2ha. So should be noted that to apply the appropriate mitigation measures.

- As reported by the investment project, the volume of soil excavation, embankment and dismantling works include:

Weight strip of land plants and waste: 8.300,4 m3.

Excavated volume: 16.952,3 m3.

Volume utilized land cover return: 16.952,3 m3.

Thus, the total amount of land to be transported out of the building by more than 8.300,4 m3.

- The construction workforce of 100 people / day, the amount of garbage generated an average of 0.05 tons / day. After 24 months of construction the amount of garbage generated 30 tons. Compared with the amount of waste rock large amount of domestic waste but not the main ingredient is organic material at high risk of causing illness in humans and animals should have effective remedies.

Source of solid waste generated during construction will be collected and taken to the processing area. The size of land used for storage of solid waste will be calculated in the specific mitigation measures (section 6). The land acquisition is only temporary (24 months) and of social policy is to plant trees to offset the work is completed, the impact is assessed at a lower level, can be controlled by measures to reduce lack of.

- This phase can generate hazardous wastes following: fluorescent lamps, rags containing oil, waste oil ...

These sources, if not collected, processed but uncontrolled waste around will be a source of environmental pollution, environmental degradation of land (land becomes more hardened, dead microorganisms, affecting yield), breaking the landscape. Therefore, investors should request construction units implement measures to collect rent functional units collected and sent for processing to reduce, minimize adverse impacts due to emissions may cause out.

h) Impact on biological environment

The effects on aquatic ecosystems

Construction activities on the site such as digging soil canvas, draining water for construction ... makes water turbid reservoir area, water quality changes due to leakage of grease ... Lithology encroachment lose habitat, spawning takes place, killing fish, reduced photosynthetic capacity of algae ... it will break and adversely alter the habitat of fish and other aquatic species, affect the lives of aquatic ecosystems.

b. Affect terrestrial ecosystems

The felling of trees, vegetation and soil surface often causes soil erosion. However, these impacts will be limited in the initial stages of construction and should be minimized by adopting measures such as paving, surface treatment, and water.

Noise from the disturbance, leveling create vibrations that affect life, biological behavior and move the animals out of the living area.

However, the species of terrestrial and aquatic animals in the area of the project is not much, the impact is relatively clear, but to be localized and short-term level of influence ecological environment construction is not worthy. Losses caused directly or indirectly to the flora and wildlife. This effect is primarily due to turbulence, move and re-distributed on ground pools. The impact mostly short-term in nature and limited to areas where construction. The most direct impact to wildlife is to build, expand the spillway. The level of impact is considered small.

5.3.3.3Social impacts

b.Affect security at the local

Sub-projects to be implemented will attract a number of employees in the local neighborhood focus during the implementation of sub-projects. This will have a negative impact to the socio-economic situation in the sub-projects such as population density increases mechanical, causing difficulties in controlling the security and generate currency social problems. Therefore, our workplace must comply with the provisions of the law on public administration and management of household members, and to use local labor for simple tasks at work.

c.Impact on the safety of workers and the community

During transport the rock strewn road without clearing would harm the beautiful, dangerous for people and vehicles, increased risk of traffic accidents.

Besides the current route connecting Highway 506 to beat Dong Province Swimming, active traffic on main roads remained basically guaranteed. In addition, the density of traffic on these roads and population density along the road quite sparse, only problem accident mild. Therefore, the operation of the service truck for the project will not cause major problems for traffic accidents on the road transportation. However, the construction unit should still apply mitigation measures to prevent traffic accidents.

As a rule, the car has become overloaded (5 tonnes) and speed regulation (30km / h) while on communal lines. The overloaded truck can allow damage the traffic, causing traffic accidents.

Besides the residential area sparse, not in the way police, the main transport route goes through two touch points, which is the central area of Xuan Du and Trieu Thanh. These are places where the risk of accident highest in the entire building project area.

d.Impact on public health, worker

The investment project will mainly affect the environment during the construction, materials and transportation by the noise of machinery, ... in addition to joining forces construction workers moved from other areas also can bring pathogens and changing lifestyle of the local. Next to that, a number of social diseases such as HIV / AIDS, syphilis ... also a risk. The agency project managers need to consider the health risks such as infectious diseases, with the propaganda activities, closely monitor this work.

Domestic waste from the camps without proper management was unsanitary locally as odors, leading to the concentration of infecting organisms such as flies, mosquitoes, rats ... bad influence to health workers and the community.

e.Impact on transport infrastructure in the region

Working transport during construction affecting roads, damage, deterioration of the system of local traffic. The owner of the vehicle for failure to comply with regulations on traffic safety: No shielding material, there is no sense in traffic while not adversely impact air environment, but also affects the operation travel and living of the local population.

The increase in the vehicle transporting materials in the local route 2 Xuan Du, Zhao To increase the risk of traffic accidents, especially for children and students.

f.The impact on the landscape and land resources

Earthworks activities in the construction process is one of the main items of the project, the construction of large volume, volume strip of land plants and waste is 8.300,4 m^3 , the volume of excavated soil was 16.952,3 m^3. This action will change the surface morphology in the area of project execution and exploitation of land in the park. Soil structure in this region disrupted by loss of the weathering and soil surface affects the ability to mount, easy to occur landslides, erosion, runoff.

g.Impacts by dismantling support works after construction

For camps, the cast concrete components, the demolition will generate solid waste such as iron, steel, timber, sand, stone rest were scattered on the ground school. In addition, during demolition, the careless operation of machinery and equipment can cause occupational accidents. The other occupational accidents have access to a power source such as a collision on the lead wires across the road, the storm caused power cord. On the other hand reverting, environmental restoration, if not radically change will topography, landscape camps located in the area.

The mobilization of machinery and labor plus materials can cause the following effects:

- Impact on air environment: emissions, noise from construction vehicles, the impact is short and small.

- Impact on the environment: The surface water disposal areas likely to be affected by tailings spilled increase turbidity, obstructing the flow, the impact is short and small.

- Impact on soil environment: Mainly due to grease from machinery strewn ground, clogging the capillaries, affecting crops in the region, the impact is local and medium.

5.3.4 Impacts during operational phase

5.3.4.1 Environmental impacts

In this phase, the source of the environmental impact can be the kind of solid, liquid of some people planted forest land in the region is higher than the water level and area residents benefit. This is also a source of impact on environmental quality, but the impact large or small depending on the number of households and land use.

- Solid waste from residential and agricultural byproducts.

- Solid waste from the use of fertilizers and pesticides in agriculture.

- Domestic wastewater, industrial wastewater;

- Change the design works

a) Impact on the environment

Sub-project activities after the upgrade will increase the ability to take water from it can change the speed of flow, sediment transport and the current line mode. These problems can lead to soil erosion and sedimentation along the irrigation system.

Sources of liquid waste include: Wastewater operators of work: Currently, Company Limited Chu River system is managed Dong Be irrigation scheme. After upgrading the system works can be added more staff to manage the project. Proposed 3-5 operators, domestic waste water of the workers are not significant, only 01 household size can be minimized.

Oil and fat during maintenance of equipment in the area drain water may cause pollution of the reservoir water. Unit management and operation of buildings will be responsible for collecting and gathering together in the area of local waste disposal.

In addition, during the flood generation of wood items, dead carcasses ... drifting down the reservoir. This is also the source of reservoir pollution, but the short duration of action (during and after a flood) and operational management unit responsible for handling this effect can be minimized.

b) The impact on air quality and climate of the region

The repair, upgrade reservoirs environmental impact of air at different stages of the degree of influence is also very different. At this stage of preparation and execution of environmental air pollution mainly by dust and emissions from the construction site preparation, roads, wharves, warehouses, transport of materials ... The Author This takes place only within a small space and often pollute local, discontinuous. When the reservoir repaired and working again (operational phase), the impact of fluctuations will cause some meteorological factors in the region.

c) Impact on landscape

Landscape Reservoir: After building was renovated and upgraded, the landscape around the reservoir to be spacious, clean and beautiful than (02 route management, rescue concreted). Beautiful landscape combined with convenient transportation will attract visitors to the tourism will increase funding for local.

Improve the ecological environment: surface area of construction, the upper reservoir and flora, vegetation of the ecological environment will be significantly improved by planting trees, forest restoration ecosystem after construction is complete the work.

d) Impacts on Ecosystems

Forests and forest upstream along the reservoir will be protected as well as planting, growing trees plus the tranquility will be a positive factor in attracting many species, especially small and medium-sized mammals, species birds to live.

The reservoir operation stable, safe contribute to the development of forest ecosystems. Impacts on ecosystems are rated as medium and long duration of action, continuity in the life of the project.

e) The impact on erosion, sedimentation

The reservoir is designed, built to ensure flood frequency design flood frequency of 1.5% and 0.5% inspection. Ho will be a renovation to ensure flood frequency of 0.01%. The

calculation results show that flood control reservoir flood overflow to expand the status quo to 50m. The expansion will increase the drain overflowing flood, the water level will drop faster than the status quo. Due to the flood water level in the reservoir decreases rapidly, while floodwaters deposited in the reservoir will decrease resulting in reduced amounts of reservoir sedimentation. Slower sedimentation tank will improve the life of the building, reducing the cost of dredging the reservoir. However, the expansion of spillway also causes the flow through the larger could lead to the erosion lower than the current status.

Risk of dam safety: risk assessments and other dam safety studies often require that an estimate be made of the number of fatalities that would result from dam failure. To assist in this effort, an extensive evaluation of dam failures and the factors that contributed to loss of life was conducted. Dam failure can cause loss of life (100 household with about 500 people in residential area of two communes in the downstream (Dong Bun village, Xuan Du commune and 9, 10, 11 villages, Trieu Thanh commune) and yield of 1000 ha of agricultural production land of Trieu Thanh and Xuan Du communes, property damage, local hydrologic change cultural and historic losses, environmental losses as well as social impacts. The suggested mitigation measure to minimize impact is mentioning in Part VI.

PART VI: ALTERNATIVE ANALYSIS

6.1 No action alternative

Dong Be reservoir irrigation schemes for irrigation and water supply for poor upland communes in 2 districts Nhu Thanh and Trieu Son. Since its construction so far have contributed significantly to improving the lives of local people, creating a solid basis for irrigated rice areas of the mountain, stable life of people in the region. Still works construction for 25 years, through the process of managing disability exploited during the construction work, the effect of weather over time affect the safety of dams and reservoirs. Along the length spillways position appears more permeable, upper roof tile with chocolate drops, peeling Unsightly, foot roof middle offtake dam 80m from cholera was sinking toward the hammock, flat roof than necessary Design guide to cause unsafe work; Offtake in the construction process should be open not guaranteed slot watertight leading to fade, the valve hard, concrete pipe culvert itself was badly damaged, the concrete was much reduced intensity humus, a reinforcement of the section open, on the tower drains without protective housing; Overflow concrete surface much room was peeling, the gear reducer is broken many passages. The investment in repair works of the limited management unit should work increasingly degraded. Downstream of the reservoir is residential area, situated at an altitude areas irrigated from (10:50 ~ 35.00) m very unsafe when works are a problem.

If renovated, upgraded safety Dong reservoir tank will bring practical results are:

- To ensure the safety of lives and property of the people downstream.
- Improving the efficiency of irrigation systems, increased crop yields contributed to improving the lives of people.
- Ensure irrigation of 255 hectares of cultivated area under design tasks and provide drinking water for people and water for the development of local industry.
- Reduce the cost of remodeling works regularly every year.
- Creating environmental landscape of the area.

6.2 With project implementation alternative

a) Change the location pits (land mine):

Initial placement of land mines subproject area located at the left shoulder of main dam, a flood overflow location 50m, expected permanent acquisition of land for forestation of about 2ha 02 households. However, after considering the probable impacts affecting the reservoir as erosion, sedimentation, affecting aquatic ecosystems, water turbidity of the reservoir, affecting the production and consumption of forest land Design of households above 02 ... Unit consultant has recommended investors eliminate alternatives on and find alternatives. Soil will be purchased at Minh Son commune land mines, making land mines in Thanh Hoa province was licensed to exploit, a work placement of 18 km.

Option to buy land at alternate land mines was limited to the minimum the impact on permanent land acquisition and avoid affecting forest land.

b) Changes in construction plans offtake:

Construction of the offtake under the plan originally was to tear down the old culvert and construction of new sewer in place the old sluice. Under this plan will have to stop the water supply within 3 months for sewer construction, will affect 255 ha for irrigation of agricultural land and of the people living downstream communes, causing negative impacts environment and society ... Unit consultant has recommended investors eliminate alternatives on and perform alternative construction methodology is as follows: Grafting cofferdam compartment lines, constructing new sewer drain from the old 3 m, preserved old drain water continues until the new culvert replacement. Thus ensuring water supply to downstream areas in the construction phase.

PART VII: ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)

7.1 ESMP objectives

Objectives

Ensure compliance with regulations, laws, standards and guidelines applicable at the provincial and national level

Ensure that sufficient resources are allocated based on project budget to carry out activities related to the ESMP

Ensure that the environmental risks, social of sub-project managed appropriately

Responding to environmental issues unforeseen and have not been identified in the environmental impact assessment of projects

Feedback for the continued improvement of environmental performance

Content of ESMP

Environmental management plan, outlining the social mitigation measures, monitoring and institutional classic will open during construction and operation of the sub-project to avoid or control the adverse effects on the environment society and the actions needed to implement mitigation measures. ESMP create useful link between the measures to minimize adverse impacts and to ensure that such measures will be implemented

Content ESMP made responsible for implementing, monitoring implementation, budget execution and the execution time of the mitigation measures proposed.

7.2 Mitigation measures

7.2.1Potential impacts and mitigation measures

The measures to overcome incidents in history

Dong Be reservoir had infiltration through dam body. To overcome this problem during the construction, take following actions:

- Execution of works according to plan and proposed measures;

- Comply with the provisions of the state of construction of dams, reservoirs and dam safety;

- Disconnect the water reservoir water level to ensure the safety of the construction process;

- Make plans for incident prevention and mobilize governments and local people available to respond to the incident.

Mitigation measures in pre-construction phase

Activities in the preparatory phase of construction including compensation plan land acquisition in the mining materials; BTHT plan for the affected households to agricultural production as sewer construction and earth dams; Luminescent clearance in mine soil materials, road widening and construction management; leveling, make camp, where the material gathering, gathering facilities, construction materials. The negative effects of this phase include:

Impact on society:

- The impact of land acquisition and resettlement
- Transportation in the project area
- Impact on health workers and community
- Impact on Infrastructure
- The impact on

The impact on the natural environment:
- Impact on air environment:
- Impact on the Environment Land
- Impact on Water Environment
- Causing soil erosion and sedimentation reservoir operation by leveling, surface exfoliation land mines
- Impact on the natural landscape
- Impact on biological environment

Table 7 - 1: Measures to minimize the environmental impact, social subprojects in pre-construction phase

No.	The impact	Subjects affected	Mitigation measures
I	***Measures to minimize negative impacts to society***		
1	Land acquisition within the works	- 13 households permanently revoked 5.721m ^{2} land within the construction of major dams and flood overflow; - Temporary acquisition 10 815 m ^{2} as disposal.	- The area of reclaimed land in the corridor of land type safety Dam (dam base ranges from 50m out) under the management of the company Chu River irrigation, the farmers are growing rice and vegetables. Recovery area as disposal sites managed by XuanDu commune, for use in construction time, then returned to the commune, conducting tree planting. When land acquisition, investor will have to compensate for crops for the people according to the law. The recovery of agricultural land to prepare for the clearance will not affect farming practices. Land area occupied is not large. Results of direct consultation at local people showed households are permanent land acquisition will also arrange a new livelihood, have no difficulty in producing land and does not affect your life.
2	Transportation within the project area	- The amount of trees trucks, construction materials increased, road transport is mainly provincial road 506 20km away from the town of Trieu Thanh, Xuan Du.	- Prior to clearance, the investor has to consult with the government of Trieu Thanh, Xuan Du commune, and communities to identify transport routes to minimize the impact to the lowest level of traffic in the area. - The significant increase in traffic volume should be mentioned in the construction plan was approved earlier. - Avoid transported through the central area of the Hop Thanh Commune, Trieu Thanh during peak hours. - The installation of the lighting system

			at night to ensure traffic safety. - Place signs around the area clearance to help with traffic and travel convenient. - Use the control measures traffic safety, including road signs.
2	Impact on health workers and community	- About 10 workers on the site and the people and Xuan Du, Trieu Thanh	- Training of employees in the labor safety regulations and provide adequate protective clothing labor under current provisions of the law of Vietnam. - Erect fence, barrier, Hazard surrounding area clearance
3	Impact on Infrastructure	- Material handling over 200m away from the concrete road in the provincial road 506 in the area near the dam.	- Use the transportation of under 7 tons to fit structural concrete road - Remodelling of the damage caused by damaged roads and infrastructure
4	The impact on	- 13 households acquire land in the locality and Xuan Du 02 Million Members	- Compensation satisfactory and timely damage caused by the impact of construction. - Arranging for women, families with difficulties, poor households, households affected production labor participation to increase employment and income.
II	***Measures to minimize negative impacts to the natural environment***		
1	Impact on air environment	- Air pollution caused by dust, noise affecting 10 workers and farmers on the road recruiting material handling, waste	- Water surface to minimize dust from material handling, waste - Spray water to wash the dust surrounding vegetation clearance area
2	Environmental Impacts of land	- Loss of topsoil, increasing the level of discoloration and erosion, runoff in the area of land mines, waste dumps, workers' camps. - Soil, stones often caught up in rain water increases the likelihood of erosion stockpile areas, sedimentation and stream channel system At the pool.	- To separate the topsoil to cover the ground after completion of works - Apply the high banks and tight land disposal areas - No clearance during the rainy season - Do not choose the location of the landfill, land mines, material yard near water, rivers and streams - Apply embankments around dumping ground and rolled tightly to the bottom waterproof
3	Impact on Water	- Increased turbidity reservoir, streams and canals At	- Do not choose the location of the landfill, land mines, material yard near

	Environment	Swimming downstream	water, rivers and streams - Cover to not waste land dropping down canal
4	The impact on the natural landscape	- Felling trees removed within buildings. - Clearance of 2,000 m ^{2} in the hallway of a work camp areas and gathering materials.	- Trees felled after the farmers in the region utilize as fuel. - Waste should be packed up and shipped daily to landfill - Clean, refund status quo camps and material gathering after work completion
5	Impact on biological environment	- Habitats and habitats of birds and destruction of vegetation due to the clearance of land mines, dumps materials, yard waste and worker camps	- Clearly define the boundary area clearance. Only illuminating the area to be used; - Irrigation water for washing the dust of vegetation clearance areas and on transport routes. - Do not use chemicals to clear the trees. - It is strictly forbidden tree except where expressly permitted in vegetation clearing plan.

Measures to mitigate the impact in the construction phase

Activities in the construction phase TDA include: Application Management sugar, earth dam construction, water sewer, flood overflow; extraction and transportation of soil from soil pits to construction sites, construction waste and living ... In addition to the direct effects also have indirect effects such as water cut construction affecting production and income of the people downstream. The potential negative impact of this phase include:

Negative Social Impacts:

- Impact of regional transportation projects

- Potential conflicts between construction workers and local residents

- Risk of accidents for workers and communities in the construction phase

- Risks to safety and human health

- Construction activities may cause damage to the roads and rural infrastructure

- The impact on

- Impact on society

- Impact on utility services

Negative impact to environment

- Change of surface water quality or flow

- The amount of dust generated during construction

- The amount of waste oil generated during construction

- Noise generated during construction

- The amount of solid waste generated during construction
- Increased risk of erosion during construction
- Changing Landscape
- Risk of fire and explosion incidents
- The negative impact due to the volume of water in the reservoir after construction
- The negative impact of the demolition operation of auxiliary facilities after construction
- Environmental impact of biological

For TDA majority of the above effects were evaluated with a low to moderate, can be overcome or minimize or mitigate if properly implement the following mitigation measures (Table 7.2):

Table 7 - 2: Measures to minimize the environmental impact, social subprojects in the construction phase

No.	*The impact*	*Subjects affected*	Mitigation measures
I	***Measures to minimize the negative impact of social***		
1	Transportation impacts in the project area	Affect the travel of about 13 households during the construction management route 02; Of vehicles transporting construction materials increased residential affect the Trieu Thanh, Hop Thanh, and Xuan Du.	- Notify the local government plans to transport materials and waste. - Do not transport through the center of Trieu Thanh, Hop Thanh in rush hour - Do not transport materials, wastes at night. - Installation of lighting system on transport routes through residential areas. - Place signs around the construction area to help with transportation, travel is convenient, and provide guidance to the different areas of work and provides instructions and safety warnings. - Plug the appropriate road signs for road transport.
2	The impact on regional security, conflict between construction workers and local residents	Focus can cause loss of human security. Conflicts between local residents, with about 50 construction workers on site	Arranging for households whose land is recovered, the affected producers participating in the construction activities to increase employment and income Contractor must have management regulations workers and coordination with local authorities to declare a temporary residence for workers Construction worker management regulations and common implementation Sign up temporary residence for workers and coordination with local authorities, village leaders / managers of the workers Maximum use unskilled workers on site Advocating people to cooperate to support workers during construction
	The risk of accidents for workers and communities in the	Construction workers 13 residents living in the area of road construction	Training for employees of labor safety regulations and provide adequate protective clothing in accordance with prevailing laws of Vietnam. Implementing measures to ensure safety as protecting fence, railing, Hazard and

	construction phase	People walking through the management route 02 near the construction area	lighting system to avoid traffic accidents as well as other dangerous to people and sensitive areas.
	Safety risks to human health and	50 officers, construction workers on site	The contractor must have medical staff and medicine cabinet in the camps to aid in time Periodic health examinations for workers Labor protective equipment and supervision of workers performing
	Construction activities may cause damage to the roads and rural infrastructure	The operation of the transportation of construction materials affects 200m concrete road Xuan Du commune and 700m dirt road Trieu Thanh	Using the transport tonnage of 5-7 tons to prevent damage to road structures Any damage to the cable system of utility services must be reported to the competent authorities and repaired as soon as possible. To compensate for the damage caused by damaged roads and infrastructure
	The impact on gender	Women and children in 13 households affected by land acquisition in the project corridor	Compensation satisfactory and timely damage caused by construction impacts caused Arranging for women, families with difficulties, poor households, households affected production labor participation to increase employment and income Contracts with women, the poor and guide food service providers, food for workers to have more income.
	Impact on society	Women's Union, Youth Union, the farmers involved in monitoring environmental management plans, reconcile conflicts between workers and contractors locals ...	Training for the social organization of rights and responsibilities in monitoring the implementation of the Environmental Management Plan of the contractor Supervisory skills training, information reflecting the impact on the environment and society of the construction activities Building supply network information between social organizations with local authorities, PMU, contractors and consultants monitor for receiving and processing information in time

	Impact on utility services	Supply of food, supplies, medical services, telecommunications concentration of 80 workers at the construction site	Reserves data plans, food and transferred from elsewhere come to give workers Contractor shall arrange additional medical staff. Medical services contract with CHS, the district medical center to overcome the problem arising and periodic health examinations for workers Improving infrastructure, power systems, telecommunications services prior to TDA Contracts with women, the poor and guide food service providers, food for workers to have more income.
II	***Measures to minimize negative impacts Environment***		
1	Change of surface water quality or flow	Increase the turbidity of the reservoir, river Latin, House Homeland streams and canals downstream	To minimize the amount of soil, rock falls into the reservoir by means of shielding the area of construction, transportation of waste a day Installation 5-7 portable toilets at construction workers. Wastewater from toilets and kitchen, bath, sink, etc. must be discharged into a tank to take off work or unsatisfactory handling of QCVN 09-2009 before discharge into the environment; not be released directly to any public waters. Upon completion of construction, the cistern and septic pits will be covered and sealed effectively.
2	The amount of dust generated during construction	Environment air in the sub-project area 80 construction workers on site People living near the construction area	Spray wash the dirt road and at construction sites; Cover the warehouse gathering materials; Truck cover materials and safety during transportation to the sand, or dirt materials being dispersed; Sandy soil and lots of storage materials gathered outdoors to be shielded from the wind.
3	The amount of waste oil generated during the construction process:	Environmental soil, water affected by oil and diesel leaks in machinery	The amount of waste oil generated will be properly collected and processed in accordance with the management of hazardous waste.

4	Noise generated during construction	80 health workers on site 10 residents living along the road transport sector and road construction materials and construction management	Focus mode maintenance equipment, machinery ensures the technical requirements to minimize the possibility of noise from construction equipment created; Only operate the equipment is maintained in the field. Maintenance of equipment during construction. Arranging transport times material to avoid going through the residential areas in the sensitive period (from 18:00 to 7:00 the day before the next morning and the afternoon, from 11:30 to 13:00). Workers often near major sources of noise, to wear protective ear covering to avoid affecting hearing.
5	The amount of solid waste generated during construction	The quality of surface water and groundwater, sediment canals	For the construction of solid waste: Collecting type steel, cement bags, ... sell units purchased scrap recycling; Use the entire topsoil stripping in pits to leveling spot when Felled earth dam; Use weathered soil detachment from the dam for road construction work management; Leveling and compacting regularly to reduce landfill volume and accident prevention subsidence For hazardous waste to deal with functional units collecting and processing regulations, For solid waste activities: The volume of garbage workers of 40 kg / day at peak times. Household waste sorting prior to collection into 2 categories: recyclables and garbage recycling, are stored in separate containers with lids. Recycling collection sold to a recycling facility. Non-recyclable garbage contract with sanitation team and Zhao Xuan Du The daily collection of communal waste landfill. The collection of containers arriving handled in accordance with regulations to ensure sanitation. No discharge of domestic waste into surface water in the construction area or surrounding areas; to collect the prescribed place.

			Establish rules of living, layout trash and toilet properly and hygiene regulations.
6	Increased risk of erosion during construction	Erosion at the construction of the dam, overflow, drain by digging and strip roof dam Song Latin, House Homeland streams, canals system	The earthworks activities when repairing the dam, overflow, demolition tools need to be shielded to prevent landslides, soil erosion After excavation, peel weathered beach fill material should be compensated back Construction layout in the dry season to minimize erosion, soil erosion No material gathering, soil, waste in the reservoir area and should be shipped in days Waste dump area surrounding embankments sure. Waste must be leveled and compacted regularly.
7	Alter the landscape	Material gathering area at 02 locations Earthwork Area: dam, drain water, waste dumps, flood overflow	Construction materials were gathered at the designated places and neatly arranged The construction site must be shielded, insulated from the surrounding area When excavation for landfill need to separate the topsoil to complete the project after the landfill cover for planting. Maximum use of the excavated to fill embankments Waste should be packed up and shipped daily to landfill
8	Risk of fire and explosion incidents	The construction workers on site	Educating and mobilizing staff and workers to strictly implement fire prevention ordinance, charter rules and fire safety. The construction site must be equipped with fire fighting equipment such as CO2 bottle, MFZ8, drums containing water, sand, alarm gong ... Ban hanging fire, beaten salt ban smoking in places where fire or near flammables. Forbidden fire welding, brazing where fuel, materials, products and flammable products. In the fuel storage should be arranged protection, shielding and sprinkler irrigation in humid environmental conditions dry, hot weather. Training of workers plan in place to handle fire protection in time when a dangerous situation occurs. When the explosion occurred, the personnel actively fighting according to their assigned tasks, and immediately notify the police sections Fire, Police Thanh Hoa province and the neighboring unit support timely rescue . Rushed

			the injured to emergency and fire deal with the consequences.
9	The negative impact due to the volume of water in the reservoir after construction	Reservoir water pollution, increased water turbidity in the early stages reservoir water volume	After completion of the work, the contractor will clean and remove all materials, rubbish and temporary works before the volume of water in the reservoir.
10	The negative impact of the demolition operation of auxiliary facilities after construction	Reservoir sediment, increased turbidity and rivers, canals downstream of Trieu Thanh, Xuan Du communes	The disposal areas, land mines, workers' camp at the site, regional gathering of materials will be recovered by means of embellishing the landscape, complete drainage and vegetation cover. Leveling of land mines, re topsoil and planting cover crops Disposal areas must be covered with a layer of clay, compacted to waterproofing and re topsoil for planting cover crops
11	The environmental impact of biological	Breaking and adversely alter the habitat of fish and other aquatic species Noise and vibration from the disturbance, leveling influence life, biological behavior and can move the animals out of the living area. Photosynthesis of plants is hampered by the dust generated from construction activities and transportation of construction materials will be covered with trees near the site and along the transportation route 2	Restrict to drain the reservoir during construction to avoid upsetting the habitat of aquatic species Irrigation water for washing the dust of vegetation clearance areas and on transport routes Need to reduce as much of the area to be luminescent. Do not use chemicals to clear the trees. Cutting trees is strictly prohibited except where expressly permitted in vegetation clearing plan.

Measures to mitigate the impact of the operational phase

During the operational phase of the negative impacts that may arise as reservoir sedimentation, water pollution caused by the operation and production activities, the impact of flood emergency ... The impact is assessed at the level of low. However, the records management unit should implement mitigation measures as follows (Table 7.3):

Table 7 - 3: Measures to minimize the environmental impact, social subprojects in the operational phase

No.	The impact	Subjects affected	Mitigation measures
1	Impact due to sedimentation	Sediment and water pollution in the reservoir	- Tidy clean remnant vegetation in the reservoir prior to impoundment. - Plant protection forests upstream reservoir to increase water storage capacity and minimize erosion and sedimentation - Limit the mining activities on the slopes, reservoir area
2	Impact of waste activities from agriculture, forestry and aquaculture	- Water quality is affected reservoir from waste generated from agriculture such as bottles, containers of plant protection products, fertilizers ..., hazardous chemicals (pesticides) and aquaculture feed	- Collection of waste (bottles, containers of pesticides, fertilizers), waste materials discharged immediately; prevent uncontrolled waste or collected but so long. - The joint project with the local government to train people to use farming methods in terms of environmental safety; development of green manufacturing model - clean in aquaculture and forestry.
3	Flood emergency	- Flooding dam safety corridor; - Increased risk of erosion and sedimentation downstream; - Affects People's production of downstream	- Despite the possibility of flooding to affect downstream areas is very small. However, to minimize the damage that may occur, should have the following mitigation measures: - Preparation of plans and training for local people to respond in case of emergency flood discharge; - Notifying the people and the local government of the time flood, the flood and the negative effects that may occur - There are plans to evacuate and protect the property of the people downstream flood when necessary

			- Need to invest in infrastructure for the people during the flood as a community, potable water supply facilities ...
4	Risk of loss of reservoir water	Affect the ability to regulate the water, causing water shortages production, economic damage.	- Regularly inspect and detect incidents lead to dehydration and the authority competent to handle - Annual maintenance fee allocation, maintenance and fix the damage and breakdown for major works (dams, flood overflow, drain water)
5	Dam Safety Risk	Greatly affect the hydrological regime of the region, affecting water and soil environments, aquatic ecosystems, water supply capacity of irrigated areas, affecting agricultural production downstream projects . Especially, when the dam broke a major influence on the lives and property of downstream farmers.	- Need to dam safety assessment before and after project implementation. - Enhance the capacity of the dam management unit - Implement proper operating procedures to ensure the safety of reservoirs. - Periodic inspection and maintenance of the works in accordance with regulations.

Table 7 - 4: Environmental and Social Management plan

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
Preparation for construction	Land acquisition of 13 households in the dam's protected area	Losses of crops and trees.	+Compensation for farmers at unit prices of Thanh Hoa Province and in harmony with the policies of the World Bank + The public consultation, the benefit is to be done + The tally of damage to comply with prescribed, especially to the participation of people directly affected	Provincial funding	Before implementing the project.	- PPMU - Resettlement Council	Thanh Hoa PPC PMU and the Department of Agriculture and Rural Development DPC Trieu Son and Nhu Thanh district Community's supervisors
	Transporting waste	- Increased risk of traffic	- Equip 10 canvas cover	2tr / x10 Canvas canvas = 20tr	everyday	Construction unit	Investors

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
		accidents. - Generating dust, noise on the line.	for trucks no, or replace the government has promoted degradation. + Ensure vehicles and construction equipment is maintained in good condition. + In the dry season, the car or when materials need to water through the crowded residential areas, schools .... in the rush hour. + Regulation speed limit (15km / h) and guides the driver to know	Watering: 5 million Speed limit signs: 4 x 1 tr sea / ocean = 4 million			

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
			and comply with. + The contractor will perform the proposed construction plans, are PMU chap agreement to reduce clearance time, execution and storage pits.				
	Collect the vehicle, machinery	-Noise, dust emissions, occupied premises	- Relocation planning, gathering the right equipment, to avoid affecting the daily life of people		Preparatory Phase Project	Construction unit	Investors
	Workers staying in the project area	Disrupt the lives of people	+ Sign up temporary residence, temporarily absent workers + Contractor's	contractors	When workers began staying in the community	contractors	Supervision Consultant

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
			instructions how to communicate, interact with government and community + Building Contractors and workers required to comply with the rules while living in the community (not quarrel with the locals, not gambling, theft ...)				
Phase constructio n	Activities building works	- Environmenta l Deterioration of air quality by dust, emissions, noise, vibration	- Do not use obsolete equipment, routine maintenance of machinery, vehicles 6 months / time	15 million / time * 1/1 year = 30 million.	Regularly during construction	Construction unit	Investors

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
			- Watering regularly on construction sites and road construction along	to change by date			
			- Cover the canvas in the yard of material, covering the truck tarpaulin material.	10 million			
		- Solid waste construction, soil spillage of hazardous waste (waste oil, grease rag) polluting environment, biodiversity decline	- Tidy, handle the amount of soil excavation and removal of weathered were strewn on the ground	30 million	Perform daily	Construction unit	Investors
			- At each site waste collection bins set includes 02 containers of hazardous waste; 02	1 million / trash truck 1 x 04 trash truck = 4 million	Make shopping before the project is implemented	Construction unit	Investors

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
			conventional waste containers				
			- Regular sweeping and collecting raw materials spilled - Classification solid waste, give the correct bins defined - Collection and treatment of hazardous waste in accordance with regulations	Service fee collection and processing: 20 million / year * 2 years = 40 million .	Everyday	Construction unit	Investors
		Stormwater runoff, wash facilities,	- Use water saving - Develop hole settles to the construction of wastewater	10 million / 1 construction site * 01 constructon = 10 million.	before under construction	Construction unit	Investors
					Everyday	Workers on site	Investors

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
		materials	collection, water treatment facilities washed sediment.				
		- Impact on safety, working conditions, health workers in the field.	- Arranging a reasonable schedule - Fully equipped instruments of labor protection for workers - training, capacity building of labor safety and environmental protection prior to construction. - Organize periodic health examinations for workers on	- Equipped with the instruments of labor protection: 20 million / year * 2 years = 40 million. - Organize training sessions on occupational safety: 30 million / time * 2 times / year * 2 years = 60 million. - Organize regular checkups: 20 million / year * 2 years = 40 million.	Perform during construction	Construction unit	Investors

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
			site				
		- The problem of environmental disasters, storm, oil leak, fire ...	- Planning rooms storm, tropical depression, cyclone - Dissemination of response plans. - Organize rehearsal.		Every year	The specialized agencies	Investors
	Activities production of concrete structures	- Soil pollution, water pollution due to water sanitation equipment.	- Use water saving - Construction of the collection system, sedimentation pit to treat wastewater before discharge into	Along construction costs at the sewage pit deposition	Built before the project was implemented	Construction unit	Investors

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
			the environment.				
		- Dust emissions, noise due to mixing, pouring concrete	- Maintenance, periodic maintenance machinery		Monthly	Construction unit	Investors
	Activities transports materials	- Air pollution by noise, dust, emissions of transportation	- Moving into the specified time frame - Carrying load properly, have promoted shielding. Retrofitted 20 canvas to equip the vehicle with no or replace the canvas has deteriorated. - Runs true maximum speed allowed.	02 million / Canvas x20 canvas = 40 million	Every day	Construction unit	Investors
		- Impact on transport infrastructure sector					
		- Increased risk of traffic accidents for people traveling on the road					

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
	Life activities, accommodation of officers and employees	- Arising domestic wastewater	The contract to purchase 03 portable toilets.	30 million / toilet units x 2 = 60 million	Purchase and installation before deployment project	The contract with the distribution unit	Investors
		- Domestic waste	- Armed with 03 waste collection bins placed in camps - Regular cleaning - Contract with sanitary units of local MT for shipping and handling	2tr / trash truck x 03 trash truck x 01 camp = 6 million Shipping and handling fee junk: 20tr / year * 2 years = 40 million	Make shopping and garbage collection contract before project implementation	Construction unit	Investors
	Repair and return transportation routes damaged	- Protect roads project area	- Repairing, leveling, rehabilitation of damaged roads, subsidence, poor quality	80 million	Immediately after the end of the construction phase	Construction unit	Investors
	Monitoring and supervision Environment	Ensure environmental quality project	- Sampling, monitoring of environmental	565 million	Implementation of the construction phase for 3-6 months period /	The unit has sufficient legal entity hired by	Investors

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
	phase of construction projects	area to set standards allow	quality at the construction site (24 months)		time	investors	
Operation phase	Revert construction areas: camps, landfill, mining land	- Solid waste	- Proceed to dismantle the tents, signs. - Collection, sold to the user. - Tap to, relocation of machinery and construction equipment. - Bury, san regarding the exploitation area.	50 million	Implementation of the end stage of construction	Construction unit	Investors
	Management, operation, maintenance, maintenance of sewers, locks	- Ensuring the safety of the population, arable land, buildings, infrastructure	- Organize regular maintenance check periodically. - Detecting and handling time	Funds for maintenance works	Every year	PPMU	Investors

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
			encroachment, use corridor improper channels.				
	Observation and monitoring in operation of sub-project	Ensure quality of environment in accordance with allowed standard.	Sampling, observation of environment quality in project area in 2 years after completion.	257 million	Implement every 6 months in construction time	PPMU	Investors
	The training, prevention of incidents	- Serving the inspection, timely detection, rescue, rescue when the problem	- Organizing training situations frequency response 1 / year program to produce the DARD.	Funds for operation of the facility	Every year	PPMU	Investors
	Dredging canals	- Avoid sedimentation, polluting the environment, changing hydrological regime of long narrow channel by	- Operating flexible drain; - Monitoring, tracking detection area phenomenon sedimentation, erosion;	Funds for operation of the facility	Every year	PPMU	Investors

Phase of subprojects	Actions of subprojects	Environment and social impact	Mitigation measures	Budget	Implementation time	Implementation unit	Monitoring unit
		river	- There are plans to periodically dredged canals, flow assurance and environmental				
	Operating closed, open drain	- Cause stagnant water inland, the influence of surface water quality	- Regularly monitor salinity, hydrology area - Operating drain flexible, timely	Funds for operation of the facility	Every year	PPMU	Investors
	TOTAL ESTIMATED BUDGET			**1,396,000,000 VND**			

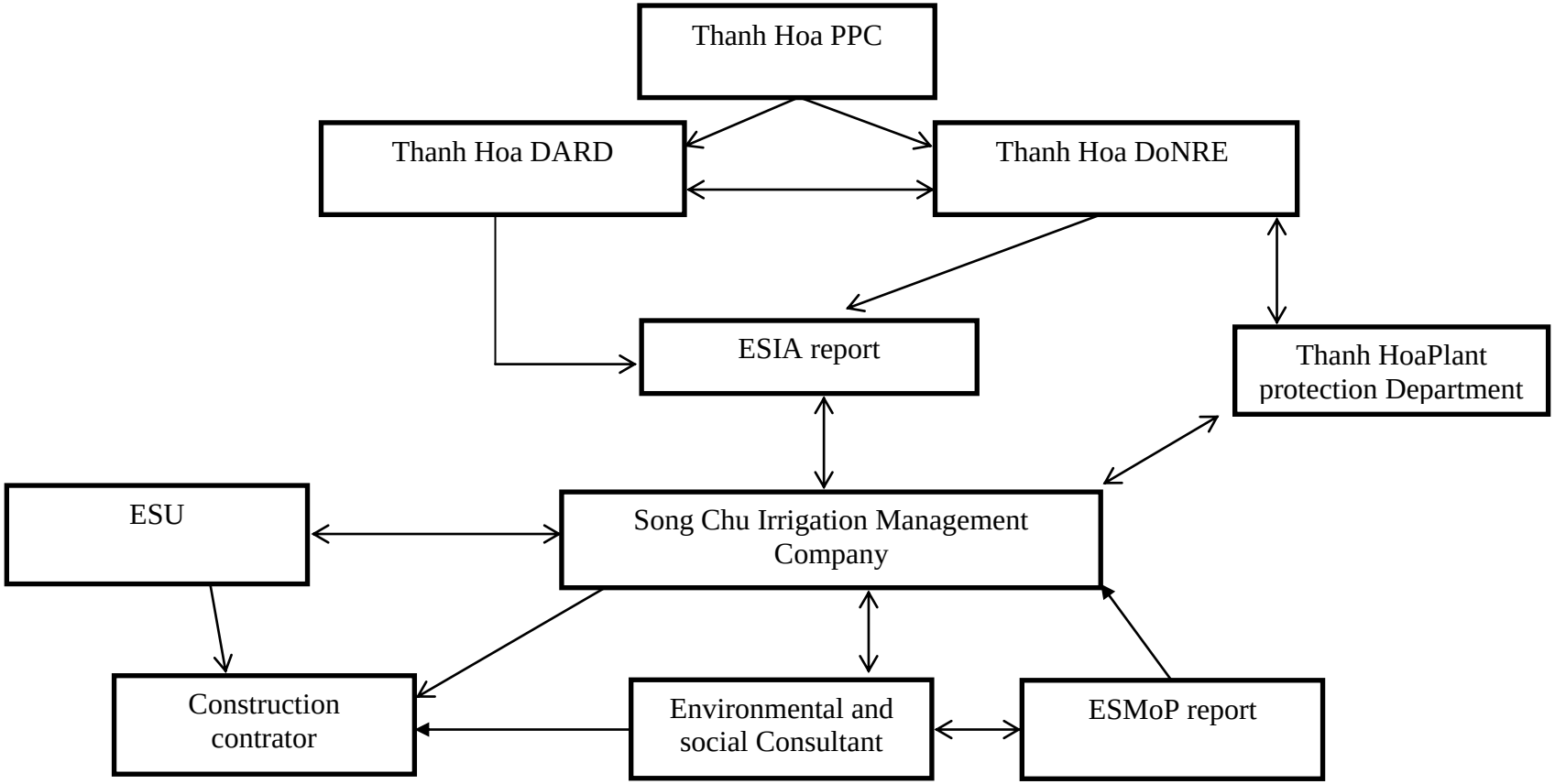

Figure 7.1: Schematic diagram of Environmental management organizations in construction phase

7.3Environmental and social monitoring plan (ESMoP)

7.3.1 Environmental Monitoring Program

This section describes the monitoring program proposed to be implemented in stages sub-project implementation. The program will include (a) monitoring the implementation of compliance with the mitigation measures outlined in the ESMP; (b) monitoring of environmental quality.

Monitoring compliance with ESMP

i) Monitoring by PPMU

PPMU will monitor the conformity with safety policies of contractor during construction period. PPMU will appoint Construction supervision consultant (CSC) to supervise everyday based on Environmental and Social Management plan (ESMP) and approved Environmental and Social Monitoring plan (ESMoP) and show interest in minimizing potential adverse impacts causing by construction activities such as the material transportation causes dust, noise and obstructs traffic in the subproject's area, TOR for construction supervision consultant. PPMU will appoint environmental officer and environmental monitoring agency (environmental consultant of province) to monitor and supervise the conformity with safety policy.

ii) Monitoring by community

The local community supervision board has been established according to "Decision No.80/2005/QD-CP dated 18/04/2005 of Prime Minister on investment supervision statutes of community". The community supervision board of commune has the right and responsibility for supervising construction activities, negative impacts to environment caused by construction activities and guarantees mitigation measure compliant of construction contractor. In case of arising environmental problems that affect to community, they will report to scene Supervision Consultant and/or PPMU by filling in forms reflect information on environmental safety.

Monitoring of environmental quality

i) Environmental monitoring programs, construction phase

Table 7 - 1: Environmental Monitoring in the construction phase

No.	Sample	Location	Frequency	Parameter	Standard base
I	Oversee the management of waste sources				
1	Source arising	Camp workers Landfill	3 months / time	The volume of solid waste Number of toilets, tents, waste water treatment system The volume of hazardous waste The composition;	

2	Measures to manage emissions	Construction site, construction worker camp Landfill	3 months / time	The number of bins Documents collection services and transportation.	
II	Monitoring impact on the natural environment				
1	Gas	Air samples (measurement, analysis criteria): 01 representative samples taken at each residential focus on transport routes VL (04 areas), irrigation canals took 01 samples N1, N2 irrigation canals 01 samples taken at the pits area 01 samples taken at the beginning area spillway drains 03, 01 at landfill; A total of 11 samples	3 months / time	Microclimate conditions (temperature, humidity, wind speed) -The Noise LAeq - Dust suspended TSP - SO_2 - CO - NO_2	NTR 05: 2013 / BTNMT National Technical Regulation on ambient air quality NTR 26: 2010 / BTNMT National Technical Regulation of noise. NTR 27: 2010 / BTNMT National Technical Regulation on sound vibration.
2	Surface water	Surface water samples (measurement, analysis criteria): 01 representative samples taken at each residential focus on transport routes VL (04 areas), irrigation canals took 01 samples N1, N2 irrigation canals 01 samples taken at the regional focal area 03 samples, 01 samples at the landfill; A total of 10 samples	3 months / time	- PH - DO - TSS - COD -BOD_5 (20^0 C) - NO_3^- (as N) - PO_4^{3-} (as P) - NH_4^+ (as N) - As - Total oil and grease - Coliform	NTR 08: 2008 / BTNMT: National technical regulation on surface water quality.
3	Groundwater	Groundwater samples (measurement, analysis criteria): 01 representative samples taken at each residential focus on transport routes VL (04 areas), irrigation canals took 01 samples N1, N2 irrigation canals 01	3 months / time	- PH - Hardness (CaCO3) - Arsenic (As) - NH^{4+} according to N	NTR 09: 2008 / BTNMT: National Technical Regulation on groundwater quality.

		samples taken at the beginning area 03 samples; Total: 09mau		- NO_2 (in N) - Sulfur (SO_4^{2-} Ecoli - Colifom	
3	Land	Soil / sediment (measurement, analysis targets): irrigation canal took 01 samples N1, N2 irrigation canal 01 samples taken at the beginning area 03 sluice spillway; A total of 05 samples;	3 months / time	- Arsenic (As) - Cadmium (Cd) - Copper (Cu) - Lead (Pb) - Zinc (Zn)	NTR 03: 2008 / BTNMT: limits of heavy metals in soil. QCVN
4	Landslides, erosion	Construction of flood overflow	1 to Q6	Sliding scale; The degree of erosion	
III	Monitoring the social impact				
	Social Impact	The communal area downstream	6 months / time	Income and employment; of production and average yield of service, water supply schedule The feedback and complaints of the people	
IV	Monitoring environmental hygiene and safety				
1	Sanitation	Project areas Camp workers Material gathering area	3 months / time	The quantity and condition of the toilets The quantity and condition of hygiene kits First aid kit Medical work The number of transfusion, infection Communication plan for public health	

2	Work safety	Project areas Camp workers Material gathering area Disposal areas	3 months / time	Tools Workwear Safety Signs The number of accidents	

ii) Environmental and social monitoring program in the operational phase

Table 7-3: Environmental and social monitoring in the operational phase

No.	Sample	Location	Frequency	Parameter	Standard base
I	Monitoring impact on the natural environment				
2	Surface water	Surface water samples (measurement, analysis criteria): 01 representative samples taken at each residential focus on transport routes VL (04 areas), irrigation canals took 01 samples N1, N2 irrigation canals 01 samples taken at the regional focal area 03 samples, 01 samples at the landfill; A total of 10 samples)	6 months / time	- PH - DO - TSS - COD -BOD_5 (20 ^{0} C) - NO_3^- (as N) - PO_4^{3-} (as P) - NH_4^+ (as N) - As - Total oil and grease - Coliform	NTR 08: 2008 / BTNMT: National technical regulation on surface water quality.
4	Landslides, erosion	Downstream flood overflow	During flooding during the 2 years after operation	Sliding scale; The degree of erosion	
II	Monitoring the social impact				
	Social Impact	The area of social benefit	6 months / time	Income and employment; of production and average yield of service, water supply schedule The feedback and complaints of the people	

7.3.2 Social monitoring program

The social monitoring programs in detail are presented in individual report of RAP or in the Annex B4 of GAP.

7.3.3. Estimated cost for implementation of environmental monitoring

Table 7 - 2: Estimated budget for environmental and social monitoring in construction phase

No.	Estimates of expenditure	Unit	Quantity	Price (VND)	Amount (VND)
I	**Oversee the management of waste sources**				**10,000,000**
1	**Source arising**	*Phase*	*1*	*5,000,000*	*5,000,000*
2	**Measures to manage emissions**	*Phase*	*1*	*5,000,000*	*5,000,000*
II	**Monitoring impact on the natural environment**				**34,133,000**
1	**Analysis of air**				**7161000**
	SO_2	Sample	11	140,000	*1540000*
	CO	Sample	11	140,000	*1540000*
	NO_2	Sample	11	140,000	*1540000*
	Noise	Sample	11	35,000	*385,000*
	Dust suspended	Sample	11	140,000	*1540000*
	Microclimate conditions (humidity, temperature, wind speed)	Sample	11	56,000	*616,000*
	Cost analysis of 11 positions x 11mau / day	***Sample***	***11***	***651,000***	***7161000***
2	**Analysis of surface water**				**16,440,000**
	pH	Sample	10	56,000	*560,000*
	Concentration of BOD5	Sample	10	200,000	*2,000,000*
	COD	Sample	10	120,000	*1,200,000*
	Dissolved Oxygen	Sample	10	104,000	*1,040,000*
	Total suspended solids TSS	Sample	10	80,000	*800,000*

	N-NO3 content	Sample	10	140,000	*1,400,000*
	P-PO4 content	Sample	10	84,000	*840,000*
	NH4 + concentration	Sample	10	98,000	*980,000*
	As content	Sample	10	150,000	*1,500,000*
	Grease	Sample	10	500,000	*5,000,000*
	Coliform	Sample	10	112,000	*1,120,000*
	Industry estimates of the cost analysis of 10 positions x 1 times	*Sample*	*10*	*1644000*	*16,440,000*
3	**Analysis of groundwater**				**7182000**
	The pH	Sample	9	56,000	*504 000*
	Hardness according CaCO3	Sample	9	80,000	*720000*
	Concentration of arsenic (As)	Sample	9	150,000	*1350000*
	Concentration of nitrite NO_2^- under N	Sample	9	100,000	*900000*
	Ammonium NH4 + concentrations under N	Sample	9	98,000	*882 000*
	Of sulfate SO_4^{2-}	Sample	9	90,000	*810000*
	E Coli	Sample	9	112,000	*1008000*
	Coliform	Sample	9	112,000	*1008000*
	Plus estimated costs 9 x 1 position	*Sample*	*9*	*798,000*	***7182000***
4	**Analysis of soil**				**3,350,000**
	Arsenic (As)	*Sample*	*5*	*150,000*	*750,000*
	Cadmium (Cd)	*Sample*	*5*	*130,000*	*650,000*
	Copper (Cu)	*Sample*	*5*	*130,000*	*650,000*
	Lead (Pb)	*Sample*	*5*	*130,000*	*650,000*
	Zinc (Zn)	*Sample*	*5*	*130,000*	*650,000*
	Plus estimates place the cost 5vi x 1 times / day	*Sample*	*5*	*670,000*	***3,350,000***

5	Landslide Monitoring	Phase	1	15,000,000	15,000,000
III	**Monitoring the social impact**				**5,000,000**
	Social Impact	Phase	1	5,000,000	5,000,000
IV	**Monitoring environmental hygiene and safety**				**10,000,000**
1	**Sanitation**	Phase	1	5,000,000	5,000,000
1	**Occupational safety**	Phase	1	5,000,000	5,000,000
V	**Diem 3 x 3 day staff**		**9**	**350,000**	**3,150,000**
VI	**Ride sampling measurement analysis (lump, provisional 5 million 1 trip)**	**Trip**	**1**	**5,000,000**	**5,000,000**
VII	**Reporting intermittent monitoring**	**Report**	**1**	**4,000,000**	**4,000,000**
VIII	**Estimated budget monitoring phase 1 (Plus I-VII)**	**Phase**	**1**		**71,283,000**
IX	Cost estimate supervision 1.5 years (3 phase)	Phase	6	71,283,000	427,698,000
X	COST MANAGEMENT GENERAL: TT * 20%		C		85,539,600
XI	Plus expenses before tax		TC		513 237 600
XII	Value Added Tax (VAT) = 10% x (TC)		VAT		51,323,760
XIII	The cost of implementing the construction phase GSMT		G		564 561 360
	Finish				**564,561,000**

Table 7-5: budget monitoring environmental and social commissioning phase

TT	**Estimates of expenditure**	**Unit**	**Quantity**	**Price (VND)**	**Amount (VND)**
I	Monitoring impact on the natural environment				**31,440,000**
1	**Analysis of surface water**				**16,440,000**
1.4	pH	Sample	10	56,000	560,000

1.5	Concentration of BOD5	Sample	10	200,000	2,000,000
1.6	COD	Sample	10	120,000	1,200,000
1.7	Dissolved Oxygen	Sample	10	104,000	1,040,000
1.8	Total suspended solids TSS	Sample	10	80,000	800,000
1.9	N-NO3 content	Sample	10	140,000	1,400,000
1.10	P-PO4 content	Sample	10	84,000	840,000
1.11	NH4 + concentration	Sample	10	98,000	980,000
1.12	As content	Sample	10	150,000	1,500,000
1.13	Grease	Sample	10	500,000	5,000,000
1.14	Coliform	Sample	10	112,000	1,120,000
1.15	**Industry estimates of the cost analysis of 10 positions x 1 times**	**Sample**	**10**	**1644000**	**16,440,000**
2	Landslide Monitoring	Phase	1	15,000,000	**15,000,000**
II	Monitoring the social impact				5,000,000
1.16	Social Impact	Phase	1	5,000,000	5,000,000
III	Diem 3 x 3 day staff		9	350,000	3,150,000
IV	Ride sampling measurement analysis (lump, provisional 5 million 1 trip)	Trip	1	5,000,000	5,000,000
V	Reporting intermittent monitoring	Report	1	4,000,000	4,000,000
VI	Estimated budget monitoring phase 1 (Czech IV)	Phase	1		**48,590,000**
VII	Estimated budget monitoring 2 years (4 waves)	Phase	4	48,590,000	**194 360 000**
VIII	COST MANAGEMENT GENERAL: TT * 20%		C		38,872,000
IX	Plus expenses before tax		TC		233,232,000
X	Value Added Tax (VAT) = 10% x (TC)		VAT		23,323,200

XI	The cost of implementing the construction phase GSMT		G		256 555 200
	Rounded total				**256,555,000**

Table 7 - 3: Table aggregate cost estimates for implementing the social environmentmonitoring plan

No.	**monitoring content / implementation phase**	**Responsibility for implementation**	**Cost (VND)**
I	Construction phase	The unit has sufficient legal entity hired by investors	**564,561,000**
II	Operation phase	PPMU	**256,555,000**
	Total (I+II)		**821,116,000**

7.3.4Monitoring report requirement

The report will be made during the implementation of the monitoring program, to gather reports on the impact or the recommendations of the people of sub-project. To assess the effectiveness of mitigation measures were implemented.

Table 7 - 4: The type of environmental monitoring reports, social

Responsibility for implementation	**Type of report**	**Content of report**	**Frequency of submission**	**Submitted to**
Contractor	Report Accident / incident	Collect information about accidents or incidents	In the 24 hours since the incident	PMU and Construction Supervision Consultant
	Violation report	Provides information about the violation of the regulations on environmental management, social	Within a week after the incident	PMU and Construction Supervision Consultant
	The report reveals	Recording and reporting agencies artifacts, archeology, tomb newly discovered ...	Within 24 hours of the discovery of archaeological sites, tombs	PMU, Supervision Consultant and Department of Culture

Responsibility for implementation	Type of report	Content of report	Frequency of submission	Submitted to
	Report on the implementation of the EMP	report the results of implementation of measures to minimize the impact on the environment, social	Every month	PMU
Construction Supervision Consultant	Report on implementation of measures to minimize the impact on the environment, social	- Evaluation of the implementation of measures to minimize the impact to MT, XH of contractors - Results resolve and remedy the problem and the remedies the shortcomings of previous reports	Every month	PMU
Independent Environmental Consultant	Report an independent safety monitoring of environmental and social	- The results of the field test execution - Results based on community supervision - Summary of supervision of construction management consultant - The results of environmental monitoring - Review the results of ESMP and recommendations	6 month/time or 3 month/time	PMU and WB
Board sub-project management	A report on the environmental performance of subprojects	Result of ESMP implementation	Every 6 months	CPO and WB

7.4ESMP implementation arrangement

7.4.1 Agencies and responsibilities

a) The responsibility of project owner/PPMU

PMU, representative of the implementing agency, will be responsible for monitoring the overall project implementation, including environmental compliance of the project. PMU will have the final responsibility for ESMF implementation and environmental performance of the project during both the construction and operational phases. As the subproject owner, PPMU is responsible for implementation of the all the ESMP/ESMoP activities to be carried out under the project, including fostering effective coordination and cooperation between contractor, local authorities, and local communities during construction phase. PPMU will be assisted by the environmental staff, and CSC/or field engineer. Specifically the PPMU will closely coordinate with local authorities in the participation of the community during project preparation and implementation, monitor and supervise ESMP implementation including incorporation of ESMoP into the detailed technical designs and bidding and contractual documents, ensure that an environmental management system is set up and functions properly, be in charge of reporting on ESMP/ESMoP implementation to the IA and the World Bank.

b) Construction contractor

The construction contractors are responsible for implementing mitigation measures and the mitigation costs will be part of the contract. Take actions to mitigate all potential negative impacts in line with the objective described in the ESMP. In order to be effective in the implementation process, PMU will establish an Environmental Unit with at least two environmental staffs to help with the environmental aspects of the project, including ESMP at the working site, actively communicate with local residents and take actions to prevent disturbance during construction.

c) Construction Supervision Consultant (CSC) and/or Field Engineer

The CSC will be responsible for routine supervising and monitoring all construction activities and for ensuring that Contractors comply with the requirements of the contracts and the EMP. The CSC shall engage sufficient number of qualified staff (e.g. Environmental Engineers) with adequate knowledge on environmental protection and construction project management to perform the required duties and to supervise the Contractor's performance

d) Independent Environmental Monitoring Consultant (IEMC)

IEMC will, under the contract scope, provide support to PMU to establish and operate an environmental management system, offers suggestions for adjusting and building capacity for relevant agencies during project implementation and monitor the Contractor's EMP implementation in both construction and operation stages. IEMC will also be responsible to support PMU to prepare monitoring reports on EMP implementation. The IEMC shall have extensive knowledge and experience in environmental monitoring and auditing to provide independent, objective and professional advice on the environmental performance of the project.

e) Local community

The local community supervision Board has been established according to "Decision No.80/2005/QD-CP dated 18/04/2005 of Prime Minister on investment supervision statutes of community". The community supervision Board of commune has right and responsibility for supervising construction activities, negative impacts to environment caused by construction activities and guarantees the measures to minimize potential adverse impacts have been implemented effectively by contractor. In case of arising environmental problems that affect

to community, they will report to scene Supervision Consultant and/or PPMU by filling in forms reflect information on environmental safety.

f) Responsibility of reservoir management and development agency

The local irrigation management company will dispatch a staff to manage environment, waste in the irrigation system, coordinate with environmental consultants to monitor environment, periodically report on environment of sub-project to DoNRE.

g) Responsibility of CPO

CPO will guide PPMU staffs to carry out environmental and social management plan of subproject. CPO will monitor the progress of subproject during construction time.

h) Province and District People's Committees (PPCs/DPCs), Provincial DONRE

Monitor implementation of subprojects under recommendations of DONRE and PPMU to ensure compliance of Government policy and regulations. DONRE is responsible for monitoring the compliance with the Government environmental requirements.

7.4.2Assessment of existing environmental and social management practice and capacity for dam management

Capacity building and training for project's staff and authorities relevant to dam safety is important. Especially, new staff should be trained to focus on dam safety engineering. Because the technique of dam design, construction engineering and inspection activities are constantly changing, even experienced staffs still need training on new techniques and application in practice.

Regarding environmental management resources, the Thanh Hoa PPMU has not had specialized division or personnel responsible for the environmental and social issues.

Regarding the training program, PPMU has not attended any training on safeguard policy on environment, involuntary resettlement, gender and gender equality.

Training needs of capacity building for environmental management were recommended for training on monitoring and environmental impact assessment for 02 technical staff of the PPMU.

7.4.3 Building capacity and improves the knowledge on the environmental and social protection training programs

To improve the technical and environment management for staff PPMU, organizations and individuals involved, PPMU will implement the training content is as follows.

Table 7 -8: Program of building capacity and technique of environmental management

No.	Training courses	Implementation cost (VND)
1	Building capacity on ESMP and ESMoP	2 class x VND 2 mil./class = VND 4 mil.
2	Improving knowledge on environmental protection and media	3 class x VND 2 mil./class = VND 6 mil
3	Training on fire fighting	4 class x VND 2 mil./class = VND 8 mil
4	Training on environmental regulations and	4 class x VND 2 mil./class =

	standards	VND 8 mil
5	Training on environmental health and safety measures	4 class x VND 2 mil./class = VND 8 mil
6	Training/coaching on dam safety knowledge	3 class x VND 2 mil./class = VND 6 mil
7	Training/coaching on diseases	3 class x VND 2 mil./class = VND 6 mil
8	Training/coaching on gender equity	3 class x VND 2 mil./class = VND 6 mil
Total		52,000,000

7.5 Community development needs assessment

Social and political organizations at the local (such as Farmer Union, Women's Union, Youth Union, Veterans Association, Association of the Elderly, Red Cross Association, ...) are organization involved in monitoring and implementation of the project, especially the period of land acquisition, compensation, assistance and resettlement of affected households to ensure compliance with policies and resettlement and the objectives of the project. The community organizations are where grasp the issues and responses of people related to the operation of the project during the preparation, construction and put into use. The monitoring of these organizations to coordinate with the population groups in the community is crucial in helping the management and implementation units to adjust timely design, operation construction activities to minimize undesirable social impacts on people lives in the affected areas.

The hamlet: The grant works directly with the people, reflect the issues raised during the preparation, construction and putting into operation of the project category. Hamlets will be the last place the activities implemented to provide information to residents of the project and are the first place to receive the feedback of the people related to the project. The role of village officials/neighbors very important, objectively and timely reflect the aspirations and legitimate petitions of the people for the monitoring of the project implementation process to minimize the impact of project to life of the people. In addition, the comments reflected from village officials, neighbors also make construction project categories more relevant, bring economic benefits for society than community benefit area direct the project.

PART VIII. STAKEHOLDER CONSULTATION AND INFORMATION DISCLOSURE

8.1. Public consultation objectives

- To get the consent of the relevant agencies, local governments and communities in the sub- project implementation
- To share information about the scope of the project and its impact on the environment and society
- To increase the encourage of the participation in the community for determining the impacts of the sub-project.
- To collect information about the requirement and the responsibility of the local resident and local authority on the proposing mitigation measures of the project owner, or to improve the mitigation measure in pre-construction phase or project design

8.2. Consultation on environmental impact assessment

Summary of community consultation activities implemented during the preparation of the ESIA

i) Subjects consultation:

CPC

Fatherland Front Committee

The unions (Farmers Union, women's groups, youth groups

Head of village / hamlet

The affected households in the project area

ii) Consultation content

- Summary information subprojects financed components.

- Discuss the historical risk / accident happened on the environment and society in the past from the building construction.

- The key construction activities and operational issues

- The potential impact on society and the environment is important in the construction phase and operation

- Mitigation measures, environmental management plans and social

- Monitoring and observation

- Settlement Mechanism complaint claims

Commune People's Committee and Fatherland Front comments written

iii) Method of consultation

Organize meetings with components as outlined above including local authorities, the local organizations, people affected. To create the conditions for people to express their opinions, their aspirations, consultations were held open and consultative form of a questionnaire on the situation, the consequences of a disaster phenomenon took place, in which have shown willingness stems and requirements of the unit or the people interviewed for the project.

iv) The results of the consultation

TT	Day	Location	The number of participants	Participants
1	18/02/2015	Trieu Thanh CPC	40	Representatives of the Department of Agriculture and Rural Development; representative of the Department of Natural Resources and Environment; representative of the Department of Culture, Sports and Tourism; representative of the Department of Transportation; representative of the Department of Education; DPC representative Trieu Son; As Thanh District People's Committee representative. Representative CPCs Million Members, Hop Thanh Xuan Du, Phuong Nghi and represent people in the subproject area.
2	17/03/2015	Phuong Nghi CPC	30	Representatives of the CPC; Commune Fatherland Front Committee representative; associations, mass; representing the people of the villages along the reservoir At the pool.
3	03/18/2015	Hop Thanh commune	30	Representatives of the CPC; Commune Fatherland Front Committee representative; associations, mass; representative of the people.
4	03/19/2015	Xuan Du CPC	35	Representatives of the CPC; Commune Fatherland Front Committee representative; associations, mass; representative of the people; households whose land is recovered.
5	20/03/2015	Trieu Thanh CPC	40	Representatives of the CPC; Commune Fatherland Front Committee representative; organizations, social organizations; representative of the people; households whose land is recovered.

TT	Day	Location	Content consultation	Responsibility for implementation
1	18/02/2015	Trieu Thanh CPC	- Introduction to the target, the main items of the TDA, scope and objects affected by the subproject - Share the requirements of the World Bank and the Government of Vietnam on health policy and social environment of the subproject - Discussion of consensus on the implementation of sub-projects, provide information about the	Investors subprojects Environmental Consulting The participants of the conference

			risk / incident happened in history (from the dam), the detection of a positive impact, target pole can occur when implementing projects and proposals on the BP minimize impacts to MTXH and recommendations to investors	
2	17/03/2015	Phuong Nghi CPC	- Inform about the negative impact on the environment and society can occur during project implementation. - The proposed measures to mitigate the impact it. - The participants discuss environmental and mitigation measures will be implemented. - Investors acquiring and adding the appropriate information to the ESIA report.	Investors subproject
3	03/19/2015	Xuan Du CPC	- Inform about the negative impact on the environment and society can occur during project implementation. - The proposed measures to mitigate the impact it. - The participants discuss environmental and mitigation measures will be implemented. - Investors acquiring and adding the appropriate information to the ESIA report.	Investors subproject
4	20/03/2015	Trieu Thanh CPC	- Inform about the negative impact on the environment and society can occur during project implementation. - The proposed measures to mitigate the impact it. - The participants discuss environmental and mitigation measures will be implemented. - Investors acquiring and adding the appropriate information to the ESIA report.	Investors subproject

Comments from local authorities

The project had many comments from the Fatherland Front Committee and the Commune People's Committee in the project area. In general, the opinion of the local government can be summarized as follows:

- Trieu Son and Nhu Thanh District People's Committee and the Fatherland Front Committee of the commune fully support the implementation of the project. Recommend

PPMUs collaboration with consulting unit organize padded disseminate information related to the project, advocacy for people to understand the purpose and benefits of the project, when the project is completed, it production conditions, activities of local people will be improved and guaranteed;

- Local will create favorable conditions for the maximum support for the project, especially on issues of land acquisition projects in service during site clearance and construction items process;

- Trieu Son and Nhu Thanh District People's Committee and Fatherland Front Committee agrees with the social issues related to the impact of socio-environmental is presented in the report. The impact of the project are mainly positive. However, the implementation process, especially in the construction phase of the works, it will create a certain impact on the operation environment and the lives of residents in the construction sector;

- Agree with measures to reduce environmental pollution presented in the report;

- Recommend investors comply with appropriate regulations committed to reducing the negative impacts caused by the project, as well as management and monitoring of environmental quality;

- Committee of the Fatherland Front and the People's Committees of communes, are willing to cooperate to deal with problems that arise during project implementation.

The reviews from the locals

Besides opinion in favor of the household, people also gave a lot of opinions and needs to implement the project. These comments are summarized as follows:

- The local community agrees on the impact caused by the project during construction, and implementation require construction contractors to ensure quality and progress;

- To request the competent authority approval allows quick subprojects implemented quickly;

- To minimize the impact of the construction project to the activities of the community, the categories of projects to be done quickly, and complete each section before moving on to the next section;

- Require contractors and investors to listen to feedback from the community to make modifications accordingly. Comments from the community must be sent to the unions, community monitoring committee, CPC, PMU and related units;

- Require the contractor to comply with the commitment to reduce the negative impacts from the implementation of projects outlined in the management plan and monitor the quality of the environment and society;

- Existing canal system degradation, the occurrence of leakage, filling up low hydraulic conductivity. The phenomenon of dehydration occur primarily for high fields, while no shortage of water in the reservoir, due to loss of water in the channel before being led off the field. People who wish to support projects in the rehabilitation, dredging the canal system from Dong Be to ensure water;

- People fear the expansion of aquaculture activities on the water tank after tank At upgrades, repairs will reduce water quality in the reservoir, causing the risk of water pollution, disease in the country using reservoir water for fish ponds in the commune people's benefit.

- Requirement applied PPMUs implementing measures and provisions on sanctions or even unilaterally terminate the contract with the contractor, environmental monitoring units

without complying with adequate safety measures all off and up the proposed measures to protect the environment.

8.3. Consultation on social impact assessment

i) Consultation subjects:

CPC

The affected households

ii) Consultation content

About the content, the main items of sub-project, funding for implementation;

Advice presented policy interests of the people affected, grievance mechanisms and resolve complaints; compensation policies for each type of land, buildings and structures and trees, crops

Consulting presents forecasts of the impact of resettlement sub-project, gender;

Community discussion of policy benefits and compensation for affected land, buildings, structures and plant crops.

iii) Method of consultation

No.	Day	Location	The number of participants	Participants
1	18/02/2015	Trieu Thanh CPC	40	Representatives of the Department of Agriculture and Rural Development; representative of the Department of Natural Resources and Environment; representative of the Department of Culture, Sports and Tourism; representative of the Department of Transportation; representative of the Department of Education; DPC representative Trieu Son; As Thanh District People's Committee representative. Representative CPCs Million Members, Hop Thanh Xuan Du, Phuong Nghi and represent people in the subproject area.
2	17/03/2015	CPC Phuong Nghi	30	Representatives of the CPC; Commune Fatherland Front Committee representative; associations, mass; representing the people of the villages along the Dong Be reservoir.
3	03/18/2015	Hop Thanh commune	30	Representatives of the CPC; Commune Fatherland Front Committee representative; associations, mass; representative of the people.
4	03/19/2015	Xuan Du UBNX	35	Representatives of the CPC; Commune Fatherland Front Committee representative; associations, mass; representative of the people; households whose land is recovered.
5	20/03/2015	Trieu Thanh CPC	40	Representatives of the CPC; Commune Fatherland Front Committee representative; organizations, social organizations; representative of the people; households

				whose land is recovered.

Even in the early stages the project preparation, local government and the leaders of the various levels of government in Trieu Son and Nhu Thanh District, Thanh Hoa Province was informed about the project, the objectives and activities of the proposed project. The people affected are invited to a consultation meeting held at the commune and conduct discussions related content.

iv) The results of the consultation

During the consultation process, many reviews of people attending consultation meetings offer has been discussed widely and freely, are summarized as follows:

- The area of land acquisition is in dam's protected area where people are using without permission.

- Thanh Hoa subproject takes very little land acquisition for the dam rehabilitation was conducted on the old route, thus, the negative impacts can be minimized and recovery project scope negligible .

- The construction and upgrading works to improve the efficiency of dam safety, stable life for local people.

- The affected households wishing to provide information on the progress of the project.

- The affected households wish to be compensated fully transparent replacement cost for lost assets, and market prices for crops affected temporarily.

- Both men and women are involved in the organization and in the local community and make recommendations related to the project, so that gender issues are guaranteed.

- In the area of project implementation EMs are the beneficiaries of the project.

- No occurrence of trafficking of women and children in the project area.

- The BAH understand the impact and benefits from the project for the local people, so they totally agreed with the implementation of the project and wants the project to be implemented soon.

8.4. ESIA disclosure

Information disclosure: According to the World Bank's policy on access to information, all draft safeguard instruments, including the ESMP/ESMoP, are disclosed locally in an accessible place and in a form and language understandable to key stakeholders and in Vietnamese and English at the CPO and InfoShop before the appraisal mission. EMP is locally disclosed at the sites and in the Vietnam Development Information Centre of the World Bank in Hanoi

- ESIA report in Vietnamese will be public on website of MARD, CPO, People's Committee of Binh Thuan province. The summary report of ESIA will be sent to Department of Natural Resources and Environment of Binh Thuan province, People's committee of Ham Thuan Bac district, Thuan Hoa CPC and Ham Tri CPC in order to community, organization contact, monitor and implement ESMP .
- ESIA report in English will be public at VDIC of World Bank in Hanoi and InforShop of World Bank.

PART IX. CONCLUSIONS, RECOMMENDATIONS AND COMMITMENTS

9.1. Conclusion

(i) Sub-project of group B environmental policy and environmental safety of the WB;

(ii) Sub-project is not in the sensitive areas of the environment and not committed to the "mismatch" of the World Bank;

(iii) report has identified and assessed the full impact significantly in all three phases: pre-construction, construction and operation and raised the mitigation measures, in consultation with the rights and those affected, including vulnerable groups;

(iv) A management plan (ESMP) and environmental monitoring plan - social (ESMoP) to monitor the impact has been set up to help the decision makers regularly updated on progress of sub-projects;

(v) The subproject Upgrade secure Dong Be reservoir Xuan Du, Nhu Thanh District, Thanh Hoa province by the Department of Agriculture and Rural Development in Thanh Hoa province as an investor, the Board of Management of Water Resources Project benefits under the Department of Agriculture and Rural Development Management Thanh Hoa province. The construction could cause potential impact positively and negatively in the construction phase of the project:

The potential impact of the preparation phase

In the preparation phase of construction, the work clearance is permanently affected 0.572 hectares of land around the reservoir Also works using temporary pools and 2,000 m2 of land around the project area to build parks support and service of construction.

The potential impacts of the construction phase

The upgrade of the sub-project items including dams, ancillary works, irrigation channels, roads management can cause some negative impacts as follows: a) increase the risk for the people along the route for the increase in the transportation of materials and waste; b) increase in noise levels, dust, and vibration emissions from the operation of machinery, equipment and can affect the health of residents and workers along the route if exposed to the pollutant source This infection for a long time; c) arising out of social evils due to the presence of workers such as theft, gambling, drugs and infectious diseases; d) soil, construction materials and irrigation channels can drop down the flow, rice fields of the people ....

Potential impacts during the operational phase

During operation, the dam may be sliding hatch, unsafe for people in areas downstream. Also, in the area downstream of the spill incidents in the rainy season, if the water level through accidental spills may affect the livelihood consists of rice, fish ponds and farms of people in this area.

The mitigation measures during the construction phase

Measures to mitigate the impact suitable for upgrading the dam and ancillary works include: a) implementation of the action plan for resettlement; b) implementation of mitigation measures to minimize impacts as dust, emissions, noise, vibration; operating equipment and machinery reasonable; appropriate work schedules and avoid the rainy day; implement measures to ensure the safety and health at the site); c) appropriate management personnel (personnel selection, guidance on health and safety, prevention of infectious diseases, community interaction and establish regulations in camps for workers and measures treatment for offenders); and d) a good relationship with the local community (combining work with governments, to inform people; prioritized hiring local workers, ...)

Mitigation measures in the operation phase

Unit management and operation of Dong Be periodically check the safety of the reservoir; close collaboration with the CPC and locals to promptly report the risks related to dam safety for timely remedial measures; appoint regular monitoring duty to ensure reasonable water regulation during the rainy season; plan to inform people about the flood plan

Environmental Monitoring - social

Unit won the bid to prepare ESMP at the site, which will be the basis for environmental monitoring is done by the state agency authorized and PPMUs and supervision consultants. An environmental monitoring system has been prepared and approved by the Bank will be applied in the implementation of subprojects. Supervision consultants regularly inspect and report monthly to the PPMUs, this report will be independent of the environmental compliance report submitted to the provincial and central PMU.

9.2. Recommendation

Based on the findings of the environmental assessment and environmental management plan social (ESMP) referred to in this document, the following recommendations can be put on the sub-projects:

(I) The mitigation measures mentioned in the ESMP will be established as an integral part of the Bidding Documents Construction. Contractors will peel workload and make the total cost for the implementation of the mitigation measures outlined above. This cost is considered the costs and environmental safety, and will be paid when the mitigation measures are contractors commitment made effective.

(Ii) Based on the report of environmental impact assessment Social Policy Advisory safe and PMU propose competent authorities and the World Bank approved Environmental impact assessment of social subprojects Upgrade project to ensure safe water of Dong Be reservoir, Thanh Hoa province as a basis for implementing the next step, ensure the progress of implementation of subprojects. /.

9.3. Commitment of the investor

All public comments were recorded investor. The investor is committed to the mitigation measures that consultants proposed in Part 6 of this report. The project owner is committed to implement strong measures: sanctions to the contractor if the contractor fails to take measures to minimize negative impacts.

The investor of the project has committed to:

- Conform strictly and guarantee environmental parameters in accordance with Vietnam standards (National technical norms/Vietnam standards) follows current regulations on environmental quality parameters of QCVN 05-2009/BTNMT and QCVN26:2010/BTNMT
- Perform all measures to project water source and environment of wastewater QCVN 14:2008/BTNMT (B).
- Collect and treatment of solid waste, hazardous waste generated during the construction phase in compliance with the regulations for hazardous waste by Circular No. 12/2011 / TT - BTNMT April 14, 2011 of the Ministry of Natural Resources and Environment regulations on hazardous waste management.
- Implement fire safety measures during the construction phase.
- Commit follow the proposed mitigation measures in construction activity.
- Follow the regulation and penalty of environmental management agency of the local governments on environmental issues if any

- Compensate and recover the issue generating by the project on environmental and social
- Commit repair all damaged roads during construction due cause.
- Implement the monitoring program, environmental management, regularly

REFERENCES

1. Report of the sub-projects FS repair, upgrade safety Dong Be reservoirs, Xuan Du, Nhu Thanh District, Thanh Hoa Province;
2. A report on the action plan for resettlement (RAP) subproject repair, upgrade safety Dong Be reservoir, Xuan Du commune, Nhu Thanh District, Thanh Hoa Province .;
3. A report assessing the impact of social subprojects repair, upgrade safety Dong Be reservoir, Xuan Du commune, Nhu Thanh District, Thanh Hoa Province .;
4. Dam Safety Report subprojects repair, upgrade safety Dong Be reservoir, DXuan Du commune, Nhu Thanh District, Thanh Hoa Province.
5. Report on the socio-economic situation Trieu Thanh, Trieu Son district, Xuan Du commune, Nhu Thanh District, Thanh Hoa Province in 2014;
6. Results of the analysis of environmental samples background subproject area repair, upgrade safety Dong Be reservoir, XuanDu commune, Nhu Thanh District, Thanh Hoa Province.
7. The types of maps:
8. - Map of the project area
9. - The map of land use and planning of the project.

ANNEX A. ENVIRONMENTAL DOCUMENTS

Annex A1. Drawings of the main items of construction

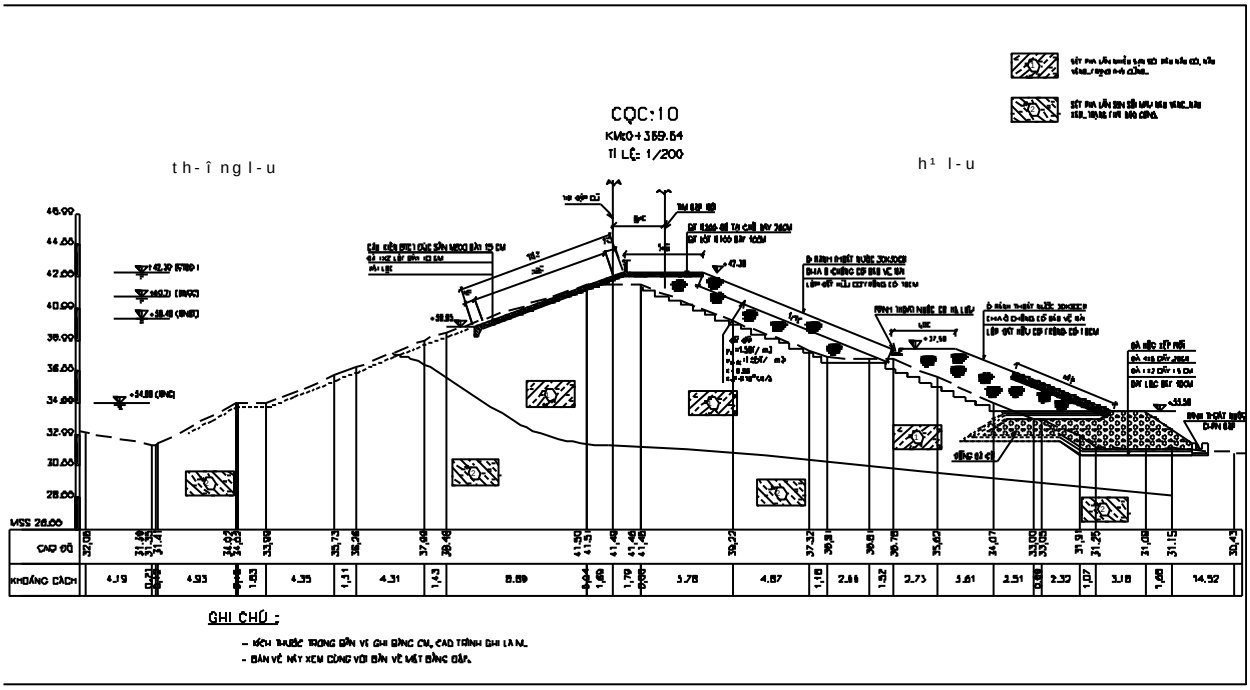

Figure 1: Cross-section of representative dam

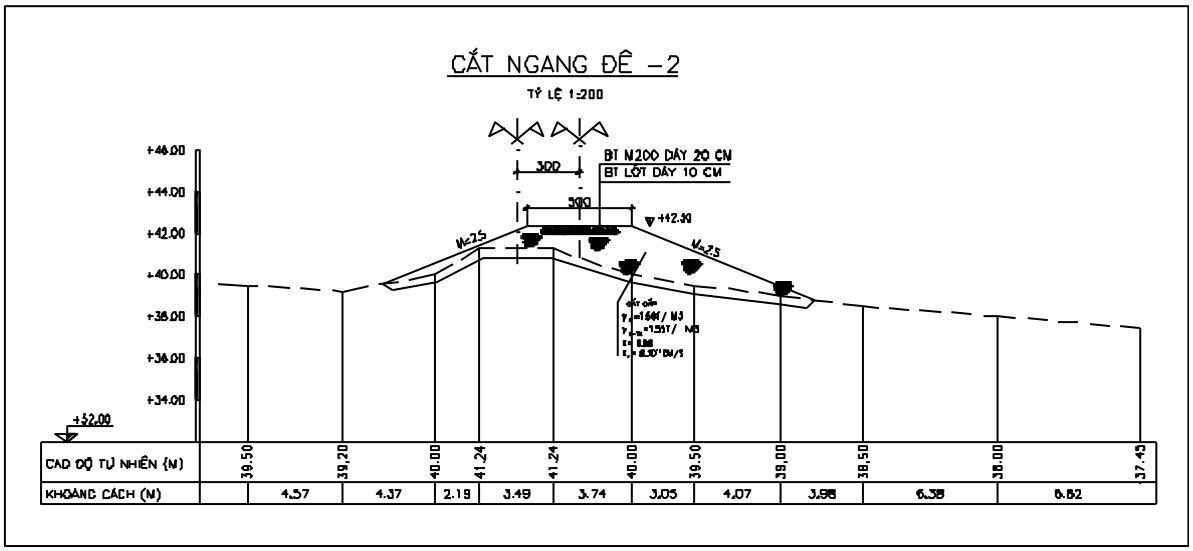

Figure 2: Cross-section of representative of flood protection dike

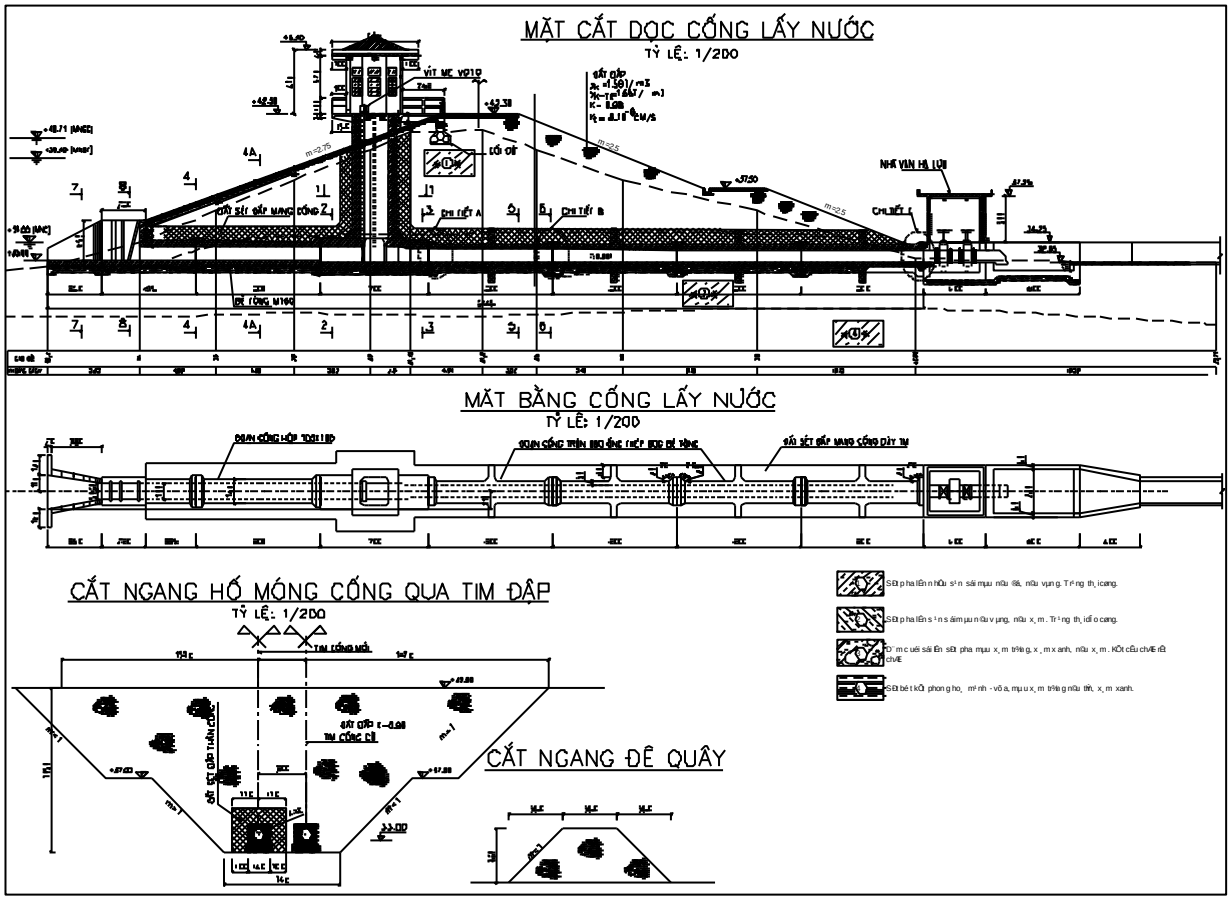
MẶT CẮT DỌC CỐNG LẤY NƯỚC
TỶ LỆ: 1/200
MẶT BẰNG CỐNG LẤY NƯỚC
TỶ LỆ: 1/200
CẮT NGANG HỐ MÓNG CỐNG QUA TIM ĐẬP
TỶ LỆ: 1/200
CẮT NGANG ĐÊ QUÂY

Figure 3: Cross section of representative irrigation sluice

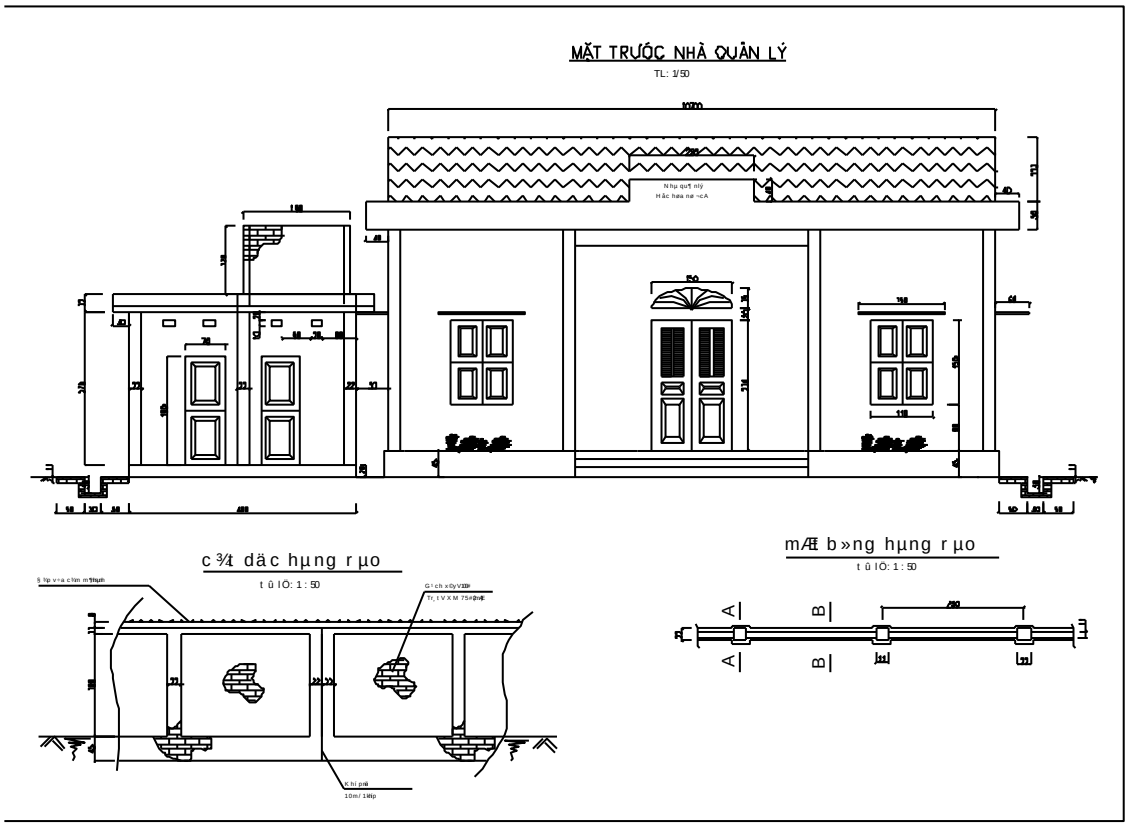

Figure 4: Representative cross-section of management house

Annex A2. Maps

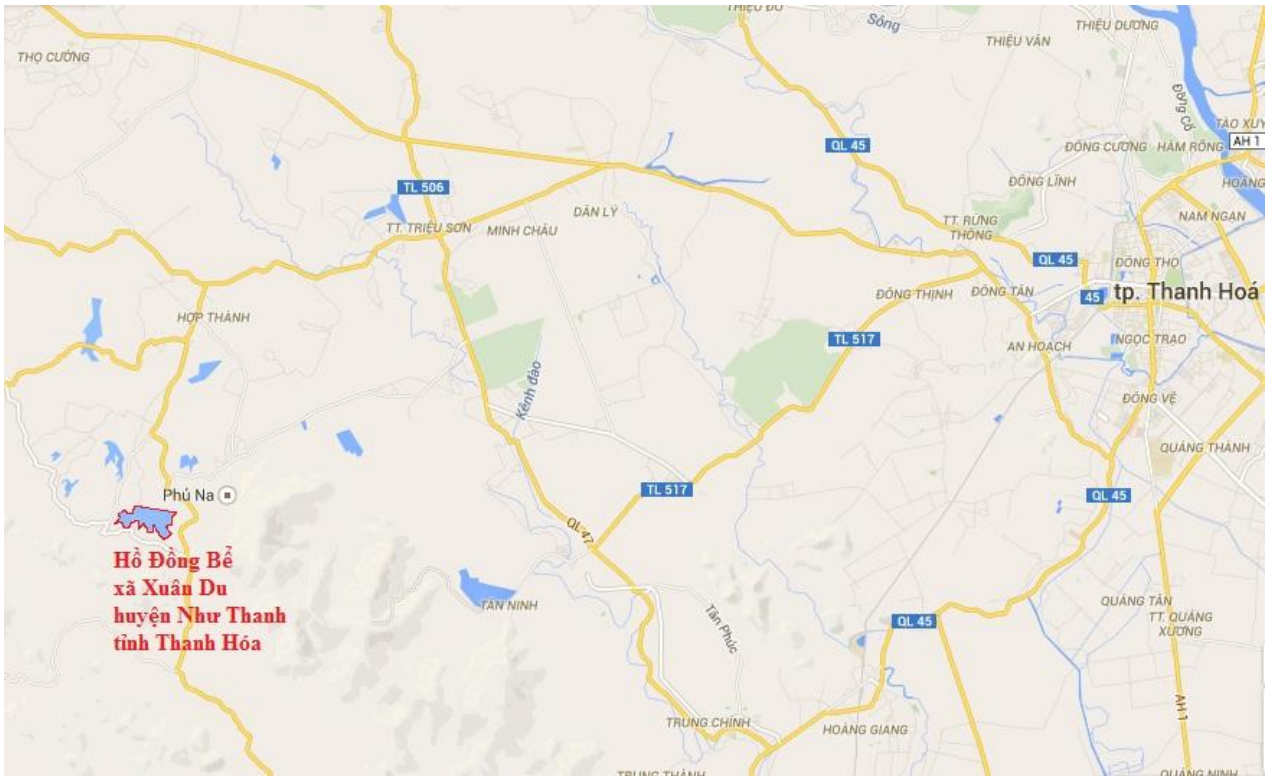

Figure 1: Location of Dong Be reservoir

Figure 2: Project area

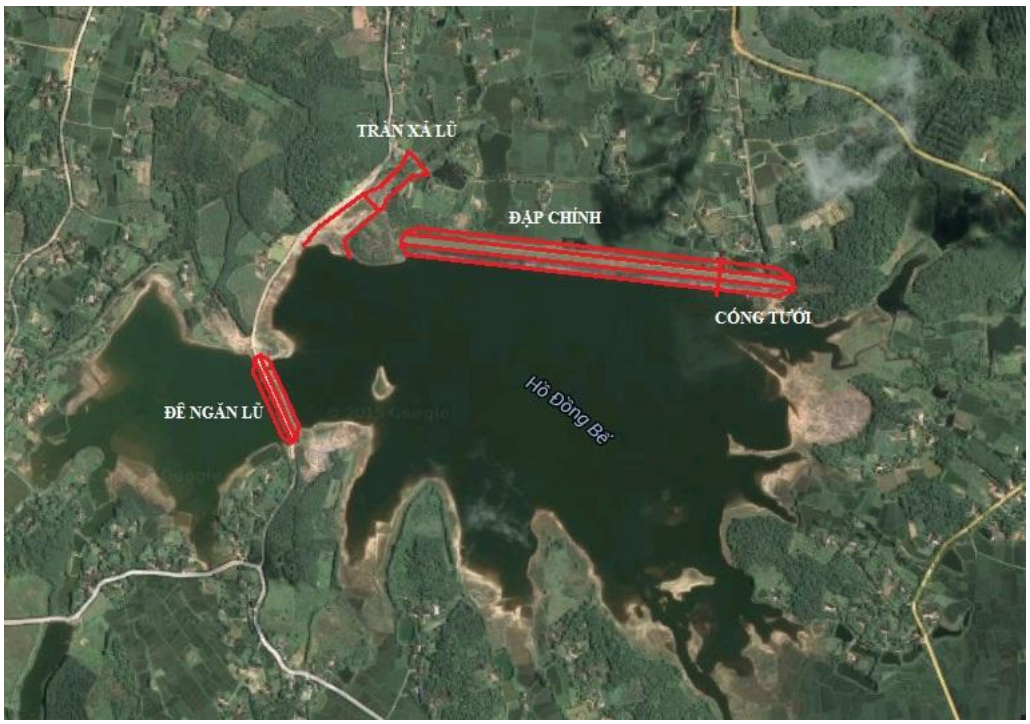

Figure 3: Location of constructions

Annex A3. Policy framework, institution and regulation

1.Policy framework, institution and regulationof GoV for ESIA

Legal framework related to environmental protection

- Law on Environmental Protection 2014, No. 55/2014/QH13 regulating the issues related to Strategic Environmental Impact Assessment and commitment of Environmental protection for development activities. EIA report must be prepared during investment preparation process (feasibility study);
- Decree No. 18/2015/NĐ-CP dated 14/02/2015 regulating plan for environment protection, strategic environmental impact assessment, EIA and planning for environmental protection;
- Direction No. 26/CT-TTg dated 25/8/2014 of Prime Minister on implementing the Law on Environmental Protection;
- Circular No.01/2012/TT-BTNMT dated 16/3/2012 of MONRE regulating preparation, approval and monitoring, identifying the implementation of the detailed environmental protection project; preparation and registration of the simple environmental protection project;
- Decree No. 29/2011/NĐ-CP dated 18/04/2011 regulating strategic environmental assessment, EIA and environmental protection commitment;
- Circular No.16/2009/TT-BTNMT dated 17/10/2009 of MONRE on Regulation and Technical Standard on environment, air quality and some toxics in around air;
- Decision No. 22/2006/QĐ-BTNMT dated 25/12/2006 of MONRE on forcing Vietnam National Standards of environment application.

Legal framework related to land use and land aquisition of the investment projects

- Law on Land No. 45/2013/QH13 approved by Vietnam National Assembly dated 29/11//2013;
- Decree No.44/2014/ND- CP, dated 15/05/2014 regulating the land price;
- Decree No. 47/2014/ND-CP, dated 15/05/2014 regulating the compensation, support and resettlement in cases of the land recovered;
- Decree No. 37/2014/ND-CP, dated 30/06/2014 regulating in details about the compensation, support and resettlement in cases of the land recovered;
- Circular No. 23/2014/TT-BTNMT dated 19/5/2014 regulating the Certificate of Land use right, House ownership and other assets attached.

Legal framework related to the use and management of the investment projects

- Law on Construction No. 50/2014/QH13 approved by Vietnam National Assembly dated 18/08/2014;
- Decree No. 15/2013/NĐ-CP dated 06/02/2013 on managing the construction quality;
- Decree No. 207/2013/NĐ-CP dated 11/12/2013 on revising and supplement some Articles of Decree No. 48/2010/NĐ-CP dated 07/5/2010 of Government on the contract in construction activities;
- Decree No. 12/2009/ND-CP dated 10/02/2009 on managing the construction and investment projects.

Legal framework related to integrated water resources exploitation and forest protection, cultural heritage and biodiversity

- Law on Water Resources approved by Vietnam National Assembly dated 21/06/2012;
- Decree No.42/2012/NĐ-CP, dated 11/05/2012 of Government on managing and using of rice land;

- Decree No. 112/2008/NĐ-CP dated 20/10/2008 of Government on managing, protecting and integrated exploitation of water resources and environment of the electrical generation and irrigation reservoirs;
- Decree No. 120/2008/NĐ-CP dated 01/12/2008 of Government on River Basin management;
- Decree No. 72/2007/NĐ-CP dated 07/05/2007 of Government on Dam safety management;
- Decree No. 149/2004/NĐ-CP dated 27/07/2004 of Government regulating the licensing of exploration, exploitation and use of water resources and waste water discharge into water resources;
- Law on Culture Heritage No.28/2001/QH10 approved by Vietnam National Assembly dated 12/07/2001. Article 13 - Strictly prohibit the following acts: Appropriating and distorting the cultural heritage; destroying or risk destruction of cultural heritage; Unauthorized excavation of archaeological sites; illegal construction, encroachment of land belonging to historical – cultural and scenic areas;
- Law on Biodiversity No.28/2008/QH12 approved by Vietnam National Assembly dated 13/01/2008. Chapter III- Natural Ecosystem conservation and sustainable development, and Chapter IV- Creature Conservation and Development.

National Policy on Dam safety

- Decree No. 72/NĐ-CP dated 07/02 /2007 on managing Dam safety;
- Government Direction No. 21/CT-TTg dated 14/10/2013 on enhancing the management of reservoir safety;
- Circular No. 33/2008/TT-BNN dated 04/02/2008 on guiding the implementation of some Articles of Decree No. 72/NĐ-CP;
- Circular No. 34/2010/TT-BCT of Ministry of Industry and Trade dated 07/10/2010 regulating safety management of Electric Generation Reservoirs.
- Document N01852/BNN-TCTL dated 10/06/2014 of the Minister of Agriculture and Rural Development on supporting the urgent repair funding to ensure the safety of reservoirs;

Resettlement policy

- The Constitution of Vietnam Socialist Republic (1992) confirmed the people rights on house ownership and house ownership protection.
- The Constitution of Vietnam Socialist Republic 2013.
- Law on Land No. 45/2013/QH13 on administration regulations of land in general. Law on Land 2013 instead of the previous Land Laws in 1987 and 1993.
- Law on Complaints No. 02/2011/QH11 approved by Vietnam National Assembly.
- Decree No. 43/2014/ND-CP dated 15/5/2014 on the Land Law enforcement.
- Decree No.44/2014/ND-CP dated 15/5/2014 regulating the Land price assessment.
- Decree No. 47/2014/ND-CP dated 15/5/2014 on compensation and resettlement in cases of land recovered.
- Decree No. 75/2012/ND-CP dated 03/10/2012 on guiding the implementation of the Law on Complaints.
- Decree No. 38/2013/ND-CP dated 23/4/2013 on managing and use of Official Development Assistant Fund (ODA).
- Decree No. 42/2012/ND-CP dated 11/05/2012 on managing and use of rice land;
- Circular No.37/2014/TT-BTNMT dated 30/6/2014 regulating compensation, support and resettlement in cases of land recovered.
- Decision No. 1956/2009/QD-TTg dated 17/11/2009 of Prime Minister on approving the Overall Strategy of Career training for rural labor to 2020.
- Decree No. 197/2004/NĐ-CP of Government dated 03/12/2004 on compensation, support and resettlement in cases of land recovered.

- Circular No.116/2004/TT-BTC dated 17/12/2004 of Government on guiding the implementation of Decree No.197/2004/ND-CP, dated 03/12/2004 on compensation, support and resettlement in cases of land recovered.
- Decree No.188/2004/NĐ-CP of Government on the methods of determining land price and land price frame for each type of land.
- Circular No.36/2014/TT-BTNMT dated 30/6/2014 regulating the methods of land price assessment, construction and land price adjustment.
- Circular No. 114/2004/TT-BTC, dated 16/11/2004 guiding the implementation of Decree No. 188/2004/NĐ-CP.
- Decree No.17/2006/NĐ-CP of Government dated 27/01/2006 on revising and supplement some Articles of Decree guiding the implementation of Law on Land and Decree No. 187/2004/NĐ on the transformation of state companies into joint stock companies.
- Decree No. 84/2007/NĐ-CP of Government dated 25/05/2007 regulating the supplements of issuing the Land use rights Certificate, procedures of compensation and resettlement in cases of land recovered.
- Decree No. 123/2007/NĐ-CP, dated 27/7/2007 on revising and supplement some Articles of Decree No.188/2004/NĐ-CP, dated 16/11/2004 on the methods of determining land price and land price frame for each type of land.
- Decree No. 69/2009/NĐ-CP of Government dated 13/08/2009 regulating the additional planning regulations on land use, land price, land recovery, compensation, support and resettlement.
- Decision No. 52/2012/QĐ-TTg of Government dated 16/11/2012 on support policy of employment and career training for labors who have land recovered.

Gender policy
- Law on Gender Equality No. 73/2006/QH11 approved by Vietnam National Assembly dated 29/11/2006;
- Direction No. 07/2007/CT-TTg 3/5/2007 of Government on the Law on Gender Equality enforcement;
- Decree No. 70/2008/NĐ-CP dated 4/6/2008 of Government regulating in detail on implementation of on Gender Equality;
- Decree No. 55/2009/NĐ-CP dated 10/6/2009 of Government on administration sanctions of gender equality;
- Decree No. 48/2009/NĐ-CP dated 19/5/2009 of Government on the measures of ensuring gender equality;
- Circular No. 191/2009/TT-BTC dated 1/10/2009 of Ministry of Finance guiding the use and management of funds for gender equality and women advancement;
- Circular No. 07/2011/TT-BTP dated 31/3/2011 of Ministry of Justice guiding the gender equality ensure in staff arrangement and legal support activities;
- Decision No. 2351/QĐ-TTg dated 24/12/2010 of Prime Minister approving the National Strategy on Gender Equality for 2011 – 2020 period.

Policy for Ethnic Minority community development
- Decree No. 82/2010/ND-CP dated 20/7/2010 of Government on teaching and learning the ethnic language in the schools.
- Decree No. 60/2008/NĐ-CP dated 9/6/2008 of Government regulating the functions, tasks, responsibilities and organization structures of Ethnic Committee.
- Decision No. 06/2007/QD-UBDT dated 12/1/2007 of Ethnic Committee approving Communication Strategy for 135 Program – phase 2.
- Decree No. 70/2001/ND-CP: all registration documents of family assets and land use rights must be filled the names of both husband and wife.

- Decision No. 134/2004/CP dated 20/7/2004 of Government on policy of supporting productive land, residential land, house and domestic water for the poor and difficult ethnic households.
- Decision No. 03/2005/QĐ-BNN dated 07/01/2005 of Minister of MARD regulation the wood exploitation to support house construction of the poor and difficult ethnic households in line with Decision No. 134/QĐ-TTg dated 20/7/2004 of Government.
- Decision No. 33/2007/QĐ-TTg, dated 05/3/2007 of Government on the support policy on immigration and settlement for ethnic minorities;
- Decision No. 32/2007/QĐ-TTg dated 05/3/2007 of Government on the loans for production development of especial difficult ethnic households.
- Decision No. 1592/QĐ-TTg dated 12/10/2009 of Government on continuing implementation of some policies to support productive land, residential land, house and domestic water for the poor and difficult ethnic households.
- Decision No. 05/2007/QD-UBDT dated 06/9/2007 of Ethnic Committee approving three Ethnic Minority regions and mountainous region based on the development situation.
- Circular No. 06 dated 20/9/2007 of Ethnic Committee guiding the support services for livelihood improvement of local people, technical assistant to improve knowledge on Law enforcement in line with Decision No. 112/2007/QD-TTg.

Poverty reduction policy

- Decision No. 33/2007/QD-TTg dated 20/7/2007 of Prime Minister on the support policy to improve knowledge of Law enforcement within 135 program- phase 2.
- Decision No. 1956/2009/QD-TTg, dated 17/11/2009 of Prime Minister approving the Master Plan on career orientation training for rural labors to 2020.
- Resolution No. 30a/2008/NQ-CP of Government dated 27/12/2008 on the support program for rapid and sustainable poverty reduction for 61 poorest districts.

National Regulations and Standards related to environmental protection

(i) Water Environment:

- NTR 02:2009/BYT: National technical standard on domestic water quality.
- NTR 08:2008/BTNMT: National technical standard on surface water quality;
- NTR 09:2008/BTNMT - National Technical Standard on ground water quality;
- NTR 14:2008/BTNMT - National Technical Standard on domestic waste water.
- NTR 39/2011/BTNMT - National Technical Standard on water quality for irrigation;

(ii) Air Environment:

- NTR 05:2013/ BTNMT - National Technical Standard on around air quality;
- NTR 06:2008/BTNMT – National Technical Standard on some toxics in around air.
- NTR 07:2008/BTNMT: air quality - levels of toxic substances in the air
- TCVN 6438:2001: Vehicles from the road - the maximum limit of gases emission

(iii) Land Environment

- NTR 03 : 2008/BTNMT - National Technical Standard on permitted limitation of heavy metals in the soil;
- NTR 04 : 2008/BTNMT – National Technical Standard on residue of chemical and pesticide in the soil;
- NTR 43:2012/BTNMT - National Technical Standard on sediment quality.

(iv) Solid waste management:

- NTR 07: 2009/BTNMT - National Technical Standard on thresholds of hazardous waste.
- TCVN 6696:2009: solid waste - sanitary landfill. General requirements for environmental protection

(v) Vibration and noise:

- NTR 26:2010/BTNMT – National Technical Standard on the noise;
- NTR 27:2010/BTNMT – National Technical Standard on the vibration.

(vi) Health and labor safety
Decision N0 3733/2002 / QD-BYT of the Ministry of Health dated 10/10/2002 on the application of the 21 standards of health and safety that relates to microclimate, noise, and vibration chemicals - the allowed threshold in the workplace.

2.Safeguard policies of WB

According to Bank policy, ESIA report must be combined with the economic, financial, institutional, social and technical analysis of projects to ensure that environmental and social issues are adequately reviewed in the selection of projects, location and the decisions relating to technology solutions. Five (05) safeguard policies of the Bank's should be enabled for the project.

Annex A4. Environmental and social screening of the sub-project

Table 1: Environmental and social screening with criteria of group A

Screening question	Yes	No	Comment
1. Does the sub-project have the potential to cause significant adverse impacts on the natural environment or vital natural environment?			
- Loss or degradation of land and water areas where (i) has the native species, and (ii) human activity has not significantly alter the fundamental ecological functions of the project.		✓	There are vegetation, many wood trees such as acacia and some shrub on the left hand of downstream side of the dam, near the spillway. It is inhabited by some insects i.e. mites, crickets, ladybirds and animals i.e. rats, frogs, birds, etc. Clearing, cleaning plants will take the place of residence, inhabited by animals. However, area and number of species is small, the impact of cleaning trees is not significant.
- Loss or degradation of vital natural habitat such as conservation areas, areas protected by traditional local communities (eg, sacred forests), biodiversity; rare, vulnerable, migratory, or endangered species.		✓	Rehabilitation activities are performed only around the headworks including dam, spillway, intake structure and management road. All of the above structures is not in the sensitive areas of the environment, such as protected areas, areas protected by traditional local communities.
2.Does the sub-project have the potential to cause significant adverse impacts on physical cultural resources?			
Loss or degradation of physical culture resources, structures, groups of structures, characteristics, natural landscape vital in archaeology, paleontology, history, architect, religious, aesthetic, or other importance of culture.		✓	There is no impact on physical cultural resources because the sub-project construction is based only on the current state of the project. In the communes of the project area, there is only Phu Na temple, a historical structure built in the early of 19th century, in Xuan Du commune. However, it is 3km away from the main dam, 500 m away from a provincial road 506, so that it is not affected by construction activities.
- It can lead to conflict with national law or international obligations under treaties and international agreements concerning the environment, including the World Heritage Convention of UNESCO or affect heritage with importance		✓	The project only rehabilitates the Dong Be reservoir built in 1991. The project will be carried out completely within the framework of national legislation and international obligations under treaties and international agreements concerning the environment.

Screening question	Yes	No	Comment
benefits on tourist and scientific			
3. Does the sub-project have the potential to cause significant adverse impacts on land and related natural resources of ethnic minorities?			
It is possible to lead to impacts on land or territory traditionally owned, or used or customary tenure, and where access to natural resources is vital for the sustainability of the culture and livelihood of ethnic minorities. It is able to affect cultural values and spirit symbolizing for the land and natural resources or the impact on the management of natural resources and the long-term sustainability of resources affected.		✓	As stated above, the project area has low proportion of ethnic minorities (5%). Construction of sub-project affects land and crops of 13 Kinh households in the protective area of dam in the two communes. No land areas, natural resources are related to the use of ethnic minorities. The project does not use the land or territories traditionally owned, used, or occupied by customary.
4. Does the sub-project have the potential to cause significant adverse impacts on the displaced people?			
Leading to the displacement of people or land acquisition, property affects their lives and difficulty restoring livelihoods.		✓	Sub-project will permanently acquire land of 5,721 m^2 within protective area of the dam where 13 households of Xuan Du and Trieu Thanh communes are cultivating rice, aquaculture and perennial crops, without structure. There is no displacement and crops, assets of affected households will be compensated at the cost issued by Thanh Hoa PPC. Consultation results showed that households with affected crops mentioned above are not difficult to restore their livelihoods.
5. Does sub-project require the construction of a large dam?			
Does the sub-project requires the construction of a large dam: - Height of more than15 meters - Height from 10 to 15 meters, complicated design - Less than 10 meters high,		✓	The largest height of Dong Be dam is 10.95 m. However, there is only rehabilitation in the subproject, without large dam construction. A dam safety report for this sub-project was prepared to ensure principles of dam safety of the Vietnamese government as well as the policies of the World Bank.

Screening question	Yes	No	Comment
but is it expected to become the large dam in the operation phase of the sub-projects?			
The operation of the sub-project depends on the efficiency of: - Existing dams or under construction - Power stations or water supply systems get water directly from the reservoir by a large dam or a dam under construction. - Diversion dam or hydraulic structures at the downstream from an existing dam or dams under construction, where every incident of upstream dams can cause tremendous harm or damage to the architecture, water resources or water supply project funded by the World Bank, the project is dependent on the capacity and performance of a large dam or dam is being constructed to provide water and could not function if the dam is broken.		✓	Sub-project is undertaken to improve and ensure the safety of the dam and people living in downstream of the dam. During rehabilitation, some categories of dams are improved efficiency. Dam is only constructed on the current state, not increase the capacity or increase the irrigated area after the investment.
6. Does the subproject lead to the purchase or use of pesticides?			
The formula of the product belongs to IA and IB classification of the World Health Organization, or type II?		✓	The purchase or use of pesticides types IA and IB of WHO is not in the activities of sub-project.
7. Does subproject have the potential to cause irreversible effects or impact which is not easy to mitigate?			
Lead to loss of recharging aquifers regions, affecting the quality of water storage		✓	Rehabilitation of sub-project limited in the headworks area of the Dong Be reservoir will not cause impact to the quality of water storage areas.

Screening question	Yes	No	Comment
and water storage areas responsible for providing drinking water to large population centers.			Moreover, the majority of the population in the project area use bore hole, dug wells for domestic purpose, so the project does not affect the water storage providing for residential areas.
Lead to any impact that affected period is relatively long, on a large geographical area or intense impact.		✓	Total construction time of subproject is not long, only 24 months. The construction time of Dong Be reservoir is in the dry season. Construction area of a new intake is embanked around, old intake is still operating normally. After finishing the construction of new intake, old intake is removed. Thus there is no influence on water supply for the beneficial area in construction time. The reservoir is rehabilitated to ensure the safety of the people behind the dam and provides a stable water source to contribute to community economic development. Therefore the subproject has no major negative effect on the environment and society.
8. Does subproject potentially result in a wide variety of significant adverse effects?			
Construction sites in different locations affect significantly the habitat, natural resources, land or resources depletion in the quality.		✓	Temporary land acquisition includes: - The camp, construction management house and material storage: expected area of 0.2 ha in the empty area and reservoir side area. These areas will minimize the effects of construction to natural resources, and environment. - The dumpsite located in the village 4 and 5, Xuan Du commune has capacity of 29.000 m^3. Dumpsite in a vacant shallow area adjacent to the inter-communal roads. After the completion of the project, dumpsite area will be leveled and planted with acacia, eucalyptus, etc. Thus, the construction site is in a narrow scale without significant impact on the environment, natural resources, land or depletion of resource quality.
The significant adverse effects, potentially capable of expanding beyond the construction site.		✓	The construction uses only two transportation roads: - Contemporary management of provincial highway 506 connecting Xuan Du withers Organic main dam; - Road construction flood overflow and flood protection dike fell 3 Trieu Thanh come from Dong Bun ham let, Xuan Du .. The cause dust, spread beyond the site may occur,

Screening question	Yes	No	Comment
			but only in a narrow range. Construction area is rural, wooded should easily be diluted dust, impact if the mitigation measures are implemented, it may well be limited.
The impact across the border (in addition to a small change in the waterway activities are taking place).		✓	Sub-projects are implemented entirely in the territory of Vietnam does not impact across borders.
The need for public roads, tunnels, canals, power transmission corridors, new pipelines, or borrow and disposal areas in the region is underdeveloped.		✓	In sub-project category 2 upgrade route to the dam and road management services of students reservoir, combined rescue, flood prevention and rescue from Dong Be to 506 lines for the purpose of operating and the better use of incident cases. - The road on the left bank of the main dam, from the junction Million Members to flood dikes are all dirt roads, pavement width of about 3 m long and 700 m, the rainy season is very muddy, causing many difficulties for transportation . This route will be used during the construction of temporary roads and flood overflow dam. After construction is complete the main items will be upgraded into a concrete road with a length of 700m and ensuring travel needs of the people and operational management of the reservoir. - The road on the right bank of the main dam, from the provincial road 506 into the operation of irrigation drains, current hardened concrete roads are rural 200m, 100m there is still dirt roads, 3m wide. This route will be used as the main road and dam construction of new irrigation drains. After construction is complete the above item will inevitably be damaged, be taken to renovate and upgrade the entire route with a total length of 300m. Vegetation along the main road through the bushes, appearing only see one of the common trees such as oval, knife, wood magazine. The area of reclaimed land to build up the road management are estimated 1ha of household gardens. Affected trees are fruit (grapefruit, star fruit, apple ...) and vegetables have lower economic value, is not the kind of rare plants.
Interrupting the cycle of migratory wildlife, animal		✓	Sub-projects are implemented in the areas of concentrated population. Not detect all kinds of

Screening question	Yes	No	Comment
or herd grazing, nomads or semi-nomads			wildlife, only grazing animals such as buffalo, cows ... of the household. The construction of subproject not disrupts cell cycle uncle animals. No nomads or semi-nomads in the project area.
9. Is the subproject is not precedent?			
No precedent at the national level?		✓	The Prime Minister had written some 1479 / CP-NN dated 30.10.2003 on approval of the program to ensure the safety of reservoirs; Document No. 1734/TTg-KTN 21/9/2009 Prime Minister requests continue to implement programs to repair and upgrade the water. After 10 years of implementation, the program has achieved the following results: Repaired and upgraded nearly 600 types of reservoirs, with a total budget of nearly 6,000 billion (mainly to ensure the safety of key works). Funding for the repair, upgrade reservoir are taken from many different sources, including ODA, Government bonds, the state budget by the Ministry of Agriculture and Rural Development Management, local budgets and other sources.
Unprecedented in the province?		✓	There are a total of six reservoirs with a capacity of over 1 million m3 in Thanh Hoa province has been upgraded and repaired.
10. Skin controversial and likely to attract the attention of NGOs and social organizations in national or international?			
Operational risk is considered likely to have particular aspects controversial.		✓	As subprojects repair work went into long-term operation and management units and specific service object, therefore availability of particular aspect is no controversy.
Likely to lead to protests by those who wish to express or stop construction.		✓	Consultation results showed that both the government and the people 100% agree, support implementation of subprojects.

Annex A5. Review of environmental impacts

No.	The subproject has caused the environmental impact of this?	No	Low	Medium	High	Unknown	Comment
1.	Violate regional history/ culture.	✓					Without any historical parks / culture in the area or scope of the project
2.	Violate ecosystems (and: natural habitat or sensitive conservation areas, national parks, nature reserves ...).	✓					Sub-projects to renovate the current state only, not expanding, non-infringement of Nature reserve area... Communes in the project area, no damage nature reserves or natural habitats sensitive. Therefore, the primary activities of the project will not cause infringement of the ecosystem.
3.	Deform the landscape and increase the amount of waste.		✓				During construction, sub-project will permanently acquire 5.721m2 land around the area of Dong Be reservoir and temporary use of land area about 10.815m2 disposal. In particular, the area of land was permanently revoked in dam safety corridor, people voluntarily cultivation; land temporarily withdrawn is public land managed by Xuan Du commune. There are three sources of solid waste arising from construction activities include: the type (i) construction waste such as debris

No.	The subproject has caused the environmental impact of this?	No	Low	Medium	High	Unknown	Comment
							from the surface leveling operations (plant, animal feces, fences, ...), cement bags, containers and oil, lubricants, ...; type (ii) wastes from worker camps in the construction area; and (iii) excess excavated. In addition, the sludge from the toilet can contain harmful bacteria and pollution sources should be handled in the construction process.
4.	Breaking down trees or vegetation class.		✓				Elementary construction project based on the current status of the work, so the vegetation does not have to be demolished or damage. Only two blank area, approximately 1,000m2 of land managed by the commune used to worker camps, the operator. However, this ground without any vegetation
5.	Change of surface water quality or flow (eg, increased water turbidity currents occur due to wastewater from camps and erosion, and construction waste).		✓				At the peak of construction, domestic wastewater of workers flowing into the water when the risk will increase the amount of the substance in the water causing water pollution Oil spills from machinery and construction equipment or water when washing machines can be washed cell interference and declining water quality

No.	The subproject has caused the environmental impact of this?	No	Low	Medium	High	Unknown	Comment
							and aquatic ecosystems. Waste water and oil compounds may be sunk into the ground and over time will gradually seep into aquifers and contaminate aquifers.
6.	Increase the level of dirt or contaminants in the air during the construction process.		✓				During repair the dam, overflow, bridges and ancillary works, some of the activities described below will cause negative impacts such as dust emissions, emissions affect the lives of local people. The amount of dust and gases that can cause respiratory disease or lung diseases to people (such as sinusitis, asthma, ...) if direct contact with the sources of this pollution for a long time.
7.	Noise / vibration increases.		✓				Noise can be caused by the transportation of construction materials and construction equipment (excavators, bulldozers, road rollers, compactors) affects families and schools along the road sections construction. Every day during the construction phase, about 15 vehicles. During construction and operation data transport, waste, noise will be generated and can affect noise to the people living along the route in the province of Dong Be reservoir. In particular,

No.	The subproject has caused the environmental impact of this?	No	Low	Medium	High	Unknown	Comment
							the route goes through the central area of Xuan Du. However, this effect is SMALL and TEMPORARY.
8.	Resettlement of households? If yes, how many households?	✓					No public beneficiaries of resettlement.
9.	Using geographical relocation environmentally sensitive and / or culture.	✓					Not resettlement.
10.	The risk of transmission from human to local people (and vice versa).		✓				During construction, the use of water does not meet sanitary standards for workers in the camps or construction may also cause gastrointestinal disease or the spread of insect vectors (ie dengue fever, malaria, ..) when migrant workers are bitten by infected insects (mosquitoes) and then spread to others. Next to that, a number of social diseases such as HIV / AIDS, syphilis ... also a risk.
11.	Potential conflicts between construction workers and local people (and vice versa).		✓				During construction, approximately 20-30 technical workers from other provinces about living and working locally. During this time, there may be conflicts between the local labor from elsewhere due to disagreements about the culture or communication or

No.	The subproject has caused the environmental impact of this?	No	Low	Medium	High	Unknown	Comment
							disputes about employment opportunities. However, these effects are SMALL and TEMPORARY
12.	Use explosives and toxic chemicals.	✓					Subproject not use explosives or toxic chemicals in the construction process.
13.	Using the site where the accident happened due to blasting or explosive remnants of war.	✓					Subproject not use the site where the accident occurred mine. Some material gathering place and workers' camp was open spaces, safe by the local government and the people and allow introduction. The total area should be 2ha demining along the route and left shoulder spill.
14.	Construction activities may disrupt transport, roads, or waterway.		✓				During construction may impact travel, local transportation, as well as the risk of accidents: a) increase the risk of accidents due to the increase of the means through inter-commune roads / communication and construction sector (where the excavation activities, and where the construction equipment, waste is located on or next to roads, buildings, ...) can be dangerous, especially in night when visibility is limited; and dust particles suspended in reduced visibility; b) the construction of the dam and ancillary works such as road manager

No.	The subproject has caused the environmental impact of this?	No	Low	Medium	High	Unknown	Comment
							will limit the ability of people to travel as well as access to social infrastructure such as schools, markets ... However, this effect is LOW and TEMPORARY.
15.	Construction activities may cause any damage to the roads, bridges or other rural infrastructure is local?		✓				The process of transporting construction materials or waste on rural roads can ruin the way if the truck is overloaded and become active in the rainy season. The construction of rural infrastructure such as canals, system power cables, communication cables are not affected by the construction of the sub-projects because of this work lies in the safety corridors of the main roads. The line manager works without cables or cables for information. Thus, the social infrastructure is not affected by the construction activities. Main canal irrigation system running along Dong Swimming may be affected by the material spilled from the truck in the process of moving vehicles or by the large load caused. The impact on the LOW and TEMPORARY
16.	Excavation during		✓				Dam construction process, the construction

No.	The subproject has caused the environmental impact of this?	No	Low	Medium	High	Unknown	Comment
	construction of the sub-projects can cause soil erosion.						may cause erosion overflow dam or a nearby location. However, this effect is LOW and TEMPORARY.
17.	There is need to open a new line of temporary and long-term service?	✓					Sub-projects are not open new roads and temporary duty by the current route is capable of transporting construction materials or waste.
18.	Split or disintegrate habitat of animals and plants?	✓					+ For the flora and fauna under the reservoir will not be affected by the project does not create an impact on water quality or water. + For terrestrial flora: Around the sub-project area and you do not have an indirect impact position is habitat of flora and fauna.
19.	Long-term impact on air quality.	✓					The sources of air pollution made mainly from dust by means of public transport construction materials, waste transportation .... running on the roads in the communes of Trieu Thanh Xuan Du and. In addition, the air may be polluted from the construction machinery, vehicles emitted. However, very few sources of emissions and only appear in certain time .. Therefore, there is no long-term impact on air quality. Only a

No.	The subproject has caused the environmental impact of this?	No	Low	Medium	High	Unknown	Comment
							temporary impact on air
20.	The risk of accidents for workers and communities in the construction phase.		✓				Construction process can take the risk of accidents due to operating machinery, process digging and filling or shipping materials if the workers are not complied with regulations on occupational safety. In addition, the construction can also cause accidents to the community if people are not restricted to the construction area. However, this effect is MEDIUM and TEMPORARY
21.	Use of hazardous materials or hazardous and toxic waste generated.	✓					Subproject not use poisons two or generate hazardous substances. During construction, there may be a small amount of machine oil leak into the environment.
22.	risks to human health and Safety.		✓				During construction there may be risks of occupational safety, risk of respiratory diseases due to contaminated smoke, dust ...
23.	Affect the water supply and production during construction works	✓					Construction of dams and spillway period of 15 months. In the first year of high dam will be constructed to the normal water level. The construction of culverts, dams overflow and will

No.	The subproject has caused the environmental impact of this?	No	Low	Medium	High	Unknown	Comment
							not affect the water vectors for production. The construction schedule will not affect water supply.
24.	Increase flooding, sediment transport downstream	✓					Dong Be reservoir is independent reservoir, irrigation areas are in downstream. Construction process will need to drain the water level high death but mainly during the dry season, when the water in the tank is not large. In addition, areas with good drainage system should be assessed impacts are NOT.
Sub-projects requiring land acquisition or restrict access to resources?							
25.	Land acquisition (temporary or permanent) of public land (public or private) to build.		✓				During construction, the sub-project will permanently revoke a certain area. Specifically: Sub-projects will be permanently acquired land around the area 5.721m2 of Dong Be reservoir, 2000 m2 of the dam corridor and temporary use of land 10.815m2 landfill space. This impact is LOW.
26.	Land use is currently being possessed or used regularly for production purposes (eg, gardening, farming,	✓					Sub-projects will be permanently acquired land around the area 5.721m2 works Dong Swimming pools and temporary use of land area about 10.815m2

No.	The subproject has caused the environmental impact of this?	No	Low	Medium	High	Unknown	Comment
	grazing, where fishing, forest.						disposal. Permanent land acquired is in the protective area of the dam, people are cultivating on these land without allowance or registration. These land belongs to Xuan Du CPC. This impact will NOT happen.
27..	Relocation of personal, family, or business.	✓					There is no relocation, no impacts on buisness of household.
28.	Temporary or permanent loss of crops, fruit trees, or infrastructure in the galaxy.		✓				Total vegetation clearance will be: 2,140 trees, of which 10 banana plants, 500 bamboo plants, 20 Eucalyptus and Acacia 1610.
29.	Restrict mandatory access of people in the park preserves and conservation areas.	✓					Subproject area without conservation parks, so this effect does not occur
Subproject impact on ethnic minority?							
30.	The ethnic minority groups living within or near the subproject.		✓				Subproject will not affect ethnic minorities.
31.	Members of minority groups in the region are likely to be benefited or harmed by the	✓					Ethnic minorities in the subproject areaare the primary beneficiaries of the project.

No.	The subproject has caused the environmental impact of this?	No	Low	Medium	High	Unknown	Comment
	project.						
Sub-project requires the construction of a dam or rely on?							
32.	Involves the construction of a large dam?	✓					Dong Be dam is below 15m (10.95m) should not be a big hit, as defined by the World Bank.
33.	Depending on the water level of a dam or weir or dam is under construction?	✓					Upstream of Dong Be dam no dam or weir or dam is under construction.

Annex A6. Results of environmental sample analysis

1. Results of the analysis on the air environment

Table 1: Results of the analysis of air quality in project area

No.	Parameter	Unit	Results of sample analysis				QCVN 05:2009/BTNMT (average 1 hour)
			Mk1	Mk2	Mk3	Mk4	
1	Temperature	^oC	28,2	29,6	27,9	30,4	-
2	Humidity	%	79	71	73	76	-
3	Wind speed	m/s	3,2	3,6	2,9	2,8	-
4	Equivalent noise	dBA	40	38	44	49	70*
5	TSP	$\mu g/m^3$	122	148	107	158	300
6	SO_2	$\mu g/m^3$	87	72	115	131	350
7	Cacbon oxit (CO)	$\mu g/m^3$	890	1.500	2.300	2.900	30.000
8	Nitơ oxit (NO_2)	$\mu g/m^3$	56	46	61	86	200

Note: NTR 05: 2009 / BTNMT- national technical standards for the quality of ambient air environment (average 1 hour).

(-):not specified;

**QCVN 26: 2010/BTNMT: National technical regulations on noise.*

Table 2: Results of the analysis of air quality in project area

No.	Parameter	Unit	Results of sample analysis				QCVN 05:2009/BTNMT (average 1 hour)
			Mk5	Mk6	Mk7	Mk8	
1	Temperature	^oC	27,9	27,6	28,3	28,7	-
2	Humidity	%	75	73	76	71	-
3	Wind speed	m/s	4,1	2,2	3,7	2,0	-
4	Equivalent noise	dBA	48	51	40	47	70*
5	TSP	$\mu g/m^3$	90	161	113	172	300
6	SO_2	$\mu g/m^3$	139	169	105	173	350
7	Cacbon oxit (CO)	$\mu g/m^3$	1.100	1.800	900	2.200	30.000
8	Nitơ oxit (NO_2)	$\mu g/m^3$	82	101	77	125	200

Note: NTR 05: 2009 / BTNMT- national technical standards for the quality of ambient air environment (average 1 hour).

(-):not specified;

**QCVN 26: 2010/BTNMT: National technical regulations on noise.*

Table 3: Results of the analysis of air quality in project area

No.	Parameter	Unit	Results of sample analysis				QCVN 05:2009/BTNMT (average 1 hour)
			Mk9	Mk10	Mk11	Mk12	
1	Temperature	^oC	30,3	31,7	30,9	30,4	-
2	Humidity	%	77	74	75	78	-
3	Wind speed	m/s	1,9	4,2	2,6	3,7	-
4	Equivalent noise	dBA	43	54	57	39	70*
5	TSP	$\mu g/m^3$	180	129	146	135	300
6	SO_2	$\mu g/m^3$	171	143	202	116	350
7	Cacbon oxit (CO)	$\mu g/m^3$	3.200	1.500	1.600	4.300	30.000
8	Nitơ oxit (NO_2)	$\mu g/m^3$	125	116	158	92	200

Note: NTR 05: 2009 / BTNMT- national technical standards for the quality of ambient air environment (average 1 hour).

(-):not specified;

**QCVN 26: 2010/BTNMT: National technical regulations on noise.*

Table 4: Results of the analysis of air quality in project area

No.	Parameter	Unit	Results of sample analysis				QCVN 05:2009/BTNMT (average 1 hour)
			Mk13	Mk14	Mk15	Mk16	
1	Temperature	^oC	29,2	29,6	28,8	30,1	-
2	Humidity	%	80	79	82	78	-
3	Wind speed	m/s	4,8	3,3	5,2	2,4	-
4	Equivalent noise	dBA	47	51	38	58	70*
5	TSP	$\mu g/m^3$	140	172	120	195	300
6	SO_2	$\mu g/m^3$	119	67	140	161	350
7	Cacbon oxit (CO)	$\mu g/m^3$	2.700	4.500	1.100	3.300	30.000
8	Nitơ oxit (NO_2)	$\mu g/m^3$	68	45	52	71	200

Note: NTR 05: 2009 / BTNMT- national technical standards for the quality of ambient air environment (average 1 hour).

(-):not specified;

**QCVN 26: 2010/BTNMT: National technical regulations on noise.*

Table 5: Results of the analysis of air quality in project area

No.	Parameter	Unit	Results of sample analysis				QCVN 05:2009/BTNMT (average 1 hour)
			Mk17	Mk18	Mk19	Mk20	
1	Temperature	^oC	27,2	28,6	27,9	29,3	-
2	Humidity	%	75	72	69	72	-
3	Wind speed	m/s	2,2	2,9	1,3	3,8	-
4	Equivalent noise	dBA	43	49	55	56	70*
5	TSP	$\mu g/m^3$	190	138	155	219	300
6	SO_2	$\mu g/m^3$	176	142	119	198	350
7	Cacbon oxit (CO)	$\mu g/m^3$	4.300	1.900	2.600	1.400	30.000
8	Nitơ oxit (NO_2)	$\mu g/m^3$	124	78	63	162	200

Note: NTR 05: 2009 / BTNMT- national technical standards for the quality of ambient air environment (average 1 hour).

(-):not specified;

**QCVN 26: 2010/BTNMT: National technical regulations on noise.*

Table 6: Results of the analysis of air quality in project area

No.	Parameter	Unit	Results of sample analysis				QCVN 05:2009/BTNMT (average 1 hour)
			Mk21	Mk22	Mk23	Mk24	
1	Temperature	^oC	29,6	28,9	29,5	29,0	-
2	Humidity	%	79	75	77	74	-
3	Wind speed	m/s	3,8	2,4	3,6	4,2	-
4	Equivalent noise	dBA	55	46	59	44	70*
5	TSP	$\mu g/m^3$	162	133	142	98	300
6	SO_2	$\mu g/m^3$	135	121	145	116	350
7	Cacbon oxit (CO)	$\mu g/m^3$	5.200	2.800	3.300	2.100	30.000
8	Nitơ oxit (NO_2)	$\mu g/m^3$	70	66	82	60	200

Note: NTR 05: 2009 / BTNMT- national technical standards for the quality of ambient air environment (average 1 hour).

(-):not specified;

**QCVN 26: 2010/BTNMT: National technical regulations on noise.*

Table 7: Results of the analysis of air quality in project area

No.	Parameter	Unit	Results of sample analysis				QCVN 05:2009/BTNMT (average 1 hour)
			Mk25	Mk26	Mk27	Mk28	
1	Temperature	^oC	28,2	28,8	27,9	28,0	-
2	Humidity	%	80	78	77	79	-
3	Wind speed	m/s	1,2	3,1	2,6	1,5	-
4	Equivalent noise	dBA	40	38	42	67	70*
5	TSP	$\mu g/m^3$	102	93	131	279	300
6	SO_2	$\mu g/m^3$	97	62	108	295	350
7	Cacbon oxit (CO)	$\mu g/m^3$	1.600	990	1.300	12.000	30.000
8	Nitơ oxit (NO_2)	$\mu g/m^3$	56	43	67	176	200

Note: NTR 05: 2009 / BTNMT- national technical standards for the quality of ambient air environment (average 1 hour).

(-):not specified;

**QCVN 26: 2010/BTNMT: National technical regulations on noise.*

Table 8: Results of the analysis of air quality in project area

No.	Parameter	Unit	Results of sample analysis					QCVN 05:2009/BTNMT (average 1 hour)
			Mk29	Mk30	Mk31	Mk32	Mk33	
1	Temperature	^oC	30,3	29,7	30,8	30,1	30,5	-
2	Humidity	%	71	76	72	74	75	-
3	Wind speed	m/s	4,3	1,7	2,9	3,0	3,7	-
4	Equivalent noise	dBA	58	53	39	49	42	70*
5	TSP	$\mu g/m^3$	202	191	153	161	140	300
6	SO_2	$\mu g/m^3$	182	151	122	138	117	350
7	Cacbon oxit (CO)	$\mu g/m^3$	10.200	7.400	2.600	2.900	1.800	30.000
8	Nitơ oxit (NO_2)	$\mu g/m^3$	163	151	76	115	61	200

Note: NTR 05: 2009 / BTNMT- national technical standards for the quality of ambient air environment (average 1 hour).

(-):not specified;

**QCVN 26: 2010/BTNMT: National technical regulations on noise.*

2. Results of the analysis of surface water quality

Table 9: Results of the analysis of surface water quality in project area

No.	Parameter	Unit	QCVN08:2008/ BTNMT		Result of analysis				
			B1	**B2**	Nm1	Nm2	Nm3	Nm4	Nm5
1	pH		5,5-9	5,5-9	7,5	7,7	7,8	8,0	8,3
2	DO	mg/l	≥4	≥2	5,8	6,1	6,2	5,0	5,6
3	TSS	mg/l	50	100	31,9	42,7	22,5	29,4	38,2
4	COD	mg/l	30	50	23,7	18,8	28,5	20,0	27,9
5	BOD_5 (20^0C)	mg/l	15	25	12,2	9,6	14,7	10,2	14,5
6	$NO3^-$ (calculated by N)	mg/l	10	15	0,9	1,6	2,7	1,3	2,4
7	PO_4^{3-} (calculated by P)	mg/l	0,3	0,5	0,02	0,08	0,13	0,06	0,16
8	Amoni (NH_4^+)	mg/l	0,5	1	0,01	0,03	0,02	0,19	0,32
9	Asen (As)	mg/l	0,05	0,1	kph	kph	kph	0,002	kph
10	Oil	mg/l	0,1	0,3	0,06	0,08	0,04	0,01	kph
11	Total Coliform	MPN/ 100ml	7.500	10.000	2.700	5.900	4.200	5.300	3.200

Note: Kph: not detected;

Sign (-) is not specified;

QCVN 08:2008/ BTNMT: National technical regulation on surface water quality;

B1 - Used for irrigation purposes or other uses require water quality or other similar purposes like type B2;

B2 - Aqualculture and other purposes with the requirements of low quality water.

Table 10: Results of the analysis of surface water quality in project area

No.	Parameter	Unit	QCVN08:2008/ BTNMT		Result of analysis				
			B1	**B2**	Nm6	Nm7	Nm8	Nm9	Nm10
1	pH		5,5-9	5,5-9	7,3	7,7	6,8	8,2	7,6
2	Dissolved oxygen (DO)	mg/l	≥4	≥2	4,7	5,5	4,9	5,2	5,8
3	Total suspended solid (TSS)	mg/l	50	100	40,6	37,8	50,6	43,5	31,7
4	COD	mg/l	30	50	19,3	15,6	25,8	31,2	24,6
5	BOD_5 (20^0C)	mg/l	15	25	9,8	8,2	12,9	15,8	12,4
6	$NO3^-$ (tính theo N)	mg/l	10	15	1,4	2,8	1,7	0,6	1,1
7	PO_4^{3-} (tính theo P)	mg/l	0,3	0,5	0,06	0,19	0,28	0,02	0,17
8	Amoni (NH_4^+)	mg/l	0,5	1	0,05	0,01	0,09	0,22	0,19
9	Asen (As)	mg/l	0,05	0,1	kph	0,001	kph	0,002	0,001
10	Total petroleum	mg/l	0,1	0,3	0,01	kph	kph	0,04	0,07
11	Total Coliform	MPN/ 100ml	7.500	10.000	1.700	3.900	2.200	1.300	4.400

Note: Kph: not detected;

Sign (-) is not specified;

QCVN 08:2008/ BTNMT: National technical regulation on surface water quality;

B1 - Used for irrigation purposes or other uses require water quality or other similar purposes like type B2;

B2 - Aqualculture and other purposes with the requirements of low quality water.

Table 11: Results of the analysis of surface water quality in project area

No.	Parameter	Unit	QCVN08:2008/ BTNMT		Result of analysis				
			B1	**B2**	Nm11	Nm12	Nm13	Nm14	Nm15
1	pH		5,5-9	5,5-9	7,4	7,3	7,5	8,3	7,6
2	Dissolved oxygen (DO)	mg/l	≥4	≥2	5,1	4,5	5,4	5,7	4,3
3	Total suspended solid (TSS)	mg/l	50	100	32,9	43,7	46,5	29,6	48,4
4	COD	mg/l	30	50	14,9	21,2	16,5	29,2	21,7
5	BOD_5 (20^0C)	mg/l	15	25	7,8	10,9	8,7	14,8	10,7
6	$NO3^-$ (tính theo N)	mg/l	10	15	1,3	0,7	2,6	0,4	0,3
7	PO_4^{3-} (tính theo P)	mg/l	0,3	0,5	0,04	0,09	0,13	0,06	0,15
8	Amoni (NH_4^+)	mg/l	0,5	1	0,14	0,25	0,04	0,31	0,07
9	Asen (As)	mg/l	0,05	0,1	kph	kph	0,003	0,001	kph
10	Total petroleum	mg/l	0,1	0,3	0,05	0,03	kph	0,06	kph
11	Total Coliform	MPN/ 100ml	7.500	10.000	4.700	1.900	3.500	4.300	4.000

Note: Kph: not detected;

Sign (-) is not specified;

QCVN 08:2008/ BTNMT: National technical regulation on surface water quality;

B1 - Used for irrigation purposes or other uses require water quality or other similar purposes like type B2;

B2 - Aqualculture and other purposes with the requirements of low quality water.

Table 12: Results of the analysis of surface water quality in project area

No.	Parameter	Unit	QCVN08:2008/ BTNMT		Result of analysis				
			B1	**B2**	Nm16	Nm17	Nm18	Nm19	Nm20
1	pH		5,5-9	5,5-9	6,7	7,5	7,3	8,0	7,1
2	Dissolved oxygen (DO)	mg/l	≥4	≥2	5,0	4,8	6,1	5,3	4,9
3	Total suspended solid (TSS)	mg/l	50	100	30,3	27,7	41,2	20,6	43,8
4	COD	mg/l	30	50	19,5	21,2	14,3	28,5	15,5
5	BOD_5 (20^0C)	mg/l	15	25	10,2	11,4	12,6	14,7	12,9
6	$NO3^-$ (tính theo N)	mg/l	10	15	2,8	1,3	2,9	2,6	0,7
7	PO_4^{3-} (tính theo P)	mg/l	0,3	0,5	0,15	0,06	0,05	0,27	0,19
8	Amoni (NH_4^+)	mg/l	0,5	1	0,26	0,13	0,02	0,08	0,23
9	Asen (As)	mg/l	0,05	0,1	0,001	0,001	kph	kph	kph
10	Total petroleum	mg/l	0,1	0,3	kph	0,05	0,01	kph	kph
11	Total Coliform	MPN/ 100ml	7.500	10.000	3.600	2.100	5.300	3.200	2.700

Note: Kph: not detected;

Sign (-) is not specified;

QCVN 08:2008/ BTNMT: National technical regulation on surface water quality;

B1 - Used for irrigation purposes or other uses require water quality or other similar purposes like type B2;

B2 - Aqualculture and other purposes with the requirements of low quality water.

Table 13: Results of the analysis of surface water quality in project area

No.	Parameter	Unit	QCVN08:2008/ BTNMT		Result of analysis				
			B1	**B2**	Nm21	Nm22	Nm23	Nm24	Nm25
1	pH		5,5-9	5,5-9	7,2	7,8	7,3	6,8	7,6
2	Dissolved oxygen (DO)	mg/l	≥4	≥2	4,9	5,2	4,8	5,0	6,4
3	Total suspended solid (TSS)	mg/l	50	100	30,8	41,2	38,5	49,6	33,7
4	COD	mg/l	30	50	22,6	18,9	27,3	20,5	30,1
5	BOD_5 (20^0C)	mg/l	15	25	11,7	9,7	13,9	11,2	14,8
6	$NO3^-$ (tính theo N)	mg/l	10	15	1,8	0,6	1,2	0,3	1,5
7	PO_4^{3-} (tính theo P)	mg/l	0,3	0,5	0,16	0,09	0,25	0,06	0,19
8	Amoni (NH_4^+)	mg/l	0,5	1	0,38	0,15	0,26	0,13	0,09
9	Asen (As)	mg/l	0,05	0,1	kph	kph	0,001	0,001	kph
10	Total petroleum	mg/l	0,1	0,3	0,07	0,02	0,04	0,05	0,08
11	Total Coliform	MPN/ 100ml	7.500	10.000	1.600	2.300	3.600	2.000	4.600

Note: Kph: not detected;

Sign (-) is not specified;

QCVN 08:2008/ BTNMT: National technical regulation on surface water quality;

B1 - Used for irrigation purposes or other uses require water quality or other similar purposes like type B2;

B2 - Aqualculture and other purposes with the requirements of low quality water.

Table14: Results of the analysis of surface water quality in project area

No.	Parameter	Unit	QCVN08:2008/ BTNMT		Result of analysis				
			B1	**B2**	Nm26	Nm27	Nm28	Nm29	Nm30
1	pH		5,5-9	5,5-9	7,6	7,5	7,2	7,9	8,3
2	Dissolved oxygen (DO)	mg/l	≥4	≥2	4,3	5,6	4,7	5,2	4,3
3	Total suspended solid (TSS)	mg/l	50	100	21,4	27,3	38,9	40,2	30,2
4	COD	mg/l	30	50	19,6	17,3	27,4	32,9	20,3
5	BOD_5 (20^0C)	mg/l	15	25	10,3	8,9	13,9	16,2	10,7
6	$NO3^-$ (tính theo N)	mg/l	10	15	2,4	1,3	0,6	1,9	1,0
7	PO_4^{3-} (tính theo P)	mg/l	0,3	0,5	0,13	0,04	0,17	0,09	0,15
8	Amoni (NH_4^+)	mg/l	0,5	1	0,41	0,26	0,15	0,05	0,39
9	Asen (As)	mg/l	0,05	0,1	0,001	kph	kph	0,001	kph
10	Total petroleum	mg/l	0,1	0,3	0,04	kph	0,07	0,03	kph
11	Total Coliform	MPN/ 100ml	7.500	10.000	3.200	1.100	4.900	5.500	2.600

Note: Kph: not detected;

Sign (-) is not specified;

QCVN 08:2008/ BTNMT: National technical regulation on surface water quality;

B1 - Used for irrigation purposes or other uses require water quality or other similar purposes like type B2;

B2 - Aqualculture and other purposes with the requirements of low quality water.

3. Results of the analysis of groundwater quality

Table 15: Results of the analysis of groundwater quality

No.	Parameter	Unit	QCVN09:2008 / BTNMT	Nn1	Nn2	Nn3	Nn4	Nn5
1	pH	-	5,5 - 8,5	7,01	7,24	7,14	7,45	7,08
2	Hardness (by $CaCO_3$)	mg/l	500	167	303	420	105	389
3	Nitorit (NO_2^-)	mg/l	1	0,07	0,03	0,07	0,08	0,02
4	Amoni (NH_4^+)	mg/l	0,1	0,06	0,02	0,005	0,09	0,04
5	Asen (As)	mg/l	0,05	kph	0,001	0,002	kph	0,001
6	Sufat (SO_4^{2-})	mg/l	400	102	137	89	186	160
7	E.coli	MPN/ 100ml	Not detected	kph	1	1	kph	kph
8	Total Coliform	MPN/ 100ml	3	3	2	kph	1	2

Note: NTR 09: 2008 / BTNMT: National Technical Regulation on groundwater quality;

Kph: not detected; Sign (-) is not specified.

Table 16: Results of the analysis of groundwater quality

No.	Parameter	Unit	QCVN09:2008/ BTNMT	Nn6	Nn7	Nn8	Nn9	Nn10
1	pH	-	5,5 - 8,5	7,32	7,03	7,26	7,40	7,11
2	Hardness (by $CaCO_3$)	mg/l	500	266	170	351	279	303
3	Nitorit (NO_2^-)	mg/l	1	0,12	0,06	0,03	0,17	0,31
4	Amoni (NH_4^+)	mg/l	0,1	0,04	0,01	0,006	0,002	0,05
5	Asen (As)	mg/l	0,05	0,001	kph	0,003	0,002	kph
6	Sufat (SO_4^{2-})	mg/l	400	256	180	132	291	107

7	E.coli	MPN/100ml	Not detected	kph	2	1	1	kph
8	Total Coliform	MPN/100ml	3	kph	3	kph	kph	1

Note: NTR 09: 2008 / BTNMT: National Technical Regulation on groundwater quality;

Kph: not detected; Sign (-) is not specified.

Table 17: Results of the analysis of groundwater quality

No.	Parameter	Unit	QCVN09:2008/ BTNMT	Nn11	Nn12	Nn13	Nn14	Nn15
1	pH	-	5,5 - 8,5	7,22	7,13	7,61	7,50	7,03
2	Hardness (by $CaCO_3$)	mg/l	500	304	140	262	240	290
3	Nitorit (NO_2^-)	mg/l	1	0,49	0,11	0,28	0,30	0,25
4	Amoni (NH_4^+)	mg/l	0,1	0,08	0,03	0,01	0,07	0,01
5	Asen (As)	mg/l	0,05	kph	kph	0,001	0,001	0,001
6	Sufat (SO_4^{2-})	mg/l	400	205	82	161	227	93
7	E.coli	MPN/100ml	Not detected	kph	kph	kph	1	1
8	Total Coliform	MPN/100ml	3	kph	kph	1	2	3

Note: NTR 09: 2008 / BTNMT: National Technical Regulation on groundwater quality;

Kph: not detected; Sign (-) is not specified.

Table 18: Results of the analysis of groundwater quality

No.	Parameter	Unit	QCVN09:2008/ BTNMT	Nn16	Nn17	Nn18	Nn19	Nn20
1	pH	-	5,5 - 8,5	7,18	7,21	7,01	7,45	7,36
2	Hardness (by $CaCO_3$)	mg/l	500	307	208	170	361	244
3	Nitorit (NO_2^-)	mg/l	1	0,19	0,38	0,47	0,12	0,56
4	Amoni (NH_4^+)	mg/l	0,1	0,08	0,04	0,02	0,05	0,03
5	Asen (As)	mg/l	0,05	kph	0,001	kph	kph	kph
6	Sufat (SO_4^{2-})	mg/l	400	108	182	141	209	151
7	E.coli	MPN/100ml	Not detected	kph	kph	1	2	kph
8	Total Coliform	MPN/100ml	3	kph	1	2	4	kph

Note: NTR 09: 2008 / BTNMT: National Technical Regulation on groundwater quality;

Kph: not detected; Sign (-) is not specified.

4. Results of the analysis of land quality

Table 19: Results of the analysis of land quality in project area

No.	Parameter	Unit	Results					QCVN 03:2008/BTNMT
			MD1	MD2	MD3	MD4	MD5	
1	Asen (As)	mg/kg	0,36	1,84	2,33	4,96	2,16	12
2	Cadmi (Cd)	mg/kg	0,37	0,96	0,12	1,84	0,26	2
3	Cu	mg/kg	1,86	7,90	4,35	5,10	11,24	50
4	Pb	mg/kg	10,26	2,44	17,20	21,78	8,80	70
5	Zn	mg/kg	40,81	29,36	32,18	10,45	20,80	200

Note: QCVN 03:2008 BTNMT: National technical regulation on maximum permissible limits of heavy metals in soil - land used for agricultural purposes;

Sign (-) is not specified.

Table 20: Results of the analysis of land quality in project area

No.	Parameter	Unit	Results					QCVN 03:2008/BTNMT
			MD6	MD7	MD8	MD9	MD10	
1	Asen (As)	mg/kg	1,03	2,18	0,90	3,27	1,60	12
2	Cadmi (Cd)	mg/kg	0,32	0,14	0,55	1,07	0,96	2
3	Cu	mg/kg	9,27	6,80	5,21	13,18	25,05	50
4	Pb	mg/kg	15,09	8,65	22,05	5,66	29,71	70
5	Zn	mg/kg	23,44	18,52	49,13	27,06	42,48	200

Note: QCVN 03:2008 BTNMT: National technical regulation on maximum permissible limits of heavy metals in soil - land used for agricultural purposes;

Sign (-) is not specified.

Table 21: Results of the analysis of land quality in project area

No.	Parameter	Unit	Results					QCVN 03:2008/BTNMT
			MD11	MD12	MD13	MD14	MD15	
1	Asen (As)	mg/kg	0,53	3,94	1,67	5,15	3,37	12
2	Cadmi (Cd)	mg/kg	0,81	1,02	0,69	0,88	1,35	2
3	Cu	mg/kg	13,09	5,37	9,03	21,09	17,96	50

4	Pb	mg/kg	22,69	17,51	31,65	15,60	9,71	70
5	Zn	mg/kg	49,02	34,68	21,07	29,13	40,91	200

Note: QCVN 03:2008 BTNMT: National technical regulation on maximum permissible limits of heavy metals in soil - land used for agricultural purposes;

Sign (-) is not specified.

Table 22: Results of the analysis of land quality in project area

No.	Parameter	Unit	Results					QCVN 03:2008/BTNMT
			MD16	MD17	MD18	MD19	MD20	
1	Asen (As)	mg/kg	2,36	1,04	3,60	4,37	5,18	12
2	Cadmi (Cd)	mg/kg	0,55	0,26	0,78	1,09	0,80	2
3	Cu	mg/kg	13,09	5,37	9,03	21,18	17,96	50
4	Pb	mg/kg	15,06	26,13	33,97	11,42	10,45	70
5	Zn	mg/kg	19,37	51,02	9,83	13,06	26,48	200

Note: QCVN 03:2008 BTNMT: National technical regulation on maximum permissible limits of heavy metals in soil - land used for agricultural purposes;

Sign (-) is not specified.

Table 23: Results of the analysis of land quality in project area

No.	Parameter	Unit	Results					QCVN 03:2008/BTNMT
			MD21	MD22	MD23	MD24	MD25	
1	Asen (As)	mg/kg	2,91	0,35	6,13	3,09	7,18	12
2	Cadmi (Cd)	mg/kg	0,77	0,56	0,25	1,21	0,30	2
3	Cu	mg/kg	19,82	10,36	5,07	8,13	26,05	50
4	Pb	mg/kg	21,02	9,35	30,08	22,16	7,45	70
5	Zn	mg/kg	17,06	30,98	10,75	22,37	28,82	200

Note: QCVN 03:2008 BTNMT: National technical regulation on maximum permissible limits of heavy metals in soil - land used for agricultural purposes;

Sign (-) is not specified.

Table 24: Results of the analysis of land quality in project area

No.	Parameter	Unit	Results					QCVN 03:2008/BTNMT
			MD26	MD27	MD28	MD29	MD30	

1	Asen (As)	mg/kg	4,76	3,62	7,14	5,46	8,83	12
2	Cadmi (Cd)	mg/kg	0,84	0,16	0,51	0,10	0,91	2
3	Cu	mg/kg	21,02	3,76	15,93	7,08	10,40	50
4	Pb	mg/kg	19,03	20,36	41,15	8,06	33,92	70
5	Zn	mg/kg	72,06	38,13	6,91	17,52	29,94	200

Note: QCVN 03:2008 BTNMT: National technical regulation on maximum permissible limits of heavy metals in soil - land used for agricultural purposes;

Sign (-) is not specified.

Table 25: Results of the analysis of land quality in project area

No.	Parameter	Unit	Results			QCVN 03:2008/BTNMT
			MD31	MD32	MD33	
1	Asen (As)	mg/kg	3,68	0,74	1,85	12
2	Cadmi (Cd)	mg/kg	0,37	0,19	0,40	2
3	Cu	mg/kg	7,61	16,02	24,39	50
4	Pb	mg/kg	32,18	19,55	27,08	70
5	Zn	mg/kg	26,37	16,42	34,48	200

Note: QCVN 03:2008 BTNMT: National technical regulation on maximum permissible limits of heavy metals in soil - land used for agricultural purposes;

Sign (-) is not specified.

Table 26. Biodiversity:List of phytoplankton in the study area

No.	Science name
I	**Bacillariophyta**
1	*Amphora ovalis* Kützing
2	*Cyclotella comta* (Ehrenberg) Kützing
3	*Fragilaria capucina* Desmazières
4	*Pinnularia biceps* W.Gregory
II	**Chlorophyta**
5	*Ankistrodesmus falacatus* (Corda) Ralfs
6	*Coelastrum proboscideum* Bohlin
7	*C. pseudomicroporum* Korshikov
8	*Chlamydomonas epibiotica* Ettl
9	*C. pertyi* Gorozh
10	*C. pseudotarda* Bourrelly
11	*Chodatella quadriseta* Lemm
12	*Didymocystis inermis* (Fott) Fott
13	*Euastrum turneri* West
14	*Golenkinia radiata* (Chod) Wille
15	*Micractinium pusillum* Fresenius
16	*Oocystis borgei* J.Snow
17	*O. submarina* Lagerheim
18	*Pediastrum braunii* Wartmann
19	*P. biradiatum* Meyen
20	*Siderocelis ornata* Lemm
21	*S. tetracerum* Bur

22	*Tetrastrum heteracanthum* (Norost) Chod
III	**Cyanophyta**
23	*Aphanothece clathrata* W. et G. S. West
24	*Microcytistis incerta* Lemm
25	*Oscinlatoria geminata* Lyg
IV	**Euglenophyta**
26	*Astasia klebsii* Lemmermann
27	*Phacus acuminatus* Stokes
V	**Pyrrophyta**
28	*Cryptomonnas gracilis* Skuja
29	*Ceratium brachyceros* Daday

Table 27: List of zooplankton in the study area

No.	Science name
	Rotatoria
	Monogononta
	Ploimida
	Brachionidae
1	*Brachionus angularis* Gosse
2	*Keratella cochlearis* Gosse
3	*Platyias quadricornis* Ehrenberg
	Lecanidae
4	*Lecane leontina* Turner
5	*L. decipiens* Murray
	Synchaetidae
6	*Asplanchna brightwellii* Gosse
7	*Polyarthra vulgaris* Carlin
8	*Ploesoma truncatum* Levander
	Trichocercidae
9	*Trichocerca similis* Wierzejski
	Arthropoda
	Crustacea
	Cladocera
	Bosminidae
10	*Bosmina longirostris* (O.F.Muller)
11	*Bosminopsis deitersi* Richard
	Chydoridae

No.	Science name
12	*Alona guttata* Sars
13	*A. rectangula* Sars
14	*Chydorus ovalis* Kurz
	Daphniidae
15	*Ceriodaphnia rigaudi* Richard
16	*Daphnia longiremis* G.O. Sars
	lyocryptidae
17	*Ilyocryptus sordidus* Liévin
18	*I. agilis* Kurz
	Sididae
19	*Diaphanosoma excisum* G.O. Sars
20	*Sida crystallina* (O.F.Muller)
	Copepoda
	Diaptomidae
21	*Eodiaptomus draconisignivomi* Brehm
22	*Mongolodiaptomus formosanus* Kiefer
	Cyclopidae
23	*Eucyclops serrulatus* (Fischer)
24	*Mesocyclops leuckarti* (Claus)
	Oithonidae
25	*Oithona simplex* Farran

Table 28: List of benthic organisms in the study area

No.	Science name
	Arthropoda
	Crustacea
	Decapoda
	Brachyura
	Grapsidae
1	*Sesarma plicata* Latreille
2	*S. bidens* de Haan
	Portunidae
3	*Scylla serrata* Forskal
	Ocypodidae
4	*Uca dussumieri* H. Milne Edwards
	Macrura
	Atyidae
5	*Caridina acuticaudata* Dang
6	*C. flavilineata* Dang
	Palaemonidae
7	*Macrobrachium mieni* Dang
8	*Palaemontes tonkinensis* Sollaud
	Mollusca
	Gastropoda
	Caenogastropoda
	Thiaridae
9	*Antimelania costula* (Rafinesque)

No.	Science name
10	*Sermyla tornatella* Lea
11	*Melanoides tuberculata* O.FMuller
	Viviparidae
12	*Angulyagra wilhelmi* (Yen)
13	*Sinotaia aeruginosa* (Reeve)
	Bivalvia
	Veneroida
	Corbiculidae
14	*Corbicula baudoni* Morlet
15	*C. bocourti* Morlet
16	*C. cyreniformis* Prime
	Unionoida
	Unionidae
17	*Oxynaia jourdyi* (Morlet)
18	*Plethologhus discoideus* (Lea)
	Annelida
	Oligochaeta
	Haplotaxida
	Aelosomatidae
19	*Aeolosoma hemprichii* Ehrenberg
	Naididae
20	*Amphichaeta leydigi* Tauber
21	*Pristiana proboscidea* Beddard
	Tubificidae
22	*Branchiura sowerbyi* Beddard

Annex A7. Publicconsultation minutes

UBND TỈNH THANH HÓA
SỞ NÔNG NGHIỆP VÀ PTNT

Số 471 /SNN&PTNT-KHTC

V/v Tham vấn cộng đồng và điều tra xã hội các xã bị ảnh hưởng từ tiểu dự án: Hồ chứa nước Đồng Bể xã Triệu Thành, Hợp Thành, huyện Triệu Sơn và xã Xuân Du, Phượng Nghi huyện Như Thanh.

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập -- Tự do -- Hạnh phúc

Thanh Hóa, ngày 13 tháng 3 năm 2015

Kính gửi: Chủ tịch UBND các huyện Như Thanh, Triệu Sơn.

Tiểu dự án: Hồ chứa nước Đồng Bể xã Triệu Thành, huyện Triệu Sơn và xã Xuân Du, Phượng Xuân huyện Như Thanh đã được lựa chọn đưa vào danh mục tham gia giai đoạn 1 của Dự án: Cải tạo và nâng cao an toàn đập, vay vốn Ngân hàng Thế giới (WB8).

Để có cơ sở lập Báo cáo đánh giá tác động môi trường – xã hội; kế hoạch quản lý môi trường và kế hoạch hành động tái định cư theo yêu cầu của Nhà tài trợ; Sở Nông nghiệp và PTNT tổ chức tham vấn cộng đồng và điều tra xã hội các hộ dân bị ảnh hưởng trong vùng dự án; thành phần, thời gian và địa điểm tham vấn cụ thể như sau:

- Thành phần tham gia là các đại diện: Uỷ ban nhân dân xã, Ủy ban mặt trận Tổ quốc xã, các thôn/xóm và một số hộ dân trong phạm vi bị ảnh hưởng của dự án.

- Thời gian và địa điểm:

+ Ngày 17/3/2015 tổ chức tại UBND xã Triệu Thành, thời gian từ 8h 00';

+ Ngày 18/3/2015 tổ chức tại UBND xã Hợp Thành, thời gian từ 8h 00';

+ Ngày 19/3/2015 tổ chức tại UBND xã Xuân Du, thời gian từ 8h 00';

+ Ngày 20/3/2015 tổ chức tại UBND xã Phượng Nghi, thời gian từ 8h 00'.

Sở Nông nghiệp và PTNT đề nghị UBND huyện quan tâm, chỉ đạo các xã thông báo cho các thành phần được tham vấn có mặt đầy đủ, đúng thời gian và địa điểm quy định./.

***Nơi nhận*:**
- Như trên;
- Ban QLDA Thủy lợi;
- Lưu: VT, KHTC,Quang.

KT.GIÁM ĐỐC
PHÓ GIÁM ĐỐC

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
SỞ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN
TỈNH THANH HÓA

Trần Quang Trung

SỞ NÔNG NGHIỆP VÀ PTNT TỈNH THANH HOÁ **BAN QLDA THỦY LỢI** Số: 04/DATL	**CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM** **Độc lập - Tự do - Hạnh phúc** *Thanh Hóa, ngày 16 tháng 03 năm 2015*

V/v: Xin ý kiến tham vấn trong quá trình lập báo cáo đánh giá tác động môi trường, xã hội của Tiểu dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa.

Kính gửi: - UBND các xã Xuân Du, Phượng Nghi huyện Như Thanh;
- UBMTTQ các xã Xuân Du, Phượng Nghi huyện Như Thanh;
- UBND các xã Triệu Thành, Hợp Thành huyện Triệu Sơn;
- UBMTTQ các xã Triệu Thành, Hợp Thành huyện Triệu Sơn.

Thực hiện Luật Bảo vệ môi trường, các quy định của pháp luật về đánh giá tác động môi trường (ĐTM) và các yêu cầu của Ngân hàng Thế giới (WB) về đánh giá tác động môi trường, xã hội (ESIA). Ban QLDA Thủy lợi Thanh Hóa đang tổ chức triển khai lập báo cáo đánh giá tác động môi trường và xã hội của Tiểu dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa thuộc Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8).

Ban QLDA Thủy lợi Thanh Hóa xin gửi đến chính quyền địa phương thuộc vùng dự án tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường, xã hội của Tiểu dự án và rất mong nhận được ý kiến tham vấn của đơn vị.

Nơi nhận:
- Như trên;
- Sở NN&PTNT (báo cáo);
- Lưu: VT, DA2.

GIÁM ĐỐC

BAN QUẢN LÝ DỰ ÁN THỦY LỢI THANH HÓA

Phạm Công Văn

UBMTTQ XÃ XUÂN DU
HUYỆN NHƯ THANH

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Số: ...

Xuân Du, ngày... tháng ... năm 2015

V/v ý kiến tham vấn về Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8)

Kính gửi: Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa

UBMTTQ xã Xuân Du nhận được Văn bản số... ngày... tháng... năm 2015 của Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Tiểu dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa. Thuộc dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8). Sau khi xem xét tài liệu này, UBMTTQ xã Xuân Du có ý kiến như sau:

1. Về những tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

(*nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý*)

UBMTTQ xã Xuân Du đồng ý với các tác động xấu của dự án đến môi trường tự nhiên và kinh tế xã hội đã được trình bày trong báo cáo đánh giá tác động môi trường xã hội của dự án

2. Về các biện pháp giảm thiểu tác động môi trường, xã hội của Dự án:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBMTTQ xã Xuân Du đồng ý với các nội dung biện pháp giảm thiểu các tác động xấu đến môi trường xã hội được trình bày trong báo cáo

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

UBMTTQ xã Xuân Du yêu cầu nhà thầu và chủ đầu tư lắng nghe, phản hồi từ cộng đồng để thực hiện sửa đổi phù hợp. Ý kiến từ cộng đồng phải được gửi đến các tổ chức đoàn thể ban giám sát cộng đồng, UBMTTQ xã, [illegible] các đơn vị liên quan.

yêu cầu nhà thầu thực hiện đúng cam kết để giảm thiểu các tác động tiêu cực từ việc thực hiện dự án, đưa vào trong kế hoạch quản lý và giám sát chất lượng môi trường, xã hội.

Trên đây là ý kiến của UBMTTQ xã Xuân Du gửi Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường, xã hội của Tiểu dự án./.

Nơi nhận:
- Như trên;
- Lưu …

UBMTTQ XÃ XUÂN DU
P. CHỦ TỊCH

Nguyễn Hữu Thân

UBND HUYỆN NHƯ THANH
UBND XÃ XUÂN DU

Số: .....CV-UBND

V/v ý kiến tham vấn về Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8).

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Xuân Du, ngày... tháng ... năm 2015

Kính gửi: Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa

UBDN xã Xuân Du nhận được Văn bản số... ngày... tháng 3 năm 2015 của Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường, xã hội của Tiểu dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa. Thuộc dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8). Sau khi xem xét tài liệu này, UBND xã Xuân Du có ý kiến như sau:

1. Về những tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

.....UBND xã Xuân Du đồng ý với những tác động xấu của dự án.....
.....đối với môi trường tự nhiên và Kinh tế, xã hội của khu vực này.
Tuy nhiên báo cáo đánh giá tác động môi trường về xã hội của dự án.....
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2. Về các biện pháp giảm thiểu tác động môi trường, xã hội của Dự án:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBND xã Xuân Du đồng ý với các nội dung biện pháp giảm thiểu tác động xấu đến môi trường xã hội được trình bày trong báo cáo.

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

UBND xã Xuân Du yêu cầu nhà thầu và chủ đầu tư lắng nghe phản hồi từ cộng đồng để thực hiện giải quyết phù hợp, ý kiến từ cộng đồng phải được gửi đến cán bộ phụ trách thu thập góp ý cộng đồng, UBND xã, PPMU và các đơn vị liên quan.

Yêu cầu nhà thầu thực hiện đúng cam kết để giảm thiểu các tác động tiêu cực từ việc thực hiện dự án được nêu trong kế hoạch quản lý và giám sát chất lượng môi trường, xã hội.

Trên đây là ý kiến của UBND xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa gửi Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa để xem xét và hoàn chỉnh Báo cáo đánh giá tác động môi trường, xã hội của Tiểu dự án./.

Nơi nhận:
- Như trên;
- Lưu …

UBND XÃ XUÂN DU
CHỦ TỊCH

NGUYỄN VĂN SINH

UBND HUYỆN TRIỆU SƠN
UBND XÃ HỢP THÀNH

Số: ......CV-UBND

V/v ý kiến tham vấn về Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8).

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Hợp Thành, ngày 18 tháng 3. năm 2015

Kính gửi: Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa

UBDN xã Hợp Thành nhận được Văn bản số… ngày… tháng 3 năm 2015 của Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường, xã hội của Tiểu dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa. Thuộc dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8). Sau khi xem xét tài liệu này, UBND xã Hợp Thành có ý kiến như sau:

1. Về những tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBND xã Hợp Thành đồng ý với các nội dung về những tác động xấu đến môi trường tự nhiên, kinh tế - xã hội đã được trình bày trong báo cáo đánh giá tác động môi trường, xã hội của dự án.

2. Về các biện pháp giảm thiểu tác động môi trường, xã hội của Dự án:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBND xã Hợp Thành đồng ý với các biện pháp giảm thiểu tác động xấu đến môi trường xã hội đã được nêu trong báo cáo đánh giá tác động môi trường, xã hội của dự án.

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

UBND xã Hợp Thành đề nghị các cơ quan có thẩm quyền nhanh chóng phê duyệt cho phép triển khai dự án, chủ đầu tư triển khai một cách nhanh chóng.

- Yêu cầu nhà thầu thực hiện đúng cam kết để giảm thiểu các tác động tiêu cực trong việc thực hiện dự án được nêu trong kế hoạch quản lý và giám sát chất lượng môi trường xã hội.

Trên đây là ý kiến của UBND xã Hợp Thành, huyện Như Thanh, tỉnh Thanh Hóa gửi Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa để xem xét và hoàn chỉnh Báo cáo đánh giá tác động môi trường, xã hội của Dự án./.

Nơi nhận:
- Như trên;
- Lưu ...

UBND XÃ HỢP THÀNH
CHỦ TỊCH

PHÓ CHỦ TỊCH
Nguyễn Đình Hà

UBMTTQ XÃ HỢP THÀNH HUYỆN TRIỆU SƠN ----------	**CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM** **Độc lập - Tự do - Hạnh phúc** ----------
Số: ... V/v ý kiến tham vấn về Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8)	*Hợp Thành, ngày 18 tháng 5 năm 2015*

Kính gửi: Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa

UBMTTQ xã Hợp Thành nhận được Văn bản số... ngày... tháng... năm 2015 của Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường, xã hội của Tiểu dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa. Thuộc dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8). Sau khi xem xét tài liệu này, UBMTTQ xã Hợp Thành có ý kiến như sau:

1. Về những tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBMTTQ xã Hợp Thành đồng ý với các nội dung về những tác động xấu đến môi trường tự nhiên kinh tế xã hội đối được trình bày trong tài liệu gửi kèm

2. Về các biện pháp giảm thiểu tác động môi trường, xã hội của Dự án:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBMTTQ xã Hợp Thành đồng ý với các biện pháp giảm thiểu các tác động xấu đến môi trường, xã hội được trình bày trong báo cáo đánh giá tác động môi trường, xã hội của dự án.

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3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

UBMTTQ xã Hợp Thành đề nghị các cơ quan có thẩm quyền nhanh chóng bố trí vốn cho chủ đầu tư dự án được thực hiện một cách nhanh chóng.

Yêu cầu nhà thầu thực hiện đúng cam kết để giảm thiểu các tác động tiêu cực từ việc thực hiện dự án, đưa ra kế hoạch quản lý và giải quyết hài hòa môi trường xã hội.

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Trên đây là ý kiến của UBMTTQ xã Hợp Thành gửi Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường, xã hội của Dự án./.

Nơi nhận:
- Như trên;
- Lưu …

UBMTTQ XÃ HỢP THÀNH

CHỦ TỊCH

Hà Xuân Tâm

UBND HUYỆN TRIỆU SƠN
UBND XÃ TRIỆU THÀNH

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Số: ....CV-UBND

V/v ý kiến tham vấn về Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8).

Triệu Thành, ngày 20 tháng 3. năm 2015

Kính gửi: Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa

UBDN xã Triệu Thành nhận được Văn bản số... ngày... tháng 3 năm 2015 của Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường, xã hội của Tiểu dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa. Thuộc dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8). Sau khi xem xét tài liệu này, UBND xã Triệu Thành có ý kiến như sau:

1. Về những tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

...UBND xã Triệu Thành đồng ý với những tác động xấu đến môi trường, xã hội đã được nêu trong tài và có biện pháp bảo vệ môi trường, xã hội của dự án...

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2. Về các biện pháp giảm thiểu tác động môi trường, xã hội của Dự án:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBND xã Triệu Thành đồng ý với các biện pháp giảm thiểu các tác động xấu đến môi trường, xã hội đã được nêu trong báo cáo đánh giá tác động môi trường, xã hội của dự án.

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

UBND xã Triệu Thành đề nghị các chủ đầu tư thực hiện theo quy định pháp luật và cam kết giảm các tác động xấu đến môi trường; thực hiện chương trình quản lý, giám sát chất lượng môi trường; yêu cầu nhà thầu áp dụng thực hiện các biện pháp và các quy định về xử phạt hoặc tạm đình chỉ, đơn phương chấm dứt hợp đồng với nhà thầu; đơn vị giám sát môi trường nếu không tuân thủ các biện pháp an toàn; đồng thời và kịp thời đề xuất biện pháp bảo vệ môi trường.

Trên đây là ý kiến của UBND xã Triệu Thành, huyện Như Thanh, tỉnh Thanh Hóa gửi Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa để xem xét và hoàn chỉnh Báo cáo đánh giá tác động môi trường, xã hội của Tiểu dự án./.

Nơi nhận:
- Như trên;
- Lưu …

UBND XÃ TRIỆU THÀNH
CHỦ TỊCH

Lê Văn Chữ

UBMTTQ XÃ TRIỆU THÀNH
HUYỆN TRIỆU SƠN

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Số: ...

V/v ý kiến tham vấn về Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8)

Triệu Thành, ngày... tháng ... năm 2015

Kính gửi: Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa

UBMTTQ xã Triệu Thành nhận được Văn bản số... ngày... tháng... năm 2015 của Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường, xã hội của Tiểu dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa. Thuộc dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8). Sau khi xem xét tài liệu này, UBMTTQ xã Triệu Thành có ý kiến như sau:

1. Về những tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBMTTQ xã Triệu Thành đồng ý với những tác động xấu đến môi trường và xã hội đã được trình bày cụ thể hàng loạt biện pháp giảm thiểu tác động môi trường và xã hội của dự án

2. Về các biện pháp giảm thiểu tác động môi trường, xã hội của Dự án:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBMTTQ xã Triệu Thành đồng ý với các biện pháp giảm thiểu các tác động xấu đến môi trường, xã hội đã được nêu trong báo cáo đánh giá tác động môi trường, xã hội của dự án

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

UBMTTQ xã Triệu Thành đề nghị nhà đầu tư thực hiện theo đúng như những gì đã cam kết giảm các tác động xấu đến môi trường, khi thực hiện dự án cũng như quá trình giám sát chất lượng môi trường. Yêu cầu nhà thầu áp dụng thực hiện các biện pháp và các quy định về xử phạt hành chính đối với những [illegible] [illegible] không [illegible] theo ý kiến và giám sát môi trường, nếu không [illegible] thì có biện pháp an toàn đối với việc thi công [illegible] xử lý biện pháp bảo vệ môi trường.

Trên đây là ý kiến của UBMTTQ xã Triệu Thành gửi Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường, xã hội của Tiểu dự án./.

Nơi nhận:
- Như trên;
- Lưu …

MTTQ xã

Đinh Văn Hải

UBMTTQ XÃ TRIỆU THÀNH
CHỦ TỊCH

Lê Văn Quế

UBND HUYỆN NHƯ THANH UBND XÃ PHƯỢNG NGHI ----------------	**CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM** **Độc lập - Tự do - Hạnh phúc** ----------------
Số: ....CV-UBND V/v ý kiến tham vấn về Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8).	*Phượng Nghi, ngày 27 tháng 5 năm 2015*

Kính gửi: Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa

UBDN xã Phượng Nghi nhận được Văn bản số… ngày… tháng 3 năm 2015 của Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường, xã hội của Tiểu dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa. Thuộc dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8). Sau khi xem xét tài liệu này, UBND xã Phượng Nghi có ý kiến như sau:

1. Về những tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBND xã Phượng Nghi đồng ý với các tác động xấu đã được trình bày trong bản báo cáo các giải pháp tác động môi trường, xã hội của tiểu dự án.

2. Về các biện pháp giảm thiểu tác động môi trường, xã hội của Dự án:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBND xã Phượng Nghi đồng ý với các biện pháp giảm thiểu các tác động xấu đến môi trường và xã hội của dự án.

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

Đề nghị Chủ dự án thực hiện nhanh chóng các hạng mục xây dựng và hoàn thành từng phần trước khi chuyển đến phần kế tiếp, để tránh ảnh hưởng đến sinh hoạt và cây trồng.

Yêu cầu nhà thầu và chủ đầu tư đều nghe phản hồi từ cộng đồng để thực hiện sửa đổi phù hợp. Ý kiến cộng đồng phải được gửi đến các tổ chức đoàn thể, ban giám sát cộng đồng, UBND xã, PMU và các đơn vị liên quan.

Trên đây là ý kiến của UBND xã Phượng Nghi, huyện Như Thanh, tỉnh Thanh Hóa gửi Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa để xem xét và hoàn chỉnh Báo cáo đánh giá tác động môi trường, xã hội của Dự án./.

Nơi nhận:
- Như trên;
- Lưu …

UBND XÃ PHƯỢNG NGHI
CHỦ TỊCH

TRƯƠNG VĂN QUANG

UBMTTQ XÃ PHƯỢNG NGHI
HUYỆN NHƯ THANH

Số: ...

V/v ý kiến tham vấn về Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8)

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Phượng Nghi, ngày 8 tháng 5 năm 2015

Kính gửi: Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa

UBMTTQ xã Phượng Nghi nhận được Văn bản số... ngày... tháng... năm 2015 của Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường, xã hội của Tiểu dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa. Thuộc dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8). Sau khi xem xét tài liệu này, UBMTTQ xã Phượng Nghi có ý kiến như sau:

1. Về những tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBMTTQ xã Phượng Nghi đồng ý với các tác động xấu đã được nêu
trong báo cáo, các giải pháp môi trường, xã hội của dự án.

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2. Về các biện pháp giảm thiểu tác động môi trường, xã hội của Dự án:

(nêu rõ ý kiến đồng ý hay không đồng ý với các nội dung tương ứng được trình bày trong tài liệu gửi kèm; trường hợp không đồng ý thì chỉ rõ các nội dung, vấn đề cụ thể không đồng ý)

UBMTTQ xã Phượng Nghi đồng ý với các nội dung về biện pháp giảm thiểu để đưa vào trong báo cáo đánh giá tác động môi trường xã hội của dự án

3. Kiến nghị đối với chủ dự án:

(nêu cụ thể các yêu cầu, kiến nghị của cộng đồng đối với chủ dự án liên quan đến việc cam kết thực hiện các biện pháp, giải pháp giảm thiểu các tác động xấu về môi trường của Dự án và các kiến nghị khác có liên quan đến Dự án (nếu có).

UBMTTQ xã Phượng Nghi đề nghị chủ dự án thực hiện nhanh chóng các hạng mục công trình với thời gian [illegible] nhanh nhất. Khi thi công phải kế hoạch để không ảnh hưởng đến sinh hoạt của cộng đồng

Yêu cầu nhà thầu và chủ đầu tư lắng nghe phản hồi từ cộng đồng để khắc phục sửa đổi những ý kiến cộng đồng phản ánh. Quá trình [illegible] giám sát cộng đồng, UBMTTQ xã, [illegible] các đơn vị liên quan

Trên đây là ý kiến của UBMTTQ xã Phượng Nghi gửi Sở Nông nghiệp & Phát triển nông thôn tỉnh Thanh Hóa để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường, xã hội của Tiểu dự án./.

Nơi nhận:
- Như trên;
- Lưu …

UBMTTQ XÃ PHƯỢNG NGHI
CHỦ TỊCH

HOÀNG VĂN TUẤN

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

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BIÊN BẢN CUỘC HỌP THAM VẤN CÁC NGÀNH LIÊN QUAN

1- Tên dự án: **Sửa chữa và nâng cao an toàn đập (WB8)**

2- Tiểu dự án : Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa.

3- Thời gian họp: 9h 00 ngày 18 tháng 2 năm 2015

4- Địa điểm họp: Sở Nông nghiệp và Phát triển nông thôn Thanh Hóa.

5- Thành phần cuộc họp

a) Đại diện Sở NN và PTNT Thanh Hóa

Ông: Trần Quang Trung Chức vụ: Phó Giám đốc Sở

b) Đại diện Sở TN&MT Thanh Hóa

Ông: Đào Văn Hùng Chức vụ: CB Chi cục BVMT Sở TN&MT

c) Đại diện Sở Giao thông VT Thanh Hóa

Ông: Phạm Hoài Nam Chức vụ: CB Sở GTVT

d) Đại diện Ban Quản lý dự án Thủy lợi

Ông: Trần Hữu Quý Chức vụ: Phó Giám đốc BQLDA Thủy lợi

e) Đại diện UBND các huyện

Ông: Lê Xuân Dương Chức vụ: Phó Chủ tịch huyện Triệu Sơn

Ông: Nguyễn Văn Triệu Chức vụ: CB Phòng TNMT huyện Như Thanh

f) Đại diện UBND các xã vùng dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa.

Ông: Lê Minh Phương Chức vụ:CT UBND xã Phượng Nghi

Ông: Lê Văn Quế Chức vụ: Chủ tịch UBND xã Triệu Thành

Ông: Nguyễn Văn Sinh Chức vụ: Chủ tịch UBND xã Xuân Du

Ông:Nguyễn Đình Pho Chức vụ: Phó chủ tịch UBND xã Hợp Thành

g) Đại diện công ty QLKT CTTL

Ông: Nguyễn Văn Chanh Chức vụ:TP kỹ thuật Cty Sông Chu

h) Đại diện đơn vị tư vấn

Ông: Ngô Xuân Nam Chức vụ: Trưởng nhóm tư vấn MT-XH

Ông: Mai Trọng Hoàng Chức vụ: Chuyên gia môi trường

6. Nội dung cuộc họp

a) Đại diện Ban QLDA, ông: Trần Hữu Quý trình bày nội dung các TDA.

b) Đại diện đoàn tư vấn: Ngô Xuân Nam giới thiệu các chính sách an toàn môi trường của WB và Chính phủ Việt Nam và xã hội, tiến độ chuẩn bị dự án và các tài liệu chuẩn bị.

7. Các ý kiến thảo luận:

7.1- Về phạm vi ảnh hưởng của dự án và các đối tượng bị ảnh hưởng:

a) Về phạm vi ảnh hưởng:

Vùng lòng hồ thuộc đất của xã Phượng Nghi, huyện Như Thanh. Khu vực cụm công trình đầu mối của hồ Đồng Bể thuộc xã Xuân Du - huyện Như Thanh và xã Triệu Thành - huyện Triệu Sơn. Các xã vùng hạ lưu được hưởng lợi từ nguồn nước tưới của hồ Đồng Bể bao gồm: xã Triệu Thành, Hợp Thành - huyện Triệu Sơn và xã Xuân Du - huyện Như Thanh.

b) Về các đối tượng bị ảnh hưởng:

Tổng số hộ bị ảnh hưởng về cây cối và hoa màu trên đất do canh tác trong hành lang bảo vệ an toàn đập: 13 hộ, không phải người dân tộc thiểu số, bao gồm 07 hộ thuộc thôn 2 xã Xuân Du – huyện Như Thanh và 06 hộ thôn 9 xã Triệu Thành – huyện Triệu Sơn. Diện tích đất nông nghiệp, lâm nghiệp, thủy sản và các loại khác không bị thu hồi. Dự án không ảnh hưởng đến di tích lịch sử văn hóa và không phải di dời mồ mả.

7.2 Về tác động của dự án đến môi trường:

- Tác động tích cực:

Đảm bảo an toàn hồ chứa nước, đảm bảo tính mạng và tài sản của 19.279 người dân 15km đường liên xã; 11 trường học và các tuyến đường tỉnh lộ 506, 514, 15B ở phía hạ lưu đập;

Tăng khả năng trữ nước trong hồ chứa để cung cấp nước tưới cho 255 ha đất sản xuất nông nghiệp và cấp nước phục vụ sinh hoạt, công nghiệp với tổng lưu lượng 2592m^3/ngày đêm.

- Tác động tiêu cực:

Trong thời gian thi công khu vực đầu mối có thể có những ảnh hưởng đến khu vực xung quanh như: tiếng ồn, bụi... Những tác động này là không lớn và có thể giảm thiểu được. Mặt khác vùng TDA nằm xa khu dân cư đông đúc nên sẽ không ảnh hưởng nhiều;

Trong quá trình làm đường vào đập cần chú ý về vấn đề môi trường (bụi, tiếng ồn) đối với các hộ dân ven đường;

Mở rộng tràn sẽ làm tăng khả năng xả lũ, an toàn cho hồ nhưng có khả năng ảnh hưởng đến vận chuyển bùn cát, có thể ảnh hưởng đến vùng hạ du, tư vấn FS cần phải tính toán kỹ vấn đề này;

Trong thời gian thi công ảnh hưởng đến việc tích nước trong hồ dẫn đến có thể ảnh hưởng đến cấp nước tưới cho vùng hạ du. Tuy nhiên, đơn vị tư vấn thiết kế đã đưa ra biện pháp thi công hợp lý: đắp đê quây thi công cống mới, giữ nguyên cống cũ phục vụ tưới cho đến khi thi công xong cống mới sẽ không ảnh hưởng tới nhiệm vụ cấp nước cho vùng hạ du.

7.3- Tác động của dự án đến xã hội:

Tác động tích cực:

- Tạo việc làm cho một số nhân công địa phương, tăng thu nhập, tăng diện tích tưới, tăng năng suất cây trồng, nuôi trồng thủy sản và nâng cao đời sống nhân dân trong vùng dự án.

- Việc xây dựng và nâng cấp các công trình nhằm nâng cao hiệu quả an toàn đập, ổn định cuộc sống cho người dân địa phương.

- Cả nam giới và phụ nữ đều được tham gia vào các tổ chức và đoàn thể tại địa phương và đề xuất ý kiến liên quan đến Dự án, do đó vấn đề về giới được bảo đảm.

- Trong khu vực thực hiện dự án người DTTS là những người hưởng lợi của dự án.

- Không xảy ra tình trạng buôn bán phụ nữ và trẻ em trong khu vực dự án.

Tác động tiêu cực :

- Diện tích đất bị ảnh hưởng bởi dự án chủ yếu là đất vườn.

- Tiểu dự án Thanh Hóa chiếm dụng đất rất ít vì việc nâng cấp, sửa chữa đập được tiến hành trên tuyến cũ, do vậy, các tác động tiêu cực có thể được giảm thiểu được và phạm vi thu hồi dự án không đáng kể.

7.4- Kiến nghị của các địa phương trong vùng dự án/ có đồng tình với các nội dung của dự án không:

- Tất cả các xã trong vùng dự án đồng tình với việc đầu tư: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa.

- Toàn bộ cây trồng trong khu vực hành lang bảo vệ an toàn đập, khi thi công sẽ phải chặt bỏ, ảnh hưởng đến kinh tế của một số hộ dân ven đập. Đề nghị Chủ đầu tư phối hợp cùng chính quyền địa phương tiến hành đền bù theo đúng quy định của Nhà nước Việt Nam và Ngân hàng Thế Giới.

- UBND xã Xuân Du đồng ý bố trí bãi đổ đất thải của dự án tại 2 hồ thuộc thôn 4 và 5, với tổng diện tích: 1,08 ha, trong quy đất của xã quản lý.

- Các hộ bị ảnh hưởng mong muốn được cung cấp các thông tin về tiến độ thực hiện dự án.

- Các hộ bị ảnh hưởng mong muốn được bồi thường đầy đủ, minh bạch theo giá thay thế cho những tài sản bị thiệt hại, và giá thị trường cho hoa màu bị ảnh hưởng tạm thời.

- Người BAH hiểu được những tác động tích cực và lợi ích dự án mang lại cho người dân địa phương, do đó họ hoàn toàn nhất trí với việc thực hiện Dự án và mong muốn Dự án sớm được triển khai.

7.5- Kiến nghị của các ngành liên quan:

Đồng tình với các nội dung của dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa;

Ở gần khu vực TDA có khu di tích Phủ Na, đây là khu du lịch tâm linh nên trong khi thi công không được để gây ảnh hưởng đến khu vực này;

Trong quá trình thi công phải có giải pháp để đảm bảo cấp nước tưới cho vùng hạ lưu như: chọn thời điểm thi công hợp lý quản lý bùn thải khi nạo vét lòng hồ;

Tư vấn thực hiện dự án cần bổ sung, lồng ghép Kế hoạch ứng phó với BĐKH của Tỉnh để hoàn thiện hồ sơ.

8- Kết luận:

Các Sở, ban ngành, chính quyền địa phương các huyện, xã trong vùng dự án cùng đơn vị QLKT CTTL đều đồng tình với việc đầu tư dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa.

Việc đầu tư xây dựng nâng cao an toàn hồ chứa nước Đồng Bể sẽ góp phần bảo đảm an toàn tính mạng, tài sản, nâng cao đời sống kinh tế của người dân trong vùng dự án. Nâng cao hiệu quả tưới, khai thác hiệu quả các công trình thuỷ lợi hiện có phục vụ thâm canh tăng vụ, tăng năng suất và chất lượng sản phẩm, phát triển mạnh việc trồng các loại cây có năng suất cao, có giá trị kinh tế lớn. Đảm bảo phục vụ nhu cầu dùng nước cho dân sinh, phát triển công nghiệp của địa phương. Giảm thiểu lượng nước tổn thất.Tạo cảnh quan thiên nhiên, cải thiện môi trường sinh thái, thúc đẩy phát triển du lịch trong vùng.

Tuy nhiên trong quá trình thực hiện dự án, sẽ không tránh khỏi các tác động tiêu cực đối với môi trường, xã hội. Chủ đầu tư cam kết thực hiện đầy đủ các biện pháp giảm thiểu tác động môi trường, xã hội được nêu trong Báo cáo đánh giá tác động môi trường, xã hội được Nhà tài trợ (WB) thông qua.

Sở Nông nghiệp & PTNT

PHÓ GIÁM ĐỐC

Trần Quang Trung

Sở TN&MT

Ban Quản lý dự án

Công ty QLKT CTTL

Nguyễn văn Chanh.

UBND Huyện Triệu Sơn

UBND Huyện .....

UBND Huyện . Như...Thanh

Phòng TN MT huyện Như Thanh

Nguyễn Văn Tuấn

UBND Huyện .....

Xã Triệu Thành

Xã Phương Nghi

Lê minh Phương

Sở Giao thông vận tải

Phạm Hồng Nam

SỞ NÔNG NGHIỆP VÀ PTNT TỈNH THANH HOÁ **BAN QLDA THỦY LỢI** Số: 05 /DATL	**CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM** **Độc lập - Tự do - Hạnh phúc** *Thanh Hóa, ngày 3 tháng 4 năm 2015*

V/v: Ý kiến phản hồi và cam kết của Chủ dự án về các vấn đề môi trường, xã hội của Tiểu dự án: Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa.

Kính gửi: UBND các xã Xuân Du, Phượng Nghi huyện Như Thanh;
UBMTTQ các xã Xuân Du, Phượng Nghi huyện Như Thanh;
UBND các xã Triệu Thành, Hợp Thành huyện Triệu Sơn;
UBMTTQ các xã Triệu Thành, Hợp Thành huyện Triệu Sơn.

Ban Quản lý dự án Thủy lợi Thanh Hóa phúc đáp văn bản của chính quyền địa phương về các vấn đề môi trường Dự án "Sửa chữa, nâng cấp đảm bảo an toàn hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh tỉnh Thanh Hóa. Thuộc dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB (WB8)" do Ban Quản lý dự án Thủy lợi Thanh Hóa làm đại diện Chủ đầu tư. Ban QLDA cám ơn ý kiến đóng góp từ chính quyền địa phương thuộc vùng Dự án và cam kết sẽ thực hiện đầy đủ các biện pháp giảm thiểu các tác động xấu đến môi trường, đồng thời cam kết thực hiện tất cả các quy định chung về bảo vệ môi trường trong quá trình triển khai thực hiện Dự án, cụ thể:

1. Phối hợp với UBND cấp huyện, cấp xã và Hội đồng đền bù và giải phóng mặt bằng theo quy định hiện hành.
2. Chỉ đạo Nhà thầu thi công và phối hợp với chính quyền địa phương quản lý các hoạt động trên công trường để đảm bảo vệ sinh và an ninh xã hội khu vực.
3. Chỉ đạo Nhà thầu thi công thực hiện nghiêm chỉnh các biện pháp giảm thiểu, khống chế ô nhiễm môi trường trong quá trình thi công xây dựng và dọn dẹp vệ sinh sạch sẽ vùng Dự án sau khi thi công.
4. Thực hiện kế hoạch quản lý môi trường và chương trình giám sát chất lượng môi trường trong giai đoạn thi công và vận hành của Dự án.

Nơi nhận: - Như trên; - Lưu: VT, DA2.	**GIÁM ĐỐC** BAN QUẢN LÝ DỰ ÁN THỦY LỢI THANH HÓA **Phạm Công Văn**

Annex A8. Images of project status

Images of structures


Spillway


Main dam


Intake

Management road

Water surface sampling

Air sampling

Air sampling

ANNEX B. SOCIAL DOCUMENTS

Annex B1: Methodology notes

Sampling Frame

Household survey was done with 120 households in two communes by sampling with the sample amount depending on the number of affected person (according to the guidance of national consultants). 100% of the 13 affected households were interviewed, together with 107 other farmers benefited from Dong Be reservoir.

Four focus groups discussions with 40 people in total were held in each of two communes, of which, one discussion with the 10 staffs of CPC including leaders, land, agriculture, irrigation manager, women union, farmer association, etc. and one discussion with the 10 people affected and benefited from sub-project.

15 key informant interviews were done with the directly/indirectly affected persons in different spaces from upstream to downstream of the dam in two communes of Xuan Du (upstream) and Trieu Thanh (downstream), and dam managers, CPC leaders, political organizations, village heads, irrigation staff, clinic staff, DARD staff.

Community meetings with 60 people in total were held in two communes with 30 people of each.

The education level of the householder (unit:%)

No.	Commune	Education Level				Total
		Illiterate	Primary school	Secondaryschool	High School	
1	Trieu Thanh	5.4	32.1	50.0	12.5	100
2	Xuan Du	0.0	50.0	40.0	10.0	100
3	Total	4.5	34.8	48.5	12.1	100

The education level of household members by sex (unit:%)

Gender	Illiterate	Primary school	Secondaryschool	High School	Vocational school	College/ university	Not yet school	Total
Male	2.3	19.1	44.3	18.3	2.3	8.4	5.3	100
N u	4.5	27.1	33.1	20.3	1.5	6.0	7.5	100
Total	3.4	23.1	38.6	19.3	1.9	7.2	6.4	100

The main occupation of the householder (unit:%)

Commune	Occupation						Total
	Laborless	Agriculture, forestry and fishery	Business, service	Worker	Retired	Hired work	
Total	6.8	70.3	0.8	1.7	18.6	1.7	100
Trieu Thanh	12.7	45.5	1.8	3.6	32.7	3.6	100
Xuan Du	1.6	92.1	0.0	0.0	6.3	0.0	100
By ethnic minorities							
Kinh	7.1	68.8	0.9	1.8	19.6	1.8	100
EM	0.0	100.0	0.0	0.0	0.0	0.0	100

The main occupation of the household members (unit:%)

Commune	Laborless	Agriculture, forestry & fishery	Business, service	Employee of state	Student	Handicraft	Worker	Retired	Hired work	Jobless
Total	3.5	46.7	1.0	3.8	25.8	0.2	9.2	7.7	1.9	0.2
Trieu Thanh	6.2	36.2	1.4	1.9	27.1	0.0	10.5	12.4	4.3	0.0
Xuan Du	1.5	54.8	0.7	5.2	24.8	0.4	8.1	4.1	0.0	0.4
By ethnic minorities										
Kinh	3.8	46.8	0.9	3.5	25.8	0.2	8.6	8.2	2.0	0.2
EM	0.0	44.4	3.7	7.4	25.9	0.0	18.5	0.0	0.0	0.0

The main water supply for households affected (unit:%)

No.	Commune	Drinking water			Bathing water		
		Wells	**Rain**	Total	**Wells**	**Rain**	Total
1	Trieu Thanh	100.0	0.0	100	98.2	1.8	100
2	Xuan Du	96.9	3.1	100	98.4	1.6	100
3	Total	98.3	1.7	100	98.3	1.7	100

No.	Commune	Productive water					Total
		River	**Reservoir**	**Wells**	**Irrigation**	**Rain**	
1	Trieu Thanh	10.7	7.1	1.8	80.4	0.0	100
2	Xuan Du	6.3	12.5	6.3	71.9	3.1	100
3	Total	8.3	10.0	4.2	75.8	1.7	100

Current status of the toilet used in affected households (unit:%)

TT	Commune	Type of toilet					Total
		No toilet	**Septic**	**Two compartments**	**Simple**	**Ponds, rivers,**	
1	Trieu Thanh	1.8	26.8	28.6	42.9	0.0	100
2	Xuan Du	1.6	29.7	29.7	35.9	3.1	100
3	Total	1.7	28.3	29.2	39.2	1.7	100

The disease mainly in the project area during the past 12 months (unit:%)

No.	Commune	Flu	Respiratory	Cold	Malaria	Liver	Poisoning	Injury	Total
1	Trieu Thanh	75.5	26.5	4.1	12.2	8.2	0.0	8.2	100
2	Xuan Du	77.8	22.2	0.0	0.0	0.0	0.0	0.0	100
3	Total	75.9	25.9	3.4	10.3	6.9	0.0	6.9	100

The health services reach the common people (unit:%)

No.	Commune	Commune clinic	Inter-communal clinic	District hospital	Provincial hospital	Central hospital	Private clinic	Pharmacy	Traditional medicine	Total
1	Trieu Thanh	34.0	2.1	33.0	10.6	0.0	0.0	18.1	2.1	100
2	Xuan Du	32.1	1.9	32.1	9.4	0.0	2.8	20.8	0.9	100
3	Both	33.0	2.0	32.5	10.0	0.0	1.5	19.5	1.5	100

Energy source for lighting (unit:%)

No.	Commune	Power source		Total
		Petrol	Grid	
1	Trieu Thanh	1, 8	98, 2	100
2	Xuan Du	3, 1	96, 9	100
3	Both	2, 5	97, 5	100
	By ethnic minorities			
	Kinh	1.8	98.2	100
	EM	16.7	83.3	100

Energy sources used for cooking (unit:%)

No.	Commune	Power source				Total
		Wood	Petrol	Gas	Biogas	
1	Trieu Thanh	80.4	0.0	17.9	1.8	100
2	Xuan Du	73.4	3.1	23.4	0.0	100
3	Both	76.7	1.7	20.8	0.8	100
	By ethnic minorities					
	Kinh	77.2	1.8	20.2	0.9	100
	EM	66.7	0.0	33.3	0.0	100

Average size of household land

Commune	Residential land (m^2)	Garden soil (m^2)	Agricultural land (m^2)	Aquatic Land (m^2)	Forest land (m^2)
Average	434	1886	589	186	1042
Trieu Thanh	378	2043	540	149	893
Xuan Du	483	1748	632	218	1172
By ethnic group					
Kinh	442	1864	495	140	921
EM	290	2303	383	1050	3333

Annex B2. Public Health Intervention Plan

1. Main contents in the Public Health Intervention Plan

Identification of risk factors

Step 1: Identify health problems by answering screening questions as follows:

- What issues on health sector need to concern in the project?
- What reasons causes health risks?
- Why these health risks need to be concerned?
- What measures to identify risk factors for health?
- Is assessment of health risk appropriate to the context of the project?

Step 2: Evaluation of risk factors in both qualitative and quantitative methods.

Qualitative and quantitative information aims to assess relationship between different levels of exposure and its effects to community health, especially the adverse impacts. Methods to identify risk factors to health include: (1) physical, chemical, biological factors; (2) factors of social, cultural, custom aspects ... affect to community health.

Step 3: Description of risk

This is final step of identification and assessment process of risk factors. Objective of this step is to synthesize all information step 1 and step 2. Contents of the step aim to provide managers scientific basis for making decisions on selection of risk management solutions and provide basic information for risk communication activities.

Implementing above 3 steps aims to provide information for management of health risks which can occur when implementing project. Also, according to concept of integrated risk assessment, the three steps are implemented in a uniform and link to help determine the closest and truest risk factors.

Promoting positive factors of community health

This is an important content because besides risk of adverse impacts on health when implementing the project, positive impacts also need to interest and have solutions to promote positive factors. Such as solutions for protection of air environment, beautiful scenery, clean water in the structures during operation process or to encourage people to participate in healthy entertainment activities in the works where can be exploited to sever community activities (in accordance with regulations).

Developing community health management program of the sub-project

Based on strategic directions of community health management, the sub-projects will develop plans and programs of community health management in accordance with the characteristics of the sub-projects.

2. Management of health risks of the WB8 project

Assessment of risk factors for health

The surveys on disease in community of project area show that common diseases in this area include flu, respiratory diseases, malaria, cholera / dysentery, hepatitis, etc. The number of people suffering from colds has relatively high proportion ranged from 49% to 65%. The

percentage of people who get sick in the survey of the sub-project is 86%. There are 5 main reasons have a adverse impact on the health situation from high level to low level are water contaminated, residential areas polluted, food insecurity, disease and lack of clean water for living.

Implementation process of the sub-projects can cause impacts on health and community unsafety as follows.

- Upgrading some structures will create beautiful landscape, increasing number of tourism as well as tourist services can cause some social ills such as drug smoking, prostitution, etc. Also, attracting visitors can increase environmental pollution (litter), or drowning risk for children and women.
- Affecting safety of workers during the construction project. Construction process can cause loss of safety for workers if not properly implement procedures for occupational safety, fire prevention.
- Most of results of social impact assessment showed that social risks associated with construction can be occurred such as HIV/AIDS, issues on community unsafety because a large number of workers concentrate in construction time. The presence of a large amount of male can create risk of transmission of HIV/AIDS through injecting and sex. Neighborhood security may be affected by conflicts between community and construction workers.
- Increasing agricultural production in the project area as well as the expansion of crop and aquaculture will have risk of water pollution due to increasing demand for fertilizers, pesticides and food industry.
- In consultation process, people expressed concerns on impacts on environmental pollution due to transportation of land, construction materials, oil waste, and domestic waste of workers. Travelling activities may be hindered or unsafe due to dirt roads and transportation of vehicle.

Besides, construction process can cause noise of machineries, security issues such as theft or public unsafety due to conflicts between workers and indigenous people or noise of group activities.

The process of living of workers and project management as well as operation of machinery on construction projects can lead to contamination of waste, especially hazardous waste may affect health people.

Management of health risks

To minimize the risk factors which have adverse impacts on community health, it is necessary to implement the following measures:

- It requires control and assessment measures of cumulative impacts, developing public health management plan, dissemination plan and community consultation in order to minimize impacts on surrounding communities in the project areas such as transportation, traffic, noise, etc.

- Good management of production activities; encouraging and guiding people to apply new production and environmental friendly methods; reducing use industrial feed in aquaculture and fertilizer, affecting health and environment and polluted water quality of the reservoir.

- Implementing successfully provisions on ensuring safety corridors of irrigation structures, managing dangerous areas for people, adding some items such as bridge over spillway, bridge over flood discharge route, management road combined migration, rescue, water-level gauge of flood warning ... to reduce the risk of drowning occurred, especially children and women.

- During the construction process, workers in construction site must be equipped with knowledge of occupational health, food safety, propaganda, information on health protection in order to minimum transmission of sexual diseases, etc.

- The truck transporting sand and gravel for construction services should be screened carefully to avoid spillage of materials affected roads and atmosphere (dust, dirt). Should use cars before expire date and transport with designed volume to avoid road subsidence due to over volume allowed.

- Project Management Board should have garbage containers classified for related waste oil and waste generated by activities of workers. Types of hazardous wastes should be collected and transported carefully to handle places to avoid adverse impacts on community health of the project.

- Vehicles and construction equipments must be maintained periodically. Avoid implement construction activities near residential areas in the break time. Regularly announce construction plan to communities and local authorities by telephone, speaker, text or message boards of CPC, message boards at construction site. The Management Board should install signs of dangerous warning around the construction site to prevent movement of the local people, and control movement of people in the project area.

- When the project is put into operation, it needs to test periodically the safety of reservoirs, arranging people to monitor activities in the rainy season. Coordinating with local people in activities; constructing safety corridors of flood discharge; developing dam break scenarios; announcing time of flood discharge for people. Residents and local authorities need to have community based disaster risk response plans.

- As for sub-projects related to mine clearance activities, these activities were carried out according to regulations and mitigation measures from survey step, project design, and site clearance, ensuring compliance with safety procedures, regulations, and rules.

- Propagating disseminating to the local people around construction area on information of environmental protection, water resources, natural landscape, developing advantages of clean water for life and production.

3. Responsibilities of stakeholders

- CPO is responsible for developing community health management of the project, ensuring activities of plan to comply with objectives, coordinating the participation of stakeholders.

- Provincial Project Management Office will be responsible for general supervision of all project activities, including communication plan, public health consultation. The issues relating to public health is also one of the content is reflected in complaints mechanism of the project.

- Construction contractor:

- Commander of construction on the behalf of the contractor will coordinate with local governments to implement the communication, and consultation activities related to community health and workers.
- Contractor will be assigned to commander of or a worker in charge of occupational safety and health for workers to monitor and support related issues.
- Contractor shall coordinate with commune clinic, officers of clinic in the village to timely update on disease situation in the province or health problems of workers can spread

- Contractor shall coordinate with local authorities, clinic to inform on issues related to people's safety at construction sites or in the road for transport of construction materials / waste
- Contractor shall coordinate with CPC / clinics to coordination mechanism when accident or disease occurs.

- Workers / employees: implement fully provisions in the process of construction.

- Clinic: clinic at communes has function of management, monitoring, first aid, reporting problems to community health in the commune. Therefore, the issues relating to community health are supported by the units.

4. Monitoring and evaluation

Indicators for health monitoring and management:

- The number of accidents caused by construction of sub-projects

- The number of traffic accidents by construction vehicles of sub-projects

- Number of times / number of workers are ill, especially infectious diseases

- The availability of medicine cabinet for workers in camps

- Number of employees are guided / trained on issues related to community health: diseases transmitted via sex

- Knowledge and understanding of construction workers on prevention of social evils and social diseases

- The documentations to guide for coping with disease, accidents which contractors provide for workers

Annex B3. Public Consultation, Participation And Communication Plan

1. Information disclosure and participation

Information disclosure is an on-going process beginning early in the project cycle and continuing throughout project preparation and implementation. The process provides timely information to communities in order that they may meaningfully contribute to project design, decisions and also mitigation. Provision of timely and accurate information will avoid misinformation and inaccurate rumours from circulating in communities. During consultations particular attention is given to vulnerable groups in the community to ensure their understanding and collective input. In accordance with both WB and GoV policy (contained in Decree 69 Articles 29, 30 and 31 and 2) the PPC and DPC ensure that public notice is given and disseminate details of the approved draft resettlement plan, or framework, before project Fact Finding by the WB. This draft will also be disclosed on the WB website. Following the census of affected persons, the final resettlement plan, as endorsed by the GoV and WB, is further disseminated to the affected communities and posted on the WB website. Any updates or revisions to the final resettlement plan must be further disseminated to affected communities and again, posted on the WB website.

The Resettlement Provincial Project Management Unit, with assistance from consultant, relevant provincial and districts, communes agencies, conducted a series of public meetings to provide information regarding project activities and the proposed resettlement and compensation arrangements. These public meetings have been carried out to: (i) disseminate information on inventory and pricing results, (ii) inform the APs on amounts of compensation and supports of each affected household, (iii) to listen to their feedback and suggestions, and (iv) for revising or adjusting the inaccurate data, if any. It is important that APs are informed well in advance of the date, time and location of each meeting, and that reminders are also provided. It is essential that these meetings enjoy maximum participation as this will reduce misunderstandings and potential for conflict. For removal or relocation of tombs/graveyards or other religious or cultural significant items, special consultation took place and a record of consultation should be made available which includes: (i) nature and type of tombs; (ii) how old are the tomb and status of land where the tombs are located; (iii) new location and status of land; (iv) if the tombs are owned by ethnic minorities or not and the implications of impact on the religious and cultural sentiments of the community; (v) agreed ritual process, cost and time of removal of tombs, and other arrangements as deemed necessary.

In accordance with Decree 69/ND-CP Article 30(2b) the posting must be recorded in official minutes and confirmed by the CPC, the Commune Fatherland Front and APs. As per Decree 69/ND-CP Article 30 Clause 3(a), following expiration of this period the agency in charge of compensation will summarize all opinions and comments received, including numbers of APs and stakeholders who agree and disagree, with the compensation and land acquisition and assistance offered in the resettlement plan. Interviews with APs will be conducted in order to check the adequacy of compensation prices issued by the provinces. Further public consultations will be carried out during the implementation stage with a focus on specific activities including assessment of compensation, acquisition of land, and design of rehabilitation assistance planning. These measures are undertaken to ensure that APs are satisfied with the compensation arrangements and will not object to the disruption and that they will not suffer enduring adverse impacts due to the project and be able to fully restore and further improve their livelihoods.

Participation provides for the occasion and the process by which stakeholders influence and become co-responsible for development initiatives and decisions that affect them. Through participation, the needs and priorities of the local population are expressed and can be

addressed in project and resettlement planning. The affected households and other stakeholders will continue to be consulted during RAP updating and implementation, following a two-way process – information dissemination and gathering of feedback and suggestions.

2. Public Consultation

A Social Impact Assessment (SIA) was pursued to inform stakeholders on the project and possible social impact resulting from it, and solicit their comments and suggestions on possible mitigation of the perceived impacts. The activity utilized focus group discussions that were participated in by section of stakeholders (i.e. Ethnic Minority, women, etc.) in project district.

There was an active participation of the stakeholders in the Provincial consultation meetings. Briefly, the predominant feedback related to resettlement are as follows:

(i) All are in favour of implementing the project;;

(ii) Un-harmonized compensation policies adopted by different projects financed by different multi-lateral funding institutions as well as the Vietnam government, are causing social problems due to disparity between unit rates used to compute for compensation and other benefits provided to affected persons;

(iii) Since there are no available replacement land for affected households dependent on agriculture, it is essential that the crafting and implementation of viable livelihood restoration program for severely affected and vulnerable groups be given serious consideration; and

(iv) Close coordination between the Executing agency, project consultants and concerned provincial/district/commune implementers is essential to the success of the Project;

The first public consultations at project affected communes were held prior to the commencement of the IOL and SES with participation of communal officials and affected households. In addition, focus group discussions were held with the affected people and local officials during the conduct of the census and the IOL survey.

During the meetings, the consultant teams relayed to participants the following topics:

i. General information of the project and its features;

ii. Objectives and Principles of RAP according to the requirements of GOV and WB's policy on involuntary resettlement;

iii. Livelihood restoration program;

iv. Compensation and relocation modes (options for cash and/or in-kind compensation);

v. Ethnic, Gender and vulnerable group issues;

The reactions of the community consultation meetings were various. There are those where active participation were observed, while there were also some meetings where the public rather listen and offer minimal inter-action with the members of the consultant team. Among the issues discussed above, the following were the most significant:

i. Basis for compensation and allowance package for affected persons; and

ii. Crafting and implementation of a viable and acceptable income restoration program for SAHs is essential as suitable replacement land for recovered agricultural lands is not available.

The consultant carried out detailed consultations individually and/or in small groups with all type of affected households, in order to determine their specific requirements and preferences for rehabilitation assistance and, as required, resettlement.

The second of Public Consultation was held along with the Environmental Impact Assessment (EIA) for public hearing, where the contents of the resettlement plan is briefly disclosed, including its social impact assessment of the project, compensation plan and other proposed involuntary resettlement mitigation measures. Participants came from relevant affected Province departments, concerned communes and representatives from affected persons. Feedbacks and suggestions to be secured from stakeholders on the resettlement plan, foremost of which is the harmonized resettlement policy, compensation plan and income restoration approach and institutional arrangements among others.

Further public consultations will continue during updating and implementation of resettlement plans. RAP updating is necessary during the detailed engineering design phase, where the full extent of the land acquisition will be known and the DRCs would have conducted the cadastral survey to delineate the recovered and residual lands of affected persons, and prepared the updated Compensation Plan. Similar to the approach during RAP preparation, separate meetings will again be undertaken with the vulnerable and severely affected households. All consultation and disclosure activities will be properly documented. These meetings will take place: (i) following completion of the DMS and review and updating of replacement costs for affected assets, where the District Resettlement Council consults with the affected households individually and/or in group in connection with the updating of compensation and entitlements and, as warranted, income restoration programs and relocation plans; and (ii) following approval of the updated RAPs, to present to the affected households in the communes (i.e., also referred to as "final disclosure meeting") the validated/updated list of affected people, compensation and entitlements due to them, and schedule of delivery of compensation and entitlements.

3. Disclosure of RAP

A public information booklet (PIB) will be prepared and distributed to the affected households through the concerned local governments (PPC/DPC/CPC) after the approval of the RAP by WB and GOV. The following information are provided in the PIB: (i) a brief background of the Project, specifically the civil works to be undertaken andthe adverse social impacts; (ii) IOL results, with a statement that detailed information is available at the commune office; (iii) basis used for asset valuations, stating also that detailed information is available at the commune office; (iv) the entitlements due to the affected households; (v) timing of payments and the schedule of displacement; (vi) grievance redress mechanism; and (vii) contact persons at RAP-PMU, DRCs and concerned local authorities.

With regard to disclosure of the draft RAP, key information of the plan will be disclosed to the PPC, DPCs, and relevant Provincial Departments during the third Public Consultation meetings in which Resettlement Impacts, Mitigation Measures, Compensation and Rehabilitation will be present. The results of the consultation meetings, which focused on alternative livelihoods are discussed in detail in subsequent chapter. A copy of the RAP, also translated in Vietnamese, will be placed in the provincial, district and communal offices. Similarly, the draft RAP will be uploaded on the WB website following approval of the draft RAP by CPO and WB.

Disclosure of the updated RAP to PPC, DPCs, will be carried out prior to its submission to WB for review and approval. Key information in the updated RAP to be disclosed to the displaced persons, will include: (i) compensation, relocation and rehabilitation options, (ii) DMS results, (iii) detailed asset valuations, (iv) entitlements and other benefits, (v) grievance redress procedures, (vi) timing of payments, and (vii) displacement schedule. The final

updated RAP will again be disclosed to the affected households and uploaded on the WB website. The information will be made publicly available in commune offices and provided to the displaced persons in the form of a summary RAP. Social monitoring reports as well as resettlement External Monitoring Report will also be uploaded on WB website.

Annex B4. Gender Action Plan

Gender Action Plan (GAP) is designed to directly improve women's approach extent to social services, and/or opportunities and economic and financial resources, and/or base urban and rural infrastructure works, and/or enhancing voice and right of women, contributing into gender equality and empowerment to women

1. Legal policy framework

The Law on Gender Equality is considered as the key legal basis of the GoV to enhance gender mainstreaming in the socio-economic development programs.

Law on Gender Equality was issued by GoV on 29th November 2006 aiming at elimination of gender discrimination, creating equal opportunities for both men and women in socio-economic development, man power development and establishing the mutual cooperation and support mechanism for men and women in all aspects as well. Regarding content, the Law on Gender Equality launches the principle of gender equality in all fields of economics, politics, in family and society. Coming together with these principles, the Law also refers to the implementation of measures to ensure gender equality as well as the responsibilities of agencies, organizations, families and individuals in the implementation of gender equality. The strengthening of gender mainstreaming in socio-economic development programs is the measures strategy that creates opportunities for women to have voice and participation in process of decision-making to the critical issue of communities. It is also the measure to give women the opportunity to reach equally and sustainably the benefits of the project and the opportunity to develop capabilities, innovation in management and monitoring; and to limit the adverse impacts and promote the positive impact of the socio-economic development and construction of rural and urban infrastructure programs.

2. Main activities of GAP

The GAP of project is proposed based on the general strategy of enhancement of the extensive involvement of stakeholders in construction and management of irrigation system to ensure all concerns and interests of stakeholders (women, men, the poor, EM and farmers) are satisfied. The plan is also aimed at increasing ability and capacity of women and community in planning, implementation, management and monitoring.

The common feature of those gender actions includes (i) the common design to redress the shortcomings that women face in 5 districts and promote the advantages of women and (ii) specific design to individual issues of each group and circumstances of every district. Those activities are prepared through consultations with stakeholders, especially to local women, and will be implemented during project's implementation. The issues that the project focuses on the most include information disclosure to people and design of actions to attract participation of whole community, men and women from the beginning. This will be implemented by the WUS in coordination with Central Woman Union during project's implementation (construction phase).

The communication/gender training programs combined with building of happy family, domestic violence prevention, development of HH's economics and protection of environment and irrigation canal system will be carried out selectively in each commune, depending on budget and actual condition as well as demand of women and community at consultations. Some training and communication activities will be highlighted in some locations based on analysis of actual situation.

Another key issue is building activities creating employment and increasing income during and after the construction phase of the project, contributing in ensuring stability and recovery

of livelihood of AHs. Although the main responsibility for livelihood recovery program for Ahs belong to Provincial and district compensation committee, WUs are responsible for adding the training programs supporting women business knowledge. The specific practice measurements should pay special attention to HHs affected on land, housing and assets or relocated HHs who are the poor or women-headed HHs and EM HHs.

Furthermore, another indispensable emphasis is communications program warning of the spread of the disease through sexual transmission/HIV. A campaign to raise awareness about HIV/AIDS prevention will be conducted at the construction site and in the affected communes before and during the construction phase of the canal system.

Employment in the construction phase is the issue attracted many people's arguments. The canal construction work will need unskilled labor to prepare the ground, making the earthworks and other activities. The preferential employment of unskilled labor in the locality, where canal is upgraded and constructed, would bring significant social benefits for women, communities and participating households, and it is also a way of compensation for households affected by construction of canals.

It should be noted that a campaign to raise awareness on prevention of HIV infection will be carried out individually by the contractors for their workers. The contractor shall prepare plan for the awareness raising campaign, organize and implement training programs for the workers. Funding for this program will come from the contractor's budget. Women's Union and village officials, along with gender specialist will coordinate, monitor and report on the campaign against HIV/AIDS by contractors and assist them by providing documentation and implementation of activities propagation to their workers.

Employment in the construction phase is the issue attracted many people's arguments. The canal construction work will need unskilled labor to prepare the ground, making the earthworks and other activities. The preferential employment of unskilled labor in the locality, where canal is upgraded and constructed, would bring significant social benefits for women, communities and participating households, and it is also a way of compensation for households affected by construction of canals.

As per the Labor Code, all employment for civil work will have to respect GOV commitments to gender equity and promotion of ethnic minorities, including:

- Employment targets for women and ethnic minorities
- No discrimination against the employment of qualified women and ethnic minorities, and;
- No differential wages paid to men and women for work of equal value.

It will need discussion and agreement to include specifications in biding documents and civil works contracts that require, to the extent feasible, civil works and other contractors for the project to hire a local labor force, especially: i) 30% of the labor force (unskilled laborers) will come from the local project communes; ii) Among 30%, 50% will be women; and iii) Equal work for equal pay and no use of child labor.

Discussion with commune authorities will also need to identify the process to hire local people. Contractors will have to submit to the commune authorities the number of people and the types of tasks needed. The local authorities, in collaboration with the Woman Union (WU), will inform the community and will ask interested people to give their names at the commune level. The list, 50% men and 50% women, will be given to the contractors. The PPMU, district and commune authorities and WU will monitor whether the contractor meet the targets i.e. agreed percentage of local labors and women; wages to be paid by the contractor.

Serving for project management and effective mainstreaming of gender issues, the project will also ensure a minimum of 25% of total staff of CPMU / PPMU to be women. The gender training and introduction to gender action plan will be introduced to all the staff of the PMU, CPMU and the partners involved. The activities of monitor, examine and evaluate the implementation of the GAP and gender mainstreaming in the activities will be carried out according to the cycle beginning, middle and the end.

3. The Matrix of Gender Action Plan (GAP)

Project Component	**Actions**
Dam Safety Rehabilitation	1. At least, 50% female will participate the consultation meetings on information regarding projects and build up the action plans for communes. In a such meeting, at least that 25% of participants will be minority women in ethnic minority communities + Carrying out trainings for core groups including volunteers on communication skills. These will disseminates information on project and communicate the obligations to protect irrigation system. It is possible to integrate media content in activities hold by the happy family clubs. At least, 30% of trained volunteers are women. + Carrying out communication campaigns on project implementation (be played on the district's and commune's radio, or in writing such as flyers, brochures distributed to hands of households and / or representatives). +Conduct regular consultations with women and men during whole project implementation process. Formation of a feedback mechanism for the concerns of women to all levels of project leadership timely capture and adjust as needed. 2. Building community monitoring groups and these will be responsible for supervision of construction works through their locations. A minimum of 20% of the supervision leadership groups will be female. 3. At least, 20-30% participants of training on reservoir operation will be women. + The training/consultation should be held according to the time frame proposed that creates favorable conditions for women's participation. + The consultation meetings, and training information can be used by the Kinh language since minority households in the commune are fluent in Kinh.
Dam Safety Management and Planning	1. Organize some training program on gender, gender equality and environmental protection, the role of women in water resources and environmental protection. 50% participants should be women. 2. At minimum, 50% participants of meetings, discussion on the topic "keep clean the living environment, keep irrigation system" are women. 3. Carry out activities/ campaigns to keep hygienic environment in

	villages like sweeping, picking up trash, guiding people not to throw garbage into the canal, protecting of canal section not to be contaminated. At least, 30% of participants of each campaigns are male. 4. The contractor should prioritize recruiting the local employees for unskilled labor + Unskilled labors should be paid equally by gender at the same job; + It is not allow to use child labor in building of civil work; + Contractors will inform CPCs on their needs of unskilled labors; Considers will register at CPCs and CPCs will submit the name list to the contractors. It should be given a priority to the poor and the poor whose female are householders.
Project Management Support	1. At least 25% of CPMU and PPMU staff will be women, and gender sensitive training provided for all project staff. 2. GAP will be introduced for all stakeholders and make sure the compliance GAP during whole implementation section. 3. Implementation for monitoring and supervisor. - Develop a simple monitoring form based on the initial HH survey and socio-economic data - Collect and analyze the initial data separated by gender on project's impacts; and conduct regular assessment and make adjustment if needed. - Make final assessment upon the project complete, compare with the initial indicators, especially gender indicators to identify how the gender situation would have changed. - Lessons to be learned. 4. Organize final review workshops as well as festival/ art contests among communes in the project areas.

5. Cost estimate

No.	Activities		Cost (VND)
1	The public disclosure of information relating to the project	All of 4 components	5,000,000
2	Organize training on community supervision in the implementation of irrigation projects for the community monitoring committee	Component 1	20,000,000
3	Communication and raising awareness to the people about the risks that may occur during project construction,	Component 1	5,000,000
4	Communication and raising awareness through organizing training for local communities downstream of the risks	Component 2	10,000,000
5	Organize gender training activities	Component 3	20,000,000
Total: 60,000,000			

Annex B5. Grievance redress mechanism

In order to ensure that all APs' grievances and complaints on any aspect of land acquisition, compensation and resettlement are addressed in a timely and satisfactory manner, and that all possible avenues are available to APs to air their grievances, a well defined grievance redress mechanism needs to be established. All APs can send any questions to implementation agencies about their rights in relation with entitlement of compensation, compensation policy, rates, land acquisition, resettlement, allowance and income restoration. Otherwise, all APs are not ordered to pay any fee during the grievance and complaints at any level of trial and court. Complaints will pass through 4 stages before they could be elevated to a court of law as a last resort. The Executing Agency (EA) will shoulder all administrative and legal fees that might be incurred in the resolution of grievances and complaints.

First Stage, Commune People's Committee: An aggrieved affected household may bring his/her complaint before any member of the Commune People's Committee, either through the Village Chief or directly to the CPC, in writing or verbally. It is incumbent upon said member of CPC or the village chief to notify the CPC about the complaint. The CPC will meet personally with the aggrieved affected household and will have 15 days following the lodging of the complaint to resolve it. The CPC secretariat is responsible for documenting and keeping file of all complaints that it handles.

Second Stage, District People's Committee: If after 15 days the aggrieved affected household does not hear from the CPC, or if the affected household is not satisfied with the decision taken on his/her complaint, the affected household may bring the case, either in writing or verbally, to any member of the DPC or the DRC. The DPC in turn will have 15 days following the lodging of the complaint to resolve the case. The DPC is responsible for documenting and keeping file of all complaints that it handles and will inform the DRC of any determination made. The DRC must ensure this decision is notified to the AP.

Third Stage, Provincial People's Committee: If after 15 days the aggrieved affected household does not hear from the DPC, or if the affected household is not satisfied with the decision taken on his/her complaint, the affected household may bring the case, either in writing or verbally, to any member of the PPC. The PPC has 15 days within which to resolve the complaint to the satisfaction of all concerned. The PPC is responsible for documenting and keeping file of all complaints that reaches the same.

Final Stage, the Court of Law Arbitrates: If after 15 days following the lodging of the complaint with the PPC, the aggrieved affected household does not hear from the PPC, or if he/she is not satisfied with the decision taken on his/her complaint, the case may be brought to a court of law for adjudication.

The above grievance redress mechanism is subject to be disclosed and discussed with the APs to ensure that the APs understand the process. RP-PMU and DRCs are responsible to follow up the grievance process from the APs.

The procedure described in these four steps complies with the legal process for resolution of disputes in Viet Nam which include: a) Article 138 of Land Law 2003, Article 63, Article 64 of Government Decree 84/2007/NĐ-CP, b) Clause 2, Article 40 Decree 69/2009, and c) regulation on grievance at Government Decree 136/2006/ND-CP dated 14/11/2006.

The External monitoring Agency (EMA) contracted for external monitoring and evaluation will be responsible for checking the procedures for and resolutions of grievances and complaints. The EMA may recommend further measures to be taken to redress unresolved grievances.

As part of the Project internal monitoring and evaluation, PPC and RP-PMU will keep a written record of all grievances and complaints brought forward by APs, as well as their final resolution. PPC and the RP-PMU will be responsible to ensure that the grievance redress procedures and timeframes are explained clearly to each level of People's Committees. CPO being the Executing Agency will retain the overall responsibility for the resolution of all grievances, and can follow-up resolution of outstanding cases in the Project level especially those that are policy related.

In addition to the grievance mechanism described above, APs may also (or permit representatives on their behalf) raise their concern or complaint with the WB, through the WB office in Hanoi, if APs are still not satisfied with the grievance resolutions at the Project level.

Annex B6. Implementation Arrangements

1. Central level

MARD will delegate responsibility of the Executing Agency to a Central Project Management Unit (CPMU) within MARD's Central Project Office (CPO), which will be led by a Project Director with fully-delegated responsibility for decision making. The CPMU comprises full-time qualified and experienced staff of CPO. Project implementation consultants will assist the CPMU with these tasks.

The CPMU will:

i Provide overall management and coordination of the project;

ii Liaise with IAs to carry out all project components;

iii Coordinate with ADB in providing resettlement consultant services for the project;

iv Support the RP-PMU for updating RPs of the project's components;

v Consolidate project progress reports on land acquisition and resettlement submitted by the RP-PMU for relevant ministries and ADB; and

vi Recruit and supervise the external independent organisation (or consultants) for external resettlement monitoring.

2. Provincial Level

The Implementing Agency (IA) will be Thanh Hoa Provincial People's Committee (PPC). The PPC will be responsible for issuing all decisions and approvals relating to the implementation of RP including those relating to its formal adoption, unit compensation costs, notices and approvals for information disclosure, land acquisition and compensation payments, allocations of replacement land (if applicable) and grievance redress. The PPC will also be responsible for establishing the Land Valuation Council and allocation of responsibilities to district-based organizations.

Thanh Hoa PPC authorizes Thanh Hoa DARD to be the Owner of the land acquisition, resettlement and compensation component in this Project. Within its authorization, Thanh Hoa DARD established the Resettlement Provincial Project Management Unit (RP-PMU) for Land Acquisition, Resettlement and Compensation of the Project and to undertake the implementation of RPs for the Project.

The RP-PMU will oversee all activities of District Resettlement Committees (DRCs) in regard to the implementation of the RP. The RP-PMU will also be responsible for:

(i) Updating RPs for the project components, including updating numbers of APs, compensation rates (based on an independent assessment of current market values) and budget, submitting this to the PPC for approval and, once approved, making it publicly available in commune offices;

(ii) Working with relevant agencies at different levels to ensure timely and effective implementation of RP; this applies particularly to DONRE who will review the overall RPs and recommending PPC approving the land acquisition plans and the unit compensation costs (with assistance from the Land Valuation Council in regard to current market prices, if necessary) and verify compensation plans;

(iii) Resolving any issues of inter-agency coordination that cannot be resolved by the relevant agencies;

(iv) Monitor grievances related to the project and calls the attention of concerned government offices where complaints have remained outstanding beyond prescribed action periods. Resolving any grievances that have been appealed to the PPC;

(v) Ensuring the timely release of funds;

(vi) Design and implement an internal monitoring system that shall capture the overall progress of the RP updating and implementation; and prepare quarterly progress reports for submission to CPMU and ADB.

The membership of the RP-PMU will include the Vice-Director of Thanh Hoa DARD who will be the Head of the RP-PMU; Vice-Director of the Provincial Sub-Department of Rural Development will be the Deputy Director of RP-PMU, and other RP-PMU staff.

3. District and Commune Levels

District People's Committee (DPC)

The District of Peoples' Committees will be responsible for the following:

(i) Establish the District Resettlement Committee (DRCs) or empower an existing body (Land Fund Development Centre) of similar function, to assist the RP-PMU in the updating of the RP and implementation of resettlement related activities;

(ii) Assist the RP-PMU in coordinating with the Commune People's Committees and relevant organizations on various resettlement activities;

(iii) Review and endorse the Updated RP prepared by DRC for endorsement to the PPC; and

(iv) Oversee the updating and implementation of the RP within the District.

District Resettlement Committee (DRC)

The composition of the DRCS but will be coming from the District offices and Government bodies, in addition to the representatives of the affected households (including women affected households), District Farmers' Association, Women's Union, and Committee for Ethnic Minorities, if ethnic minority households are among the affected households in the district. The main responsibilities of DRCs are the following

(v) The dissemination of the Public Information Brochure and other publicity material; ensuring that APs are aware of the LAR process.

(vi) Planning and carrying out the DMS and the disbursement of compensation payments.

(vii) The identification of severely affected and vulnerable APs and the planning and implementation of rehabilitation measures for these APs.

(viii) Help identify any resettlement sites and new farming land for APs who cannot remain in their present location.

(ix) Assist in the resolution of AP grievances.

(x) Facilitate the work of the agency appointed to undertake the external monitoring

Commune People's Committee (CPC)

The responsibilities of the CPC relative to resettlement include the following:

(i) Assign commune officials to assist the DRCs in the updating of the RP and its implementation;

(ii) Identify replacement land for the AHs;

(iii) Sign the Agreement Compensation Forms along with the AHs;

(iv) Assist in the resolution of grievances; and

(v) Actively participate in all resettlement activities and concerns

4. Consultant

The Project consultants (i.e., TA Loan consultants and the Project supervision consultants) will assist the CPMU in its tasks, specifically during RP updating and implementation. Said consultants likewise will provide training and capacity-building interventions to the DRCs as needed. TA consultants during RP updating and implementation including:

a) Resettlement/Social Development Team.

b) Income Restoration Program.

c) Replacement Cost Study.

5. Implementation

The implementation process is as follows:

(i) Establishment of the DRCs. The PPC will establish DRCs for the projects, and entrust tasks to relevant agencies and entities.

(ii) Land clearance/boundary setting for the Project. After receiving the PPC and DPCs in revoking land and handing over land to the RP-PMU for implementing the projects, RP-PMU will cooperate with the provincial Department of Natural Resources, Environment and the specialised cadastral agency having a contract with RP-PMU to determine the project land clearance red line and setting out boundary at the field, handing over land to implement resettlement tasks for the displaced persons, in order to clear land for the project. Relevant Offices of Natural Resources, Environment of districts and Commune People's Committees of the project will assign their staff working as members of DRCs to implement this task.

(iii) Engagement of External Monitoring Agency. CPMU will engage the services of an external monitoring agency to carry out independent monitoring and evaluation of RP preparation and implementation activities. Semi-annual progress reports will be submitted by the EMA to CPMU and ADB.

(iv) Information campaign before DMS. According to Decree No.181/2004/ND-CP, before land acquisition, within 90 days in case of agricultural land and 180 days in case of non-agricultural land, the DRCS must send written notices to affected land owners in respect of reasons for land acquisition, time and plan of displacement, resettlement options, land clearance and resettlement.

(v) Before census and detailed measurement survey, RP-PMU in cooperation with local authorities of districts and communes will provide project information to residents in the project area. Information will be broadcasted via the public address system of the locality in combination with other multi-media such as radios, press, television, brochures or letters delivered to households to be open posted in public areas.

(vi) Orientation meetings will be held in the project affected commune to notify the affected community about the scope and scale of the project, impacts, policies and rights for all kinds of damages, implementation schedule, responsibilities for organisation, and complaint mechanism. Brochures including (images, photos or books) related to project implementation will be prepared and delivered to all affected communes in the meetings.

(vii) Conduct of Replacement Cost Survey by a Qualified Agency. A qualified agency will be engaged by CPMU to assist PPC in determining the current market price under normal condition of land and non-land assets. If there is a significant difference between compensation price and market price as per replacement cost survey carried out by a qualified agency, PPC will update the compensation unit price according to regulations and implementation guidance of Decree No.197/2004/CP and 17/2006/ND-CP.

(viii) Detailed Measurement Survey. DMS will be undertaken once detailed design is finalised. These surveys will be the basis for the preparation of compensation plan and for preparation of the RPs.

(ix) Preparation of Compensation Plan. DRCs are responsible for applying prices and preparing compensation tables for each affected commune. RP-PMU and People's Committees of districts will appraise these tables in respect of prices, quantities of affected assets, rights that the displaced persons are entitled to, etc. before notifying each commune for review and comments. All tables of compensation price application must be checked and signed by the displaced persons to prove their consensus. RP-PMU and DRCs will submit the proposed unit rates as per result of the replacement cost survey to PPC for review and approval. The unit rates to be applied will be based on the approved unit rates of PPC.

(x) Submission of RP and ADB concurrence. RP-PMU will prepare Updated Resettlement Plan, disclose key information of the Updated RP to the displaced persons and submit the same to ADB for review and concurrence.

(xi) RP Uploading on ADB website. Once the RP is acceptable to ADB, the RP will be uploaded on the ADB website.

(xii) Implementation of RP. Compensation and assistance will be paid directly to the APs under the supervision of representatives of DCARBs, commune authorities and representatives of the displaced persons. Income restoration and relocation plan will be implemented in close consultation with the APs and concerned agencies.

(xiii) Monitoring. Internal monitoring and independent monitoring will be implemented from RP preparation to implementation. Grievances received will be addressed through the grievance redress mechanism set up for the project. One post-project assessment survey will be undertaken by the EMA within 6 to 12 months after completion of compensation and resettlement activities.

Annex B7: Photos of community consultations

Community consultation in Xuan Du commune

Community consultation in Trieu Thanh commune

Annex B8. Records of community consultation

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG

Về việc lập kế hoạch hành động tái định cư
Tiểu dự án: Sửa chữa, nâng cấp hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa
Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB.

Hôm nay, vào hồi 8 giờ 30 phút ngày 17 tháng 3 năm 2015. Tại hội trường UBND xã Hợp Thành, huyện Triệu Sơn, tỉnh Thanh Hóa. Tổ chức họp dân với mục đích tham vấn người dân trong vùng dự án giai đoạn lập kế hoạch hành động tái định cư Tiểu dự án: Sửa chữa, nâng cấp hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa.

I. THÀNH PHẦN THAM DỰ:

- Đại diện UBND Huyện Triệu Sơn;
- Đại diện Ban QLDA Thủy lợi Thanh Hóa;
- UBND xã Hợp Thành;
- Các tổ chức trong xã;
- Đại diện tư vấn lập RAP;
- Đại diện các hộ được tham vấn.

(Có danh sách kèm theo).

II. NỘI DUNG THAM VẤN

1. Ông Lê Minh Văn nêu mục đích, nội dung của buổi tham vấn lập kế hoạch hành động tái định cư tiểu dự án: Sửa chữa, nâng cấp hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa.

2. Ban QLDA thủy lợi Thanh Hóa trình bầy về dự án và các hoạt động của Tiểu dự án, kế hoạch thực hiện và dự kiến khi thực hiện có thể gây ảnh hưởng tới tài sản, vật kiến trúc, cây cối hoa màu của nhân dân địa phương theo phương án thiết kế cơ sở.

3. Đơn vị tư vấn trình bày các bước thực hiện lập kế hoạch hành động tái định cư, chính sách quyền lợi được áp dụng theo khung chính sánh tái định cư của Dự án.

- Kết quả tham vấn nhận được ý kiến từ phía cộng đồng:

Toàn thể Nhân dân trong vùng tiểu dự án, đồng tình ủng hộ xây dựng công trình để chủ động hơn trong việc cấp nước phục vụ sản xuất nông nghiệp và sinh hoạt của Nhân dân, họ mong muốn dự án sớm được triển khai xây dựng vì đó

là biện pháp bảo vệ tốt nhất đối với người người nghèo, gia đình chính sách nói riêng và của khu vực dự án nói chung. (Vì họ hiểu rằng việc GPMB để xây dựng Tiểu dự án không làm ảnh hưởng đến phong tục, tập quán sử dụng đất đai hoặc các nguồn tài nguyên thiên nhiên, tình trạng kinh tế xã hội, tính bảo tồn văn hoá cộng đồng làng xã, y tế giáo dục, tình hình dân sinh kinh tế, các vấn đề an ninh xã hội và vấn đề văn hoá trí thức của họ, khi TDA được xây dựng tạo điều kiện thúc đẩy kinh tế cho nhân dân sớm thoát nghèo và làm giàu trên mảnh đất của họ, góp phần trong việc xây dựng đất nước giàu mạnh).

Buổi tham vấn kết thúc lúc 11 giờ 30 phút cùng ngày, các thành phần tham gia thống nhất ký tên./.

Đ.D UBND HUYỆN

Trưởng Phòng NN-PTNT

Đ.D BAN QLDA THỦY LỢI THANH HÓA

PHÓ GIÁM ĐỐC

Trần Hữu Quý

Đ.D TƯ VẤN LẬP RAP

Đ.D UBND XÃ

PHÓ CHỦ TỊCH

Nguyễn Đình Pho

Đ.D CÁC TỔ CHỨC XÃ HỘI TRONG XÃ

DANH SÁCH CÁC HỘ DÂN THAM GIA CUỘC HỌP THAM VẤN CỘNG ĐỒNG

Về việc lập kế hoạch hành động tái định cư

Tiểu dự án: Sửa chữa, nâng cấp hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa.

Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB.

(Kèm theo biên bản họp tham vấn cộng đồng ngày 17 / 3/2015)

TT	Họ và tên	Địa chỉ	Đại diện hộ dân tham gia cuộc họp ký
	Xã Hợp Thành	Thôn Lai Thịnh	
1	Lê Kim Bổn		[illegible]
2	Lê Kim Nghiêm		[illegible]
3	Lê Kim [illegible]		[illegible]
4	Lê Kim [illegible]		[illegible]
5	Lê Thị Thoa		[illegible]
6	Nguyễn Thị Tâm		[illegible]
7	Lê Văn Huấn		[illegible]
8	Phạm Văn Cơ		[illegible]
9	Bùi Đình Đồng		[illegible]
10	Lê Thị Xuân		[illegible]
11	Hà Thị Thúy		[illegible]
12	Bùi Đình Thiêng		[illegible]
13	Nguyễn Quang Hùng		[illegible]
14	Lê Thanh Sơn		[illegible]
15	Bùi Thị Chiều		Chiều
16	Trần Văn Biếu		[illegible]
17	Phạm Văn Định		[illegible]
18	Trịnh Xuân Luân		[illegible]
19	Vũ Văn Quí		[illegible]
20	Lê Đăng Quân		[illegible]

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG

Về việc lập kế hoạch hành động tái định cư
Tiểu dự án: Sửa chữa, nâng cấp hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa
Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB.

Hôm nay, vào hồi 14 giờ 00 phút ngày 17 tháng 3 năm 2015. Tại hội trường UBND xã Triệu Thành, huyện Triệu Sơn, tỉnh Thanh Hóa. Tổ chức họp dân với mục đích tham vấn người dân trong vùng dự án giai đoạn lập kế hoạch hành động tái định cư Tiểu dự án: Sửa chữa, nâng cấp hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa.

I. THÀNH PHẦN THAM DỰ:

- Đại diện UBND Huyện Triệu Sơn;
- Đại diện Ban QLDA Thủy lợi Thanh Hóa;
- UBND xã Triệu Thành;
- Các tổ chức trong xã Triệu Thành;
- Đại diện tư vấn lập RAP;
- Đại diện các hộ được tham vấn.

(Có danh sách kèm theo).

II. NỘI DUNG THAM VẤN

1. Ông Lê Minh Văn nêu mục đích, nội dung của buổi tham vấn lập kế hoạch hành động tái định cư tiểu dự án: Sửa chữa, nâng cấp hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa.

2. Ban QLDA thủy lợi Thanh Hóa trình bầy về dự án và các hoạt động của Tiểu dự án, kế hoạch thực hiện và dự kiến khi thực hiện có thể gây ảnh hưởng tới tài sản, vật kiến trúc, cây cối hoa màu của nhân dân địa phương theo phương án thiết kế cơ sở.

3. Đơn vị tư vấn trình bày các bước thực hiện lập kế hoạch hành động tái định cư, chính sách quyền lợi được áp dụng theo khung chính sánh tái định cư của Dự án.

- Kết quả tham vấn nhận được ý kiến từ phía cộng đồng:

+ Tất cả mọi người dân đồng tình ủng hộ xây dựng tiểu dự án, và hoàn toàn thống nhất đền bù GPMB theo chế độ chính sách của nhà nước và Nhà tài trợ;

+ Toàn thể nhân dân trong vùng tiểu dự án, họ sẵn sàng giải phóng mặt bằng để xây dựng công trình. việc sớm triển khai xây dựng tiểu dự án là biện pháp bảo vệ tốt nhất đối với người người nghèo, gia đình chính sách nói riêng và của khu vực dự án nói chung. (Vì họ hiểu rằng việc GPMB để xây dựng Tiểu dự án không làm ảnh hưởng đến phong tục, tập quán sử dụng đất đai hoặc các nguồn tài nguyên thiên nhiên, tình trạng kinh tế xã hội, tính bảo tồn văn hoá cộng đồng làng xã, y tế giáo dục, tình hình dân sinh kinh tế, các vấn đề an ninh xã hội và vấn đề văn hoá trí thức của họ, khi TDA được xây dựng tạo điều kiện thúc đẩy kinh tế cho nhân dân sớm thoát nghèo và làm giàu trên mảnh đất của họ, góp phần trong việc xây dựng đất nước giàu mạnh).

Buổi tham vấn kết thúc lúc 16 giờ 30 phút cùng ngày, các thành phần tham gia thống nhất ký tên./.

Đ.D UBND HUYỆN

Trưởng phòng Nông nghiệp

Đ.D BAN QLDA THỦY LỢI THANH HÓA

BAN QUẢN LÝ DỰ ÁN THỦY LỢI THANH HÓA

PHÓ GIÁM ĐỐC

Trần Hữu Duý

Đ.D TƯ VẤN LẬP RAP

Đ.D UBND XÃ

Đ.D CÁC TỔ CHỨC XÃ HỘI TRONG XÃ

DANH SÁCH CÁC HỘ DÂN THAM GIA CUỘC HỌP THAM VẤN CỘNG ĐỒNG

Về việc lập kế hoạch hành động tái định cư

Tiểu dự án: Sửa chữa, nâng cấp hồ chứa nước Đồng Bể, xã Xuân Du, huyện Như Thanh, tỉnh Thanh Hóa.

Dự án: Cải tạo và nâng cao an toàn đập, vay vốn WB.

(Kèm theo biên bản họp tham vấn cộng đồng ngày 17 / 3 /2015)

TT	Họ và tên	Địa chỉ	Đại diện hộ dân tham gia cuộc họp ký
	Xã Triệu Thành		
1	Phạm Xuân Ba	BT. Đồng Mỹ	
2.	Lê Văn Quế	PBT. CT UBND xã	
3	Hà Hữu Lực	PCT UBND xã	
4	Đinh Văn Hải	CT MTTQ xã	
5	Lê Văn Cường	CB Văn Phòng	
6	Lê Xuân Hảo	CN Hợp Tác xã	
7	Trịnh Xuân Thủy	PCT MTTQ xã	
8	Trịnh Hữu Quang	CT CCB	
9	Trần Thị Thu	CT PN xã	
10	Hà Văn Kỷ	CT HND xã	
11	Lê Văn Thưởng	BT Đoàn xã	
12	Lê Anh Tuấn	Trạm Y tế	
13	Lê Ngọc Anh	CB Địa chính xã	
14	Lê Thuý Tuấn	CB Văn Hoá xã	
15	Phạm Bá Thuận	Xóm trưởng xóm 11	
16	Lê Xuân Thư	Xóm 11	
17	Lê Sỹ Hiệp	x 11	
18	Như Thị Mai	x 9	
19	Trần Xuân Trang	x 9	
20	Bùi Thị Thái	x 9	
21	Lê Thị Hằng	x 8	
22	Lê Thị Sới	x 9	
23	Lê Đăng Sơn	x 9	
24	Đào Chí Thắng	x 9	
25	Lê Hữu Phương	x 9	
26	Lê Văn Tuấn	Công chức VH xã	
27	Lê Sỹ Quyền	Xóm 11	
28	Mã Thanh Bảy	Xóm 11	
29	Lê Sỹ Long	Xóm 11	
30	Lê Sỹ Thọ	Xóm 11	
31	Lê Sỹ Thế	Xóm 11	
32	Phạm Thị Hằng	x 10	