



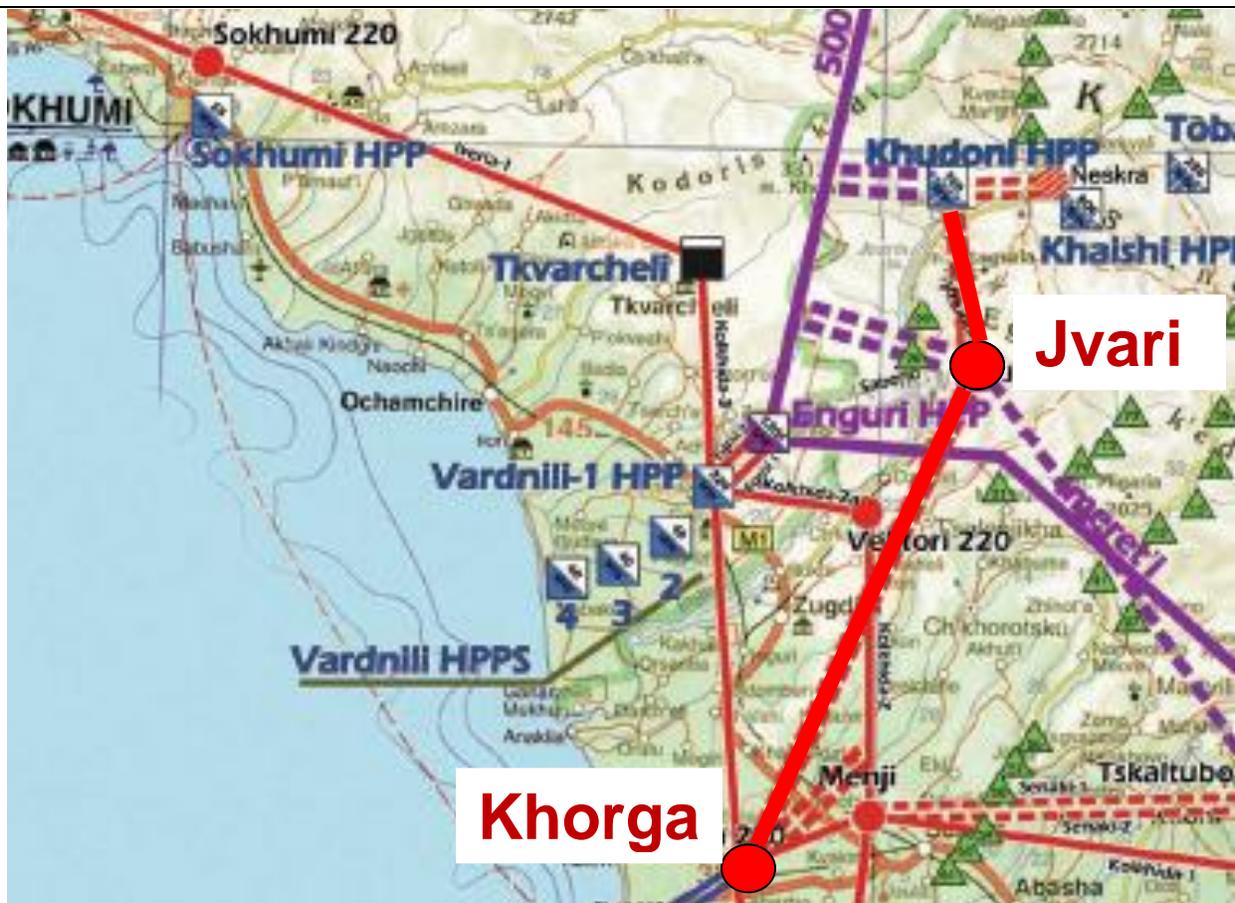
Prepared for the Ministry of Energy and Natural Resources of Georgia

Black Sea Transmission Network Project

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR CONSTRUCTION OF 500/220 KV SUBSTATION AT Jvari & TRANSMISSION LINES: KAVKASIONI OHL TO JVARI SUBSTATION AND JVARI TO KHORGA SUBSTATION;

DRAFT ESIA REPORT

EXECUTIVE SUMMARY



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TITLE PAGE

Project Title: Black Sea Transmission Network Project

Document Title: Executive Summary of the Environmental and Social Impact Assessment for Construction of 500/220 kV Jvari Substation and Transmission Lines from kavkasioni OHL to Jvari SS and From Jvari SS to Khorga SS

Prepared by: Foundation World Experience for Georgia (WEG)

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ABBREVIATIONS

ACSR	Aluminium Conductor Steel Reinforced
EBRD	European Bank for Reconstruction and Development
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESP	The EBRD's Environmental and Social Policy of 2008
EU	European Union
GoG	Government of Georgia
GSE	JSC "Georgian State Electrosystem"
HVDC	High Voltage Direct Current
MoE	Ministry of Environmental Protection
NGO	Non-Governmental Organisation
OHL	Overhead Line
OPGW	Optical ground wire
SEP	Stakeholder Engagement Plan
UNECE	United Nations Economic Commission for Europe
WEG PTL	Foundation World Experience for Georgia Power Transmission Line
RoW	Right of Way

1. INTRODUCTION

There is a significant power generation-load imbalance in the Georgian power system: two-thirds of Georgia's energy resources are located in the northwest of the country, while two thirds of domestic demand is located in eastern Georgia, and most of the potential export market is located in countries south of Georgia (for example, Turkey, Iran, and Iraq, all of which are experiencing rapid economic development and growth in electricity demand). Power delivery to any of these markets requires a reliable high voltage transmission network. At present, only one strong transmission line connects West and East Georgia, the 500kV transmission line "Imereti" – "Kartli-II" – "Kartli-I". Any fault on this line, especially during autumn and winter, causes a large power deficit in the east of the country and this has resulted in frequent total system blackouts. The Ministry of Energy sponsored a feasibility study funded by the United States Trade and Development Agency to determine the least-cost technical options to make power transmission more reliable in Georgia.

Apart from reducing national power grid reliability, the lack of high voltage transmission lines limits existing and future opportunities for power swaps, export potential and plans of developing Georgia as a power transit country, notably for electricity exports from Azerbaijan to Turkey¹. It is also recognised that investment in hydropower would likely depend on there being a firm commitment to having suitable transmission lines in place, whereas financing for transmission lines would depend on commitments to generation projects.

Therefore, upgrading of existing and the construction of new high voltage transmission line networks is one of the development priorities for the Government of Georgia.

Subsequently, the Government of Georgia made a decision to proceed with developing the transmission line network so it is adequate to the current demands and export potential needs. The Government of Georgia intends to expand and upgrade the country's electricity grid, and as part of this process has applied to the European Bank for Reconstruction and Development (EBRD) and the European Investment Bank (EIB), Kreditanstalt für Wiederaufbau (KfW) and EC Neighbourhood Investment Facility (EC NIF) (hereinafter referred to as "the Banks") for the financing of the **Black Sea Transmission Network Project (BSTN Project or the Project** total estimated cost of EUR 270 million).

The first stage of the BSTN Project involved completion of a 500kV transmission line from Gardabani to Zestafoni, a new Akhaltsikhe substation, and a new 400kV line from the Akhaltsikhe substation to the Turkey border. This new project will build upon the first phase. Georgia's power

Second Stage is this new Project has to be financed by the Banks and the Georgian Government and includes the following components below . The Environmental and Social Impact Assessment (ESIA) focusses on the following components of the Project:

- The (1) construction of 2 x 8 km sections of 500 kV overhead line (OHL) from the 500 kV Kavkasioni line (at Murjava) to a (2) new Jvari 220 kV substation;

¹ The Ministry of Energy commissioned a strategic study to determine whether there is adequate demand in Turkey for electricity exported from Georgia and Azerbaijan and whether there is sufficient existing and feasible electricity generation projects in Azerbaijan and Georgia to supply the Turkish markets using a newly constructed transmission line. The study determined that this was feasible, given a competitive price and additional investment in hydropower generation facilities in Georgia.

- (3) The construction of approximately 60 km of 220 kV double-circuit OHL from Jvari to Khorga connecting (4) proposed new Khorga (220 kV) and (5) Jvari (500 kV) substations;

and element beyond the scope of the current EIA :

Khorga (220 kV) substation rehabilitation/reconstruction (financed by ADB - Asian Development Bank)²

(6) construction of a new 500/220kV substation at Jvari.

The Project Execution Agency for the project is EnergoTrans, a company owned by the Georgia State Electrosystem (GSE). EnergoTrans will be responsible for designing and constructing the line together with the Technical Consultant hired through international tender specifically for the Black Sea Transmission Project. EnergoTrans is the legal entity that owns portions of the line that already exists³ and will own the entire line once the right-of-way is fully acquired.

The ESIA , which was prepared to meet the requirement of Georgian law and the requirements of the Banks, assesses the potential environmental and social impacts associated with the Project components and identifies and designs measures to avoid, reduce, and/or mitigate these impacts. It includes an Environmental and Social Action Plan (ESAP), which lists the actions that must be taken by to ensure that it meets all applicable requirements, including the EBRD's Environmental and Social Policy Performance Requirements.

This document is the Non-Technical Summary of the ESIA.

2. APPLICABLE STANDARDS, ENVIRONMENTAL REGULATIONS AND SCREENING

The project design will comply with the worldwide accepted design and construction standards and best international practices. For the Jvari substation it is proposed to use EURO-NORMS, as is the case of the Package B (Akhaltikhe) Substation, which is the first phase of BSTN project.

The ESIA report describes in detail the environmental legal framework and administrative structure in Georgia including environmental regulations and procedures and indicates the institutions at the local and national levels responsible for issuing permits, licenses, and enforcing compliance with environmental standards

According to the law of Georgia on the Environmental Impact Permits (2008) projects related to construction of the high voltage (500/220kV) transmission lines and substations require full scale EIA and an Environmental Impact Permit. An ESIA was published in June 2012 for xxx60 days of public review and comment. Meetings were held in September 5 and 6, 2012 So that people could provide their opinions. In June 2013, the Environmental Impact Permit will be

² The project design comply with the worldwide accepted design and construction standards and best international practices

³ "Meskheti", "Vardzia" and "Zekari" lines

issued by Ministry of Economic Development and Ministry of Environment together with construction permission

. The Project has been classified as a Category A under EBRD's Environmental and Social Policy because it involves construction of a high-voltage transmission line through an undeveloped area and because it requires land acquisition and physical relocation of some affected households. For category A projects, a full ESIA is required together with public consultation in accordance with the requirements set forth in Georgian legislation and the Bank's Policy. The 2012 ESIA was intended to meet this requirement, and a Stakeholder Engagement Plan describes how EnergoTrans will communicate with stakeholders, including those affected by the Project.

3. PROJECT DESCRIPTION

The Project comprises:

- The construction of 500 kV overhead line (OHL) from the 500 kV Kavkasioni line (at Murjava) to the proposed Jvari 220 kV substation;
- The construction of approximately 60 km of 220 kV double-circuit OHL from Jvari to Khorga connecting the Khorga (220 kV) and Jvari (500 kV) substations; and
- The construction of a new 500/220kV substation at Jvari.

Construction of Transmission Lines

The total length of the proposed **Mujava - Jvari 500 kV** line is approximately 8 km and will carry electrical wires (ACSR-Aluminium Conductor Steel Reinforced) and an optical ground wire (OPGW).

Four types of suspension towers are foreseen based on the OHL length, proposed routing and on-ground configuration. At this stage it is estimated that 24 towers will be required, including

- old Russian designs (2),
- suspension towers (6),
- light-angle tension towers (10), and
- heavy-angle and dead-end towers (6).

The total length of the **Jvari – Khorga 200 kV** double-circuit line is approximately 60 km, again with electrical wires (conductors) and an OPGW. At present, it is estimated that 178 towers will be required, of for types: 88 normal suspension towers, 20 heavy suspension towers, 51 light-angle tension towers 19 heavy-angle and dead-end towers.

The works will be sequenced as follows:

- Clearance of a narrow corridor (62m wide) **Fig.1**
- Removal of the upper layer of soil (topsoil), rehabilitation-construction of access roads (4.5 m wide) ,
- Processing of tower fundamentals, arrangement of gravel lining, installation of fundamentals with ground refilling, **Fig. 2 Fig.4**
- arrangement of grounding contour, preparation of installation areas of towers,

- transportation of towers,
- installation of towers,
- installation of lines and optical-fiber cables,
- cleaning of construction territory from construction and other waste, laying of stored soil, and revegetation of the tower foundation sites. About 90 percent of the tower foundations will need to be backfilled with new material from quarries.

Fig.3



Fig.1 Vegetation clearing of narrow corridor



Fig. 2 Installation of tower foundations



Fig 3. Erection of towers

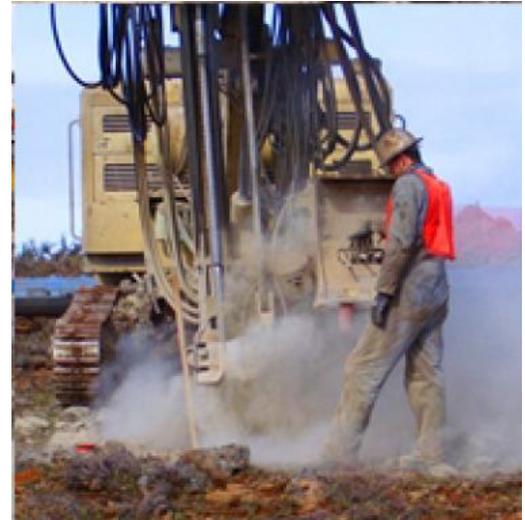


Fig.4 Installation of tower foundations

Two to three construction camps will be required, and they are currently expected to be located in Pirveli Khorga, Narazeni and Lia. In reality these camps would be equipment yards used for storage of equipment and vehicles, fuelling, etc. rather than camps for workers. Workers are generally accommodated in rental houses in towns: Zugdidi, Tsalenjikha, Khobi or Jvari

Filling material quarries are located in Khobi and Jvari⁴. Material will be transported from the quarries to tower sites in normal trucks. Loads will be covered to avoid too much dust.

Construction of 500/220kV Jvari Substation

The following infrastructure will be constructed and installed at the proposed 500 kV/220 kV substation site (108746m³) at Jvari:

- Fences around the perimeter of the substation
- Gate house
- Control building
- Outdoor Facilities
- Cable ducts
- Roads and hard surfacing
- Storm water drainage system
- Sanitary sewage

Number of operational staff:

- 12-16 people for 500 kV sub-station;
- 10-12 people in 220 kV sub-station

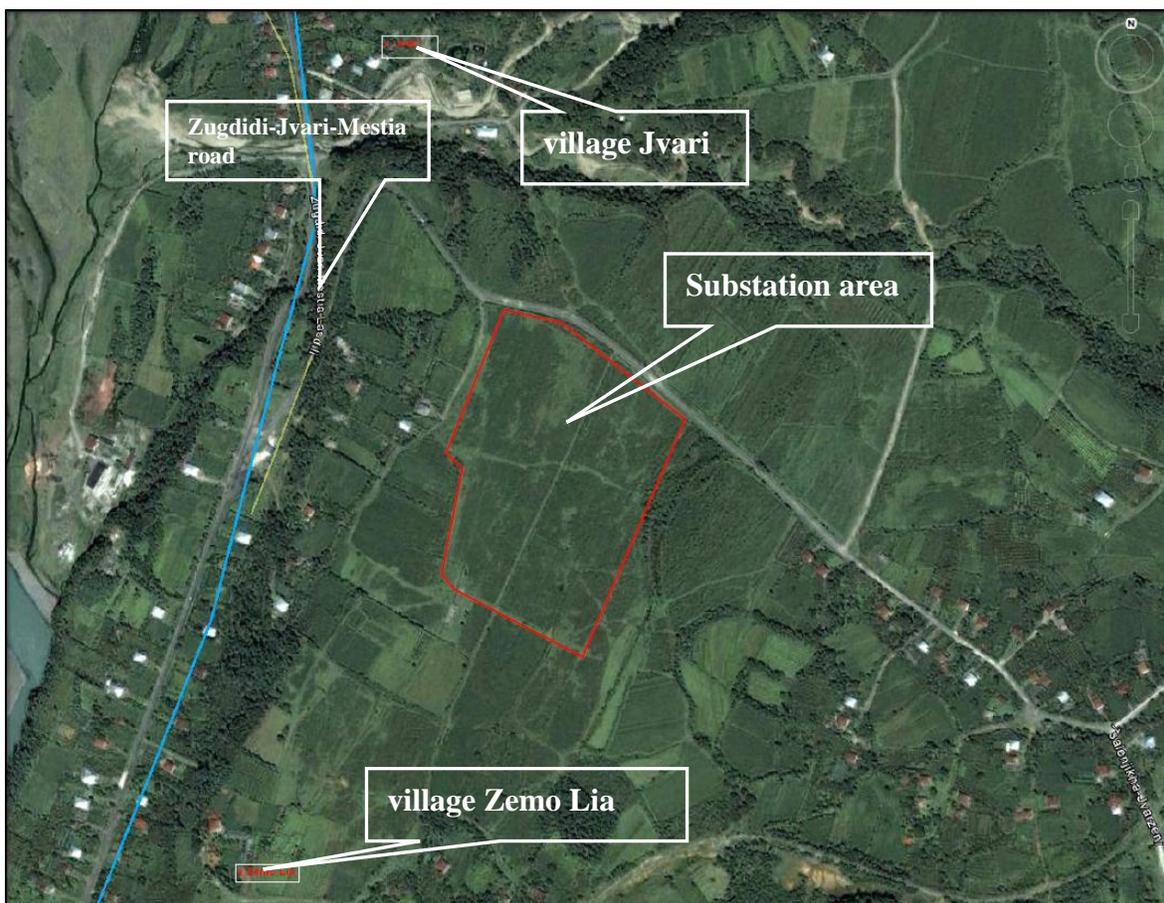


Fig. 5 Jvari Substation Location

⁴ Will be needed 4 truckloads per tower, on average

4. PROJECT ALTERNATIVES

“No Project” Alternative

According to overall context of the Project and Feasibility Studies conducted by the Government of Georgia and their consultants, development of reliable power transmission network is necessary for stable power supply in country and for utilisation of the country's export and transit potential. Connection of major generation facilities located in North-West part of Georgia with the network has no alternatives.

Alternative Routes Considered for the 220 kV Transmission Line

Double circuit 220 kV Khorga-Jvari is designed to connect 220 kV sub-station Khorga and 500 kV sub-station Jvari.

Two directions were studied and reviewed for the selections of Right of Ways (RoW) of double circuit 220 kV PTL Khorga-Jvari (see fig. 1).

Alternative #1 – vil. Khorga of Khobi district – Gaghma 1-Khorga 1-Guripuli-Sabukio-Torsa-Didi (Large) Nedzi-Akhali (New) Kakhati-vicinities of t. Zugdidi integrated works settlement-Lia-Zeda (Upper) Lia.

Alternative #2 - vil. Khorga of Khobi district – Gaghma 1-Khorga 1-Nijikhevi-Zemo (Upper) Bia-Bia Sashonio-Japshakari-Narazeni-Tchakvinji-Kulishkari-Grigolishi-Tchkaduashi-Etseri- Zeda (Upper) Lia.

The estimated length for alternative 1 is 70 km, while for alternative 2 is 60km. Length of the forested areas to be crossed by the alternative routes is approximately equal (10.5 – 11km), as is the number of watercourses to be crossed (25 for alternative 1 and 26 for alternative 2).

However, the alternative 1 route crosses very densely populated settlements (near v.Khobi, Zugdidi city surroundings, section between v. Narazeni and Zugdidi). In addition, it crosses wetlands in the floodplain on both sides of r. Khovi, which would create substantial problems for construction due to land instability.

Based on the high resettlement impacts and complexity of construction works, as well as high costs and low reliability of the measures aimed to ensure sustainability of towers in wetland areas of Kolkheti lowland, alternative 1 route was rejected. The alternative 2 route has much less resettlement impacts and provides more stable ground for tower construction. Therefore, the Alternative route #2 is preferred.

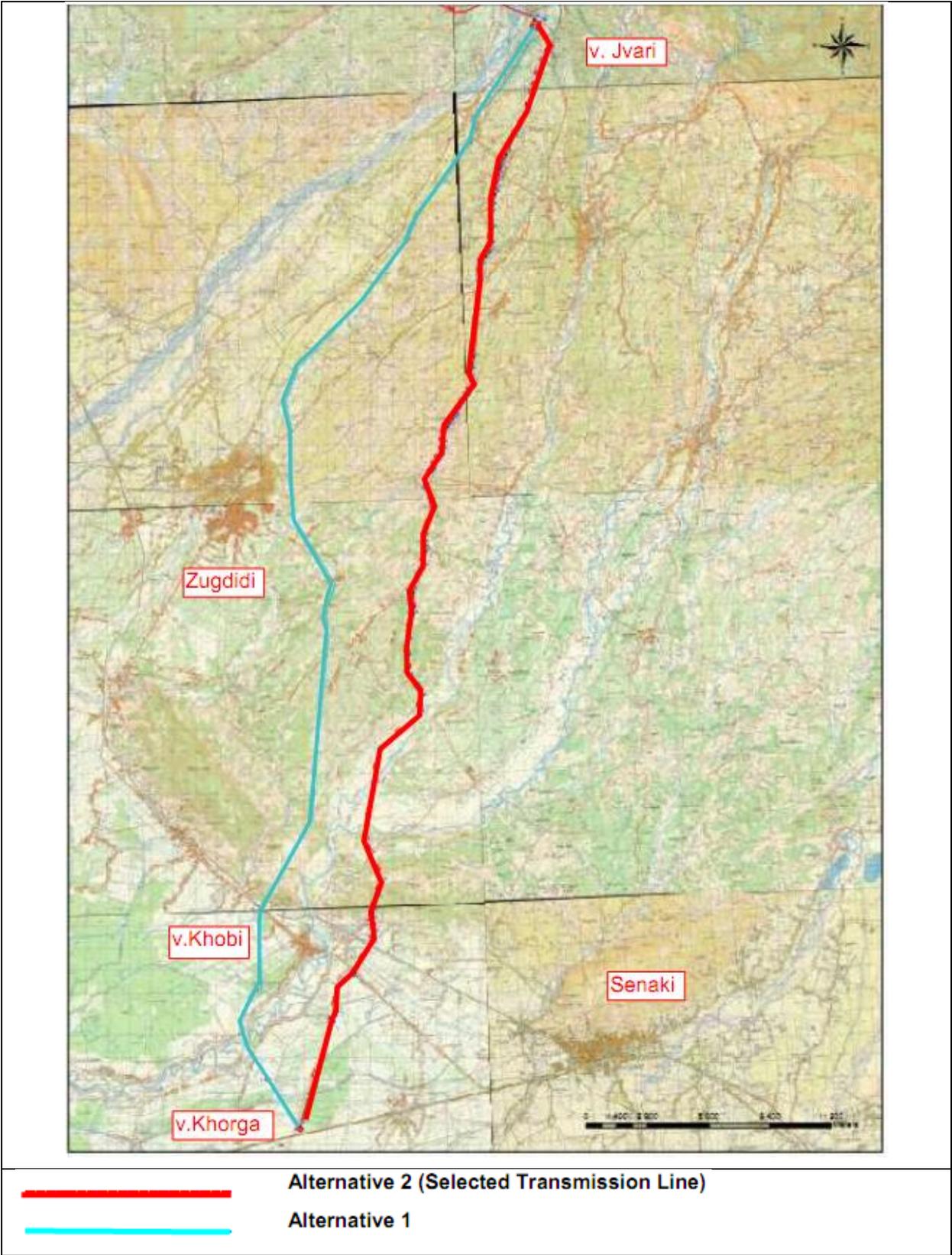


Fig. Alternative Routes for 220 kV Transmission Line Jvari – Khorga

5. ENVIRONMENTAL RECEPTORS WHICH COULD BE AFFECTED BY THE PROJECT

The 500kV line comes over hilly area from Kavkasioni line connecting Enguri HPP and Tsentralnaia substation in Russia. The first half of the new 500 kV OHL is going through very hilly and difficult terrain with a lot of very deep valleys . The access is very difficult as well. Mostly, existing rural gravel roads will be used to access the tower sites. A 1km length access road will require widening and 1km new access road will be constructed in the right-of-way for the transmission line. .

The selected alignment for the 220kV line (whose corridor is generally known but may be slightly corrected during final design) mainly traverses medium hilly territories, pastures and abandoned tea plantations. At some areas it crosses residential plots (goes between buildings maintaining distance appropriate to respective standards), forests and 0.4-10-35-110-220 kW PTLs . The transmission line will cross rivers Lebakha, Didi Ckhoushi (twice), Patara Ckhoushi, Learsame, Kiarsame, Kulistskali (3 times), Cheki, Umnia, Skaia, Chanistskali, Ogejisgele, Partili, Khobi, Nishia, Ogache and 8 nameless brooks.

Mostly, the areas of tower installation can be accessed through existing roads. Only in some places – widening of the existing roads is required. The mentioned sites are forested areas between v. Naposhtu and Bia (about 1km) and between the v. Grigolishi and Natsatu (1km). n

Tet the 220 and 500kV transmission lines pass mostly through the significantly transformed landscape, away from protected areas and natural habitats. the constituent grounds of the areas where the support towers are to be built with their physical and mechanical (geotechnical) properties and bearing capacities are acceptable almost on every site. As for the geological hazards in the design corridor and its adjacent area, despite the fact of hazardous geological processes fixed in the corridor and its adjacent area, in particular, no-deep landslide bodies, river bank washouts, flooding and bogging, provided the support towers are placed optimally (what is envisaged by the project), the risk of hazard will be minimal.

Based on the literary review and field reconnaissance, the following medium and high-sensitive areas have been identified in the design corridor:

High-sensitive areas:

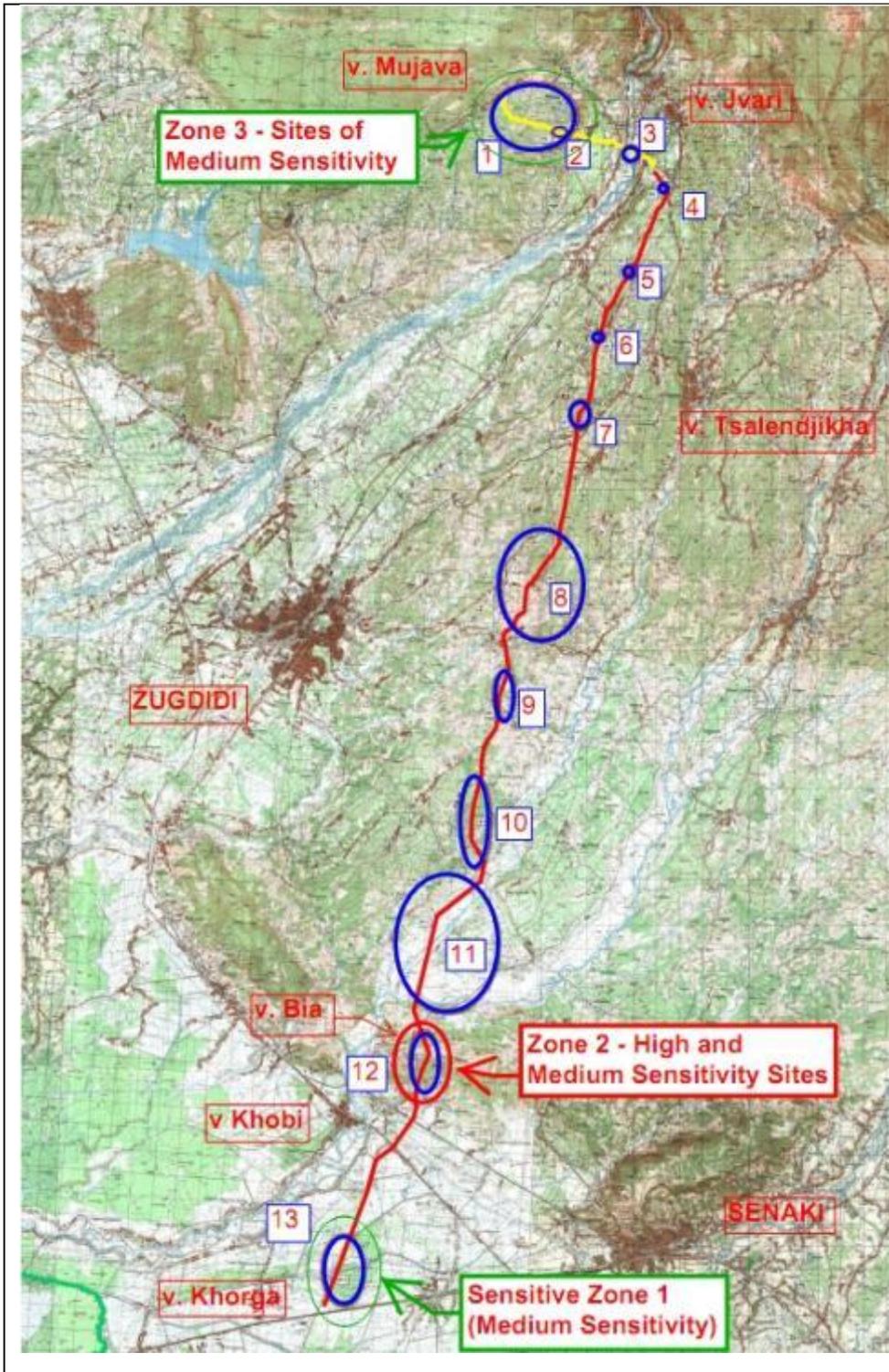
- The site is located between villages Bia and Zeda Bia (Sensitive Zone 2), 100 m above sea level, with the slope inclination of 50-60°. There are degraded (cut-down) beech and hornbeam forest over the slopes of southern and northern expositions. The forest is mixed with *Corylus avellana*, *Ficus carica*, *Fraxinus excelsior*, *Acer campestre*, *Mespilus germanica*. The sub-forest has *Rhododendron luteum*, *Ilex colchica*, *Ruscus ponticus*; the species *Hedera colchica*, *Smilax excelsa*, *Periploca graeca* form the liana.

Medium-sensitive areas:

- Within the Sensitive Zone 1: 50 m above sea level, the route of the transmission line follows the former ash (*Alnus barbata*) wind break belt (now it is cut down and young trees grow in its place). In terms of the ash forest, the weeds *Erigeron bonariensis*, *Erigeron canadensis*, *Bidens tripartita*, *Xanthium spinosum* grow over the area. There are also slightly bogged places in the ash forest with *Juncus effuses* and *Schoenoplectus tabernaemontani*.
- Within the Sensitive Zone 2: 100 m above sea level, with the slope inclination of 0-25°. There are also forests growing along the given section, which are formed with tung trees (Aleurites), *Robinia pseudoacacia*, *Alnus barbata*, *Gleditschia triacanthos*, *Diospyros lotus*, *Ailanthus altissima*, *Crataegus* sp., *Berberis vulgaris*, *Poncirus*

trifoliata, *Rubus* sp., *Smilax excelsa*, *Hedera caucasigena*, *Sambucus ebulus*, *Pteridium tauricum*, etc.

- Within the Sensitive Zone 3: Village Muzhava. 382 m above sea level. Ash forest with hornbeam (*Carpinus caucasica*) here and there. The sub-forest is formed by tea, nut (*Corylus avellana*), flame azalea (*Rhododendron luteum*); the greenbrier (*Smilax excelsa*), *Phytholacca Americana* grow here and tung trees grow in open place. There rarely grows chestnut (*Castanea sativa*).



Sensitive Zone 1. Degraded windbreak



Sensitive Zone 2. Beech- -hornbeam forest



Sensitive Zone 2. Hornbeam



Sensitive Zone 3. Hornbeam and ash

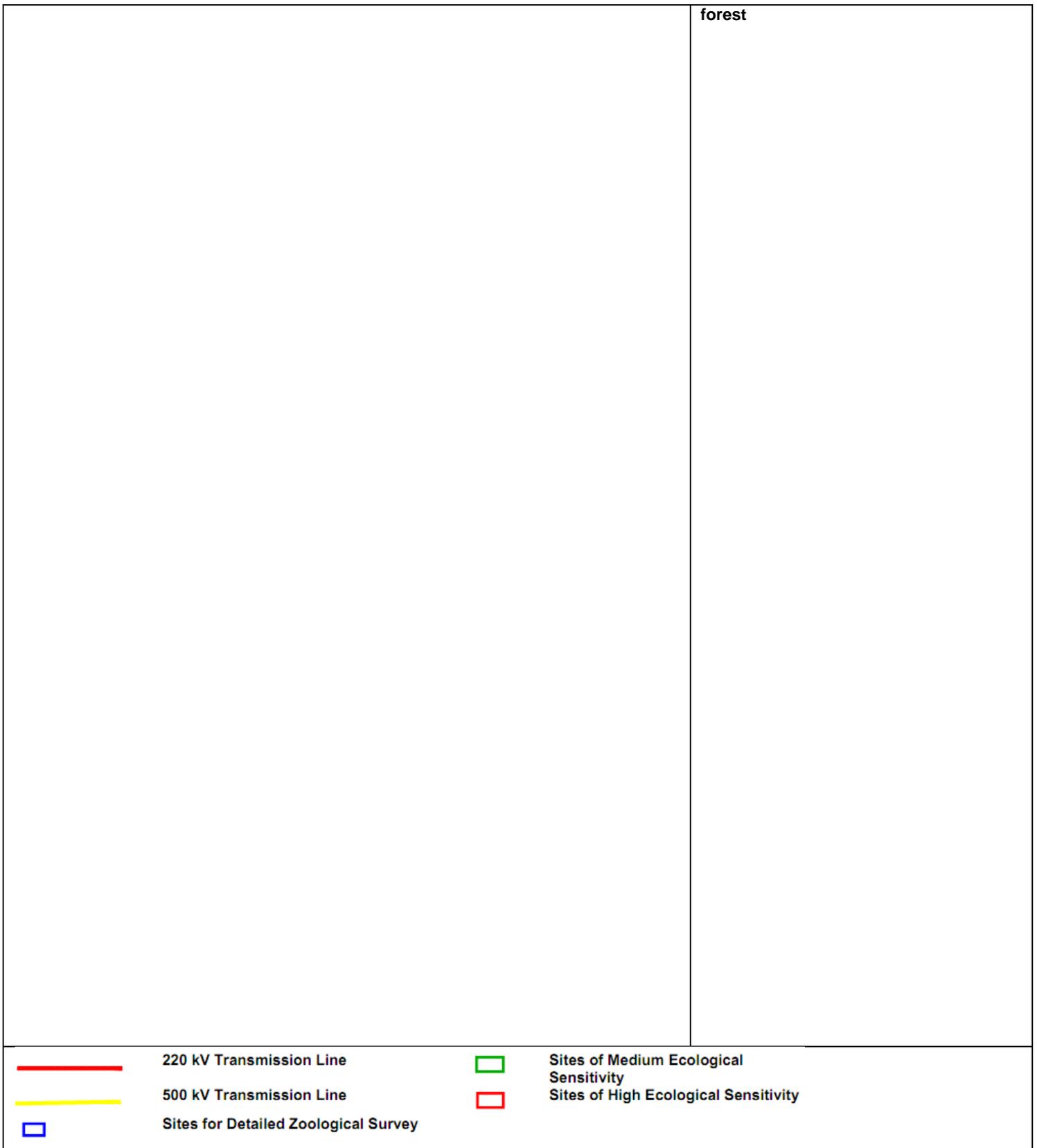


Fig. Ecologically Sensitive Zones and Sites for Detailed Survey

Sites, significant from the fauna preservation stand point

Following a review of maps and satellite images 13 sites were selected along the transmission line corridor as being potentially important for biodiversity preservation. Field surveys were then conducted for each site. The sites include: (coordinates are for the conditional middle point of the site).

- Site #1 (; 426 M above MSL) -between road Djvari-Enguri HPP and a village Etserferdi – populated area on the smooth hills, covered with sparse alder forest with admixed individuals of Hornbeam and Chestnut-trees. Some times with Colchic underwood and lianas.
- Site #2 (; 284 M above MSL) - floodplain of the river Olori, west of village Etserferdi – wet meadow and alder forest
- Site #3 (; 245 M above MSL) – meadows on the floodplain of the river Inguri
- Site #4 (; 360 M above MSL) - steep slope covered with forest south of Djvari
- Site #5 (; 329 M above MSL) – forest in floodplain of small river Didi Chkhoushi, north from the village Ordzhonikidze
- Site #6 (; 310 M above MSL) - river Didi Chkhoushi forested floodplain crossing, south from the village Ordzhonikidze
- Site #7 (; 300-255 M above MSL) - forest in one kilometer to the East from the village Chkaduashi, on the left-hand bank of the Patara Chkhoushi stream
- Site #8 (; 290-150 M above MSL) - relative long site along the river Kulistskali valley, covered with forest between villages Tsalendjikhis meurneoba (north) and Kulishkari (on old military maps – Ordzhonikidze) (south), about 1,5 Km east from the village Grigoloshi
- Site #9 (; 230-190 M above MSL) – forest west from the village Chakvindji
- Site #10 (; 190-115 M above MSL) – forest on the hill between villages Narazeni and Dzveli Khibula
- Site #11 (; ~30 M above MSL) - open floodplain of rivers Tsiteli, Chanis-Tskali, Partiki, Khobistskali covered with agricultural lands and pastures on wet meadows
- Site #12 (; 30-110 M above MSL) forested hill between the car road Bia - Bia-Sashonio and village Naposhtu. Poly-dominant forest. Mainly hornbeam and oriental hornbeam with well developed bushes as a Colchic evergreen underwood (undergrowth).
- Site #13 (7-8 M above MSL) – wetland (swamped meadow with reed and cattail) and degraded (felled) alder forest along the irrigation (drainage) channel, between villages Gaghma-Pirveli-Khorga and Gimozgonjili, crossed by another channel – Tsiva (Lubeki)

6. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Construction Phase

Most potential impacts from construction would be temporary. Most impacts come from land clearance (including tree-cutting), earth movement and grading, temporary draining activities in wetland areas, erosion, operation and maintenance of heavy equipment, and transportation of materials. Using good construction practices is sufficient for minimizing most impacts. For sensitive environmental sites the magnitude of potential impacts could be more significant, so specific protective and offset measures could be required.

The Jvari substation is located and the project transmission lines pass mostly through the significantly transformed landscape, away from protected areas and natural habitats. However, as mentioned several sensitive forested areas are crossed by the transmission line corridors. Unlike highway or pipeline projects, the transmission line construction requires only limited land clearance; only tower installation sites are permanently occupied and cleared from vegetation, while for the sections between the towers tall trees will be felled but bushes and grass would not be affected.

Impact: construction of towers and substation facilities will involve the removal of topsoil, cutting of shrubs and trees.

Mitigation : Removed topsoil will be stockpiled separately from the spoil to allow reinstatement of the ground structure at the tower sites for the further revegetation. Towards the cut trees and other vegetation will be implemented compensation measures (see more details in EIA –table 6.5).

Impact : operation of the construction camp and access roads would be associated with the generation of additional solid waste and waste water. Generation of construction waste and excess soil material is also expected.

Mitigation: will be ensured implementation of the waste management and handling plan for construction phase of Enguri-Jvari-Khorga, all wastes will be managed in accordance with Georgian law and international best practice

Impact: Clearance of ROW, and earth works for the arranging of tower foundations will cause/activate erosion processes.

Mitigation: Will be developed and implemented “Erosion control plan”. Works within 50m of any standing water will be avoided or minimised. After completion of construction activity all disturbed areas will be reinstated (will be stabilised and revegetated)

Impact: Parking, operating, and servicing of the construction machinery will carry the risk of operational spillage of oils and lubricants

Mitigation: will be used only identified fueling areas with cleanup materials on hand, and those locations will be away from any water course or natural reservoir more than 100m distance.

Impact: Operating, and servicing of the construction machinery will generate some noise, vibration, dust, and emissions

Mitigation: maintenance of equipment and vehicles, minimization of weekend and night work, especially within 0.5km of residence. During dry periods will be used water sprays or other controls, and will be restored grass cover as soon as possible after construction is complete.

Impact: Supply of gravel and filling materials carries the risks of damaging landscapes and river beds due to burrowing,

Mitigation: All inert material (spoil, gravel, etc.) for the needs of construction will be obtained only from the licensed quarries.

Operation Phase

There could be only very limited potential impacts during operation of the new transmission lines and substations.

Impact: Risk to birds from collisions and electrocution and accidents during operation and maintenance.

Mitigation: Towers will be designed with line spacing, and tower-line spacing, wider than the largest birds in the area, which will avoid electrocution. In addition, if there are any areas crossed by the line that are important corridors for bird migration, or near any major nesting areas for waterfowl (ducks, geese, swans, herons, etc.), the conductors (wires) will be equipped with devices to be move visible to birds so they can avoid collisions.

Impact: Hazardous conditions for drivers and pedestrians on roads used by construction traffic.

Mitigation measure: Traffic management plan: provide in design for proper markers and safety signs on roads, including lights. Instruct the drivers.

Impact: Vegetation management in the corridor will involve cutting/trimming trees so they are not too close the towers and lines. This could cause habitat fragmentation and also could lead to fire hazards if woody debris is left on the ground.

Mitigation. Cutting and trimming will be kept to the minimum level necessary to ensure legal clearances are maintained. To prevent fire hazard, all flammable vegetation will be removed from the corridor, or burned if that is allowed by authorities. The relatively narrow corridors should not cause significant barriers to animal movement and thus there should be no significant habitat fragmentation; indeed, the corridors will increase "edge" habitat, which can increase species richness. .

Impact: Fuel spillage

Mitigation: The spilled fuel should be recollected and contaminated bund treated by the absorbents: sawdust, sand or straw. All fuel / hydrocarbon dispensing nozzles are to be of a drip control design and securely locked when not in use. No fuel storage or refuelling of vehicles or equipment will be allowed within 50m of any watercourse, water body, well, dry gorge or within any designated wetland area or aquifer. Vehicles will not be left without supervision during refuelling process. All refuelling operations on the working sites will use absorbent pads and/or straw to minimize spills, which will be put in place prior to the commencement of refuelling operations

Impact: Emergency situations and accidents. Line break along the transmission line may cause fatalities among the local residents and/or their animals. Humans and property, including livestock, could be harmed by falling towers and live lines in case of line or tower failure (from earthquakes or high winds, for example). Accidents on the substation (lightning, fire, etc.) may lead to human losses and injury, fire (especially in forested areas). Trespassers could be subject to injury or death if they climb on towers or interfere in any way with the conductors (lines).

Mitigation. Detailed Emergency Response Plan is provided as a separate Annex to the EIA. Earthing and lightning protection system should be installed at substation, and transmission lines according standards; Emergency response plan developed and preparedness ensured. Safety requirements fulfilled and PPE provided to the operating personnel. Permanent

monitoring and maintenance of transmission lines. EnergoTrans will provide information on security measures local communities should take. This will include a pamphlet in local languages that outlines activities and dangers, and steps that community members should take to avoid accidents. Residents will be instructed when it is especially dangerous to be under or around the lines (during extreme winds and electrical storms, for example), measures to take to ensure that they will be protected, and instructed to stay away from downed lines or towers. During construction and for the entire time the line is in operation, EnergoTrans will establish a 24-hour emergency contact telephone number for reporting problems or damage to the line

7. POTENTIAL SOCIAL IMPACTS AND MITIGATION MEASURES

The Project will have short-term and long-term impacts on the local communities. The social impact of the transmission line project should be viewed under the broader context of developing energy infrastructure in the region and in the whole country and enhancing its power exporting and transit potential, as well as reliability of internal networks. This overall positive impact will be tangible for socio-economic development of the country.

Positive impacts

Benefit of the project for local communities is mostly indirect. Currently the residents of the villages are mainly self-employed working on their agricultural land parcels. Only small part of agricultural products is produced for sale, with most intended for internal consumption by the households. Indirectly, establishment of stable power networks supports development of other sectors, in particular tourism and food processing, which should be important sectors for the Samegrelo-Zemo Svaneti region and for population residing along the transmission lines.

At the same time certain limited direct benefits also are associated with the project:

- Temporary jobs during construction
- New permanent jobs on substations in v. Jvari and Khorga.
- Stable power supply

Negative Impacts:

- **Impact:** Creation of dust and noise during construction. The negative impact will be temporary, insignificant and manageable by application of good construction practices.
Mitigation measure: Dust control by application of watering. Use as minimum as 2 browsers; Noise control, installation of mufflers on equipment, daytime works;
- **Impact:** Creation of vectors of disease e.g. temporary breeding habitats for mosquito as stagnant pools of water, stagnant water bodies in borrow pits, quarries, etc. suited to mosquito breeding and other disease vectors.
Mitigation measure: pools should be drained. Remove all created pools till spring-time. Reinstate relief and landscape.
- **Impact:** Recontamination by infectious biological materials (e.g. Anthrax) during earth works near the pest holes (i.e. not registered Anthrax sites).
Mitigation measure: Permanent monitoring during land clearance and excavation activities. Stopping and suspension of construction activities in case of burial site findings. Notification to the local division of Veterinary Department. Veterinary clearance before start up.
- **Impact:** Hazardous conditions for drivers and pedestrians on roads used by construction traffic.
Mitigation measure: Traffic management plan: provide in design for proper markers and safety signs on roads, including lights. Instruct the drivers.
- **Impacts:** Archaeological Sites. Land clearance works, grading and excavations during construction of towers could affect underground archaeological remnants.

Mitigation⁵:Preliminary studies are recommended to identify potential archaeological sites near the towers after the tower locations are defined. To avoid the risk of damaging archaeological artefacts, archaeological supervision during the earth-works is necessary. Supervisory procedures and all other necessary measures should be agreed with the Ministry of Culture when obtaining the construction permit, in accordance with the rules of the permit issuance. At the construction stage archaeological monitoring should be ensured by the constructing contractor under the supervision of the Ministry of Culture, Monument Protection and Sport of Georgia.

- **Impact:** Construction could limit access to land for short periods of time, and there could be accidents involving animals or property.

Mitigation measure: Residents will be notified of limited access beforehand. Access will be restored as soon as possible. Any losses due to accidents will be fully compensated at replacement value.

Impacts: No houses can be within 30 m of the line, so some people may need to be relocated and provided housing or work buildings somewhere else. In addition, the land under the towers will have to be acquired by EnergoTrans, so people will lose the use of those small amounts of land. Land under the power lines can still be used for crops or grazing.

Mitigation: A Resettlement Action Plan will guide resettlement and associated compensation for all those who are physically displaced, even if they do not own the land/building.

- **Impact:** Hazardous conditions for drivers and pedestrians on roads used by construction traffic.

Mitigation measure: Traffic management plan: provide in design for proper markers and safety signs on roads, including lights. Instruct the drivers.

Operation Phase Impacts

- **Impacts:** Electro-magnetic fields. People could be exposed to Electro-Magnetic Fields (EMF) if they are close to the high voltage power transmission lines

Mitigation:The sanitary protection zones and safe distance of transmission line facilities and substation from the residential and public areas will prevent any exposure that is higher than allowed by law.

⁵ Ministry of Culture of Georgia is one of the regulators, whose approval is necessary to obtain general construction permit. And it's procedure of approval includes 3 stage of study for the underground archeological monuments: 1 stage Observation and desk study of the area, in the case of discovering traces of the archeological findings than will be second stage which involves drilling of the pits to identify significance of the finding, and finally, full scale investigation if previous studies had proved necessity of this. For the receiving Cult. Ministry's approval project developer have to perform at least 1 stage of study. As to "chance find procedure" this will be implemented at the spot during construction activities as it is.

- **Impacts:**Emergency situations and accidents.(for example, line break) along the transmission line may cause fatalities among the local residents and/or their animals. Accidents on the substation (lightning, fire, etc.) may lead to human losses and injury.
Mitigation: These should be very rare if they occur at all. Earthing and lightning protection system will be installed at substation, earthing of transmission lines according to standards; Emergency response plan developed and preparedness ensured. Safety requirements fulfilled and PPE provided to the operating personnel. Permanent monitoring and maintenance of transmission lines.

Land Acquisition and Resettlement Impacts

About 900 private land plots of total area 95ha could be affected by the construction of 220kV line Jvari-Khorga and relocation of up to 12 residential houses may be necessary (In addition, 221ha of affected land is State owned. About 180 private land plots with total affected area of 20.8 ha and 11 residential houses could be affected by the construction of 500kV line. 44ha of land is public land. These data are preliminary and approximate, however it gives some understanding of the scale of land use and resettlement impacts. Further detailed route refinement (especially site selection for towers) is needed to minimise land acquisition impacts and need for physical relocation of households because the line would be too close. Most parts of the land within the corridor right-of-way will be affected only partially - temporary disturbance during construction and certain limitation imposed permanently (deployment of residential houses and other buildings and growing of trees will be prohibited within the corridor(60m)). Only sites for towers will need permanent land take.

Impacts on private land related to the need of access roads are minimal, as for most part of the transmission line existing roads are available. For 220kV OHL mostly, the areas of tower installation could be accessed through regional and rural gravelled roads. Only in some places – widening of the existing roads is required. The mentioned sites are forested areas between v. Naposhtu and Bia (about 1km) and between the v. Grigolishi and Natsatu (1km). The existing rural gravel roads will be used to access the tower sites for 500kV OHL. 1km length access road will require widening and 1km new access road will be constructed (the RoW of transmission line will be used for that purpose).

The private land in the project area is mostly agricultural and is used for growing maize and hazelnut as dominant culture. Fruit trees (apple, pear, fig, persimmon, sweet cherry and black-cherry, as well as quince, grape and citrus) are common in the project area. Part of less productive land, especially in the river floodplains, is used for grazing.

About 15ha of affected land on 500kV transmission line sub-project and about and approximately 63ha on 220kV line constitutes forests and most part of these lands belongs to State Forestry Fund (see fig. 17), while rest is owned by private persons.

Temporary and permanent impacts related to land take will be compensated to the private owners of land plots and attached assets, in accordance with the Georgian legislation and EBRD Performance Requirement 5: Land Acquisition, Involuntary Resettlement and Economic Displacement. A Resettlement Action Plan has been developed to guide land acquisition. This Plan is available for review along with the ESIA and this NonTechnical Summary.

8. PUBLIC PARTICIPATION

The public consultation process for this Project began with initiation of scoping for the ESIA in September 2011. Scoping included meetings with the Ministry of Environment Protection (Department of Permits, Biodiversity Protection Department, Agency of Protected Areas, Environmental Agency), Ministry of Energy and Natural Resources (Department of Natural Resources) and meetings with local authorities and affected communities.

An initial consultation with this group of stakeholders conducted by members from the ESIA Social Team involved meeting with stakeholders in their communities in order to assess the proximity of the transmission line to the community and to identify stakeholders who will be most directly impacted by the project. The local authorities, as well as local residents have been consulted. Initial information related to the project was provided to the local communities in a form of oral communication and written leaflets.

Visited Village

Municipality

vil. Akhalsofeli
vil. Sajjao

Municipality of Khobi District

vil. Grigolishi

Municipality of Zugdidi District

vil. Etseri
vil. Jvari
vil. Chale

Municipality of Tsalenjikha District

Public Disclosure of ESIA Report under Georgian law

The draft ESIA Report was completed by February, 2012. First it was publicly disclosed in March 2012 for a 120 day period. After completion of this term, a meeting with public and stockholders was held in Tbilisi "Energotrans" office, in the Municipalities of Khobi, Zugdidi and Tsalenjikha. All comments received during the 120 day period and on those meetings were reviewed, responded to and incorporated in the final draft of EIA. At present, it is anticipated that this 120 day period will extend from May 2013 to August 2013. Specific dates will be made public once confirmed by advertisements in central and local newspapers and posters on the bulletin boards of the relevant district's offices listed below. During this period the public and Stakeholders can review the Report and provide comments and questions to GSE. Following the comment period, the ESIA document will remain in the public domain.

Public Disclosure under EBRD Requirements

EBRD requires that an ESIA for Category A projects be disclosed for public review and comment for 120 days before the project is considered by the Board of Directors. It is expected that the Board of Directors will consider this project in July or August 2013, so disclosure will begin in late March. During this time, there will be at least one meeting with local stakeholders, at a date and time to be determined, and announced in local communities.

During the 120-day period, the full text of the ESIA (and Stakeholder Engagement Plan, this NonTechnical Summary, an Environmental and Social Action Plan, and a Initial Resettlement study) will be available for review at the following locations:

- Georgian State Electrosystem (GSE) office (2 Baratashvili St., 0105 Tbilisi, Georgia; Tel: ((+995 32) 510 263, 510 391);
- Zugdidi District Municipality (City of Zugdidi, # 90 Rustaveli str., Tel: (8 415) 22 01 11)
- Khobi District Municipality (city of Khobi # 187 Tsotne Dadiani str., Tel: 8 (414) 22 21 77, 22 23 45)
- Tsalenjikha District Municipality (City of Tsalenjikha, # 5 K. Salia str; Tel: 555 29 47 00)
- The EBRD offices in:
 - Tbilisi (6, Marjanishvili Str., 0102, Tbilisi, Georgia; Tel: 2 447400)
 - London (Business Information Center, One Exchange Square, London EC2A2JN UK; Tel: +44 20 7338 7269 E-mail: StanojeS@ebrd.com)

In addition, this NonTechnical Summary of the ESIA will be available at the larger towns and villages local government offices located near the transmission line corridors, In addition, the ESIA and all other documents are available on the GSE website: <http://www.gse.com.ge>; <http://www.energotrans.com.ge>; Documents are also available on the the EBRD web-site: www.ebrd.com. GSE website and the Stakeholder Engagement Plan provide information on how to submit comments and questions about the project.