



# Project Information Document/ Integrated Safeguards Data Sheet (PID/ISDS)

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Concept Stage | Date Prepared/Updated: November 16, 2017 | Report No: 121525



**BASIC INFORMATION**

**A. Basic Project Data** OPS TABLE

Country Armenia	Project ID P155662	Parent Project ID (if any)	Project Name Utility-Scale Solar Power Project
Region ECA	Estimated Appraisal Date	Estimated Board Date March 9, 2018	Practice Area (Lead) Energy and Extractives
Financing Instrument Guarantee	Borrower(s) Republic of Armenia	Implementing Agency Renewable Resources and Energy Efficiency Fund	

**Proposed Development Objective(s):** The project development objective is to increase privately owned and operated solar electricity generation capacity in Armenia.

**Financing (in USD Million)**

<b>Private Equity</b>	<b>13.40</b>
<b>Debt Financing</b>	<b>40.30</b>
<b>Total Project Cost</b>	<b>53.70</b>
IBRD Guarantee	4.00
SREP Guarantee	26.00

Environmental Assessment Category  
**B**

Concept Review Decision  
**June 5, 2017**

Have the Safeguards oversight and clearance functions been transferred to the Practice Manager? (Will not be disclosed)

**No**

Other Decision (as needed)



## B. Introduction and Context

### Country Context

1. The Armenian economy is vulnerable to external factors given its dependence on remittances, commodity exports, and large capital inflows necessary to finance the current-account deficit. During the 2008–09 global financial crisis, the Armenian economy contracted by 14.1 percent as external financing dried up and the booming construction sector collapsed. Fiscal stimulus, which was implemented in 2009 and resulted in the tripling of the country’s external public debt, helped to stabilize the economy and the government turned its attention from crisis management to its longer-term reform agenda focused on sustainable growth.

2. The Armenian economy was hit hard towards the end of 2014 due to a deepening Russian recession, which negatively impacted foreign direct investment, remittances, and exports, and put strong depreciation pressure on the Armenian dram. Whereas previous structural reforms had been anchored in a proposed Association Agreement with the European Union, in September 2013, the country decided to join the Eurasian Economic Union. The country also has one of the highest unemployment rates (18.5 percent) in the Europe and Central Asia region largely stemming from low job creation and a mismatch of workers’ skills and jobs. In addition, corruption remains an endemic problem in the country. The government established an anti-corruption council in 2015 to provide a more structured approach to tackling this issue.

3. While some progress in poverty reduction was achieved during the post-crisis recovery, Armenia’s poverty rate remains higher than it was in 2008, and its income distribution is less equal. In 2016, 29.4 percent of Armenians were still living in poverty, compared to a post-independence low of 25.2 percent in 2008. Inequality also increased in the aftermath of the global financial crisis, and the Gini coefficient rose from 0.339 in 2008 to 0.375 in 2016 (based on national consumption expenditure).

### Sectoral and Institutional Context

4. The power system of Armenia is unbundled and consists of independent electricity generation, transmission, and distribution companies as well as the electric power system operator (EPSO) and the settlement center. It has a “single buyer model” (with one electricity distribution company acting as the single buyer and supplier of electricity) with regulated tariffs for generation, transmission, and distribution. The tariffs are approved by the independent Public Services Regulatory Commission (PSRC).

5. The power sector faces the below key challenges, which will need to be addressed to ensure adequate, reliable and affordable electricity supply to consumers.

6. Adequacy of electricity supply. Total electricity demand in the country is expected to grow at the long-run average annual rate of 2%.<sup>1</sup> Currently, the country currently has sufficient generation capacity (including reserve margin) to meet the forecast peak load and the total annual electricity demand. However, new generation capacity will be needed to meet the forecast peak load and ensure sufficient reserve margin on the system starting from 2021 when Hrazdan TPP is planned for decommissioning (see figure below). The least-cost power generation plan prepared by the World Bank in 2013 suggested that new gas-fired CCGT capacity would need to be constructed to ensure sufficient

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<sup>1</sup> Estimated based on the projected real GDP growth rates, real tariff increases and estimated income and price elasticities of demand.



supply capability in the power system. The long-run average incremental cost (LRAIC) of electricity supply was estimated at US\$0.10/kWh. The current average economic cost of supply is around US\$0.08/kWh.

7. **Energy Security:** Around 70 percent of Armenia’s electricity generation is dependent on imported fuels. Specifically, Armenia imports all of the natural gas required for electricity generation from Russia and Iran, and the nuclear fuel required for nuclear power generation from Russia. Increased energy security is one of the country’s top priorities as reflected in the 2013 National Energy Security Concept approved by the President of Armenia and the Armenian Development Strategy (ADS) for 2015-2015.

8. **Reliability of Electricity Supply:** The average interruption frequency per line for 110 and 220 kV overhead transmission lines (OTLs) is 2.5 times higher than for comparator well-performing utilities. The average age of substations is around 35 years and 14 out of 16 substations have not undergone any major rehabilitation or upgrade since their commissioning.

9. **Affordability:** In 2014-2016, the average electricity tariff for residential customers increased by 11 percent and the natural gas tariff reduced by 6 percent. The Bank team conducted distributional and poverty impact analyses of tariff changes. The tariff increases are expected to increase the electricity budget share in total household budget by 0.2-0.6 percent on average. **Error! Reference source not found.** Across the welfare spectrum, households at the bottom quintile (in particular those not covered by the family benefit program) are more affected as well as the single elderly and “extreme” poor. The impact on the electricity share is highest for the bottom quintile (0.68 percent), whereas for households in the top consumption quintile it is lower (0.36 percent). Single elderly, households in the bottom quintile not covered by Family Benefit Program (FBP) and the “extreme” poor” (below the food poverty line) are more affected than the average household.

#### Relationship to CPF

10. The proposed operation is consistent with the current FY13-17 Country Partnership Strategy (October 9, 2013) which aims to accelerate growth, reduce poverty and boost shared prosperity. Specifically, the project will contribute to Engagement Area 1.3 of the CPS on improving access, quality, and sustainability of key infrastructure (energy, water and transport). Energy security and supply reliability have been identified by the private sector as major constraints to growth. The World Bank has committed to support the Government’s plan aiming at promoting energy security and efficiency by introducing new least-cost generation capacity, investing in renewable energy supply and energy efficiency, and improving the electricity pricing system.

#### C. Proposed Development Objective(s)

11. The project development objective is to increase privately owned and operated solar electricity generation capacity in Armenia. The achievement of the PDO will be assessed using the following key PDO Level Outcome Indicators:

- Indicator One (Corporate Results Indicator): Generation capacity of energy constructed or rehabilitated (MW).
- Indicator Two (Custom): Utility-scale solar PV generation added to the grid (GWh).

#### D. Concept Description



12. The project will support construction of Masrik-1 utility-scale solar power project with involvement of the private sector. The project is located on Masrik valley in Gegharkunik Marz (administrative unit) in the north-eastern part of the country. The project is estimated to have an installed plant capacity of 46.55MW, a capacity factor of 20-22 percent, and projected average annual generation of 89 million kWh. The project will be connected to the distribution network through a 110kV OTL of 10 km to be linked to the existing Kaputak and Akung transmission lines, which are owned by ENA.

13. The Government intends to develop the project through the private sector and it plans to procure the Independent Power Project (IPP) developer through an international competitive bidding process. The Renewable Resources and Energy Efficiency (R2E2) Fund has been preparing the project and will be conducting the procurement of the IPP. Masrik-1 solar project will be the first competitively tendered IPP in the Armenian power sector.

14. The main economic benefit of the project relates to reduced variable costs of production from existing power plants which will be displaced by the project. Specifically, the project will be displacing generation from existing gas-fired thermal power plants. The reason is that the variable operating cost of the project is close to zero and in the merit order dispatch, it will come first followed by the thermal plants, which have substantially higher variable cost.

#### *IBRD and SREP guarantees*

15. The Government is considering two forms of support to the project as it defines an adequate risk allocation between ENA, the IPP developer and the Government itself that makes the project bankable:

- a. Recurring support for regular (monthly) payments by ENA to the project company pursuant to the PPA (“PPA payment support”); and
- b. One-off support for payments following an early termination of the PPA (“PPA termination support”).

16. A large number of developers also indicated that, mainly due to the perceived country risk, further coverage of the Government’s payment obligations, through the provision of World Bank guarantees, would be required for their participation in the project. It is thus expected that deployment of the World Bank guarantee instruments will increase interest from qualified bidders, thereby enhancing competition and the ability to achieve cost-efficient tariffs.

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## **SAFEGUARDS**

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

17. The Masrik-1 site will be located in the territory of Mets Masrik community of the Vardenis sub region of Gegharkunik Marz near the Lake Sevan in Masrik valley (altitude 1900-2000m above the sea level). The project site lies on a mostly flat and horizontal piece of land surrounded by mountains. The area belongs to the floristic region of Sevan and the vegetation contains steppe and meadow species.

18. The project site will be located on land owned by the Mets Masrik rural community (3,428 residents, most of whom are engaged in agriculture). The community, which is a legal entity that can own land in Armenia, owns 350 ha of



land currently unused except as pasture (primarily for sheep, as grass quality is low). The project will likely require 97ha to build fixed-axis structures based on the feasibility study. The selected IPP developer will negotiate with the local community to either lease or purchase the designated land plot. Whether the land would be leased or acquired by the IPP will be decided by the Government before issuance of the Request for Proposals (RFP) for selection of the IPP developer. Given the scale of land that will continue to be available for pasturing in comparison to the population of the community, no significant negative impact is expected on the livelihoods of the members of the local community, however, the expected scale of livelihood impact will be assessed during preparation. In the event negotiations fail between the IPP and local community on lease or purchase of requirement land, the Government of Armenia will acquire necessary land for the IPP.

19. The IPP developer will also be responsible for building a 10 km 110 kV overhead transmission line (OTL) to Kaputak-Akung transmission line, which is owned by ENA. The OTLs will mostly run over agricultural lands. Some of the lands within the right of way (RoW) corridor of the OTL are private and some are municipally owned. These lands are used for agriculture, horticulture and livestock grazing or forage making. Some acquisition of private lands may be needed for the RoW of the OTL or for the foundations off the transmission tower. Construction works may also adversely affect crops and trees in the area.

20. Technical preparation of the project has included, along with the feasibility study, the draft ESIA study, draft Environmental and social Management Plan (ESMP) and draft Resettlement Policy Framework (RPF). The Bank team has reviewed preliminary versions of these documents and found them acceptable, but they are yet to undergo a formal World Bank approval process. A Resettlement Action Plan (RAP) will be prepared by the IPP developer for the construction of Masrik-1 site before appraisal. A RAP will also be developed for the OTL upon the finalization of the route.

## **B. Borrower's Institutional Capacity for Safeguard Policies**

21. The Renewable Resources and Energy Efficiency Fund (R2E2 Fund) has been responsible for project preparation activities since effectiveness of the SREP financed Project Preparation Grant (PPG) in June 2015. R2E2 Fund will also be responsible for the selection of the IPP developer that will build, own and operate the project and for monitoring project implementation during construction. R2E2 Fund has experience in implementation of Bank projects. It is currently implementing the Geothermal Exploratory Drilling Project, which is also financed by SREP and administered by the Bank, and has implemented a number of Bank-financed projects (Energy Efficiency Project, Urban Heating Project, Renewable Energy Project, and the Geofund 2: Armenia Geothermal Project) in the past.

22. The R2E2 Fund is a non-profit organization established by the Government in 2006 with the mandate to promote the development of renewable energy and energy efficiency markets in Armenia and to facilitate investments in these sectors. The implementation of the Project as well as overall R2E2 Fund operations will be supervised by the Board of Trustees (BOT), consisting of representatives of government agencies, NGOs, and the private sector, thus, ensuring required professional expertise. The BOT is chaired by the Minister of Energy and Natural Resources.

23. R2E2 Fund will be responsible for ensuring that all relevant environmental and social requirements are properly included in the project tender documents. It will also be responsible for ensuring that all necessary permissions and/or agreements required from the relevant government institutions are received by the IPP developer prior to any construction work, for ensuring that the IPP and its contractors understand their safeguards-related obligations. In addition, R2E2 Fund should make it clear in the RFP that the IPP's sub-contractors will adhere to the requirements of the World Bank Performance Standards as well. Given that the R2E2 Fund will be responsible for ensuring that E&S issues



are included in the tender documents, that permits are received, and will be in charge of monitoring compliance of E&S obligations, the Bank will conduct further assessment of its capacity and E&S budget and document it in the appraisal-stage ISDS. The assessment will also include any necessary measures to strengthen the capacity of R2E2 Fund (if needed).

24. The IPP developer will be specifically required to: (i) develop and operate an Environmental and Social Management System (ESMS) commensurate with the project environmental and social risk, including the finalization of the Environmental and Social Impact Assessment (ESIA), which also covers the transmission line, the Resettlement Policy Framework (RPF), preparation of the Environmental and Social Management Plans (ESMP), and a Resettlement Action Plan (RAP), in accordance with the World Bank Performance Standards (OP/BP 4.03); and (ii) train relevant staff on the use of this system. The RPF will include procedures to ensure that (i) affected community is fully informed of their rights and duties with regard to their leasing or selling land to the IPP; (ii) enter into lease or purchase agreement on a willing seller-willing buyer basis; (iii) lease fees or land purchasing payments and the loss of access to grazing land will be shared on a fair and transparent manner among members of the affected community; and (iv) compensation equal to replacement values will be provided to the affected community in the event that negotiations between the IPP and the local community fail and the Government of Armenia acquires land for the IPP. The IPP developer will also carry out extensive consultations with local community members regarding all aspects related to the finalization of the ESIA and RPF, and the preparation of the ESMP and RAP. Furthermore, the Bank will undertake a detailed review of the developer’s ESMS, ESIA and other relevant documentation in order to determine whether the ESMS and the design and proposed implementation of the project are consistent with the World Bank’s Performance Standards. Based on this assessment, the Bank will prepare an Environmental and Social Review Summary (ESRS) which would include, if needed, an Action Plan for IPP EA capacity building.

25. The RFP for selection of the IPP developer will explicitly require the project to be designed, constructed, installed, operated, maintained and decommissioned in compliance with applicable national laws on environmental, safety, labor, social and security matters and with the OP 4.03. It is anticipated that international IPP developers bidding for the project will be familiar with the application of international standards such as those mandated by OP 4.03.

26. The selection of IPP developer is expected to be completed by March 2017 and the project is expected to be appraised in May 2018. Therefore, the IPP developer will need to prepare the above safeguards documents based on the actual project designs and footprint, and submit for Bank review in January 2018.

**C. Environmental and Social Safeguards Specialists on the Team**

- Mr. Arcadie Capcelea, Senior Environmental Specialist
- Mr. Satoshi Ishihara, Senior Social Development Specialist
- Ms. Zara Hayrapetyan, Social Development Consultant

**D. Policies that might apply**

Performance Standards	Triggered? (Yes/No/TBD)	Explanation (Optional)
PS 1: Assessment and Management of Environmental and Social Risks and Impacts	Yes	The proposed project activities will generate some environmental and social impacts and to address them the IPP developer should undertake an ESIA and



Performance Standards	Triggered? (Yes/No/TBD)	Explanation (Optional)
		prepare an ESMP which will include relevant mitigation and monitoring activities. The ESIA and ESMP will cover both the power plant and the transmission line. Any potential EPC and/or O&M contractor will be required to prepare and implement an ESMS consistent with the E&S requirements for the project and the ESMS prepared by the IPP contractor.
PS 2: Labor and Working Conditions	Yes	To ensure basic rights for workers, the ESMP has to specify the requirements for the developer in this regard. The IPP will also be required to prepare an OHS management plan (as part of the ESMS) and a HR manual and procedures consistent with PS2 requirements, which also includes applicable PS2 requirements to contractors. Potential EPC and/or O&M contractors would also be expected to prepare an OHS management plan and HR manual and procedures. ESMS would be expected to include plans for managing worker camps/accommodation and project immigration, including worker influx, as appropriate.
PS 3: Resource Efficiency and Pollution Prevention	Yes	The ESMP will provide basic requirements in terms of pollution prevention during both project phases – construction and operation that would ensure resource efficiency.
PS 4: Community Health, Safety, and Security	Yes	The ESMP will prescribe measures to avoid any risks and impacts from accidents, structural failure and hazardous materials
PS 5: Land Acquisition and Involuntary Resettlement	Yes	The site for the Masrik-1 solar plant construction is located on community owned lands. The community is the local self-governance body and is not considered a private entity. The land that will be used to build the Masrik-1 is used for animal grazing. It is expected that the local community will continue to have access to sufficient grazing land. The selected IPP developer will negotiate with the local community for either lease or purchase the designated land plot. Whether the land would be leased or acquired by the IPP developer will be decided by the Government before issuance of the RFP. If negotiations fail between the IPP and local community on lease or purchase of requirement land, the Government of Armenia will acquire necessary land for the IPP. The Resettlement Policy Framework (RPF) will be developed in line with PS5 by the Government of Armenia which will include procedures



Performance Standards	Triggered? (Yes/No/TBD)	Explanation (Optional)
		<p>to ensure that (i) affected community is fully informed of their rights and duties with regard to their leasing or selling land to the IPP; (ii) enter into lease or purchase agreement on an willing seller-willing buyer basis; (iii) lease fees or land purchasing payments and the loss of access to grazing land will be shared on a fair and transparent manner among members of the affected community; and (iv) policies and procedures that will apply in the event that the government acquires land for the IPP. A Resettlement Action Plan (RAP) for the Masrik-1 solar plant will be developed before appraisal.</p> <p>OTLs connecting the plant to the grid will run over agricultural lands, some of which are privately owned. Private land acquisition may be required for the RoW acquisition of the OTL or for the foundations of the transmission towers, and there may be damages to trees and crops. Since the final design of the OTL route is not complete yet, a RPF will include policies and procedures that govern acquisition of private lands for the construction of the OTL towers. A Resettlement Action Plan (RAP) will be prepared upon the finalization of the OTL route. The IPP will consult with local community members regarding the terms of purchase or lease of community lands, and prepare detailed minutes of the consultation process.</p>
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	<b>Yes</b>	The ESIA done by the R2E2 Fund confirmed that the project is not located in any protected areas or in critical natural habitats and thus doesn't trigger any of additional requirements under this PS.
PS 7: Indigenous Peoples	<b>No</b>	There are no indigenous peoples on project sites, and this PS is not applied in the case of this project.
PS 8: Cultural Heritage	<b>Yes</b>	The Gegharkunik Marz, as well as Vardenis region, are rich with historical and cultural monuments such as ancient habitations, Stone Age houses, medieval village territories, protective, spiritual, economic structures, cemeteries, obelisks and khachkars (cross-stones), etc. In this regard the ESMP will have special provisions in terms of chance findings as well as in terms of preventing adverse impacts on cultural



Performance Standards	Triggered? (Yes/No/TBD)	Explanation (Optional)
		heritage.
Project on International Waterways OP/BP 7.50	No	Not applicable.
Projects in Disputed Areas OP/BP 7.60	No	Not applicable.

**E. Safeguard Preparation Plan**

Tentative target date for preparing the Appraisal Stage PID/ISDS

January 15, 2018

Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing should be specified in the Appraisal Stage PID/ISDS

Draft ESIA study, draft Environmental and Social Management Plan and draft Resettlement Policy Framework have been completed. Upon selection of the IPP developer, these instruments and Resettlement Action Plan for Masrik-1 project will be completed to reflect the final project design and application of the Performance Standards. Based on the current project timeline, it is expected that the safeguard instruments will be completed by January 1, 2018.

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**APPROVAL**

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