SANIMA JUM HYDROPOWER LIMITED

KMC-4, Dhumbarahi, Kathmandu

JUM KHOLA JALVIDHYUT AAYOJANA

(56 MW)

PROGRESS REPORT #05

(As required by Generation License Clause No. ७ ङ)

(January, 2024)

Submitted to:
Department of Electricity Development
Ministry of Energy, Water Resources and Irrigation
Kathmandu, Nepal

Prepared by:

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		Signature	Date
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आयोजनाको प्रगति बारे संक्षिप्त जानकारी

१. प्रस्तावनाको विवरण

प्रस्तावित जुम खोला जलविद्युत आयोजना (५६ मे.वा) निर्माण गर्नका लागि मिति २१ माघ, २०७० मा सानिमा जुम हाइड्रोपावर प्रा. लि. नामक एक विशेष उद्देश्य कम्पनी स्थापना गरिएको थियो । सो कम्पनी मिति ७ माघ, २०७७ मा पब्लिक लिमिटेड कम्पनीको रुपमा परिणत भएको थियो (अनुसूची १) । यस जुम खोला जलविद्युत आयोजना (५६ मे.वा.) को विद्युत उत्पादनको अनुमतिपत्र मिति २७ असार, २०७८ मा विद्युत ऐन, २०४९ को दफा ४ को उपदफा २ र विद्युत नियमावली, २०५० को नियम १७ बमोजिम नेपाल सरकार ऊर्जा, जलश्रोत तथा सिंचाइ मन्त्रालय, विद्युत विकास विभागको महानिर्देशकस्तरीय निर्णय अनुसार सानिमा जुम हाइड्रोपावर लि. को नाममा जारी गरिएको थियो (अनुसूची १) ।

प्रस्तावित आयोजना बागमती प्रदेशको दोलखा जिल्ला स्थित बिगु गाउँपालिका वडा नं. १ मा अवस्थित छ । यस आयोजनाले जुम खोलाको बढीमा २५.४५ घन मि. प्रति सेकेण्ड बहावको पानी तथा २५४ मिटर ग्रस हेड उपयोग गरी ५६ मे.वा. विद्युतीय ऊर्जा उत्पादन गर्नेछ । यस आयोजनाको विद्युतगृहमा १४.४३ मे.वा. क्षमताको ४ वटा टर्वाइनहरू रहने गरि प्रस्ताव गरिएको छ ।

आयोजनाको प्रगति विवरण

यस आयोजनाको प्रगति विवरण निम्नानुसार रहेको छ;

विस्तृत इन्जिनियरिङ्ग डिजाइन

सानिमा जुम हाइड्रोपावर लिमिटेडले यस आयोजनाको विस्तृत इन्जिनियरिङ्ग डिजाइन गर्नका लागि सानिमा हाइड्रो एण्ड इन्जिनियरिङ्ग प्रा. लि. सँग मिति २२ पौष, २०७७ मा सम्झौता गरेको थियो । सम्झौता बमोजिम सानिमा हाइड्रो एण्ड इन्जिनियरिङ्ग प्रा. लि. ले विभिन्न मितिमा निम्नानुसारको प्रतिवेदनहरु सम्पन्न गरि प्रस्तावक सानिमा जुम हाइड्रोपावर लि. लाई पेश गरेको थियो;

- Transverse Survey Report, July 2021 (मिति ६ श्रावण, २०७८)
- Geological and Geotechnical Investigation Report, July 2021 (६ श्रावण, २०७८)
- Design Basis Memorandum Report, November 2021 (मिति ७ मंसिर, २०७८)
- Explosive Estimation and Methodology Report, January 2022 (मिति २३ माघ, २०७८)
- Construction Materials Report, February 2022 (मिति २५ माघ, २०७८)
- Preliminary Assessment of Construction Power Report, March 2022 (मिति २४ फाल्गुन, २०७८)
- Tender Document For Main Civil Works Volume I, Tender Document For Main Civil Works Volume II, Tender Document For Main Civil Works Volume III, May 2022 (मिति ४ जेठ, २०७९)
- Project Definition Report, July 2022 (मिति ३० असार ,२०७९) र

- Tender Documents of Hydro-mechanical works, Electro-mechanical works and Transmission Line works, July 2022 (मिति ३० असार, २०७९) मा प्रस्तावक सानिमा जुम हाइड्रोपावर लि. लाई बुझाएको छ ।
- Detailed Civil Drawings, October, 2023

<u>वन क्षेत्रको जग्गा प्राप्ति</u>

आयोजना निर्माणको लागि गौरीशंकर संरक्षण क्षेत्र अन्तर्गतको १५.१७२ हेक्टर जसमध्ये स्थायी ८.०३६ हेक्टर र अस्थायी ७.१३६ हेक्टर वन क्षेत्र आवश्यक पर्ने देखिन्छ । सो आवश्यक वन क्षेत्र आयोजना प्रयोजनार्थ उपयोग गर्न मिति ५ श्रावण, २०७८ मा विद्युत विकास विभागमा राष्ट्रिय वन प्रयोग (Government Land Lease) तथा रूख कटान सम्बन्धी सिफारिसका लागि निवेदन गरिएको थियो । सोही निवेदनका आधारमा गौरीशंकर संरक्षण क्षेत्र आयोजनाका प्रतिनिधिहरूले आयोजनास्थलको फिल्ड निरिक्षण समेत गरिसकेको छ । उक्त फिल्ड निरीक्षणको मुख्य उद्देश्य भनेको आयोजनाको लागि आवश्यक पर्ने वन क्षेत्रको जग्गा तथा सो क्षेत्रमा रहेका हटाउनु पर्ने रूखहरूको लगत तयार पार्नु रहेको थियो । यसरी फिल्ड निरीक्षण पश्चात् तयार पारिएको प्रतिवेदन राष्ट्रिय प्रकृति संरक्षण कोषमा मिति १६ पौष, २०७८ मा पेश गरिएको थियो । तत्पश्चात, राष्ट्रिय प्रकृति संरक्षण कोष तथा राष्ट्रिय निकुञ्ज तथा वन्यजन्तु विभागबाट प्राप्त राय अनुसार प्रस्तावित आयोजनाको लागि रूखविरूवाहरू हटाउने सम्बन्धमा आयोजनाको स्वीकृत वातावरणीय प्रभाव मूल्याङ्कन प्रतिवेदनमा उल्लेखित रूख संख्या र स्थलगत प्रतिवेदनमा फरक परेको हुँदा वातावरण संरक्षण नियमावली, २०७७ को नियम ११ बमोजिम परिमार्जित वातावरणीय व्यवस्थापन योजना (UEMP) तयार पारी पेश गर्नुहुन भनी वन तथा वातावरण मन्त्रालयले निर्देशन गरेको थियो । सोही अनुसार मिति १३ वैशाख, २०७९ मा आयोजनाको परिमार्जित वातावरणीय व्यवस्थापन योजना श्री ऊर्जा, जलश्रोत तथा सिंचाइ मन्त्रालयमा स्वीकृतिको लागि पेश गरिएको थियो । यसरी पेश गरिएको प्रतिवेदन उपर राय-सुझाव संकलन गर्न मिति २६ पौष, २०७८ मा पुनरावलोकन समितिको बैठक सम्पन्न भएको थियो भने सो बैठकबाट प्राप्त भएका राय-सुझावहरू समावेश गरी स्वीकृतिको लागि मिति २७ वैशाख, २०७९ मा श्री ऊर्जा, जलश्रोत तथा सिंचाइ मन्त्रालयमा पेश गरिएको थियो । यसरी पेश गरिएको परिमार्जित EMP वन तथा वातावरण मन्त्रालयबाट २ भाद्र, २०७९ मा स्वीकृत भईसकेको छ (अनुसूची ३) । आयोजनालाई आवश्यक वन क्षेत्रको जग्गा प्राप्ति र सो क्षेत्रमा रहेका आवश्यक रुख बिरुवा हटाउने सम्बन्धि दस्तावेज वन तथा वातावरण मन्त्रालयमा प्रक्रियागत कारवाहीमा रहेकोमा २८ मंसिर, २०७९ मा आवश्यक कागजात सहित प्रस्तुतिकरणका लागि उपस्थित हुन वन तथा वातावरण मन्त्रालयले निवेदन गरेको थियो। सोहि निवेदन अनुसार ११ पौष, २०७९ मा आवश्यक कागजात पुरा गरी प्रस्तुतिकरण सम्पन्न भइसकेको छ ।

यसरी वन क्षेत्रको जग्गा प्रयोग तथा सो क्षेत्रमा रहेको रुखविरुवा हटाउनका लागि आवश्यक सम्पूर्ण प्रकृयाहरू पूरा गरी श्री वन तथा वातावरण मन्त्रालयको मिति २८ फाल्गुण, २०७९ को प्रस्ताव म.प. बै.सं. ५३/०७९ मिति २८ चैत्र, २०७९ को मन्त्रिपरिषद् बैठकबाट निर्णय भइसकेको अवस्था छ (अनुसूची ३)।यसै शिलशिलामा श्री राष्ट्रिय निकुञ्ज तथा वन्यजन्तु संरक्षण विभागको मिति १२ बैशाख, २०८० को पत्र संख्या ९५६ (च.नं. २८९९) अनुरुप आयोजनाले प्रयोग गर्ने गौरीशंकर संरक्षण क्षेत्रको १५.१७२ हे. वन क्षेत्रमा कम नहुने गरी वन क्षेत्र सँग जोडिएको समान भौगोलिक र पारिस्थितिकीय प्रणालीसँग मिल्दो निजि जग्गा खरीद गरी राष्ट्रिय निकुञ्ज तथा वन्यजन्तु संरक्षण विभागको नाम रजिष्ट्रेशन

पास गर्नुपर्ने बमोजिम आयोजनाले दोलखा जिल्ला भित्र वन क्षेत्रसँग जोडिएको समान भौगोलिक तथा परिस्थितिकिय प्रणालीसँग मिल्दो वृक्षारोपण गर्न मिल्ने १५.१७२ हे. निजी जग्गाहरू खरिद गरी श्री राष्ट्रिय निकुञ्ज तथा वन्यजन्तु संरक्षण विभाग, नेपाल सरकारको नाममा रजिष्ट्रेशन पास गरिसकेको छ । यसै शिलशिलामा मिति २४ कात्तिक, २०८० मा सानिमा जुम हाइड्रोपावर लिमिटेड तथा नेपाल सरकार, वन तथा वातावरण मन्त्रालय, राष्ट्रिय निकुञ्ज तथा वन्यजन्तु संरक्षण विभाग बिच द्विपक्षीय सम्झौता पत्र हस्ताक्षर भएको थियो जसअनुसार यस आयोजनाको निर्माण तथा संचालनको लागि गौरीशंकर संरक्षण क्षेत्र भित्र परेको सरकारी वन क्षेत्रको १५.१७२ हे. जग्गा प्रयोग गर्न दिने र सो वन क्षेत्रमा रहेका ८५१ वटा रूखहरू हटाउन स्वीकृति प्राप्ति भएको छ । उक्त सम्झौताको प्रतिलिपी अनुसूची ३ मा समावेश गरिएको छ ।

चित्र १: आयोजना स्थलको वन क्षेत्रको अवस्था

चित्र २: गौरीशंकर संरक्षण क्षेत्र आयोजनाका प्रतिनिधिहरूले रूखहरू मापन गर्दै

पूर्वाधार निर्माणको प्रगति (भौतिक प्रगति)

१) पहुँच सडक

नेपाललाई चीन सँग जोड्ने छोटो सडक संजालका रूपमा हेरिएको लामाबगर फलाक सडक खण्डलाई नेपाल सरकारले प्राथमिकता प्राप्त योजनाका रूपमा लिएको छ । लामाबगरमा अवस्थित माथिल्लो तामाकोशी जलविद्युत आयोजनाको बाँध क्षेत्र नजिकै तामाकोशी नदीको बाँया किनारमा करिब ११०० मीटर लामो सुरूङ्ग मार्ग निर्माण गर्ने कार्य सम्पन्न भैसकेको छ । त्यसैगरी, करिब १० किलो मीटर रहेको सतही सडक मध्ये विद्युतगृह सम्मको करिब ३.५ कि.मि. सडक निर्माण कार्य विभिन्न स्थानहरू बाट भइरहेको छ जसमध्ये सुरूङ्ग मार्गको आउटलेटबाट च्यादु दोभान सम्मको १३८० मिटर सडक खण्ड निर्माण सम्पन्न भएको छ । त्यसैगरि, च्यादु दोभान देखि देउराली सम्मको ३८० मिटर सडक खण्ड निर्माण कार्य भइरहेको छ भने देउराली देखि खराने खोल्सी तर्फको करिब १३०० मिटर सडक खण्डको उत्खनन कार्य भइरहेको छ । खराने खोल्सी देखि विद्युतगृह रहेको स्थान सम्मको करिब २२० मिटर सडक निर्माणको कार्य पनि द्रुत गतिमा अगाडी बढीरहेको छ । यसरी करिब ३.५ कि. मि. सतही सडक मध्ये हाल सम्ममा २.८ कि.मि. सडक निर्माण कार्य सम्पन्न भैसकेको छ भने बाँकी ६०० मीटर सडक निर्माण कार्य पनि द्रुत गतिमा अघि बढि रहेको छ । यसरी हेर्दा आयोजनाको विद्युतगृहसम्मको पहुँच सडक निर्माणमा उल्लेख्य प्रगति रहेको देखिन्छ । अबको करिब तिन महिना भित्र आयोजनाको विद्युत गृह सम्म पुग्ने सडक मार्गको निर्माण सम्पन्न गरि विद्युत गृहको निर्माण कार्य

द्रुत गतिमा अगाडि बढाउने लक्ष्य रहेको छ । त्यसैगरि, आयोजनाको बाँध क्षेत्रसम्मको पहुँच सडक निर्माण पनि अगाडि बढाउने तयारी रहेको छ ।

यी सडक बाहेक पनि आयोजनाको विभिन्न संरचनाहरू निर्माण गर्ने स्थान सम्मको आन्तरिक सडकहरू निर्माणका लागि सर्वे लगायत सडकको अलाइन्मेन्टको अध्ययन विज्ञको टोलीले गरिसकेको छ । यी सडक निर्माणका लागि ठेकेदार परिचालन समेत गरिएको छ ।

चित्र ३ : सुरुंग मार्गको इनलेट पोर्टल

चित्र ४: सुरुंग मार्ग भित्रको सटक्रिट कार्य

चित्र ५ : आउटलेट पोर्टेल नजिकै निर्माण भईरहेको सतही सडकको तस्बिर

चित्र ६ : आउटलेटदेखि हेडवर्क्स तर्फ निर्माण भइरहेको सतही सडकमार्ग

चित्र ७ :देउराली देखि टनेल आउटलेट तर्फ निर्माण भईरहेको सतही सडकको तस्बिर

चित्र ८: देउराली नजिकै निर्माण भईरहेको सतही सडकको तस्बिर

२) निर्माण शिविर

आयोजनाको विद्युतगृह नजिकै निर्माण ठेकेदारहरूका लागि शिविरहरूको व्यवस्था गरी हाल पहुँच सडक निर्माणको काम तथा सुपरिवेक्षणका कार्यहरू भइरहेको छ । त्यसैगरी, प्रशासनिक तथा आयोजनाको पूर्व निर्माण तयारीको कार्यहरू लामाबगर स्थित जनसम्पर्क कार्यालयबाट हुँदै आएको छ ।

चित्र ९: विद्युतगृह नजिकै निर्माण ठेकेदारहरूका लागि शिविरहरूको व्यवस्था गरिएको दृश्य

३) साइट अफिस

प्रस्तावित जुम खोला जलविद्युत आयोजनाको साइट अफिस हाल दोलखा जिल्ला बिगु गाउँपालिका वडा न.१ लामाबगर स्थित १२ आना जग्गामा बनेको २ तले घरका घरधनी छयोतार शेर्पा र सानिमा जुम हाईड्रोपावर लिमिटेड बीच मिति १ पौष २०७९ मा घर बहाल सम्झौता पत्र भइसकेको छ । हाल लामाबगर स्थित साइट अफिसबाट जनसम्पर्क कार्यालय लगायत पूर्व निर्माण तयारीको कार्यहरु र आयोजना सम्बन्धि विभिन्न कार्यहरु गरिदै आएको छ । साइट अफिसमा हाल १ सहायक प्रबन्धक,२ सिभिल इन्जीनियर , २ वातावरणविद, २ समाजविद र २ कुक म्यान गरि ९ जना कर्मचारीहरु कार्यरत रहनु भएको छ ।


चित्र १० : लामाबगर स्थित सानिमा जुम हाइड्रोपावर लिमिटेडको अफिस

सामाजिक सहयोग कार्यक्रम

- **पदमार्ग स्तरोन्नति**

जुम खोला जलविद्युत आयोजनाको सामाजिक सहयोग कार्यक्रम अन्तर्गत सेतीदेवी संरक्षण वन उपसमितिको आग्रह बमोजिम लामाबगर देखि जुम खोला सम्म पैदल मार्गको स्तरोन्नतिको कार्यमा सहयोग गरेको थियो । उक्त पैदल मार्ग स्थानीयहरूले आफ्नो वस्तुलाई एउटा खर्क देखि अर्को खर्क सार्न तथा रासनपानी ओसारपसार गर्नका लागि प्रयोग गर्दछन् ।

सेतीदेवी संरक्षण वन उपसमितिले मिति ०५ मंसिर, २०७८ मा गरेको अनुरोध अनुसार लामाबगर देखि जुम खोलासम्मको पैदल मार्गको स्तरोन्नति तथा जुम र लप्ची दोभानमा फड्के निर्माणका लागि सानिमा जुम हाइड्रोपावर लिमिटेडले आर्थिक सहयोग गरेको थियो । बर्षाको समयमा आएको बाढीले उक्त फड्केमा क्षति पुऱ्याएको हुँदा हाल फड्केको पुनः निर्माण गरिएको छ। आयोजनाको विद्युतगृह तथा बाँध क्षेत्र सम्म पुग्न पनि यो पैदल मार्ग र फड्के निर्माणले सहज पुऱ्याउँदछ ।


चित्र ११ : पैदल मार्गको स्तरोन्नति तथा जुम र लप्ची दोभानमा बनाइएको अस्थायी पुल (फड्के)

चित्र १२: पुनः निर्माण गरिएको अस्थायी पुलको दृश्य ।

- **सामाजिक तथा आर्थिक सहयोग**

आयोजना प्रभावित क्षेत्रमा खेलकुद विकासका लागि विभिन्न समयमा कम्पनीले आर्थिक सहयोग गर्दै आएको छ । लामाबगर खेलकुद समिति तथा गौरीशंकर माध्यमिक विद्यालयमा आयोजित पालिका स्तरिय राष्ट्रपति कप प्रतियोगितामा आयोजनाले आर्थिक सहयोग गरेको थियो (अनुसूची ४) । त्यसैगरी, आयोजना क्षेत्रको सांस्कृतिक उत्थानका तथा संरक्षणका लागि लामाबगर स्थित रहेका दुई वटा आमा समूहद्वारा आयोजित देउसी - भैलो कार्यक्रम अन्तर्गत आयोजनाको तर्फबाट आर्थिक सहयोग गरेको थियो (अनुसूची ४) । दोलखा जिल्लाको आन्तरिक पर्यटन, उद्योग व्यवसाय चलायमान गराउने उद्देश्यका साथ दोलखा चेम्बर अफ कमर्सले आयोजना गरेको दोलखा महोत्सव-२०७९ मा समेत आर्थिक सहयोग गरेको थियो (अनुसूची ४) ।

<u>कन्सट्रक्सन पावर</u>

नेपाल विद्युत प्राधिकरणको गोंगर- लामाबगर ११ के.भी. प्रसारण लाइनलाई ३३ के.भी. मा upgrade गर्नको लागि तामाकोशी जलाधार क्षेत्रमा निर्माण गरिने विभिन्न आयोजनाहरू बाट संयुक्त रूपमा मिति १२ भदौ २०८० मा बागमती प्रादेशिक कार्यालय समक्ष निवेदन गरेको थियो (अनुसूची ५) । उक्त निवेदनको आधारमा दोलखा जिल्लाको चरिकोट स्थित नेपाल विद्युत प्राधिकरणको कार्यालयबाट उक्त प्रसारण लाइनको अभिवृद्धिको अध्ययन कार्य थालनी गरेको छ ।

साथै, लामाबगरबाट आयोजनाको विद्युत गृह स्थल सम्म ११ के. भी. विद्युत प्रसारण लाइन निर्माण गर्ने योजना अनुरुप काम अगाडि बढाइएको छ ।


चित्र १३ : लामाबगरबाट आयोजनाको विद्युत गृह स्थल सम्म पुग्ने ११ के. भी. विद्युत प्रसारण लाइनको तस्बिर

विद्युत प्रसारण लाइन

१) प्रसारण लाइन आयोजनाको सम्भाव्यता अध्ययन

सानिमा जुम हाइड्रोपावर लिमिटेडले यस जुम खोला जलविद्युत आयोजना (५६ मे.वा.) बाट उत्पादित विद्युतिय उर्जालाई १३२ के.भी. डबल सर्किट प्रसारण लाइन मार्फत रामेछाप जिल्ला स्थित नेपाल विद्युत प्राधिकरणको गन्ज्याङ्ग सबस्टेशनमा जडान गर्ने योजना अनुरुप विद्युत प्रसारणको सर्वेक्षण अनुमतिपत्र नेपाल सरकार उर्जा जलस्रोत तथा सिंचाइ मन्त्रालय विद्युत विकास विभागबाट मिति २४ असोज, २०७८ मा प्राप्त गरिसकेको छ। सर्वेक्षण अनुमतिपत्र अनुसार विद्युत प्रसारण लाइनको सम्भाव्यता तथा वातावरणीय अध्ययन गर्नुपर्ने हुन्छ । आयोजनाको सम्भाव्यता तथा वातावरणीय अध्ययन गर्न मिति १६ ज्येष्ठ, २०७९ मा वन तथा वातावरण मन्त्रालय, राष्ट्रिय निकुञ्ज तथा वन्यजन्तु संरक्षण विभागबाट अध्ययन सहमति प्राप्त गरेको थियो। सम्भाव्यता अध्ययनको सिलसिलामा मिति २६ मंसिर, २०७८ देखि मिति १४ पौष, २०७८ सम्म विज्ञहरूको टोलीले विद्युत प्रसारण लाइन रहने स्थानको स्थलगत अध्ययन गरेको थियो । प्रारम्भिक अध्ययन अनुसार आयोजनाको स्वीचयार्ड देखि १२४ वटा टावरहरू खडा गरी करिब ३९ किलो मीटर लामो प्रसारण लाइन मार्फत गन्ज्याङ्ग सबस्टेशन सम्म जडान गरिनेछ । हाल आयोजनाको सम्भाव्यता अध्ययनको मस्यौदा प्रतिवेदन तयार भई रहेको छ ।

२) लामाबगर सबस्टेशन

यसै सिलसिलामा राष्ट्रिय प्रसारण ग्रिड कम्पनी लिमिटेड, नेपाल सरकारले दोलखा जिल्लाको बिगु गाउँपालिकामा लामाबगर सबस्टेशन (२२०/१३२ के.भी.) निर्माण गरी लामाबगर - बाह्रविसे २२० के.भी. विद्युत प्रसारण लाइन आयोजना निर्माण गर्ने योजना अनुरूप आयोजनाको सर्वेक्षण अनुमति प्राप्त गरी हाल प्रस्तावित २२० के.भी. सब - स्टेशनको वाकवोभर सर्वेक्षण (Walkover Survey), सर्भे कार्य एवं सम्भाव्यता अध्ययन सम्पन्न गरिसकेको छ भने उक्त सब-स्टेशनको लागि आवश्यक पर्ने जग्गा

अधिग्रहणका लागि प्रारम्भिक कारवाही र आयोजनाको वातावरणीय अध्ययनको काम अगाडि बढाइएको जानकारी प्राप्त भएको छ । यो सबस्टेशन निर्माण भएको खण्डमा जुम खोला जलविद्युत आयोजनाबाट उत्पादित विद्युतीय ऊर्जालाई पूर्व निर्धारित गन्ज्याङ्ग सबस्टेशनमा जडान गर्दा भन्दा अत्याधिक छोटो र कम लागतमा करिब ५ कि.मी. लामो प्रसारण लाइन मार्फत राष्ट्रिय प्रसारण प्रणालीमा जोड्न सकिने छ।

३) प्रसारण लाइन आयोजनाको प्रारम्भिक वातावरणीय परीक्षण

जुम खोला जलविद्युत आयोजनाको १३२ के.भी. डबल सर्किट विद्युत प्रसारण लाइन आयोजनाको प्रारम्भिक वातावरणीय परीक्षण अध्ययनको लागि मिति २६ मंसिर, २०७८ देखि मिति १४ पौष, २०७८ सम्म विज्ञहरूको टोलीले विद्युत प्रसारण लाइन रहने स्थानको स्थलगत अध्ययन गरेको थियो । उक्त प्रसारण लाइनको सम्पूर्ण संरचनाहरू (transmission line alignment) गौरीशंकर संरक्षण क्षेत्रको भू-भागमा पर्दछ । प्रस्तावित प्रसारण लाइन उपोष्ण (Sub-tropical) देखि उपलेकाली (Sub-alpine) जलवायु क्षेत्र भित्र पर्दछ । समुद्री सतहबाट ११५९ मी. देखि ३५०१ मी. उचाईसम्म फैलिएको यस आयोजनास्थल जैविक विविधता भएको क्षेत्र हो । यस क्षेत्रमा मुख्य गरी Oak-Laurel Forest, Schima-Castanopsis Forest, Lower Temperate Oak Forest, Temperate Mountain Oak Forest, Mixed Blue Pine-Oak Forest र Fir Forest रहेको छ (ICIMOD, 2010) । आयोजना क्षेत्रमा मुख्य रूपमा गुँरास, सल्लो, उतिस, दुधिलो, सिमल, कटुस आदि प्रजातिको रूखहरू पाइएको छ । यस बाहेक झिंगनी, चाँप, बाँझ, सिमने, चिलाउने, काफल, लाकुरी, भलायो आदि पनि यस क्षेत्रमा पाइएको छ । आयोजना स्थलको जमिन प्रयोगको दृष्टीकोणले हेर्दा मुख्य रुपमा वन क्षेत्र, खेतीयोग्य जमिन, घाँसे मैदान, झाडी क्षेत्र, र खोला/ बगर रहेको पाईयो । आयोजना स्थलमा रहेको वन क्षेत्रले विभिन्न स्तनधारी वन्यजन्तुहरू लाई वासस्थान प्रदान गरेको छ । आयोजना क्षेत्रमा घोरल, झारल, थार, कालो भालु, चितुवा, ध्वाँसे चितुवा, पहरे बाँदर, ढेडु बाँदर, मलसाँप्रो, रतुवा मृग आदि पाइन्छन् ।

यसरी अध्ययन गरी तयार पारिएको प्रारम्भिक वातावरणीय परीक्षणको कार्यसूची विद्युत विकास विभागमा मिति २१ वैशाख, २०७९ मा पेश गरिएको थियो । यसरी पेश गरिएको प्रतिवेदन उपर राय-सुझाव संकलन गर्न मिति १२ ज्येष्ठ, २०७९ मा विभागमा पुनरावलोकन समितिको बैठक सम्पन्न भएको थियो भने सो बैठकबाट प्राप्त भएका राय-सुझावहरू समावेश गरी स्वीकृतिको लागि मिति २३ ज्येष्ठ, २०७९ मा पुनः पेश गरिएको थियो । यसरी पेश गरिएको कार्यसूची प्रतिवेदन मिति १२ असार, २०७९ मा ऊर्जा, जलश्रोत तथा सिंचाइ मन्त्रालयबाट स्वीकृत भई सकेको छ (अनुसूची ६)।

चित्र १४: विद्युत प्रसारण लाइन रहने क्षेत्रको स्थलगत सर्वेक्षण

विद्युत खरिद विक्रि सम्झौता

नेपाल विद्युत प्राधिकरणसँग गरिने विद्युत खरिद विक्रि सम्झौताको लागि मिति २ असोज २०७५ मा निवेदन गरिएको थियो । सोही निवेदनको आधारमा नेपाल विद्युत प्राधिकरणले आयोजनाको ऊर्जा तालिका (Energy Table) तय गरेको थियो साथै Grid Impact Study (GIS) अध्ययन पनि गरेको थियो । Grid Impact Study (GIS) को नतिजा अनुसार यस आयोजनाबाट उत्पादित विद्युतिय ऊर्जालाई गञ्ज्याङ्ग सबस्टेशनमा जडान गर्न सकिने देखिएको थियो । यही अनुरूप मिति १९ वैशाख २०७६ मा नेपाल विद्युत प्राधिकरणसँग सम्झौता ज्ञापन पत्र/ विद्युत जडान सम्झौता (Memorandum of Understanding/ Connection Agreement) गरिएको थियो । उक्त विद्युत जडान सम्झौता को म्याद मिति १५ माघ, २०७९ मा सकिएको थियो । हाल उक्त सम्झौताको म्याद मिति १४ कार्तिक, २०८० सम्म रहने गरी थप गरिएको छ ।आयोजनाको विद्युत उत्पादन अनुमतिपत्रको अनुसूची ७ को सर्त ङ वमोजिम प्रवर्धक कम्पनीले उक्त विद्युत उत्पादन अनुमतिपत्र प्राप्त गरेको दुई वर्ष भित्र विद्युत खरिद विक्री सम्झौता सम्पन्न गरिसक्नु पर्ने भएतापनि नदी प्रवाहमा आधारित जलविद्युत आयोजनाहरुको खरिद सम्झौतालाई नेपाल सरकारबाट भईरहेको थिएन। RoR आयोजनाहरुको पनि विद्युत खरिद विक्री सम्झौता (PPA) गरिने cabinet निर्णय बमोजिम उक्त विद्युत जडान सम्झौता अनुरूप गरिने विद्युत खरिद विक्री सम्झौताको लागि नेपाल विद्युत प्राधिकरणबाट नदी प्रवाहमा आधारित (RoR) जलविद्युत आयोजनाहरुको विद्युत खरिद बिक्रि सझौताका लागि प्रवर्द्धकहरुलाई ४ फाल्गुन, २०७९ मा सुचना जारी गरिएको थियो ।उक्त सूचनाका आधारमा यस आयोजनाको PPA को लागि निवेदन पेश गरिएको थियो ।यसै क्रममा मिति २४ चैत्र,२०७९ मा विद्युत खरीद विक्री सम्झौताको मस्यौदा प्रतिवेदन प्राप्त भई विद्युत नियमन आयोजना तर्फबाट मिति २८ चैत्र,२०७९ मा उक्त मस्यौदा PPA लाई अन्तिम रुप दिनका लागि ने.वि.प्रा. समक्ष सिफारिस गरिएको थियो ।तत्पश्चात ने.वि.प्रा.ले मिति १० जेस्ठ, २०८० मा PPA दर रेट निर्धारण र PPA सम्झौताको सहमतिका लागि भनी विद्युत नियमन आयोग समक्ष पत्र पेश गरेको थियो ।यस सन्दर्भमा PPA गर्न आवश्यक सेवा शुल्कहरु मिति १२ जेस्ठ, २०८० र २२ जेस्ठ,२०८० मा क्रमशः विद्युत नियमन आयोग र ने.वि.प्रा. मा रकम दाखिला गरिएको थियो ।यसरी सम्पूर्ण आवश्यक प्रक्रियाहरु पूरा गरी यस आयोजनाको लागि मिति ६ असार,२०८० मा प्रवर्दक कम्पनी सानिमा जुम हाइड्रोपावर लिमिटेड र नेपाल विद्युत प्राधिकरण बीच विद्युत खरीद विक्री सम्झौता सम्पन्न भएको थियो।

उद्योग दर्ता

आयोजनाको विद्युत उत्पादन अनुमतिपत्रको सर्त अनुसार प्रवर्धक कम्पनीले उक्त विद्युत उत्पादन अनुमतिपत्र प्राप्त गरेको एक वर्ष भित्र उद्योग दर्ताको प्रकृया सम्पन्न गरिसक्नु पर्ने हुन्छ । सोही अनुरूप सानिमा जुम हाइड्रोपावर लिमिटेडले उद्योग दर्ताको लागि उद्योग विभाग समक्ष मिति १८ फागुन, २०७७ मा निवेदन पेश गरेको थियो ।तत्पश्चात् लगानी बोर्ड कार्यालयले मिति ५ कार्तिक, २०७८ मा आयोजनाको लागि लगानी स्वीकृति दिएको थियो भने उक्त स्वीकृतिको आधारमा उद्योग विभागले उद्योग दर्ताको प्रमाणपत्र मिति ८ पौष, २०७८ मा प्रदान गरेको थियो।यसरी प्राप्त गरिएको उद्योग दर्ताको प्रमाणपत्र मिति १४ पौष, २०७८ मा विद्युत विकास विभागमा पेश गरिएको थियो।

सिभिल निर्माणको लागि बोलपत्र आव्हान

सानिमा जुम हाइड्रोपावर लिमिटेडले जुम खोला जलविद्युत आयोजनाको सिभिल निर्माणको लागि अनुभवी निर्माण कम्पनीहरू लाई prequalification को लागि बोलपत्र आव्हान गरेको थियो । सो को लागि राष्ट्रिय दैनिक पत्रिका कारोबार मा मिति १ श्रावण, २०८० मा सूचना प्रकाशित गरिएको थियो (अनुसूची ८) ।उक्त सूचनाका आधारमा निम्न उल्लेखित निर्माण कम्पनीहरूले prequalification का लागि आवेदन दिएका थिए ।

- बज्र गुरू कन्स्ट्रक्सन कम्पनी प्रा. लि.
- बाबरी कन्स्ट्रक्सन प्रा. लि.
- BBHM कन्स्ट्रक्सन JV
- हाई हिमालय हाइड्रो कन्स्ट्रक्सन प्रा. लि.
- मल्टि इन्फ्रास्ट्रक्चर- आरोग्य J/V

माथि उल्लेखित पाँच कम्पनीहरूले दिएको आवेदन एवं दस्तावेजहरूको अध्ययन गर्नका लागि मूल्याङ्कन समिति गठन गरिएको थियो । मूल्याङ्कन समितिको अध्ययन पश्चात यी मध्ये तिन वटा कम्पनीहरू योग्य रहेका थिए । यी योग्य रहेका कम्पनीहरू लाई मिति २ कात्तिक, २०८० मा टेन्डर प्रक्रियाका लागि औपचारिक रूपमा आमन्त्रण गरिएको थियो र लगत्तै ति कम्पनीहरू लाई tender documents जारी गरिएको थियो । Tender documents जारी भएपश्चात ति कम्पनीहरूले ६ पौष, २०८० भित्र proposal बुझाएका छन् भने मूल्याङ्कन समितिले सो को मूल्याङ्कनको प्रकृया थालेको छ । आगामी केही महिना भित्र मूल्याङ्कन तथा सम्झौताको प्रकृया सकाएर कुनै एक कम्पनीलाई ठेक्का सम्झौता प्रदान गरिने छ ।

<u>वित्तिय व्यवस्थापनको समापन</u>

आयोजना कार्यन्वयनका लागि आवश्यक स्वपुंजी लगानीका लागि सानिमा हाइड्रो अन्तर्गतका भगिनी सस्थाहरुः सानिमा हाइड्रोपावर लि., सानिमा माई हाइड्रोपावर लि. र सानिमा प्रा.लि. बाट गरिने योजना छ ।साथै ऋण लगानी राष्ट्रिय वित्तिय सस्थाहरुबाट गरिने योजना छ । यस आयोजनाको लागि नबिल बैंक लिमिटेडको अगुवाइमा राष्ट्रिय बाणिज्य बैंक लि. र एभरेष्ट बैंक लिमिटेड तथा वित्तीय संस्था हाइड्रोइलेक्ट्रीसिटी इन्भेस्टमेन्ट एण्ड डेभलप्मेन्ट कम्पनी लिमिटेडहरुको कन्सोर्टियम बनाई लगानी गर्ने गरि अघि बढिरहेको छ । यी वित्तिय संस्थाहरू मध्ये पनि नबिल बैंक लिमिटेड, एभरेष्ट बैंक लिमिटेड र हाइड्रोइलेक्ट्रीसिटी इन्भेस्टमेन्ट एण्ड डेभलप्मेन्ट कम्पनी लिमिटेडबाट ऋण लगानी गर्न संचालक समितिका तर्फबाट स्विकृत भइसकेको छ । त्यसैगरि, राष्ट्रिय बाणिज्य बैंक लि. का संचालक समितिको निर्णयको अन्तिम चरणमा रहेको छ ।

नबिल बैंक, सानिमा जुम हाइड्रोपावर लिमिटेड र जेड कन्सल्ट प्राइभेट लिमिटेड बीच जुम खोला जलविद्युत आयोजनाको due diligence अध्ययन को लागि २२ जेठ २०८० मा सम्झौता भैसकेको थियो । त्यसैगरी जेड कन्सल्ट प्राइभेट लिमिटेडले २३ जेठ, २०८० देखि २६ जेठ, २०८० सम्म आयोजनाको स्थलगत अध्ययन गरेको थियो । जेड कन्सल्ट प्राइभेट लिमिटेडबाट आयोजनाको कागजातहरु समेतको अध्ययन गरि लगानी कर्ताहरुको तर्फबाट due diligence अध्ययन प्रतिवेदन बुझाएको थियो (अनुसूची ९) ।

नबिल बैंक यस आयोजनामा लगानी गर्ने नेत्रित्व बैंकको हैसियतले मिति ८ पौष, २०८० मा माथि उल्लेखित वित्तिय संस्था/ बैंकहरूले आयोजनाको कूल लागतको ७५ प्रतिशत बराबरको ऋण लगानी गर्ने प्रतिवद्ध रहेको जानकारी सहितको पत्र प्राप्त भएको छ (अनुसूची ९) ।

चित्र १५ : बैंक र वित्तीय संस्थासंग लगानीका सम्बन्धमा गरिएको छलफल

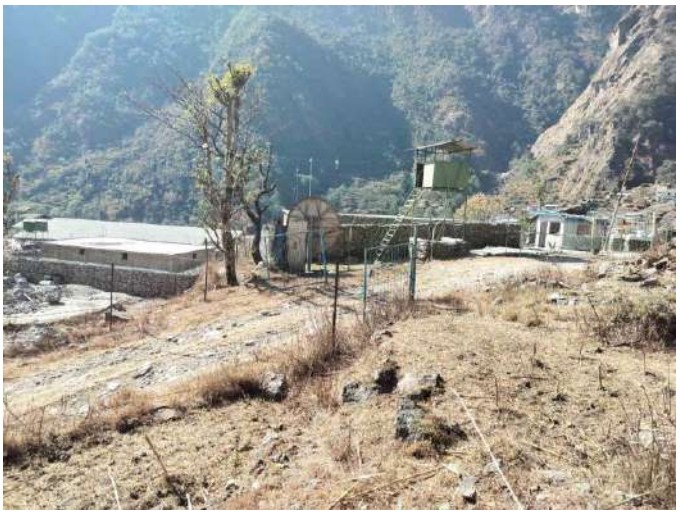
चित्र १६ : जेड कन्सल्टले Due Diligence अध्ययनको क्रममा स्थलगत अध्ययनको तस्विरहरु

विस्फोटक पदार्थ

प्रस्तावित जुम खोला जलविद्युत आयोजनाको प्राय जस्तो संरचनाहरू भूमिगत रहेका छन् । जसमध्ये, सुरूङ्ग (Headrace Tunnel), पहुँच सुरूङ्ग (Approach Tunnel), बालुवा थिग्राउने पोखरी (Settling basin), निकास सुरूङ्ग (Tailrace Tunnel), सर्ज साफ्ट (Surge Shaft), पेनस्टक (Penstock), विद्युत गृह (Powerhouse) उत्खनन् गर्न विस्फोटक पदार्थको आवश्यक पर्दछ । विस्फोटक पदार्थ तथा त्यससँग आवश्यक अन्य सामग्रीहरू आयोजना प्रयोजनका लागि खरिद, ओसार-पसार, भण्डारण तथा प्रयोग गर्न विस्फोटक पदार्थ ऐन, २०१८ (संशोधन, २०४८) को व्यवस्था अनुसार गृह मन्त्रालय तथा रक्षा मन्त्रालयको स्वीकृति आवश्यक रहेको हुँदा मिति ५ जेठ, २०७९ मा विद्युत विकास विभागमा निवेदन पेश गरिएको थियो । उक्त निवेदनमा थप आवश्यक विवरणहरू खुलाई मिति १७ जेठ, २०७९ मा पुनः पेश गरिएको थियो । उक्त निवेदनको आधारमा ऊर्जा, जलश्रोत तथा सिंचाइ मन्त्रालयले यस आयोजनाको

लागि आवश्यक पर्ने विस्फोटक पदार्थहरु खरिद / आयातको स्वीकृति, आयोजना स्थलमा बंकर घरको निर्माण, सुरक्षा, भण्डारण र प्रयोग तथा विस्फोटक पदार्थ ढुवानीको लागि श्री गृह मन्त्रालय समक्ष अनुरोध गरेको थियो (अनुसूची ११) । यसै सन्दर्भमा मिति २१ भदौ, २०८० मा दोलखा जिल्लाका प्रमुख जिल्ला अधिकारीको अध्यक्षतामा जिल्ला सुरक्षा समितिको बैठक बसेको थियो । उक्त बैठक पश्चात जिल्ला प्रशासन कार्यालय, दोलखाबाट प्राप्त सिफारिस तथा माइन्युट सहित श्री गृह मन्त्रालयमा पेश गरिएको थियो । तत्पश्चात, गृह मन्त्रालयको मिति २९ असोज, २०८० को निर्णयानुसार यस आयोजना निर्माणका लागि आवश्यक विस्फोटक पदार्थहरूको आयात इजाजत प्राप्त भएको थियो (अनुसूची ११) । साथै, भारतबाट आयत गरिने विस्फोटक पदार्थका लागि Indian Explosives Private Limited सँग सम्झौता समेत भइ सकेको छ (अनुसूची ११) । विस्फोटक पदार्थहरू आयातको स्वीकृतिको लागि काठमाण्डौ स्थित भारतीय दुतावास समक्ष निवेदन समेत गरिएको छ (अनुसूची ११)।

लामाबगर क्षेत्रमा रहेको बंकर क्षेत्रमा यस आयोजनाको विद्युतगृह निर्माणका लागि विस्फोटक पदार्थ भण्डारण गर्ने योजना रहेको छ । साथसाथै, दोलखा जिल्ला स्थित तारा दल गणका प्रतिनिधिहरूले बंकर घर तथा सुरक्षार्थ खटिने फौजका लागि आवश्यक पर्ने सम्पूर्ण भौतिक पूर्वाधारहरू निर्माण गर्न उपयुक्त स्थान छनोटका लागि आयोजनास्थलको स्थलगत भ्रमण गरेको थियो (अनुसूची ११)।



चित्र १६: लामाबगर क्षेत्रमा रहेको बंकर क्षेत्र (जुम खोला जलविद्युत आयोजनाको विद्युतगृह निर्माणका लागि सोही क्षेत्रमा विस्फोटक पदार्थ भण्डारण गर्ने योजना रहेको छ ।)

स्वास्थ्य र सुरक्षा योजना

यस जुम खोला जलविद्युत आयोजनामा भविष्यमा आउन सक्ने जोखिमहरुलाई मध्ये नजर राख्दै त्यस्ता जोखिमहरुबाट हुन सक्ने दुर्घटना रोकथाम र हरेक कर्मचारीले आफ्नो स्वास्थ्य र सुरक्षाको ख्याल राखी आयोजनालाई दुर्घटना मुक्त बनाउन सानिमा जुम हाइड्रोपावर लिमिटेडले व्यवसायजन्य सुरक्षा तथा स्वास्थ्य योजना Occupational Safety and Health Plan (OSH) तयार पारेको छ। उक्त योजना अनुरूप हाल निर्माण भइरहेको पहुँच सडकमा काम गर्ने कामदारहरूका लागि आवश्यक रहेको विभिन्न सुरक्षाका उपकरणहरू वितरण गरिएको थियो । यसै क्रममा कामदारहरूलाई उक्त कार्यमा हुनसक्ने जोखिमहरूको बारेमा सतर्क गराई सुरक्षा उपकरणहरूको महत्व तथा प्रयोग गर्ने तरिकाहरू बारे जानकारी गराइएको थियो ।

चित्र १७: कार्यक्षेत्रमा व्यवसायजन्य सुरक्षा तथा स्वास्थ्य सम्बन्धी कामदारहरूलाई जानकारी दिदै ।

चित्र १८: कामदारहरूलाई सुरक्षा उपकरणको प्रयोग तथा महत्वका बारे जानकारी दिएपश्चातको दृश्य ।

नीति नियम

यस आयोजना संग सम्बन्धित विभिन्न नीति नियमहरु जस्तै मानव संसाधन नीति (Human Resource policy), वित्तिय नीति (Finance Policy), सवारी साधन सम्बन्धि नीति (Vehicle Policy),कर्मचारी आचार संहिता (Code of Conduct) र House Keeping इत्यादि नीति नियमहरु सानिमा जुम हाइड्रोपावर लिमिटेडले तयार पारेको छ ।

जलविज्ञान

जुम खोला जलविद्युत आयोजनाको जलविज्ञान अध्यननको लागि जल तथा मौसम विज्ञान (DHM) द्वारा स्थापित गरिएको DHM Stn.६४७ (बस्तीस्थित तामाकोशी नदी) बाट परियोजनाको अध्ययन को लागि आवश्यक दीर्घकालीन जलविज्ञान तथ्यांकहरु संकलन गरिएको थियो । स्टेशनमा सन् १९७१ देखि २००६ सम्मको औसत मासिक प्रवाह डेटाको अभिलेखहरु समावेश गरि जुम खोलाको औसत मासिक प्रवाह विस्लेशण गरिएको थियो । हाल DHM स्टेशन ६४७ द्वारा सन् २००७ देखि २०१९ सम्मको डेटाहरु प्रकाशित गरेको छ ।अध्ययन टोलीले उक्त तथ्याङ्कहरु प्राप्त गरिसकेको छ भने अद्यावधिक गरिएको डाटा विश्लेषण गरी आगामी कार्य प्रगति रिपोर्टहरूमा प्रस्तुत गरिनेछ ।

निर्माण सामाग्री

आयोजना निर्माणका लागि चाहिने नदी जन्य सामाग्रीहरु जस्तै ढुंगा, गिट्टी र बालुवा उत्खनन् गरि प्रयोग गर्नका लागि श्री गौरीशंकर समंरक्षण क्षेत्र सिंगटी मा मिति ९ साउन २०२९ को पत्र मार्फत अनुमति माग गरिएको थियो । हाल सो निर्माण सामाग्री उत्खनन् गर्नका लागि गौरीशंकर समंरक्षण क्षेत्र बाट स्थलगत अध्ययन गर्ने लगायतका काम कारबाहीहरू अगाडि बढाएको छ ।

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SALIENT FEATURES (AS PER FSR)

Project Location	Bigu Rural Municipality, Dolakha district, Bagmati Province, Nepal. (Formerly Lamabagar VDC, Dolakha district, Janakpur zone, Central Development Region)
Climate	Lower Temperate to Temperate
Latitude	27° 56' 40" N to 27° 58' 23" N
Longitude	86° 12' 47" E to 86° 15' 00" E.

Geology

Region	Higher Himalaya Zone
Rock composed	Gneiss, variegated schist and quartzite

Hydrology

Catchment area	992 km^2
Annual mean flow	50.25 m^3/sec
40% PoE Discharge ($Q_{40\%}$)	28.16 m^3/sec
Adopted design discharge in energy table ($Q_{41.11\%}$)	25.45 m^3/sec (as per agreed energy table between NEA and SHL)
Flood 1 in 100 years	815 m^3/s (at headworks site) 1364 m^3/s (at powerhouse site)

Weir

Type	Concrete, free flow weir
Length	36 m
Crest level	2300.00 m amsl
High flood level	2305.74 m amsl
Height	10 m (from river bed level)

Undersluice

Number	2
Orifice size, (b x h)	4.0 m X 3.0 m
Invert level	2290.53 m amsl
Steel lining	16 mm thick
Bed slope	1:13

Intake

Type	Side intake
Number of orifice	4
Orifice size, (b x h)	2.8 m x 3.0 m
Invert level of orifice	2296.00 m amsl

Gravel trap

Type	Surface
Number	2
Length	10.00 m (including transition, average length)
Width	6.60 m (each chamber)
Height	6.85 m (each chamber)
Normal water level	2299.85 m amsl
Gravel flushing pipe	120 m long, 1 m dia. steel pipe (for both flushing units)

Approach Tunnel

Type	Inverted D shaped
Number	3
Size (Width x Height)	4.2 m x 4.2 m
Total Length	230 m
Bay 01	86.63 m approach tunnel
Bay 02	81.06 m approach tunnel
Bay 03	62.31 m approach tunnel + 30.3 m approach culvert

Settling basin

Type	Underground
Size (l x b x h) m^3	68 m x 12 m x 7.5 m each
No. of chambers	3
Normal water level	2299.55 m amsl
Trap efficiency	91 % (for particle size larger than 0.15 mm)

Headrace Tunnel

Type	Inverted D shaped, pressurized
Length	1519 m
Size (Width x Height)	4.4 m x 4.4 m

Adit Tunnel

Type	Inverted D shaped
Length	390 m
Size (Width x Height)	4.4 m x 4.4 m
HRT chainage at Adit junction	1+405 m

Surge shaft

Type	Circular, RCC
Diameter	10 m
Height	45 m
Orifice diameter	4.8 m
Up surge level	2310.00 m amsl
Down surge level	2289.00 m amsl

Ventilation Tunnel

Type	Inverted D shaped
Length	211 m
Size (Width x Height)	4.4 m x 4.4 m

Penstock Shaft

Material	Steel with concrete casing
Length	222 m (Vertical) 165 m (Horizontal including bifurcations)
Number	1
Excavation diameter	4.30 m
Diameter of penstock pipe	3.25 m
Thickness	14-55 mm (Grade E350, IS 2062 or equivalent)

Powerhouse

Type	Underground
Length	75 m
Breadth	15 m
Height	35 m
Powerhouse Machine Floor	2053.55 m amsl
Transformer cavern (Length x Breadth X Height)	86.0 m X 14.0 m x 16.0 m
Transformer cavern floor level	2053.55 m amsl

Turbine

Type	Vertical Axis Francis Turbine
Number of units	4 (Four)
Rated capacity per unit	14.43 MW
Discharge per unit	6.36 m^3/s
Turbine axis level	2044.07 m amsl
Turbine efficiency	92%

Generator

Type of generators	Three phase, Synchronous
Number of units	4 (Four)
Rated output	16.47 MVA
Generation voltage	11 kV
Frequency	50 Hz
Power factor	0.85
Excitation system	Brushless

Speed (rpm)	750
Generator efficiency	97%

Transformer

Type	Three-Phase, Oil immersed
Rated Output	17.5 MVA
Number of units	4 (Four)
Frequency	50 Hz
Voltage ratio	11kV/132 kV
Transformer efficiency	99%

Tailrace Tunnel

Type	Inverted D-shape tunnel, free flow
Length	703.64 m
Size (Width x Height)	4.5 m x 5.0 m
Tail water level	2046.00 m amsl (outside draft tube) 2044.58 m amsl (at tailrace portal)

Transmission Facilities

Transmission line Length	37 km (up to Garjyang Substation)
Type	132 kV Double Circuit Transmission Line
Conductor	ACSR “Bear”
Interconnecting Substation	Garjyang Sub-station of NEA

Power and Energy

Gross Head	254 m
Net Head at design discharge	249.62 m
Installed capacity	56 MW
Gross Annual Energy	324.75 GWh
Dry Energy	97.41 GWh (30 % of total energy)
Wet Energy	227.34 GWh (70 % of total energy)

Project Cost
(Ref. PDR Rev. 2, Mar 2023)

Cost per MW	207,142,857 NPR
Total project cost (including interest during construction)	11,600 MNPR

Financial parameter

NPV (MNPR)	1,873
B/C	1.14
IRR	12.00 %
FIRR	15.59 %

1. INTRODUCTION

1.1. BACKGROUND

Jum Khola Jalvidhyut Aayojana (56 MW) is a Run-of-River (RoR) type hydroelectric project being developed by Sanima Jum Hydropower Limited (SJHL). The Project is located in Dolakha district of Bagmati Province and utilizes the flow from Jum River.

Sanima Hydropower Limited (SHL) received the survey license for the Project from Department of Electricity Development (DoED) on 24th December, 2015 (9th Poush, 2072 B.S.). Sanima Hydro and Engineering Pvt. Ltd. (SHEPL) carried out the feasibility study which was completed in June, 2019. The feasibility study was later updated with the findings from geological investigations (core drilling) and the Updated Feasibility Study Report was submitted to DoED on March, 2021. SHEPL also carried out Environment Impact Assessment (EIA) of the Project. The EIA was approved on 13th October, 2020 (27th Ashoj, 2077 B.S.) by Ministry of Forests and Environment, GoN. On the basis of the field report and suggestion provided by Gaurisankhar Conservation Area Project (GCAP), the Ministry of Forests and Environment (MoFE) provided permission to prepare and submit a Revised Environmental Management Plan (EMP). Accordingly, the revised EMP was approved by MoFE on 18th August 2022 (2nd Bhadra 2079).The Terms of Reference (ToR) for IEE of transmission line study of the project was submitted to the Department of Electricity Development (DoED) on 21st Baisakh, 2079 B.S. which has been approved by Ministry of Energy, Water Resources and Irrigation on 26th June, 2022 (12 Ashar, 2079 B.S.).

DoED has issued the Generation License (वि.वि.वि. ०७७/०७८, वि.उ. ३४२) for the Project to SJHL on 11th July, 2021 (27th Ashar 2078 BS). DoED has also issued the survey license for transmission line study to SJHL on 10th October, 2021 (24th Ashoj, 2078 B.S.).

As per the Generation License (Clause no. ७ ङ), a semi-annual progress report (every six months) has to be submitted to the DoED until the completion of construction works. This report has been prepared accordingly.

1.1.1 OBJECTIVES OF THIS REPORT

The main objective of this report is to summarize and highlight all the progresses made on development and construction of the Project after receiving the Generation License. This report presents the various project activities that have been completed, ongoing and planned till the time of preparation of this report. This report can be referred by DoED, SJHL, SHEPL and other involved parties as a basis for project tracking and progress monitoring.

1.2. ABOUT PROJECT

Jum Khola Jalvidhyut Aayojana (JKJA) is a Run of River (RoR) type hydroelectric project located in Dolakha District. The Project utilizes a design discharge of 25.45 m^3/s at 41.11% probability of exceedance from Jum River and gross head of 254 m, which results in an installed capacity of 56 MW. The project generates 324.75 GWh energy per year out of which 97.41 GWh is a dry season energy and 227.34 GWh is a wet season energy.

The general arrangement of JKJA comprises headworks, pressurized waterways (headrace tunnel and penstock shaft), underground powerhouse and tailrace tunnel. The headworks comprises: concrete overflow diversion weir, side intake, surface gravel trap and underground approach tunnel and settling basin. The river flow diverted by the headworks structures is conveyed via pressurized headrace tunnel, penstock shaft (horizontal and vertical) and finally to the underground powerhouse accommodating four vertical axis Francis

turbines. The tail water will then be discharged back to Tamakoshi River (Jum and Lapche River after their confluence is named Tamakoshi River) by free flow tailrace tunnel.

1.3. ACCESS TO THE SITE

The project site is about 200 km from Kathmandu (via. Kathmandu–Khadichaur–Charikot–Singati–Lamabagar route). The road network from Kathmandu to Lamabagar is shown in Figure 1. The Powerhouse site of JKJA is about 6 km from Lamabagar via under construction road.

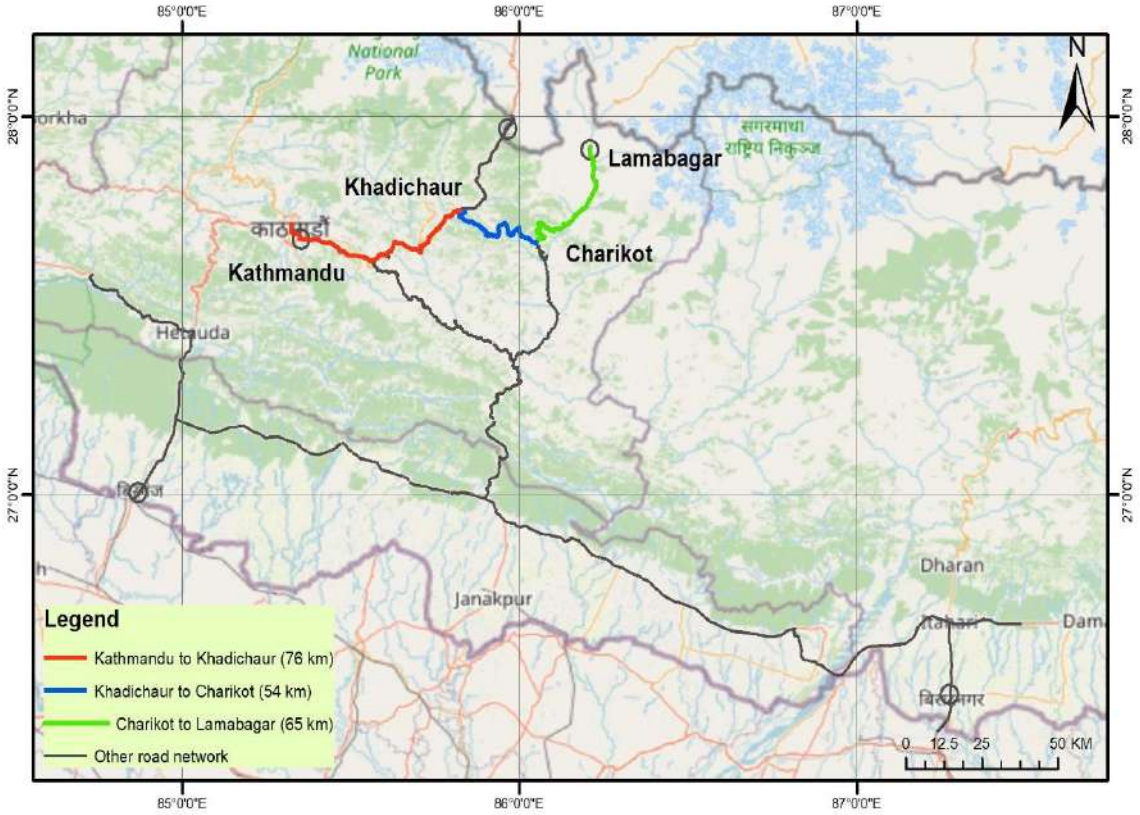

Figure 1: Road network showing connection of Lamabagar with major cities

2. PROGRESS IN PROJECT DEVELOPMENT

2.1. LAND LEASING

The project requires 15.172 ha (8.036 ha permanent and 7.136 ha temporary) of government forest land area within Gaurisankhar Conservation Area (GCA). SJHL has initiated the process of land acquisition for which an application was made to DoED on 5th Shrawan, 2078 B.S. In response to the application, representatives from Gaurishankar Conservation Area Project (GCAP) made a visit to the project site. The major objectives of the visit was to verify the land to be leased and inventory of the trees that has to be cleared for the project purpose. GCAP submitted the inventory report to National Trust for Nature Conservation (NTNC) on 16th Poush 2078 B.S. The number of trees required to be felled differed as mentioned in the approved Environmental Impact Assessment (EIA). As per the provision mentioned in Environment Protection Rules, 2077 the Ministry of Forests and Environment had directed to submit the Revised Environmental Management Plan (EMP). Accordingly, on 13th Baisakh, 2079 B.S. the Updated Environmental Management Plan (EMP) of the project was submitted to the Ministry of Energy, Water Resources and

Irrigation (MoEWRI) for approval. Thus, a Review Committee meeting was held on 26th Poush, 2078 B.S. After addressing the comments and suggestion received from the meeting, updated EMP was finally submitted to the Ministry of Energy, Water Resource and Irrigation (MoEWRI) on 27th Baisakh, 2079 B.S. The revised EMP has been approved by the Ministry of Forest and Environment (MoFE) on 2nd Bhadra, 2079 B.S.(Appendix 3). The process of acquiring the government forest land area required for the project and the permission for tree cutting was in process at the MoFE. MoFE had requested for the presentation along with the necessary documents on 28th Manshir, 2079 (Appendix 3).In response to that letter the presentation has been completed. In this way, after completing all necessary procedures for using GoN forest land and removing trees from that area, the project obtained approval through Cabinet-level decision M.P. Bai. No. 53/079 dated 28th Chaitra 2079 (Appendix 3). In this regard, according to letter number 956 (Ch.NA. 2899) dated 12th Baisakh 2080 of the National Park and Wildlife Conservation Department, the 15.172 hectares of Gaurishankar Conservation Area to be used by the project, the company is required to purchase private land of equivalent geographical and situational characteristics in Dolakha or neighbouring districts. This land should then be registered under the name of the Department of National Park and Wild Life Conservation. Accordingly, Sanima Jum Hydropower Limited purchased 15.172 ha private land in Chilakha VDC-7 (Bigu Rural Municipality-5), Khare VDC-2 (Gaurisankhar Rural Municipality-8), Jhyaku VDC-1,2,9 (Gaurisankhar Rural Municipality-4,3), Jugu VDC-1,8,9 (Gaurisankhar Rural Municipality-1) of Dolakha district and transferred it to Government of Nepal, Department of National Park and Wildlife Conservation. Finally, a bilateral agreement was signed between Sanima Jum Hydropower Limited and Department of National Park and Wildlife Conservation for the construction and operation of the project within the Gaurishankar Conservation Area. The agreement permits the utilization of the government forest land (15.172 hectares) and removal of 851 trees within the forest area. A copy of the signed agreement is included in Appendix 3.

Figure 2:Forest type in project area

Figure 3: Forest inventory by GCAP

2.2. PHYSICAL PROGRESS

2.2.1 ACCESS ROAD

The Construction of an access road from Lamabagar to Falak (Nepal-China border) is a priority project of the Government of Nepal (GoN). This road consists of about 1100 m of tunnel road and about 10 km of surface road. Construction of this 1100 m section of the road tunnel near the Upper Tamakoshi Reservoir has been completed. In case of the surface road, about 3.5 km has already been completed from different fronts which includes 1380 m stretch starting from the road tunnel outlet portal.

Likewise, a 380-meter road section is under construction, extending from Chyadu Dovan to Deurali, while excavation work is in progress along approximately 1300 meters of road from Deurali towards Kharane Kholsi. The construction of around 220 meters of road from Kharane Kholsi to the power plant site is also advancing satisfactorily.

As of now, approximately 2.8 km of the 3.5 km surface road leading to the powerhouse area has been successfully completed, with rapid progress underway for the remaining 600 meters. Examining these figures indicates a significant advancement in the construction of the access road to the project's powerhouse area. Within the next three months, the road to the powerhouse will be finalized, and construction of the powerhouse itself will be proceed. Additionally, a road to the headworks area has also undergone a study/review for its construction in near future.

Beyond these roads, the expert team has conducted surveys and studies to determine the alignment of roads for constructing internal roads leading to various project components. Contractors have also been mobilized for the construction of these internal roads.

Figure 4: Inlet portal of road tunnel

Figure 5: Shotcrete work inside road tunnel

Figure 6: Surface Road construction work near outlet portal

Figure 7: Surface Road construction work from road tunnel outlet to headworks

Figure 8:Surface Road construction work from Deurali to road tunnel outlet portal

Figure 9: Surface Road construction work near Deurali

2.2.2 CONSTRUCTION CAMP

A few temporary camps have been set up in the vicinity of the powerhouse area to support the road construction process. These camps are designed for temporary use and are specifically intended for the startup and mobilization phase. Additional facilitated camps will be established before the civil contractor mobilizes for the project.

2.2.3 FOOT TRAIL

As per the request of Setidevi Conservation Forest Sub-committee, SJHL has supported in up-gradation of foot trail from Lamabagar to Jum Khola which also included construction of temporary bridge (*fadke*) across Lapche and Jum Khola. This foot trail and the bridges also serves as access to the headworks and powerhouse area of JKJA. (Appendix 10)

Figure 10: Up-gradation of foot trail and construction of temporary bridge (fadke)

2.2.4 SITE OFFICE

An agreement to rent the house for the use as site office has been signed on 1st Poush 2079 B.S. between the house owner Chayotar Sherpa and Sanima Jum Hydropower Limited. The site office of JKJA is located in Dolakha District Rural Municipality ward no.1 Lamabagar. Pre-construction preparation and other project related activities is being conducted from the

site office and there are currently nine employees working at the site office; one Assistant Manager-Administration & Social, two Civil Engineer, two Environmentalist, two Social Officer and two Cook.

Figure 11: Sanima Jum Hydropower Limited site office at Lamabagar

2.2.5 CONSTRUCTION POWER

The Nepal Electricity Authority, Dolakha has been working to upgrade the Gongar-Lamabagar 11 kV transmission line to 33 kV (Appendix 5). Also, there has been a progress in 11 kV transmission line from Lamabagar to the project site.

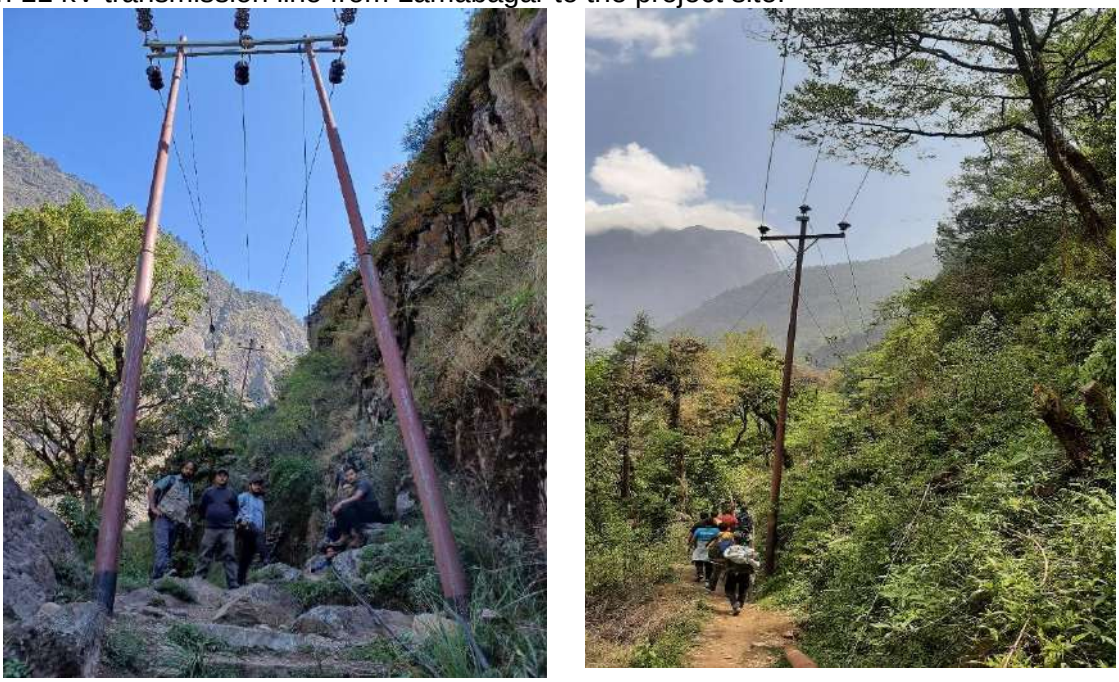

Figure 12: 11 kV transmission line from Lamabagar to the powerhouse site of the project

2.3.1 FEASIBILITY STUDY OF TRANSMISSION LINE PROJECT

Department of Electricity Development (DoED) issued the survey license of Jum Khola Jalvidhyut Aayojana, 132 kV double circuit transmission line on 24th Ashoj, 2078 B.S. As per the survey license, the proponent is required to conduct feasibility and environmental study

for the project. Department of National Parks and Wildlife Conservation (DNPWC) had provided letter of agreement to conduct feasibility and environmental study on 16th Jestha, 2079 B.S. The team of experts consisting of electrical engineer, civil engineer, geologist, surveyor and environmentalist visited the project site from 26th Mangshir 2078 B.S. to 14th Poush 2078 B.S. The major objectives of the visit was to initiate feasibility study and Initial Environmental Examination (IEE) of the Transmission Line project. The preliminary study have shown a requirement of about 39 km long transmission line consisting of 124 number of towers from the proposed switchyard area of JKJA to NEA's Garjyang substation at Ramechhap District. Currently, the feasibility study report is being prepared.

LAMABAGAR SUBSTATION

Rastriya Prasaran Grid Company Limited has obtained survey license for the proposed Lamabagar-Barhabishe 220 kV transmission line project with construction of Lamabagar substation (220/132 kV) at Bigu Rural Municipality of Dolakha district. The walkover survey of the Lamabagar-Barhabishe 220 kV transmission line feasibility study has been completed. Recently, preliminary proceedings have been taken to acquire the required land area, and environmental studies for the sub-station. Once this substation is built, the electricity produced by the Jum Khola Jalvidhyut Aayojana can be connected to national grid (alternative to the aforementioned scheme) via Lamabagar-Barhabise 220 kV Transmission Line with about 5 km of transmission line, which is much shorter and cost effective compared to the Garjyang Substation.

2.3.2 INITIAL ENVIRONMENTAL EXAMINATION OF TRANSMISSION LINE

To initiate Initial Environmental Examination (IEE) of the transmission line project, a team of experts consisting of electrical engineer, civil engineer, geologist, surveyor and environmentalist visited the project site from 26th Mangsir 2078 B.S. to 14th Poush 2078 B.S. The entire project is located within Gaurishankar Conservation Area Project. The project alignment passes through private and forested land. The major species of trees found in the project area are Gurans, Sallo, Uttis, Dudilo, Simal, Katus etc. The area is also a habitat for wild fauna. The Terms of Reference (ToR) for IEE of transmission line study of the project was submitted to the Department of Electricity Development (DoED) on 21st Baisakh, 2079 B.S. A review committee meeting was held on 12 Jestha, 2079 B.S. After addressing the comments and suggestions received from the meeting, ToR for IEE was submitted on 23rd Jestha, 2079 B.S. which has been approved by Ministry of Energy, Water Resources and Irrigation (MoEWRI) on 12 Ashad, 2079 B.S.

Figure 13: Transmission line walkover survey

2.3. POWER PURCHASE AGREEMENT (PPA)

The application for PPA with NEA was made on 2nd Ashoj, 2075 B.S. In response to the application, NEA finalized the energy table and Grid Impact Study (GIS) of the project. The

GIS showed the possibility of the interconnection of the power generated to the Garjyang substation. As per the findings of the GIS study, a Memorandum of Understanding (MoU)/ Connection Agreement was signed with NEA on 19th Baishakh, 2076 B.S. The MoU expired on 15th Magh, 2079 and it has been extended by nine (9) months to 14th Kartik, 2080. According to Generation License (Clause no. ७ ङ), the Company should have completed the Power Purchase Agreement (PPA) within two years of obtaining the Generation license. However, the agreement for RoR hydropower projects was not being executed by the GoN. In line with cabinet decision to initiate PPA for RoR projects, NEA published a notice on 4th Falgun, 2079 to the promotors, inviting application for the PPA of RoR hydropower projects. In response to that notice, an application was submitted for the PPA of this project. In this context, on 24th Chaitra, 2079, the draft PPA was signed, and on behalf of the Electricity Regulatory Commission (ERC), dated 28th Chaitra 2079, the draft PPA was sent to NEA for the finalization. Subsequently, on 10th Jestha, 2080, NEA submitted a letter to ERC regarding the PPA rate and PPA agreement. Additionally, the required service charge for the PPA was deposited on 12th Jestha, 2080, and 22nd Jestha 2080. Thus, after completing all the necessary procedures, the Power Purchase Agreement between the promoter company Sanima Jum Hydropower Limited and Nepal Electricity Authority was completed on 6th Asar, 2080 for this project.

2.4. INDUSTRIAL REGISTRATION

The generation license of the project requires SJHL to complete industrial registration process within 27th Ashar, 2079 B.S. (within one year from the date of issuance of generation license). Accordingly, SJHL made an application for Industrial Registration to Department of Industry (DoI) on 18th Falgun, 2077 B.S. In response to the application, DoI forwarded the file to Investment Board Nepal (IBN) for the investment approval. IBN provided the investment approval on 5th Falgun, 2078 B.S. Based on the investment approval, DoI provided the industrial registration certificate on 8th Poush, 2078 B.S. The industrial registration certificate was submitted to DoED on 14th Poush, 2078 B.S. (Ref: Appendix 1)

2.5. CALL FOR TENDERS FOR CIVIL CONSTRUCTION

Sanima Jum Hydropower Limited (SJHL) invited experienced contractor companies to prequalify for the main civil works construction of Jum Khola Jalvidhyut Aayojana (56 MW). A notice was published on 17th July 2023 (1st Shrawn, 2080) in the Nepalese national newspaper 'Karaobar,' inviting prospective contractors (A newspaper snippet of the notice is included in Appendix 8). Interested companies/contractors submitted their prequalification applications. A total of five companies submitted their application/documents for the prequalification process. The evaluation committee thoroughly examined these application/documents and determined that three companies met the eligibility criteria for further consideration. On October 19, 2023 (2080/07/02), prequalified contractors were formally invited to participate in the tender process. These contractors were instructed to collect the Tender Documents. All three contractors had submitted their proposals 22 December, 2023 (2080/09/06). The tender evaluation committee have officially commenced the process of evaluating the tender. It is expected that the tender evaluation and negotiation processes will be concluded in the next few months, after which the contract will be awarded.

2.6. FINANCIAL CLOSURE

Equity investment has been planned from sister organizations under Sanima Hydro (Sanima Mai Hydropower Limited, Sanima Hydropower Limited and Sanima Private Limited.) and National Financial institutes will be approached for loan investment. Currently, a consortium consisting of Nabil Bank, Rastriya Banijya Bank, Everest Bank and one financial institution Hydroelectricity Investment and Development Company Limited, has been formed and is

proceeding with the project. Among these financial institutions, Nabil Bank Limited and Hydroelectricity Investment and Development Company Limited have committed to invest in loans, while Everest Bank Limited has already prepared an investment proposal and is expected to announce its commitment soon. Similarly, Rastriya Banijya Bank is in the final stage of the decision from the board.

A Contract Agreement was signed between Nabil Bank (the lead bank), Jade Consult Pvt. Ltd and Sanima Jum Hydropower Limited for the purpose of conducting a due diligence study of Jum Khola Jalvidhyut Aayojana. Jade Consult carried out a site visit from 31th Baisakh 2080 to 3rd Jestha 2080 and has completed the due diligence on behalf of the investors (Appendix 9).

Nabil Bank, the lead bank investing in this project, has sent a letter to SJHL letter dated 8 Poush, 2080 with the information that the above-mentioned financial institutions/banks have pledged to invest 75% of the total cost of the project (Appendix 9).

Figure 14: Discussion with banks and financial institution regarding loan investment

Figure 15: Site visit during the due diligence study of JKJA by Jade Consult

2.7. COMMUNITY SUPPORT PROGRAM

As a part of Community Support Program (CSP), SJHL has supported Setidevi Conservation Forest Sub-Committee to upgrade foot trail from Lamabagar to Jum River and construction of temporary bridge (Fadke). The foot trail is used by local herders to shift their livestock from one grazing land to another. A copy of the Letter requested by the Setidevi Conservation Forest Sub-Committee to assist in upgrading the foottrail is included in Appendix 10.

Accordingly, SJHL had supported financially for the upgradation of foot trail as well as construction of temporary bridge. However, the temporary bridge was damaged by the flood event during the monsoon which now has been reconstructed by the project.

The company has provided financial support at various times for the development of sports in the project affected areas. The Lamabagar Sports Committee and Gaurishankar Secondary School received financial support from the company for organizing the Municipality-level President's Cup competition (Appendix 4). Additionally, the project provided financial support to two mothers' groups located in Lamabagar for Deusi-Bhailo program (Appendix 4).

Furthermore, with the aim of promoting internal tourism, conducting business activities, and contributing to the economic development of Dolakha district, the Dolakha Chamber of Commerce organized the Dolakha Mahotsav-2079 and received financial support from the project (Appendix 4).

2.8. PREPARATORY WORKS FOR EXPLOSIVES

Most of the structures of the proposed Jum Khola Jalvidhyut Aayojana (JKJA) project are underground. The explosives are required for excavation of the Headrace Tunnel, Approach Tunnel, Settling Basin, Tailrace Tunnel, Surge Shaft, Penstock Shaft (Horizontal / Vertical), and Powerhouse. As per the provisions of the Explosives Act, 2018 (Amendment, 2048), approval of the Ministry of Home Affairs and the Ministry of Defence is required to purchase, transport, store and use explosives and other related materials for project purposes. An application was submitted to the Department of electricity Development (DoED) on 5th Jestha, 2079 B.S. On 17th Jestha, 2079 B.S., the application was again submitted to DoED including additional details (Appendix 11). On the basis of the application, the Ministry of Energy, Water Resources and Irrigation (MoEWRI) has requested Ministry of Home Affairs for approval of purchase/import of explosives required for this project, construction of bunker house at the project site, security, storage and use and issuance of transporter identification card in the name of the employees of the company for the transportation of explosives (Appendix 11). In this regard, a meeting was conducted under the chairmanship of the Chief District Officer of Dolakha District on 21 Bhadra 2080. After the meeting, the recommendations and minutes received from the District Administration Office, Dolakha were submitted to the Ministry of Home Affairs. Thereafter, according to the decision of the Ministry of Home Affairs dated 29th Ashoj, 2080, the import license of the explosive materials required for the construction of this project was obtained (Appendix 11). Also, an agreement has been made with Indian Explosives Private Limited for explosives to be imported from India (Appendix 11). An application has also been made to the Indian Embassy in Kathmandu for permission to import explosives (Appendix 11).

At the same time, the representatives of “Tara Dal Gana” located in Dolakha district visited the project site to select a suitable place to build the bunker house and all the physical infrastructure required for the security forces (Appendix 11).

2.9. SAFETY AND HEALTH PLAN

To safeguard the well-being of all staff and minimize accidents at the Jum Khola Jalvidhyut Aayojana, SJHL has developed an Occupational Safety and Health Plan (OSH). As per the plan, various safety equipments were distributed for the workers currently involved in the construction work on the road. In this process, information about the importance of safety equipmednts and ways to use them, as well as awareness about the risks involved in the work was provided to the workers.

2.10. POLICY RULES

SJHL has prepared various policy rules such as Human Resource Policy, Finance Policy, Vehicle Policy, Code of Conduct and House Keeping etc. related to the project.

2.11. HYDROLOGY

The long term hydrological data required for the study of Jum Khola Jalvidhyut Aayojana (JKJA) were correlated from the reference hydrological station, DHM Stn.647 (Tamakoshi River at Busti), established by Department of Hydrology and Metrology (DHM).Average monthly flow of Jum Khola was analyzed by including records of average monthly flow data from 1971 to 2007 at the station. At present, DHM has published additional data of gauging station no. 647 from year 2007 to 2019. The study team has already acquired the data and the mean monthly flow of Jum Khola from 1971 to 2019 has been calculated. The detailed of it will be presented in the coming progress reports.

2.12. CONSTRUCTION MATERIAL

On 9th Shrawan, 2079 B.S. a letter was sent to the Shri Gaurishankar Conservation Area (GCA) in Singati requesting permission to excavate and use river materials such as stone, gravel and sand for the construction of the project. Gaurishankar Conservation Area has started the study for quarrying the construction materials from the river.

3. ENGINEERING PROGRESS

A contract agreement was signed on January 6, 2021, between Sanima Jum Hydropower Limited (SJHL) and Sanima Hydro and Engineering Pvt. Ltd. (SHEPL) for the design and preparation of tender documents for the Jum Khola Jalvidhyut Aayojana, 56 MW (JKJA). This contract underwent modifications in March 2023 to incorporate additional scopes. The scope of the contract are as follows:

- Traverse Survey
- Preparation of Design Basis Memorandum (DBM)
- Design of Civil Works
- Conceptual design of EM, HM and TL works
- Tender document preparation of Civil, HM, EM and TL works
- Preparation of Project Definition Report (PDR)
- Preparation of Detailed Engineering Drawings and BoQ of Civil Works
- Preparation of Detailed Reinforcement Drawings
- Preparation of Detailed Design Report (DDR)
- Preparation of periodic Progress Reports required for NEA, DoED and other government offices
- Geological and Geotechnical Investigations
- Assistance in pre-qualification, tender evaluation and negotiation of civil, HM, EM and TL works.
- Miscellaneous works (Support on preconstruction works, financial closure, Due Diligence study, PPA and other administrative works)

3.1. TRAVERSE SURVEY

Traverse survey was carried out in March, 2021 to establish necessary permanent benchmarks throughout the project area. The traverse survey report was submitted by SHEPL in 6th Shrawan 2078 B.S. (21st July 2021).

3.2. DETAILED SURVEY OF HEADWORKS AREA AND ACCESS ROAD

The project site underwent a re-survey to capture any topographical changes that may have occurred subsequent to the initial survey conducted during the feasibility phase, such as those caused by landslides and flooding events. Despite the project area being surveyed in the feasibility study, new surveys were conducted specifically for assessing the project road. F.I.T Engineering Survey Consultancy Pvt. Ltd. and SJHL itself carried out the survey work at different phases at different locations. The design team has already integrated the updated topographic data into the design drawings. Currently, SJHL and the engineering team are working jointly on the project road based on the recently acquired data. (Ref: Appendix 2)

3.3. DESIGN BASIS MEMORANDUM (DBM)

A Design Basis Memorandum (DBM) is one of the first document prepared for Detailed Engineering Design of the project.

DBM for JKJA has been submitted in 7th Mangshir 2078 B.S. (23rd November 2021) by SHEPL. The DBM includes design philosophies for civil structures, mechanical components, electrical equipment, transmission line along with specifications and standard codes of practice. The DBM covers the necessary parameters, assumptions, requirements, safety factors, functionality and other factors that will form the basis for the future design works.

A DBM tends to be a 'living' document with changes occurring throughout the engineering process as new information becomes available and the design is refined.

3.4. GEOLOGICAL AND GEOTECHNICAL INVESTIGATION REPORT

The geological and geotechnical investigation report, including the findings of core drilling works, was submitted by SHEPL in 6th Shrawan 2078 B.S. (21st July 2021). This report includes outcomes of core drilling at every major project components, in situ test and laboratory test.

3.5. DETAILED CIVIL DRAWINGS

The project's design has been finalized, and on October 19, 2023, SHEPL submitted a "Detailed Civil Drawing" that integrates the most recent changes and updates in the design and drawings. The accompanying cover letter is attached in Appendix 2. This current design will serve as the guiding framework, subject to modification as needed during construction, to incorporate any updated design parameters and baseline data.

The finalization of the underground powerhouse design is contingent upon the completion of the design for the electro-mechanical components by the EM contractor. Consequently, initial planning and sizing of the powerhouse have been conducted in collaboration with potential EM contractors. The definitive design will be concluded at a later date, following the receipt of the completed design for the electro-mechanical components.

3.6. EXPLOSIVE ESTIMATION AND METHODOLOGY REPORT

The explosive estimation and methodology report was submitted by SHEPL on 23rd Magh, 2078 B.S. (6th February, 2022 A.D.). In this report detail estimate of total quantity of explosives, detonator and fuse wire required for the project has been presented.

3.7. STUDY OF CONSTRUCTION MATERIALS

Construction materials report has been prepared to estimate the construction material required for the construction of the project. Along with the quantity estimations, this report also summarizes the availability of construction materials in local area and delineates the potential quarry sites in the project surrounding. The construction materials report was submitted by SHEPL on 25th Magh, 2078 B.S. (8th February, 2022).

3.8. PRELIMINARY ASSESSMENT OF CONSTRUCTION POWER

This report has been prepared to estimate the construction power required for the construction of the project. Along with the study on construction power availability in the region, this report also discusses the requirements of transformer capacity at end supply points. The preliminary assessment of construction power report was submitted by SHEPL on 24th Falgun, 2078 B.S. (8th March, 2022).

3.9. PREPARATION OF PROJECT DEFINITION REPORT (REVISED)

SHEPL has submitted the Revised PDR (Rev.2) on 13th March 2023 incorporating comments received from SJHL on PDR report submitted on 30th December 2022.

3.10. TENDER DOCUMENTS OF TL, HM AND EM WORKS

The tender document for Transmission line (TL) works, Hydro-mechanical (HM) works and Electro-mechanical (EM) works has been prepared and was submitted by SHEPL to SJHL on Ashad 30, 2079 B.S. (14th July, 2022 A.D.).

3.11. PLANNING FOR CONSTRUCTION OF CAMPS

Camp location for the headworks has been identified. Detailed topographic survey for this location has been carried out, and the preliminary design and drawings of the camp has been prepared.

Likewise, few temporary camps have been set up in the vicinity of the powerhouse area to support the road construction process. These camps are designed for temporary use and are specifically intended for the startup and mobilization phase.

Figure 16: Temporary camps in powerhouse area

3.12. PREQUALIFICATION FOR CIVIL WORKS

Sanima Jum Hydropower Limited (SJHL) invited experienced contractor companies to prequalify for the main civil works construction of Jum Khola Jalvidhyut Aayojana (56 MW). A notice was published on 17th July 2023 (1st Shrawn, 2080) in the Nepalese national newspaper 'Karaobar,' inviting prospective contractors (A newspaper snippet of the notice is included in Appendix 8). In response, following companies/contractors submitted their prequalification applications.

- Bajra Guru Construction Company Pvt. Ltd.
- Bavari Construction Pvt. Ltd.
- BHBM Construction JV
- High Himalaya Hydro Construction Pvt. Ltd.
- Multi Infrastructure- Aarogya J/V

To carry out the assessment of the prequalification work, an evaluation committee was formed, comprising members from SJHL and Sanima Hydro and Engineering Pvt. Ltd (SHEPL). The evaluation committee thoroughly examined these application/documents based on the criteria set forth in the PQ notice. The evaluation committee submitted "A Report on Prequalification of Contracting Firms for Main Civil Works Construction of Jum Khola Jalvidhyut Aayojana (56 MW)" on 19th October 2023 to SJHL and determined that only there from the above five companies meet the eligibility criteria for further consideration.

3.13. REVISION IN TENDER DOCUMENT OF CIVIL WORKS

SJHL and SHEPL mutually recognized the need for modifications to certain technical and commercial aspects in the previously drafted tender documents (July 2022) for the main civil works. Following a comprehensive joint assessment, the engineer revised and finalized the tender documents. This updated version (November 2023) of the tender documents supersedes the ones submitted in July 2022.

3.14. INVITATION TO TENDER

On October 19, 2023 (2080/07/02), prequalified contractors were invited to participate in the tender process. These contractors were instructed to collect the Tender Documents for the construction of the Main Civil Works of Jum Khola Jalvidhyut Aayojana (56 MW) between Thursday, November 23, 2080, and Friday, November 24, 2080, from 10:00 AM to 5:00 PM from SJHL office. The initial deadline for the submission of tenders by prequalified contractors was December 15, 2023 (29 Mangshir 2080). However, this deadline was subsequently extended by one week in response to a request from the contractor.

3.15. TENDER SUBMISSION AND TENDER OPENING

All three contractors had submitted their proposals by 1:00 PM on December 22, 2023 (2080/09/06). The tender opening took place the same day at 2:00 PM, with the presence of representatives from all the bidders, as well as the Employer and Engineer representatives.

3.16. TENDER EVALUATION

SJHL and SHEPL have officially commenced the process of evaluating the tender. It is expected that the tender evaluation and negotiation processes will be concluded in the next few months, after which the contract will be awarded.

3.17. FURTHER DEVELOPMENT IN THE ACCESS ROAD.

Presently, there is notable progress in the development of the access road. The section from Lamabagar to the powerhouse area (approximately 6 km) is nearing completion, with only a few shorter stretches and Kholsi crossing structures remaining. The construction of these crossing structures, however, is expected to take a few more months. Similarly, the construction of the access road leading to the headworks is set to commence in the next couple of months. The contractor for same has already been mobilized to the site.

Figure 17: Road construction at site (left) and conceptual layout defined at site (right)

3.18. INITIATIONS OF PROJECT ROAD AND ADDITIONAL INVESTIGATIONS.

In addition to the previously mentioned access road, SJHL is presently prioritizing the construction of a project road that connects various project components. Ongoing activities include detailed surveying and alignment fixation, with site visits conducted by team of

experts from the Engineer focusing on the Project road. SJHL has already deployed the contractor to the site to commence the construction of the project road.

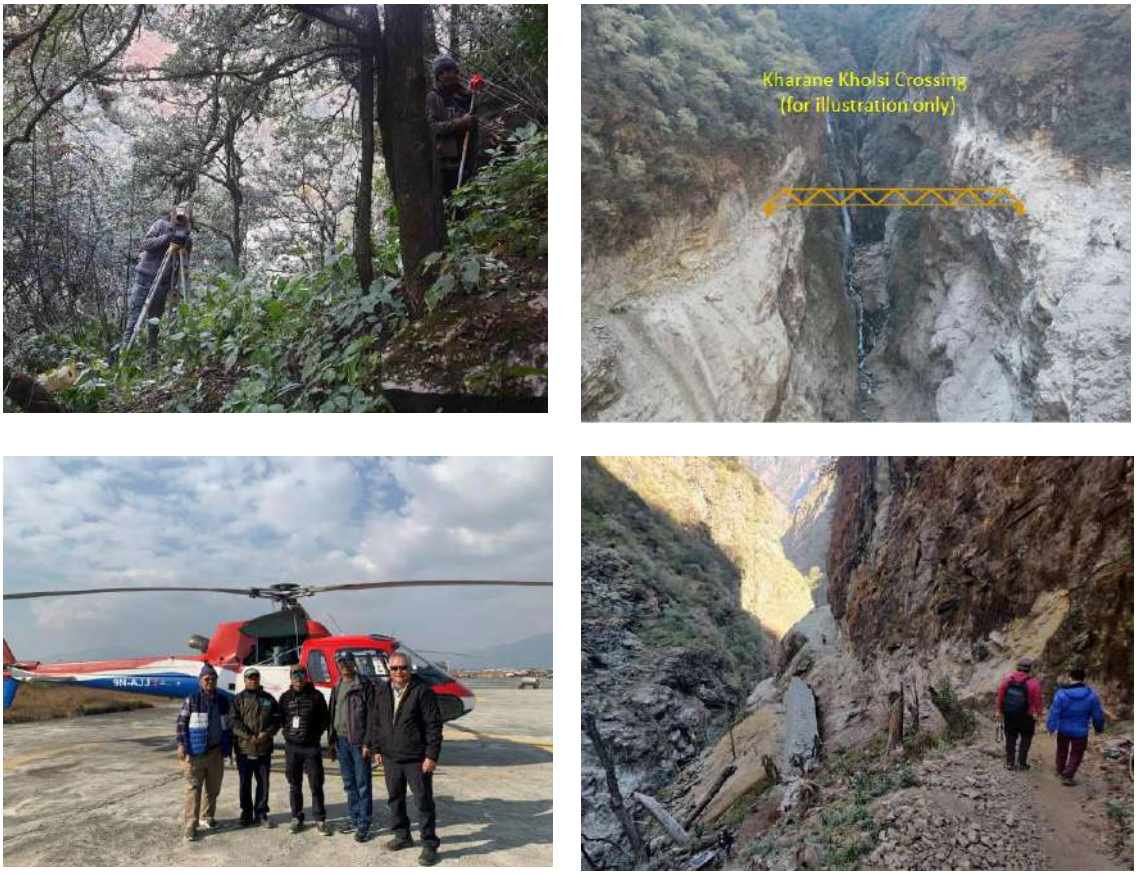

Figure 18: Site investigation and experts visit.

3.19. CONTRACT AGREEMENT FOR CONSTRUCTION SUPERVISION

SJHL is in process of conducting a contract agreement for construction supervision.

4. FURTHER PLANNING

Project activities planned to be completed in near future are listed below:

1. Tender Evaluation and Negotiation
2. Tender Award
3. Financial closure
4. Mobilization of Main Civil Contractor
5. Initiation of construction of camps and facilities
6. Deploy Engineer for Construction supervision
7. Continue with construction of project roads to different work fronts
8. Initiations of main civil works

APPENDICES

Appendix 1

- Certificate of Incorporation of Company
- Generation License of Jum Khola Jalvidhyut Aayojana (56 MW)

Appendix 2

- Submission Detailed Engineering Design/ Drawings

Appendix3

- Agreement related forest
- Approved Letter of Revised EMP from MoFE
- Approval letter from the cabinet level decision for the land use of the forest area and the removal of trees

Appendix 4

- Financial support to Dolakha Chamber of Commerce
- Financial support to Lamabagar sports development committee
- Financial support to Gaurishankar Secondary School

Appendix 5

- Application for supply of construction power till Lamabagar

Appendix 6

- Approved Letter of TOR for IEE from MoEWRI

Appendix 7

- Industrial Registration Certificate from DOI

Appendix 8

- Prequalification notice published on national newspaper “Karobar”

Appendix 9

- Submission of due diligence study report by Jade Consult.
- Letter from Nabil Bank on progress of financial closure

Appendix 10

- Setidevi Conservation Forest Sub-committee: Request letter for foot – trail up gradation and construction of temporary bridge (Fadke)

Appendix 11

- Requested Letter from MoEWRI to Ministry of Home Affairs
- Approval for purchase and import of explosives from Home Ministry
- Agreement with Indian Explosives Private Limited for supply of explosives
- Letter to Indian Embassy providing information about the project
- Location selection for construction of army camp and bunker house- letter to Tara Dal Gan