

# INTEGRATED SAFEGUARDS DATA SHEET

## CONCEPT STAGE

Report No.: ISDSC9631

Date ISDS Prepared/Updated: 12-Nov-2014

Date ISDS Approved/Disclosed: 06-Dec-2014

### I. BASIC INFORMATION

#### A. Basic Project Data

Country:	Armenia	Project ID:	P146199
Project Name:	Electricity Transmission Network Improvement Project (P146199)		
Task Team Leader:	Artur Kochnakyan		
Estimated Appraisal Date:	19-Jan-2015	Estimated Board Date:	30-Mar-2015
Managing Unit:	GEEDR	Lending Instrument:	Investment Project Financing
Sector(s):	Transmission and Distribution of Electricity (100%)		
Theme(s):	Infrastructure services for private sector development (80%), Other urban development (20%)		
Financing (In USD Million)			
Total Project Cost:	67.00	Total Bank Financing:	50.00
Financing Gap:	0.00		
Financing Source			Amount
Borrower			17.00
International Bank for Reconstruction and Development			50.00
Total			67.00
Environmental Category:	B - Partial Assessment		
Is this a Repeater project?	No		

#### B. Project Objectives

The proposed project development objective (PDO) is to increase the reliability of the electricity supply in the project areas and strengthen the institutional capacity of HVEN.

#### C. Project Description

The project will have two components: Component 1: Strengthening of the Power Transmission Network and Component 2: Technical Assistance

Component 1: Strengthening of the Power Transmission Network. This component will finance:

(a) Rehabilitation of the substation of Yerevan Thermal Power Plant (TPP): The substation is owned by Yerevan TPP and was commissioned in 1965. It served for evacuation of power from the seven gas-fired thermal units with total installed capacity of 590 Megawatt (MW). In 2010, the Yerevan TPP also commissioned the modern and efficient Combined Cycle Gas Turbine (CCGT) station with 243 MW of installed capacity. The substation is located in the city of Yerevan on the territory of the Yerevan thermal power plant (TPP). The substation was commissioned in 1965 and requires urgent rehabilitation to allow for reliable evacuation of the power generated by the modern and efficient combined cycle gas turbine plant, which accounts for almost 23% of total annual electricity generation in the country.

The rehabilitation and restoration of Yerevan TPP substation will include, but not limited to:

- Restoration and expansion of 220 kV OSY (Open Switch Yard);
- Installation of two 220/110 kV MTRs (main transformers) and two 110/35 kV MTRs;
- Complete rehabilitation of 110 kV OSY except some recently installed equipment for GTCC (Gas Turbine Combined Cycle), which will be diverted;
- Complete conversion of 35kV OSY to ISY (Indoor Switch Yard) with cubicles and an associated building;
- Installation of SCADA (Supervisory Control and Data Acquisition) and replacement of PRs (Protection Relays) with open architecture, and replacement of house transformers and Alternating Current/Direct Current (AC/DC) system;
- Construction of a new building for control rooms in OSY;
- Construction of 220kV transmission line from 220kV OSY to cut-in location at 220kV Musaler line (Armenian NPP – Marash SS) with 2km length.

(b) Rehabilitation of Ashnak substation: The substation is owned by HVEN and was commissioned in 1983. The substation is located nearby the city of Talin in the Aragatsotn marz (region) and is critical for ensuring reliable power supply to customers in Western and North-Western parts of Armenia. Its safe operation is also important for reliable evacuation of power generated at nuclear power plant.

The rehabilitation of Ashnak substation will include, but not limited to:

- Complete rehabilitation of 220 kV OSY and 110kV OSY;
- Replacement of two 220/110/10 kV MTRs having boosting transformers with two new MTRs having boosting transformers;
- Complete rehabilitation of 10 kV cubicles and an associated building;
- Installation of SCADA and replacement of PRs with open architecture, and replacement of house transformers and Alternating Current/Direct Current (AC/DC) system;
- Construction of a new building for control rooms.

(c) Full or partial replacement of Lori 220 kV overhead transmission line (OTL): The OTL is owned by HVEN and was commissioned in 1968. It has a length of around 50 km and runs from the Alaverdi-2 220/110 kV substation in the North to Vanadzor-2 220/110 kV substation located in Vanadzor city. This OTL is critical for reliable electricity supply to consumers in the North-Eastern part of Armenia, including large industrial enterprises. Moreover, Lori OTL is important for power exchange via 220 kV network between Armenia and Georgia.

The full replacement of Lori line will include construction of an entirely new line mostly within the same corridor/right-of-way, which is 50 m in width. The route will be prepared under the ongoing feasibility study. In case the feasibility study suggests that only partial replacement is needed, then it will assume complete replacement of only some sections of the line. After the new line is commissioned, the old line will either be dismantled or retained as a back-up line.

(d) Full replacement of Toumanyan-1 and Toumanyan-2 110 kV OTLs: Toumanyan-1 and Toumanyan-2 (Toumanyan-1, 2) OTLs have a length of around 3 km and run from the Alaverdi-2 substation to Alaverdi-1 substation located in Alaverdi town in the North of the country. Those lines supply power to large electricity consumers in the North-Eastern part of Armenia. Those lines use one set of towers. The full replacement will include construction of an entirely new line mostly within the same corridor/right-of-way. The route will be prepared under the ongoing feasibility study.

Component 2: Institutional strengthening of HVEN and support to Yerevan TPP to implement the project. This component will finance:

- (a) Long-term expansion plan for transmission network considering the generation expansion plan of the Government, including load flow and stability studies.
- (b) Development and adoption of a methodology for prioritization of investments in rehabilitation of power transmission network, which will also include an economic framework based on cost-benefit analyses.
- (c) Development and adoption of standardized design templates for substations and power transmission lines to avoid versatile solutions offered by various vendors. This will help to avoid technical incompatibility issues and will make the operation of the power transmission system more reliable.
- (d) Purchase and operationalization of internationally recognized power transmission line design software to allow HVEN to prepare and review transmission line designs in-house.
- (e) Training to HVEN staff on technical, fiduciary, and safeguards aspects of power transmission project preparation and implementation.
- (f) Construction of back-up dispatch center to be used in case of emergencies by the Electric Power System Operator (EPSO).
- (g) Construction of a new administrative building for HVEN.
- (h) Implementation support to HVEN in technical supervision and other aspects of project implementation.
- (i) Project audits.
- (j) Training to Yerevan TPP staff on technical, fiduciary, and safeguards aspects of power transmission project preparation and implementation.
- (k) Implementation support to Yerevan TPP in technical supervision and other aspects of project implementation.
- (l) Technical, economic/financial structuring studies and other technical assistance required for preparation of the new CCGT project at Yerevan TPP.

#### **D. Project location and salient physical characteristics relevant to the safeguard analysis (if known)**

(a) Yerevan TPP substation: The substation is located on the territory of the Yerevan TPP and the territory of the substation is fenced. The substation is accessible from the road which passes nearby the Yerevan TPP. The land around the substation carries no vegetation. There is limited agricultural activity to the East of the substation.

(b) Ashnak substation: The substation is located nearby the city of Talin in the Aragatsotn marz (region) and is critical for ensuring reliable power supply to customers in Western and North-Western parts of Armenia. The territory of the substation is fenced. It is accessible by a main road, which passes nearby the facility. The vehicles can enter the substation using the small road specifically constructed for accessing the substation from the main road. The land around the substation is used for agricultural activities.

(c) Lori 220 kV OTL: The line runs from the Alaverdi-2 220/110 kV substation in the North to Vanadzor-2 220/110 kV substation located in Vanadzor city. The line runs mostly through the slope of a hill and grazing land. At one of the sections, the line runs close to houses in a small village, however, at a safe distance (based on visual inspection). There is enough land/area to divert the route of the line if needed during the detailed design phase.

(d) Toumanyan-1, 2 OTL: The line runs from the Alaverdi-2 substation in the North to Alaverdi-1 substation located in Alaverdi town in the North of the country. The line is very short and uses a small number of towers passing through a gorge and then running over a rugged terrain to the final destination.

(e) New administrative building of HVEN: The new building will be located near the existing headquarters in the city of Yerevan. The land plot for the potential new building is already owned by HVEN and is fenced across the circumference.

(f) Construction of a back-up dispatch center for the power system. The construction will take place within the footprint of existing facility. The territory, where the potential back-up dispatch center, will be located is entirely fenced and has an access road from a free-way.

Some parts of the target infrastructure are placed in towns, some - in the rural settlements, and many sections of the OTLs pass over pastures, gorges, and cultivated land plots. None of the known project sites are outside the footprint of the existing infrastructure. The physical environment along the existing corridors of OTLs is not particularly sensitive or vulnerable, at least not by the construction and operation of a transmission line, if due diligence measures are included into design, construction and operation of the line. Many of the long term environmental impacts have already occurred (e.g. landscape aesthetics, habitat segmentation, bird flight routes, electromagnetic emissions, noise, necessity for tower access roads) and will not be significantly influenced by the new line construction.

Currently, the exact land acquisition and resettlement requirements are unknown as the exact location of the towers and access roads will not be specified until detailed design is prepared. For the most parts the OTLs will be within the existing right-of-way with some bypasses expected to go through the community/state-owned land.

## **E. Borrowers Institutional Capacity for Safeguard Policies**

The project will be implemented by HVEN (for Ashnak substation, Lori OTL, and Toumanyan-1, 2 OTLs) and Yerevan TPP (for substation at Yerevan TPP).

HVEN is also the implementing agency for the ongoing Electricity Supply Reliability Project (ESRP), under which it will receive capacity-building on managing environmental and social aspects of its activities. HVEN uses consultant services for day-to-day supervision of safeguards under

ESRP, and also plans to hire a safeguards specialist acceptable to the Bank. Specific implementation arrangements for safeguards under the proposed project will be determined during preparation.

Yerevan TPP has not previously been involved in implementation of a Bank-supported project and does not currently have in-house safeguards capacity. Specialist consultants will be hired for the project duration to support Yerevan TPP on supervision and oversight of safeguards issues.

#### **F. Environmental and Social Safeguards Specialists on the Team**

Darejan Kapanadze (GENDR)

Sarah G. Michael (GSURR)

Jennifer Shkabatur (GSURR)

## **II. SAFEGUARD POLICIES THAT MIGHT APPLY**

<b>Safeguard Policies</b>	<b>Triggered?</b>	<b>Explanation (Optional)</b>
Environmental Assessment OP/ BP 4.01	Yes	<p>The project is not expected to have significant irreversible impact on the natural environment, because all proposed works will be undertaken mostly within the footprint of the existing infrastructure (with exception of bypasses for OTLs that may be done to divert the line sections away from settlements). Rehabilitation of substations may result in generation of hazardous waste, such as replaced acid batteries and used transformer oils containing CPB. Waste disposal is a generally challenging task in Armenia due to lack of adequate infrastructure and effective control mechanisms. Some types of hazardous waste, including replaced acid batteries, are being put in storage until the Government finds acceptable and affordable solutions for their permanent disposal. Site-specific Environmental Management Plans (EMPs) will assess safety of hazardous waste storage facilities suggested for the beneficiary substations, will describe any other potential risks of their rehabilitation, and will recommend mitigation measures most suitable in the country context. Due diligence will include review of safety checks and status of environmental compliance of the Yerevan TPP and Armenia's nuclear power generating facility, because the project beneficiary substations are part of the infrastructure evacuating power from these facilities.</p> <p>The replacement of target OTLs has the largest potential for negative environmental impacts</p>

		however they can fairly easily be mitigated and minimized by adhering to good construction / housekeeping practices. Rehabilitation of OTLs will be carried out in a manner least harmful for the landscapes that they pass through. If OTLs or their individual parts are to be dismantled, the options for its disposal and/or recycling should be explored and described. Environmental and Social Impact Assessment (ESIA) report will provide information on the sensitive environmental receptors along the OTLs' alignment and EMPs will prescribe respective mitigation measures. These should include, among others, recommended engineering and technical means for decreasing impacts of OTLs' construction and operation on the movement of birds. The project is classified as environmental category B.
Natural Habitats OP/BP 4.04	No	Not expected to be triggered based on visual inspection. ESIA report will provide all information required for the final decision.
Forests OP/BP 4.36	No	The transmission lines under the proposed project run mostly through open rangeland covered by grass and low shrubs.
Pest Management OP 4.09	No	Pesticides are not likely to be required for vegetation control under the OTLs or any other purpose related to the construction or operation phases of the project. This will be confirmed and noted in the ESIA report.
Physical Cultural Resources OP/BP 4.11	TBD	No known physical cultural resources will be affected by the project. A blue print of action in case of chance finds will be provided in the EMPs.
Indigenous Peoples OP/BP 4.10	No	
Involuntary Resettlement OP/BP 4.12	Yes	As land use, acquisition or resettlement may be required during rehabilitation of the OTLs, OP 4.12 is triggered. Substation upgrading is expected to take place within the existing fenced footprint of the current substations. A Resettlement Policy Framework (RPF) for the project will be prepared. The RPF will provide detailed guidance and criteria for the development of site-specific Resettlement Action Plans (RAPs), which would be prepared and implemented prior to commencement of

		any investments where resettlement or land acquisition was required. The RPF will be included as an annex to the project's Operational Manual and disclosed in the InfoShop.
Safety of Dams OP/BP 4.37	No	
Projects on International Waterways OP/BP 7.50	No	The project will have hydrological impacts neither on national or international surface waters nor on groundwater resources.
Projects in Disputed Areas OP/BP 7.60	No	

### III. SAFEGUARD PREPARATION PLAN

**A. Tentative target date for preparing the PAD Stage ISDS:** 15-Dec-2014

**B. Time frame for launching and completing the safeguard-related studies that may be needed.**  
**The specific studies and their timing<sup>1</sup> should be specified in the PAD-stage ISDS:**

Site-specific ESIA reports and EMPs, or checklist EMPs (for lower-risk activities such as construction of new administrative building and back-up dispatch center) and a RPF will be prepared, disclosed, and consulted with all relevant stakeholders and finalized before appraisal (January 12, 2015).

### IV. APPROVALS

Task Team Leader:	Name: Artur Kochnakyan	
<b><i>Approved By:</i></b>		
Regional Safeguards Coordinator:	Name: Nina Chee (RSA)	Date: 13-Nov-2014
Practice Manager/ Manager:	Name: Ranjit J. Lamech (PMGR)	Date: 06-Dec-2014

<sup>1</sup> Reminder: The Bank's Disclosure Policy requires that safeguard-related documents be disclosed before appraisal (i) at the InfoShop and (ii) in country, at publicly accessible locations and in a form and language that are accessible to potentially affected persons.