SAFEGUARDS AND SOCIAL DIMENSIONS SUMMARY

1. The proposed combined-cycle power plant (CCPP) is a new 250-megawatt gas-fired facility to provide increased energy production for Armenia. It will include a gas turbine, steam turbine, heat recovery steam generator, and auxiliary equipment and systems. The project will include the construction of the plant, a 400 meter (m) 220 kilovolt transmission line, and a 100 m pipeline connection for industrial discharges. Service providers will build connections to other services; Gazprom Armenia will build a 600 m gas pipeline and Veolia will build a 1,000 m water pipeline and 450 m wastewater pipeline linking to the municipal system.

2. In compliance with the Safeguard Policy Statement (2009) of the Asian Development Bank (ADB), the project is classified *category A for environment* and *category C for both involuntary resettlement and indigenous peoples*. To meet ADB environmental and social requirements for an environment *category A* project, an environmental and social impact assessment was prepared.[1] The report includes an environmental and social management plan and an environmental and social action plan which details measures to be undertaken to ensure environmental compliance.

3. The institutional capacity and commitment of Renco Power and Siemens Project Ventures to manage the project's social and environmental impacts are deemed adequate. Renco has a Health, Safety and Environment Policy in place and is internationally certified under OHSAS 18001 and ISO 14001. During construction and operation, Renco will designate a manager responsible for health, safety, and environment compliance, and external audits are also proposed.

A. Environmental Safeguards

4. The project is in an industrial area, beside the Yerevan 1 CCPP and the decommissioned Yerevan Power Plant. The site is former farmland that was subject to extensive clearance during use as a laydown and storage area. The soil was found to have low levels of metals (chromium, cobalt, copper, lead, manganese and nickel) that adhere to international standards,[2] but exceed stringent national standards. However, the soil is permissible for use in industrial areas under national standards. Groundwater was found to have elevated total petroleum hydrocarbons (up to 7,407 micrograms (µg) per liter) as well as arsenic, cadmium, molybdenum, vanadium and zinc (759.87 µg per liter for vanadium). This indicates that groundwater has become contaminated from surrounding industrial land use. Air quality monitoring over three seasons for sulphur dioxide, nitrogen dioxide (NO_2) and particulates found that the airshed is non-degraded.[3] Noise levels are low near the site but elevated at some villages near main roads.[4] Industrial activities have left visual impacts, including tall stacks and power pylons. The site has low ecological value because of past ground disturbance and there is low likelihood of surviving archaeological sites.

5. Construction impacts will potentially include temporary noise, dust, traffic, erosion, solid and liquid waste generation, hazardous substances, and health and safety issues. No construction camp is required because of the Yerevan location and the use of a locally-established contractor.

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[1] Fichtner. 2018. *Yerevan 2 CC Power Plant ArmPower CJSC Environmental and Social Impact Assessment – Final*. Fichtner, Stuttgart.

[2] Dutch Soil Remediation Circular (2009); German Federal Soil Protection Act (1998) and Groundwater Protection Ordinance (2010).

[3] The International Finance Corporation (IFC) considers airsheds that significantly exceed national or World Health Organization air quality standards as degraded. IFC. 2007. Environmental, Health, and Safety Guidelines—General EHS Guidelines. Washington, DC.

[4] Levels that do not exceed IFC guidelines as per IFC. 2007. Environmental, Health, and Safety Guidelines—General EHS Guidelines. Washington, DC.

The contractor will implement dust control, erosion and sediment control and waste management as part of the Construction Environmental, Health and Safety Management Plan to address impacts. No truck movements will be permitted at night, to minimize disturbance to residents. The current proposal to manage groundwater is to install a clay barrier and sub-surface drainage. The sponsor is engaging experts to conduct a hydrological assessment and develop mitigation measures which will be submitted to ADB for review and approval prior to construction, in compliance with safeguards requirements.

6. During operation, the plant will produce air and noise emissions. It has been designed with a low nitrogen oxide burner and 66 m stack height in accordance with international standards.[5] Air dispersion modeling confirms that maximum 1-hour NO_2 emissions will be 97.9 µg per cubic meter (m^3) accounting for existing emissions, well below the national and international standard of 200 µg/m^3 (footnote 3). Maximum annual NO_2 emissions are up to 5.1 µg/m^3 compared with the 40 µg/m^3 standard. Greenhouse gas emissions will be 785,000 tons of carbon dioxide equivalent per year, which is within the intended nationally determined contribution for Armenia. The stack will have a continuous emissions monitoring system installed. Noise modeling confirms that noise will not increase by more than 0.15 A-weighted decibels (dBA) at sensitive receptors.

7. All water will be sourced from the municipal network, confirmed through a contract with the supplier. Up to 450 m^3/hour or 300,000 m^3/month is required, with pre-treatment provided on site. The site will have two wastewater treatment plants, an oil–water separator, and a biological treatment system, to process blowdown water and cooling water to international discharge standards (footnote 4). Industrial discharge of 70 m^3/hour will be delivered into an existing discharge pipeline and canals. The ultimate receiving environment is the Hrazdan River, about 7 kilometers downstream. This provides sufficient distance to cool the discharge so there are no adverse effects on the river. About 14m^3/hour of sanitary sewage will be discharged to the municipal network.

8. Consultation with the community was undertaken in 2015 during the national environmental permit process, and in 2017 to 2018 during the preparation of the environmental and social impact assessment. Regulatory authorities and local residents generally support the project and hope it will create jobs. Some concerns were raised by residents and community organizations about pollution, waste management, archaeology, and landscaping. The client has addressed these concerns in project design and mitigation measures.

B. Social Safeguards

9. ArmPower acquired the project site from Yerevan Thermal Power Plant (YTPP); YTTP is wholly owned by the Ministry of Energy Infrastructure and Natural Resources. ArmPower has entered into the final land purchase agreement with YTPP to acquire the site. The land does not have any legacy or current risks associated with land acquisition and resettlement. The due diligence has assessed that the project does not result in impacts on Indigenous People. Hence, no involuntary resettlement or indigenous peoples' issues are envisaged for the project.

10. The company's human resource policies and core labor standards comply with national laws and will be enforced for the project through contractual obligations with suppliers and contractors. Pursuant to ADB's Social Protection Strategy (SPS), the company will take measures to fully comply with internationally recognized core labor standards. Information disclosure and consultations with affected people or communities will be conducted in accordance with ADB's requirements.

[5] Environmental Protection Agency. 1985. Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations). Revised. Research Triangle Park, North Carolina.