

平成 24 年 7 月 18 日
独立行政法人 日本貿易保険

環境レビュー結果

- (1) 照会番号
1 1 - 0 1 4
- (2) プロジェクト名
水力発電所建設プロジェクト
- (3) 実施場所
ベトナム ダクラク省
- (4) プロジェクト概要
水力発電所建設プロジェクト
- (5) カテゴリ分類
カテゴリ A
- (6) カテゴリ分類の根拠
本プロジェクトは、環境ガイドラインに示される影響を受けやすい地域を伴うため。
- (7) 環境許認可
現地国環境関係制度に基づき環境影響評価報告書が作成され、ダクラク省人民委員会に提出され、2009 年 2 月に同人民委員会より許認可を取得済である。
- (8) 汚染対策
本プロジェクトは流れ込み式発電方式の水力発電形式であるため、貯水池は存在せず、水の滞留は生じない。また、特に水質汚染の要因となるような活動も行われなため、プロジェクトにより表流水の水質が悪化することはない。
- (9) 自然環境面
サイトには原生林、熱帯の自然林、生態学的に重要な生息地や貴重種の生息地は含まれていない。サイトは既に広く農地として開発されており、本プロジェクトが周辺生

態系に追加的に特段の影響を与えることは予見されない。

(10) 社会配慮面

本プロジェクトは非自発的住民移転を伴うが、適切な住民移転計画が策定され措置が講じられている。

(11) その他（モニタリング等）

大気、水質、騒音、生態系等に関するモニタリングが実施され、ダクラク省天然資源環境局及びブオンドン県自然資源環境部に報告される。

以 上

Questions

Q1. Please provide the address of the project site

A1. Address of the project site: Ea Huar, Ea Wer and Krong Na communes - Buon Don district - Dak Lak province.

Q2. Please provide brief explanation of the project

A2. Brief explanation of the project

1. *Project introduction*

Srepok 4A HPP has a geographical coordinate as below:

- 12°49' - 12°54' North latitude

- 107°48' - 107°52' East longitude

Srepok 4A HPP is located on Srepok river on the right bank, in Srepok 4 hydropower plant downstream, in Ea Wer, Ea Huar and Krông Na communes - Buôn Đôn district - Đắk Lắk province. It is about 30 km away from Buon Ma Thuot city towards the Southeast.

Srepok 4A hydropower plant is 10.5 km away from Srepok 4 HPP towards downstream. The key features of project are without dam and reservoir. It only uses flow behind Srepok 4 hydro power plant's outlet channel to generate electricity. Srepok 4A hydro power plant takes water from Srepok 4 hydro power plant's tailrace channel to generate electricity, thus its basin is the same with Srepok 4 hydro power plant's one. Srepok 4A hydro power plant's headrace channel is in series with Srepok 4 hydro power plant's tailrace channel. Apart of water discharge after passing Srepok 4 hydropower plant's turbine will be let out to return to Srepok river behind Srepok 4 damsite, about 8.23 m³/s, the remaining water will be let out into Srepok 4A hydro power plant's headrace channel in order to generate electricity with an installed capacity of 64MW, confirmed capacity of 14.16MW, annual average electricity yield $E_o = 301.5$ mill.kWh which will be transmitted to the national grid.

Srepok 4A plant's operation regime depends completely on Srepok 4 hydropower plant's regulation and operation regime. Thus, Srepok 4A hydropower plant construction doesn't impact to downstream flow regulation task of Srepok 4 hydropower plant.

Its channel runs along Srepok river, crosses over provincial road No.1: 2 times, crosses over residential areas including village 9, Na Ven village – Ea Wer commune and NĐ Rêch A village – Ea Huar commune: 3 times. Channels also cross over rural transportation roads, other small streams (Wer, Ea Tul, Ea Mot, Ea Ndraik, Đăk Hua and Jeng Lành), some transmission lines and telecommunication lines.

Investigation results have shown that Srepok 4A HPP land area doesn't belong to any national parks. It also doesn't acquire land in sensitive areas. None of religious works, historical monuments, important cultural works is impacted by the project.

2. *Project's main parameters and scale of project's works*

Project's main parameters and scale of project's works are as below:

Table 1: Project's main parameters

No.	Parameters	Unit	Value
I	Basin		
1	Basin area F_{basin}	km^2	9,560
2	Long-term average rainfall X_0	mm	1,820
3	Long-term average discharge Q_0	m^3/s	245
4	Long-term average flow module M_0	l/s.km^2	26
5	Total long-term average flow W_0	10^6m^3	7,852
II	Inlet channel		
1	Width of bottom (b)	m	20
2	Slope coefficient (m)		$1 \div 1.5$
3	Channel bottom slope (i)	change	0.00025- 0.000075
4	Length of channel (L)	m	9,850.8
III	Waterway		
A	Intake		
1	Intake spill elevation	m	170.4
2	Trash rack dimension $n \times B \times H$	m	$4 \times 8.5 \times 11.7$
3	Maintenance gate dimension $n \times B \times H$	m	$4 \times 7.9 \times 9.5$
B	Powerhouse's features		
1	Type of turbine		Kaplan
2	Number of units		2
3	Installed capacity N_{ins}	MW	64
4	Confirmed capacity N_{conf}	MW	14.16
5	Maximum water head H_{max}	m	19.20

No.	Parameters	Unit	Value
6	Minimum water head H_{min}	m	13.70
7	Average water head H_{aver}	m	16.95
8	Rated water head H_{rated}	m	14.8
9	Maximum discharge through powerhouse	m ³ /s	498
10	Annual average generated electricity yield E_o	10 ⁶ KWh	301.48
11	Number of generated hours at installed capacity	hour	4,711
IV	Outlet channel		
1	Width of bottom (b)	m	40
2	Slope coefficient (m)		1
3	Channel bottom slope (i)		0.0001
4	Length of channel (L)	m	4,013.09

Table 2: Scale of main project works

No.	Works	Unit	Value
1	Inlet channel		
1.1	Elevation of channel starting point/ending point bottom	sm	177.70/175.92
1.2	Width of channel bottom	m	20
1.3	Length of channel	m	9,850.8
1.4	Slope coefficient	m	1.0 ÷ 1.5
1.5	Channel bottom slope		0.00025 ; 0.000075
2	Surge tank		
2.1	Elevation of tank bottom	m	169
2.2	Tank bottom slope (i)	%	0
2.3	Width of tank bottom (b)	m	40.0÷58.4
2.4	Length of tank (L)	m	60.5
2.5	Length of transition section	m	28.5
2.6	Maximum water level in tank	m	186.16
2.7	Minimum water level in tank	m	185.57
2.8	Tank crest elevation	m	188.5
2.9	Side spill sill crest elevation	m	186.2
2.10	Width of spill sill crest	m	67
2.11	Width of side spill channel bottom	m	4.25÷2.0

No.	Works	Unit	Value
2.12	Length of side spill channel bottom	m	77.8
2.13	Slope of side spill channel bottom	%	6 ; 0
2.14	Deep outlet orifice dimension, nxbxh	mxm	2x5x6
2.15	Deep outlet orifice bottom elevation	m	169
2.16	Deep outlet orifice operation floor elevation	m	188.5
3	Intake gate		
3.1	Sill elevation	m	170.4
3.2	Intake channel bottom elevation	m	169
3.3	Number of orifices	orifice	4
3.4	Operation maintenance gate dimension	m x m	7.9x9.5
3.5	Trash rack dimension	m x m	11.7x8.5
3.6	Air drain dimension	m x m	0.8x2.0
3	Powerhouse		
3.1	Type of turbine		Kaplan
3.2	Powerhouse dimension	mxm	21.2x69.8
3.3	Turbine setting elevation	sm	161.8
3.4	Erection bay elevation	sm	182.05
3.5	Number of unit	unit	2
4	Outlet channel		
4.1	Elevation of channel starting point bottom	sm	163.9
4.2	Width of channel bottom	m	40
4.3	Length of channel	m	4019.3
4.4	Slope coefficient		1
4.5	Channel bottom slope		0.0001
5	Transformer area		
5.1	Bottom elevation	sm	182.1
5.2	OPY dimension (LxB)	mxm	36.7x23.2
6	Generator		
6.1	Type (synchronism, vertical axis, 3 phases)		
6.2	Number of units	unit	2
6.3	Firm capacity	MW	32
6.4	Total capacity	MVA	37.65
6.5	Capacity coefficient cosj		0.85
6.6	Firm voltage	kV	10.5

No.	Works	Unit	Value
6.7	Current frequency	Hz	50

3. *Alternative for connection to the national grid*

Powerhouse generates at 220kV voltage level, and connected to the power system by 220kV single circuit transmission line (T/L) connecting to Srepok 4 hydropower plant's 220kV distribution station with of 12km in length.

In Feasibility Study only present preliminary alternative for connecting Srepok 4A hydropower plant to the national grid, no carry out investigation and design in details. It will be implemented in an other project, thus impacts caused by the connecting T/L are not involved in this report.

4. *Proposed resettlement alternative*

According to investigation results carried out by PECC4 in February 2008 - May 2008:

- + Total number of HHs impacted on both house and productive land within channel is 20 HHs. Structures impacted by the project include houses, kitchens, breeding facilities, water wells, field watch-sheds, and ponds.
- + Total number of HHs impacted on production land is 267 HHs.

Because this project spreads along the channel with small width, HHs are only impacted on a small part of production land. According to local inhabitants' expectation cash compensation alternative for trees, crops, houses, auxiliary structures and land area impacted by the project will be applied. HHs impacted residential land, houses will be compensated by cash in order to self-resettle.

Q3. Will NEXI insurance be applied to a new project or an executing project? In case of an executing project, please inform of strong claims by stakeholders such as local residents, as well as improvement guidance or cessation orders for construction work/operations, from environmental authorities.

- ☒ New project
- ☐ Executing project (without claim etc)
- ☐ Executing project (with claim etc)
- ☐ Others (please specify)

Q4. In case of this project, it is necessary to execute Environmental Impact Assessment (EIA) based on the laws or regulation of the country where the project is to be implemented? If necessary, please inform the progress of EIA.

- ☒ Required (Completed)
- ☐ Required (Under execution or under planning)
- ☐ Not required
- ☐ Others (please specify)

Q5. In case that EIA is already completed, please inform whether EIA report is already approved based on the environmental assessment system of the country where the project is to be implemented or not? If EIA report is already approved, please provide the date and name of authorities of the approval.

- ☐ Approved (without condition)
- ☒ Approved (with condition)
- ☐ Under approval process
- ☐ Other (Please specify)

Date of approval: February 3, 2009

Name of authorities: Dak Lak Provincial People's Committee

Q6. If environmental permit(s) other than EIA is required, please provide the name of required permit(s). Have you obtained required permit(s)?

- ☒ Obtained
- ☒ Required, but not obtained yet
- ☐ Not required
- ☐ Others (please specify)

Names of required permit(s):

+ Agreement of Mekong river committee: Already obtained (Correspondence of Vietnamese Mekong River Committee No.357/UB dated June 16, 2009)

+ License to use surface water: Not obtain yet. We are finishing "the report on surface water use and exploitation" to submit to Ministry of Natural Resources and Environment for evaluation and approval.

Q7. Will the insurance be used for the undertaking that cannot specify the project at this stage (e.g. export or lease of machinery that has no relation with specific

project, or Two Step Loan that cannot specify the project at the time of loan agreement)?

(Yes/No)

If you answered "Yes", it is not necessary to reply to the following questions.

If you answered "No", please reply to the following questions.

A7. No

Q8. Are there any environmentally sensitive area(s) shown below in and around project site(s)?

(Yes/No)

If you answered "Yes", please select applicable items by marking and reply to the following questions

If you answered "No", please reply to question 9 and after.

A8. Yes

☒ (1) National parks, protected areas designated by government (coastal areas, wetlands, habitats of minorities or indigenous populations, heritage sites, etc.).

☒ (2) Primeval forests, tropical natural forests

☐ (3) Ecologically important habitats (coral reefs, mangrove, tidal flats, etc.)

☒ (4) Habitats of endangered species of which protection is required under local laws and international agreements.

☐ (5) Areas that have risks of large scale increase in soil salinity or soil erosion.

☐ (6) Desertification areas

☐ (7) Areas with special values from archaeological, historical and/or cultural viewpoints

☒ (8) Habitats of minorities, indigenous populations, nomadic people with traditional life style, or areas with special social value

Q9. Does the project involve following characteristics?

(Yes/No)

If you answered "Yes", please describe the scale of applicable characteristics, and reply to the question 10 and after

If you answered "No", please reply to the question 11 and after.

A9. Yes

- ☒ (1) Involuntary resettlement (the total number of HHs impacted on both house and production land within the channel is 20 HHs. Structures impacted by this project include houses, kitchens, breeding facilities, water wells, field watch-sheds and ponds)
- ☐ (2) Pumping of groundwater (Scale:.....m³/year)
- ☐ (3) Land reclamation, development and/or clearing (Scale:.....ha)
- ☐ (4) Deforestation (Scale:ha)

Q10. Under the environmental impact assessment system of the country where the project is to be implemented, do the applicable characteristics from (1) – (4) above and their scale serve as basis for executing an EIA for the project?

- ☒ They do
- ☐ They do not
- ☐ Others (please specify)

Q11. Will the value insured by NEXI in the export, loan or investment project be equal or less than 5% of the total project cost, or equal or less than SDR 10 millions? (In the case of additional support for a past project, this shall be the accumulated total amount)

(Yes/No)

If you answered "Yes", it is not necessary to reply to the following questions.

If you answered "No", please reply to the question 12 and after.

A11. No

Q12. Does the project belong to either of the sectors that impact on the environment is deemed immaterial or is not anticipated under normal conditions (e.g. maintenance of the existing facilities, non-expansionary renovation project acquisition of rights or interests without additional capital investment)?

(Yes/No)

If you answered "Yes", it is not necessary to reply to the following questions.

If you answered "No", please reply to the question 13 and after.

A12. No

Q13. Does the project belong to the following sectors?

(Yes/No)

If you answered "Yes", please specify the sector by marking and reply to the question 14 and after.

If you answered "No", it is not necessary to reply to the following questions.

A13. Yes

- ☐ (1) Mining
- ☐ (2) Oil and natural gas development
- ☐ (3) Pipelines
- ☐ (4) Iron and steel (projects that include large furnaces)
- ☐ (5) Non-ferrous metals smelting and refining
- ☐ (6) Petrol-chemicals (manufacture of raw materials, including complexes)
- ☐ (7) Petroleum refining
- ☐ (8) Oil, gas and chemical terminals
- ☐ (9) Paper and pulp
- ☐ (10) Manufacturing and transport of toxic and poisonous substances regulated by international treaties, etc
- ☐ (11) Thermal power
- ☐ (12) Nuclear power
- ☒ (13) Hydro power, dams and reservoirs
- ☐ (14) Power transmission and distribution lines involving large-scale involuntary resettlement, large-scale logging or submarine electric cables.
- ☐ (15) Roads, railways and bridges
- ☐ (16) Airports
- ☐ (17) Ports and harbors
- ☐ (18) Sewage and wastewater treatment having sensitive characteristics or located in sensitive areas or their vicinity
- ☐ Waste management and disposal
- ☐ (20) Agriculture involving large-scale land clearing or irrigation
- ☐ (21) Forestry
- ☐ (22) Tourism (Construction of hotel, etc)

Q14. Please provide information on the scale of the project (project area, area of plants and buildings, production capacity, amounts of power generation, etc).

Further, please explain whether an execution of EIA is required on account of the large scale of the project in the country whether the project is implemented.

A14. Some information on the scale of the project:

- + Land area acquired for constructing the project is of 565.5384 ha (not include land area acquired within the ROW of transmission line connecting to the national grid)
- + Installed capacity: 64 MW
- + Annual average generated electricity yield: $E_o = 308.35 * 10^6$ KWh
- + Documents submitted to EIA Report Evaluation Authority include EIA report and Feasibility Study Statement.

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