

102186 REV

Power Sector Financial Recovery Program

Program-for-Results

Environmental and Social System Assessment

Final Report

March 24, 2016

I. Introduction

1. The power sector achieved financial sustainability with tariffs that assured recovery of eligible and reasonable expenses and collections that reached 100% of sales, and the power sector companies were among the largest tax payers in the country. However, these achievements started to reverse since 2011 and the financial standing of the sector significantly deteriorated. Today, the state-owned power sector companies have accumulated sizeable and expensive commercial debt and are on the verge of bankruptcy. As of December 1, 2015, the aggregate cash deficit of state-owned power generation companies was estimated at US\$91 million (0.8% percent of estimated 2015 GDP) or 71% of their total estimated annual revenue for 2015.

2. The financial viability of the power sector was jeopardized due to: (a) non-core business related borrowing, lending and expenses, and (b) inadequate mechanism for compensating losses of power distribution company due to mismatch between forecast and actual generation mix.

3. *Non-core business related borrowing, lending and expenses:* The state-owned power companies: (a) provided loans to Nairit chemical plant to finance its recurrent expenses; and (b) financed the lifeline gas subsidy for the poor and some other expenses.

4. The state-owned power companies provided a total of US\$41.7 million in loans to other entities for non-core business related reasons and also accumulated US\$14 million of receivables for energy supplied. The state-owned power companies also financed the life-line gas subsidy for the poor and lent money for some other non-core business related activities. The above coupled with payment delays from Electric Networks of Armenia (ENA) resulted in US\$91 million of cash deficit.

5. *Inadequate mechanism for compensating losses of the power distribution company:* ENA is the single buyer in the power market and its tariff is the difference between the end-user electricity tariff (one-part tariff) and the capacity charge of generating plants (fixed charge that most of generators receive irrespective of the generation volume to recover their fixed costs), weighted average cost of the energy charge of generating plants (kWh based charge), transmission charge, and the service fees of the power system operator and the settlement center. Thus, if the actual consumption is lower than the volume planned under the tariffs, or the share of expensive generation plants is larger than that planned under the tariffs, ENA incurs a loss. As per the current regulatory approach (specified in the ENA's license), that loss is recovered in equal installments in three years and it does not include compensation for interest costs ENA incurs to finance the working capital until the losses are compensated. Due to substantial deviation of planned vs. actual generation mix in 2012-14, the Bank team estimated¹ that ENA incurred a cumulative loss of around US\$56 million due to lower-than-required end-user tariff increases. The two main consequences of those losses were: (a) reliance on expensive and short-term commercial loans to finance shortage of working capital at ENA, which pushed the company into financial distress; and (b) accumulation of US\$40 million of payables for electricity to Armenian Nuclear Power Plant (ANPP) and Yerevan Thermal Power Centre (YTPC).

II. Program Description

¹ Based on publicly available data from PSRC.

6. In order to ensure adequate and reliable electricity supply through restoring the financial viability of the state-owned generation companies, the Government intends to undertake a number of critical steps, which are reflected in the Program. Those activities are grouped into four Results Areas as presented below. MENR, together with ANPP and YTPC, will be responsible for activities under Results Areas 1, 2, and 4. The activities under the Result Area 3 (related to improvements of tariff-setting methodology) are the responsibility of the independent regulator, the PSRC. The PSRC will implement the activities under the Results Area 3.

7. Results Area 1: Elimination of cash outflows of state-owned power generation companies for non-core business related reasons. This will be achieved through:

8. *Decision by the Shareholder's Meeting of the state-owned power generation companies to prohibit the non-core business related expenditures, lending and borrowing by those companies.* This *decision* will ensure that state-owned power companies do not incur expenditures, lend resources to other entities or borrow for reasons not related to their core business activities of power generation. The core businesses of ANPP and YTPC will be clearly defined in the *decision* of the Shareholder's Meeting (see Annex 1 for detailed definition of core business activities). This decision is within the authority of the Shareholder's Meeting as stipulated in the Law on Joint Stock Companies.

9. *Liquidation of Haigasard.* This will be achieved through dissolving Haigasard CJSC, an existing 100% state-owned company, which does not conduct any real economic activity. The Government is the sole owner and discharges its ownership functions through MENR. Haigasard has historically been used to park liabilities of various companies before privatization of the power sector assets in late 1990s and channel funds among state-owned power companies to finance non-core business expenses.

10. Results Area 2: Reduction of expensive commercial loans of state-owned power generation companies, recovery of receivables, and repayment of YTPC's payable for natural gas. This will be achieved through:

11. *Refinancing of the principal amounts of commercial loans of state-owned generation companies.* Those cost the sector US\$3.1 million per year in interest cost, with more concessional IBRD resources under the proposed operation. The concessional resources will cost the sector around US\$0.85 million during the grace period and US\$2.9 million per year thereafter (including repayment of the principal) with declining schedule. YTPC and ANPP would substantially reduce debt service costs, thus, increasing funds available for better maintenance of assets.

12. *Recovery of receivables.* The Government has negotiated with ENA a schedule for recovery of state-owned power generation companies' receivables for electricity sales. The schedule assumes gradual repayment of receivables by the end of 2017. As of February 1, 2016, ENA owes the state-owned power generation companies US\$30 million (US\$19 million to YTPC and US\$11 million to ANPP). ENA will repay the receivables from the incremental revenue it will earn from 17% increase of average end-user tariff, which is effective from August 1, 2015.

13. *Repayment of YTPC's payable for natural gas.* The support under the proposed PforR will be limited to YTPC's payable under Contract referred to in Supplemental Letter No.3 and which is associated with purchase of natural gas from Gazprom Armenia CJSC for generating electricity for domestic needs. The payable will be repaid using the additional cash inflows under the Program from recovery of receivables from ENA and disbursements under the proposed IBRD loan. Repayment of this payable is important from the stand-point of ensuring adequate and reliable electricity supply in the country because default on this payable may result in discontinuation of gas supply YTPC needs to generate electricity for domestic needs.

14. **Results Area 3: Setting of tariffs reflecting changes in the cost of electricity supply.** This will be achieved through:

15. *Amendment of ENA's License to allow adjusting the margin by the full size of loss (profit) incurred due to mismatch between actual and forecast cost of electricity purchased by ENA.* The PSRC will amend ENA's License to clearly specify that ENA's tariff margin for each new tariff period will reflect 100% of the loss (profit) accrued due to difference between the forecast and actual tariff margin² during the preceding tariff period plus interest cost (income).

16. *Revision of tariff-setting methodology to allow adjusting the tariff by the full size of natural gas purchase related loss (profit) incurred due to fluctuation of AMD/US\$ exchange rate.* The PSRC will revise the existing tariff-setting methodology to allow the tariffs of large thermal power plants, including YTPC and Hrazdan TPP, for each new tariff period to fully reflect the loss (profit) accrued due to difference between forecast and actual cost of natural gas purchased during preceding tariff period. The tariff for natural gas for all large consumers (with monthly consumption of more than 10,000 cubic meters), including thermal power plants, is fixed in US\$ and the consumers are billed in equivalent local currency (AMD) at the exchange rate prevailing as of the date of billing.

17. **Results Area 4: Maintaining the generation capacity of the gas turbine at YTPC's CCGT plant.** This will be achieved through replacement of some components of the gas turbine at the existing CCGT plant of YTPC as part of the regular maintenance. The overhaul will allow preserving the generation capacity of the gas unit and, thus, the capability of the CCGT plant to supply the required amount of electricity. The gas turbines typically require maintenance after 36,000 equivalent operating hours (EOH) as per recommended schedules of the manufacturers. Overhaul is required because some critical components of the gas turbines, such as turbine blades, are exposed to stress caused by high temperature and variable loading. The components to be replaced will be turbine and compressor parts.

18. The total financing required for the Government program of financial recovery of the power sector is US\$43.2 million.

Table 1: Expenditure Requirements of the Government Program (in US\$)

Financing Source	Amount (in US\$)	% of Total
YTPC own funds (tariff-regulated revenue)	\$13,299,690	30%

² ENA's tariff margin is the difference between the average end-user tariff and the cost of energy purchased, which includes the cost of electricity generation, transmission, the dispatch fee and the for commercial settlements.

Proposed PforR (IBRD)	\$29,925,000	70%
Total	\$43,224,690	100%

19. MENR will be the responsible agency for activities under the Results Areas 1, 2, and 4. It is adequately staffed and the key departments/divisions, which will be substantially involved in implementation of the Program, have clearly defined roles and responsibilities. Those departments will be Financial-Economic, Accounting, and Internal Audit. The state-owned entities, YTPC and ANPP, will also be part of the Program given that the Program will help them refinance their expensive commercial debts. Moreover, YTPC will be responsible for implementing the preventive maintenance of the gas turbine at its CCGT plant. The independent regulator, the PSRC, will be responsible agency for tariff-setting related activities under Results Area 3, which include the required revisions/amendments to the ENA License and tariff-setting methodology for thermal power plants. PSRC has the required in-house expertise to implement the relevant activities under the Program.

20. The following DLIs are proposed for the Program:

Table 2: Proposed Disbursement Linked Indicators (DLIs)

	Disbursement Linked Indicators	Amount Allocated (US\$ million)
1	<i>Decision at the shareholder meetings of ANPP and YTPC, prohibiting the non-core business related expenditures, lending and borrowing by the above companies.</i>	2.832
2	Liquidation of Haigasard.	2.000
3	No new non-core business related expenditures, borrowing and lending incurred by ANPP.	2.500
4	No new non-core business related expenditures, borrowing and lending incurred by YTPC.	2.500
5	Reduction of the principal amount of outstanding commercial loans of ANPP.	4.260
6	Reduction of the principal amount of outstanding commercial loans of YTPC.	2.300
7	Reduction of YTPC's payable for natural gas under Contract referred to in Supplemental Letter No. 3	4.982
8	ENA's margin for each new tariff period fully reflects the loss (revenue) accrued due to difference between the forecast and actual cost of electricity purchased by ENA during the preceding tariff period	2.000
9	Tariffs for YTPC and Hrazdan TPP for each new tariff period fully reflect the loss (revenue) resulting from difference between forecast and actual cost of purchased natural gas due to fluctuation of AMD/US\$ exchange rate during the preceding period.	2.000
10	Electricity supplied by YTPC	4.551
	Total	29.925

21. The MENR will be responsible for oversight over the Project accounting and financial reporting arrangements. It will be responsible for submission of Program financial/monitoring reports to be verified / audited by Independent Verification Agent (IVA)/auditor. The MENR will

be responsible for ensuring that YTPC selects and appoints the required IVAs and the auditor for the annual Program audit.

III. Environmental and Social Impacts of the Program

22. **Environmental Impacts:** The environmental impacts of the proposed Program are very limited given its focus primarily on improvement of the legal and regulatory framework for the power sector to stop use of financial resources for non-core business related expenses and refinancing of expensive commercial debt with concessional resources. Therefore, the Program activities under Results Areas 1, 2, and 3, which do not imply any type of physical works, do not carry environmental implications.

23. The activity under the Results Area 4 – replacement of key components of the gas turbine of Yerevan Thermal Power Centre – has associated physical activities with potential environmental impacts. Physical activity under this item of the Program implies replacement of the key components of the gas unit of existing CCGT plant of YTPC. The main components to be replaced include rotor blades, stator vanes, and heat shields. The proposed repair is one of the regular periodic overhauls that need to be done to maintain the unit in good operational condition and, thus, preclude increased frequency of planned and forced outages. The overhaul does not imply alteration of technological processes and/or increase in the design capacity of the thermal plant. The Government’s investment in the proposed overhaul is confined to the replacement of worn-out components with new ones. Hence, according to the national environmental legislation, this activity is not subject to environmental impact assessment and permitting. Based on the information provided, no hazardous waste will be generated as a result of overhaul because the units to be replaced are metallic parts of the gas turbine that had not been in touch with any toxic substances such as battery acids, transformer oils, or other.

24. The replacement of the gas turbine components will not create any significant occupational risk hazards and will be implemented by well-trained personnel, including staff of the original equipment manufacturer, and following the health and safety guidelines applicable to such activities. Those guidelines are mandatory for YTPC. Moreover, YTPC has prior experience with implementation of such repair works and the technical staff to be involved in replacement of equipment and associated works is knowledgeable about the requirements of such safety guidelines. There have been no accidents during the operation and maintenance of the gas turbine unit of YTPC.

25. **Social Impacts:** The overall social impact of the Program is expected to be positive because it will preclude electricity shortages throughout the country in case the proposed measures are not undertaken to improve the overall financial standing of the power sector, including the two generation companies, which together account for almost 40% of total supply. The Program will create benefits for all electricity consumers, including vulnerable and impoverished households.

26. The negative social impact of the Program is the retrenchment of 40 employees of the Haigasard CJSC. Under certain circumstance, the Program may also lead to increase of end-user tariffs. Such increase may be required only if: (a) ENA’s margin is revised upward due to higher-than-expected cost of generation in the country (e.g. due to poor hydrology) and/or higher-than-

expected cost (in local currency) of natural gas for TPPs in case of steep depreciation of local currency. In case of lower-than-expected cost of electricity and appreciation of local currency, the end-user tariffs will reduce. The Government is the sole owner of Haigasard CJSC and discharges its ownership functions through MENR. Haigasard has historically been used to park liabilities of various companies before privatization of the power sector assets in late 1990s and channel funds among state-owned power companies to finance non-core business expenses. The liquidation of Haigasard will contribute to sustainability of improved financial standing of the state-owned power companies because there are no other special purposes vehicles (SPVs) in the sector to be used.

IV. Description of Program Environmental and Social Management Systems

27. **Environmental:** The excess material that is likely to be generated from the expected replacement works are worn-out components, which are made from valuable alloys. The national waste legislation promotes the principle of waste minimization, recycling, and re-use. Recycling and re-use of a variety of wastes is a common practice in Armenia. Recycling of metal is widespread. It does not require any type of environmental procedures and clearances. It is subject to agreement between entity producing/collecting metals or metallic components and an entity processing it. There are a number of companies in Armenia specializing in processing of metal, such as Mikmetal Ltd (the largest processor), and are capable of processing over 20,000 tons of metal per year. The amount of metal to be generated from replacement of key components of the gas turbine is less than 1% of the above processing capability. It should be noted that recycling of non-toxic waste is not legally binding and an entity generating such waste may opt to either discard it at a landfill or keep in storage for possible re-use. Given the value of the worn-out metallic components, YTPC will either put those to storage at its warehouse or sell to recycling companies. Based on the example from other industrial facilities in general and power generation and transmission facilities in particular, non-toxic storage facilities operated in Armenia meet general safety requirements: they have sufficient space, are properly ventilated, fenced, and guarded.

28. **Social: Liquidation of Haigasard:** The Government will need to prepare and adopt a liquidation plan for Haigasard and initiate the liquidation process. The retrenchment will be done as part of the liquidation plan for the facility. The retrenchment will be governed by the Labor Code of the Republic of Armenia, enacted in November 2004, and monitored by the State Labor Inspectorate. All retrenchment measures that will be undertaken by the government will be explained as part of a chapter on “Social and Labor Issues” that will be included in the Haygazrd liquidation plan. Approval of the liquidation plan is a DLI under the Program and this approach will ensure that it contains the appropriate chapter on Social and Labor Issues as required by the local legislation.

29. Notification requirements: According to the Labor Code, the retrenchment of Haigasard staff is regarded as "collective dismissal for economic reasons" since the entire workforce will be dismissed. Such collective dismissal requires the Government to inform employees and their representatives regarding the planned retrenchment at least two months in advance. The retrenchment announcement for Haigasard will be published on online media outlets, and the Human Resources Department will notify the employees to be dismissed in a written form.

30. Monetary compensation: According to the Labor Code, compensation should be paid to retrenched employees by the day of their dismissal from work, unless a different procedure is

specified in the Code or as part of a specific agreement between the employer and the employee. The compensation mandated by the Labor Code includes a full salary payment up to the dismissal date and reimbursement for any accrued vacation or leave days that the employee was entitled to and has not used. The Government will provide full compensation to retrenched Haygazrd employees in accordance with the Labor Code.

31. Training and Redeployment: The Labor Code does not mandate employers to offer training or redeployment options to retrenched employees. However, retrenched employees can take advantage of the general services that are offered by the government free of charge to all unemployed citizens of Armenia. These services are provided by the State Employment Agency (SEA), which operates under the Ministry of Labor and Social Affairs in all major regional cities (20+) and in all administrative regions in Yerevan. The SEA's services include the following:

- Consultation on issues connected to job search, recruitment, the hiring process, etc.
- Information on open vacancies and employment programs;
- Connecting jobseekers and potential employers;
- Support in identifying appropriate professional training possibilities;
- Support and consultation related to entrepreneurial activities;
- Calculation of unemployment benefits;
- Organization of job fairs.

32. The retrenchment process of Haigasard employees is not formally subject to the Bank's safeguards policies, but it does comply with international standards, such as the IFC's Performance Standard 2 (PS2) on Labor and Working Conditions. PS2 stipulates the following conditions:

- *An analysis of alternatives to retrenchment needs to be conducted.* If retrenchment cannot be avoided, a retrenchment plan should be prepared. Haigasard does not conduct any real economic activity. Its liquidation, therefore, has a strong economic rationale and will contribute to strengthening the financial condition of the power sector companies. The retrenchment of Haigasard employees is therefore the only viable alternative in this case. Most Haigasard employees are aware of this situation and many of them have "side-jobs" that provide them with additional sources of income. A retrenchment plan and a full explanation of Social and Labor Issues will be contained in the Haigasard liquidation plan that will be prepared by the Government.
- *Retrenchment should be conducted on the principle of non-discrimination.* The principle of equal treatment is laid down as a fundamental right in Article 14.1 of the Armenian Constitution, and Article 178 of the Labor Code grants equal pay for equal work for men and women. The retrenchment of Haigasard is driven by economic purposes. All the employees of Haigasard will be retrenched and will receive equal treatment, without any discrimination due to gender, age, or any other factor.
- *Retrenchment should be planned and conducted in consultation with workers and their organizations.* Haigasard employees will be informed of the retrenchment plans well in advance, as required in the Labor Code. As Haigasard is a relatively small facility and only

employs 40 workers, they will not be represented in this process by a worker's union, but their rights will be fully protected in accordance with the Labor Code.

- *Retrenchment must comply with local laws and, if they exist, collective bargaining agreements.* Workers will receive notice of dismissal and severance payments mandated by law and collective agreements in a timely manner. All outstanding back-pay and social security benefits and pension contributions and benefits should be paid: (i) on or before termination of the working relationship to the workers, (ii) where appropriate, for the benefit of the workers, or (iii) payment will be made in accordance with a timeline agreed through a collective agreement. As noted above, the retrenchment process will be carried out in full compliance with the Labor Code. All retrenchment measures that will be undertaken by the Government will be explained as part of a chapter on “Social and Labor Issues” that will be included in the Haygazrd liquidation plan.

33. **Social: Potential Tariff Increases:** Implementation of the improved methodology for adjustment of ENA’s margin and revised methodology for computation of YTPC’s and Hrazdan TPP’s tariffs will require regular adjustments to end-user tariffs depending on changes in variables that impact the costs of above companies. For example, the proposed adjustment of ENA’s margin may lead to upward adjustment of the end-user tariff if actual cost of supply is higher than the forecast cost. A downward adjustment will need to be done if the actual cost of supply is lower than the forecast cost. If adjustments lead to end-user tariff increases, then those will be mitigated by the existing social safety net of the Government.

34. The Government has been using the existing social assistance programs to mitigate the impact of increase energy prices on end-users. Social assistance consists of several programs, including the flagship Family Benefit Program (FBP), a means-tested unconditional transfer currently covering about 105,000 households, and an Emergency Benefit Program (EBP) covering about 9,000 vulnerable households that do not qualify for the FBP. While pensions have the greatest impact on poverty due to their size and coverage, the FBP remains the most pro-poor government transfer. Due to budget limitations, however, the FBP reaches only 12.5% of the population; consequently, targeting the extreme poor is critical. At about 60%, the FBP’s targeting accuracy is broadly in line with global standards, but it has significant room to improve to match the highest performing programs in the region. The government has already reduced leakages and increased the coverage of poor households. As a result, the number of FBP beneficiaries grew from 86,138 households at end-2011 to about 104,000 at end-2014. This was facilitated by streamlining the application process for FBP eligibility, harmonizing the eligibility criteria for both FBP and basic health services, and increasing the funding for FBP healthcare support in the 2014 budget.

35. The Government also introduced a temporary subsidy scheme (effective until July 31, 2016) financed by the Government and Tashir Charity Foundation. The Government subsidizes 13% of the electricity bill (to compensate for the recent tariff increase effective since August 1, 2015) of residential end-users consuming up to 250 kWh/month, which is the monthly average consumption of the bottom 40% of income earners in the country.

V. Program Capacity and Performance Assessment

36. The details related to implementation capacity and performance of the Government and YTPC in use/application of the environmental and social systems applicable to the Program is presented below.

37. The metallic components of the gas turbine from the previous overhaul at YTPC’s CCGT plant are stored at the territory of YTPC in a warehouse. No other environmental impacts were observed / registered by the Ministry of Environmental Protection as a result of those repair works.

38. The Government has adequate capacity to implement the retrenchment process and it has complied with the provisions of the Labor Code in previous retrenchment instances. In the case of the decommissioning of the Nairit Chemical Plant, for instance, the Nairit Company announced in December 2014 that retrenchment was planned for February 2015 and that it would be guided by the Labor Code. The retrenchment announcement was published in online media outlets, and the Human Resources Department notified all 2,200 employees in a written form. The official press release emphasized that 400-500 employees out of the 2,200 would be contracted for new employment. Nearly 1,800 employees were dismissed in September 2015, while the remaining 400 have already been notified about the retrenchment plans, but will only be laid off as part of the final decommissioning of Nairit. Compensation was provided to employees in accordance to the Labor Code.

39. Another relatively large retrenchment took place in 2007 as part of the restructuring of the Armenia Railway (AR). Around 500 employees were retrenched before the Government started the international competitive bidding to select a concession contractor. The retrenchment was conducted in compliance with the requirements of the Labor Code and the same notification and compensation requirements were followed

40. In 2009-2014, the Government has been adjusting the budget for FBP to reflect the increase in the cost of living (measured by Consumer Price Index), which helped to mitigate the impacts of electricity tariff increases that happened during the same time period taking into account that spending on electricity comprised not more than 10% of an average poor household’s budget.³ The real increase in FBP allocations and the impact of real tariff increase on spending are presented in rows 8 and 6 of the below table.

Table 3: FBP Spending and Electricity Tariff Increases

		2008	2009	2010	2011	2012	2013	2014	2015	2016f
1	Nominal monthly average spending per household from FBP (in AMD)	19,824	22,612	24,523	26,402	28,650	28,086	28,355	30,358	30,158
2	Nominal average billed electricity tariff (in AMD/kWh)	24.3	27.6	29.1	28.3	28.9	31.2	38.3	42.0	42.0

³ This is a conservative estimate because the share of electricity and gas in the expenditures of an average poor household reached 20% in 2013.

3	CPI (period average)	9.0%	3.4%	8.2%	7.7%	2.5%	5.8%	3.0%	4.3%	3.5%
4	Real billed electricity tariff (in AMD/kWh)	22.3	26.7	26.9	26.3	28.2	29.5	37.1	40.3	40.6
5	Change in real electricity tariff	-8.4%	19.6%	0.8%	-2.3%	7.3%	4.6%	25.9%	8.4%	0.9%
6	Impact on spending assuming no price elasticity	-	2%	0.08%	-	0.7%	0.5%	2.6%	0.8%	0.09%
7	Real monthly average spending per household from FBP (in AMD)	18,187	21,868	22,665	24,514	27,951	26,521	27,529	29,107	29,138
8	Change in real average monthly spending per household	-	20.2%	3.6%	8.2%	14.0%	-5.1%	3.8%	2.0%	-0.1%

41. As mentioned above, the impact of the most recent tariff increase effective since August 1, 2015, was mitigated through universal subsidy for all residential and commercial end-users with consumption below the threshold level. In order to mitigate the impact of the last tariff increase when the universal electricity subsidy is phased out as of August 1, 2016, the Government was planning to increase the size of FBP by 3.9% in 2016. However, the increase was not approved given limited fiscal space due to economic slow-down. Thus, the Government will need to further improve the coverage and targeting of FBP to ensure benefits reach to a large number of vulnerable consumers.

42. Given the importance of affordability of electricity, the World Bank has been providing advisory and analytical support to the Government to help improve affordability of electricity for poor households through improved coverage, targeting, and some other measures.

43. Under the Armenia Poverty TA, and the Social Inclusion and Labor Knowledge for Reforms, Operations and Development Technical Assistance (SILK ROAD TA), and previous ESMAP funded regional work, the World Bank provided advisory support specifically focused on mitigation of impacts of energy tariff increases on the poor as well as broader reforms that are required to social protection system to ensure adequate protection of the poor. Presented below are the details on the focus of key analytical pieces prepared.

44. Distributional Analysis of Energy Tariffs in Armenia.

- Conducted distributional impact analysis to assess the impact of electricity and gas tariff changes on consumers, differentiated by the income levels, and over time.
- Identified the changes in poverty levels.

45. Protecting Vulnerable Households from Rising Energy Tariffs.

- Provided recommendations on policy options available for maintaining affordability of energy services for the poor under two benefit generosity assumptions: (i) increase of

benefit to compensate only for the tariff increase; and (b) setting the benefit at a higher value to reduce deprivation in energy consumption among the very poor by closing the consumption gap between the bottom and the second lowest quintile of income-earners. The options included compensation through the targeting system used to allocate the FBP at the moment, at varying levels of coverage.

- Estimated the fiscal costs associated with each option for mitigating the impact of energy tariff increases on the poor.
- Provided recommendations on improvements that can be made to the FBP targeting formula to further improve its targeting accuracy, and other changes to enable the inclusion of a larger share of poor households than it does at the moment. A second set of policy scenarios simulated the distribution of an energy benefit if a new targeting formula was put in place based on proxy means testing.

46. Options to Enhance Targeting of Social Safety Nets in Armenia.

- Provided recommendation on adopting a regression-based Poverty Means Testing (PMT) formula, which will generation improvements to the targeting of benefits in Armenia. The best-performing PMT model was assessed to allow increasing the existing coverage for the bottom quintile and for the total poor (at the poverty line).
- Estimated improvements in coverage are the result of reduction in coverage of individual in the intermediate and upper quintiles.
- Proposed changes to PMT would allow reducing strong disparities in progress access currently observed across different marzes with similar poverty rates, and reduce the biases of the program against households with formal income earnings.

47. Targeting Formula Validation Survey (Ongoing).

- The survey is intended to be a pre-pilot of the new formula on a representative sample of existing beneficiary households and potential new beneficiaries.
- The survey will allow to established coherence between household survey and administrative database in terms of variables used for the computation of the proxy means score.
- The survey would also serve as a baseline to understand the effect of an eventual targeting reform on the behavior of households
- The survey includes few questions to clarify issues related to expenditure on utilities and heating products.

48. Qualitative Assessment on Impacts of and Attitudes to Energy Reforms in Armenia.

- Assessed energy consumption patterns and associated financial payment burden.
- Evaluated the impact of tariff increases on households.
- Identified the different types of measures households resort to in order to cope with price increases;
- Assessed perception on the quality of service and interaction with energy service providers including transparency, clarity of tariff-setting process, accountability, issues of arrears and non-payment;

- Explored attitudes to energy reforms and tariff reforms more broadly;
- Identified the type of programs that participants use to support them with basic needs, and perceptions on most effective measures for protecting poor households from adverse impacts of energy tariff increase.
- Assessed the different effects that tariff reforms have across genders.

49. The Bank will be providing additional advisory and analytical support to the Government in 2016 to: (1) Help assess the social impacts of recent tariff increases; (2) Develop strategies to mitigate the impact of tariff increases on vulnerable consumers. The following options will be explored in greater detail: (a) use of Proxy Means Testing to deliver targeted cash compensation to those eligible; (b) introduction of a block tariff design; and (c) introduction of a life-line tariff; and (3) Strengthening coordination, communication, and capacity on energy subsidy reform. While the above activities will provide analytical evidence to the Government and the PSRC, the ability to develop coordinated action and communicate effectively with consumers are essential ingredients for an effective response to mitigating the impacts of energy price increases.

50. *Citizen Engagement and Gender*: The Program will promote citizen engagement through seeking and responding to feedback from electricity consumers: (a) regarding the proposed changes in the methodology for adjustment of ENA's margin and revised methodology for computation of YTPC's and Hrazdan TPP's tariffs; and (b) on tariff review applications filed by the power sector companies or tariff reviews initiated by PSRC at least once a year.

51. The drafts of the amendments to the ENA License and changes to the tariff setting methodology for YTPC and Hrazdan TPP will be disclosed by PSRC on its web-site at least five business days prior to the session of the PSRC to make decision on this particular matter. The PSRC will also be disclosing for public feedback, which is required under the existing legislation, the tariff review filings submitted by the power sector companies or initiated by PSRC. A phone number is also available to ask questions or provide feedback on the disclosed documents. Typically, the tariff review filings with all of the supporting material/computations are disclosed 70 days before the PSRC session to make final decision on tariffs.

52. PSRC will respond in writing: (a) within 15 business days to any questions and requests for additional information/data; and (b) within 30 business days to complaints. The Bank team agreed with the PSRC that it will prepare a report with all comments received (disaggregated by gender) and submit to the Bank in one month after adoption of the regulatory amendments under the Program and subsequent tariff reviews during each year of the Program.

53. The implementation of such citizen engagement approach will be monitored through the Intermediate Result Indicator under the Program – “Percent of tariff-setting related questions and inquiries (gender-disaggregated) responded to by PSRC within stipulated service standards for response time.”

54. *Timeline for repair works*. The works for replacement of the key components of the gas turbine, as described above, are planned to be conducted in May-June 2018. The gas turbine will be disconnected from the power grid during that time and reconnected immediately after completion of replacement works.

55. *Timeline for retrenchment of Haigasard staff.* The retrenchment process is expected to be initiated in 2017 and the contracts with all of the employees will be discontinued by the end of 2017 upon paying in full all of the compensation specified in the Labor Code and described above.

VI. Assessment of Program Systems

56. The environmental and social systems applicable to the Program activities are consistent with the core principles of OP 9.00.

57. **Core Principle # 1:** Promote environmental and social sustainability in the Program design; avoid, minimize, or mitigate adverse impacts, and promote informed decision-making relating to the Program's environmental and social impacts.

58. The Program environmental impacts are negligible given that the repair of the gas turbine of YTPC will generate only limited number of metallic components (maximum of 2 tons), which will most likely be stored at an existing warehouse or sold to metal processing companies. The metal is not toxic and/or hazardous because it has not been in contact with such substances. The Program minimizes the social impacts because: (a) the number of employees to be retrenched at Haigasard is small; and (b) the impacts from potential tariff increases will be mitigated through existing social safety net or other measures to be put in place with the support provided by the Bank.

59. **Core Principle # 2:** Avoid, minimize, or mitigate adverse impacts on natural habitats and physical cultural resources resulting from the Program.

60. The Program would neither impact nor convert critical natural habitats, does not generate any adverse impact on terrestrial flora. There are no anticipated impacts on physical cultural resources. The Program will not support civil works except for replacement of key components of the gas turbine and the works will take place within the premises of YTPC.

61. **Core Principle # 3:** Protect public and worker safety against the potential risks associated with: (i) construction and/or operations of facilities or other operational practices under the Program; (ii) exposure to toxic chemicals, hazardous wastes, and other dangerous materials under the Program; and, (iii) reconstruction or rehabilitation of infrastructure located in areas prone to natural hazards.

62. The only activity under the Program, which may create risks for the workers' safety, is the replacement of key components of the gas turbine at YTPC. Those works will be conducted by the well-trained staff and following the requirements of the Safety Guidelines for Operation and Maintenance of Power Plants, which are mandatory for YTPC and clearly defined all safety measures and precautions during such works. Moreover, YTPC has prior experience with implementation of such repair works and the technical staff to be involved in replacement of equipment and associated works is knowledgeable about the requirements of such safety guidelines. There have been no accidents during the operation and maintenance of the gas turbine unit of YTPC.

63. **Core Principle # 4:** Manage land acquisition and loss of access to natural resources in a way that avoids or minimizes displacement, and assist the affected people in improving, or at the minimum restoring, their livelihoods and living standards.

64. The Program does not support any civil works outside of the existing YTPC facility. Additional land acquisition will not be required.

65. **Core Principle # 5:** Give due consideration to the cultural appropriateness of, and equitable access to, Program benefits, giving special attention to the rights and interests of the Indigenous Peoples and to the needs or concerns of vulnerable groups.

66. The Program does not support provision of basic services to communities. The Program gives due consideration to the needs of the vulnerable groups in case electricity tariff increases are required. Those impacts will be mitigated through the existing FPB program and/or other mechanisms/measures that the Government may decide to put in place with the support of the World Bank.

67. **Core Principle # 6:** Avoid exacerbating social conflict, especially in fragile states, post-conflict areas, or areas subject to territorial disputes.

68. The Program does not support any activities that may exacerbate social conflict, including those in fragile states, post-conflict areas, or areas subject to territorial disputes.

VII. Inputs to the Program Action Plan

69. The ESSA does not propose activities to be included in Program Action Plan. The challenges identified through the ESSA are included in the program implementation support plan.

VIII. Environmental and Social Risks Ratings

70. This section presents the environmental and social risks of the Program. The Program mainly consists of soft activities aimed at improving the legal and regulatory framework for the power sector and eliminating the vehicle (Haigasard) that was used to drain the cash flows of the state power companies. Those activities include adoption of a legal instrument prohibiting the non-core business related expenditures of state-owned power companies, improving the methodology for computing the margin of the power distribution company and the tariffs for thermal power plants, and liquidation of Haigasard. Those activities are not expected to create direct environmental impacts. The only social impacts are limited to retrenchment of employees of Haigasard and potential welfare impacts on the poor if tariff increases are required due to revision of the tariff-setting methodology. The existing social protection system will help the retrenched employees to find new occupation. The well-functioning FPB will allow mitigating the impacts of tariff increase on the poor.

71. The only physical activity under the Program is the small-scale repair works of the YTPC gas turbine. Those works will not generate any hazardous, toxic or other dangerous waste and do

not pose substantial risks to health and safety of workers. There is no land acquisition required for the implementation of the Program and no anticipated issues related to social conflicts.

72. Therefore, the environmental and social risks of the Program are Low.

IX. Inputs to the Program Implementation Support Plan

73. The Government will benefit from: (a) analytical support in analyzing and identifying improvements to the subsidy design and delivery scheme to improve the targeting and coverage; (b) analytical support in exploring other options for mitigation impacts of tariff increases on end-users, such as lifeline tariffs, block tariffs, energy efficiency; and (c) strengthening of institutional capacity in assessing the distributional/poverty impacts of tariff increases.

74. The Government and the PSRC also need to improve the efficiency of public education and outreach regarding the rationale for tariff increases. Although the most recent tariff increase was economically justified from perspective of maintaining financial viability of the power sector. Despite this fact, there was limited public support to this decision, which is also largely due to low effectiveness of PSRC and MENR efforts to explain and justify to the key stakeholders, including the protestors, in an easy-to-understand and non-technical jargon the way the power tariff-setting works in Armenia, the reasons for tariff increase and other issues facing the power sector. This leads to loss of public trust in decision made and very limited understanding and, thus, misinterpretation of the rationale and justification for tariff and other power sector related decisions.

75. The Bank-provided support in the Program’s social areas will include the below key activities:

Table 4: Inputs to Program Implementation Support Plan

Activities	By Whom	By When
Analytical and advisory support by the World Bank to analyze alternative options for mitigating impacts of tariff increases, including use of Proxy Means Testing to deliver targeted cash compensation to those eligible, introduction of a life-line tariffs, energy efficiency retrofits in the apartments of vulnerable consumers.	World Bank	December 30, 2016
Support to strengthen the institutional capacity of PSRC capacity on public communication and education on electricity tariff related issues. This will include advisory support in developing consumer-friendly materials (e.g. infographics, printed short documents) on how the	World Bank	November 30, 2016

electricity tariff-setting works and the reasons why tariff increases are unavoidable.		
Training by the World Bank staff and consultants on methodology and analytical tools for conducting distributional impact analysis for electricity tariff increases.	World Bank	November 30, 2016
Support to the MENR with preparation of the social chapter of liquidation plan.	World Bank	March 30, 2017

X. Public Consultation

76. This draft ESSA was disclosed for public feedback through publication in InfoShop (on Dec. 29, 2015) and distribution through email (on Dec. 25, 2015) to key stakeholders, including the MENR, PSRC, Ministry of Nature Protection, Ministry of Labor and Social Protection, Non-governmental Organizations (NGOs) representing the consumer interests, and Civil Society Organizations (CSO) active in the energy sector. The key stakeholders were requested to submit comments and suggestions on the document until January 15, 2016. The World Bank received only one feedback from the “Centre of Political, Legal and Economic Research and Forecasting” NGO. The key observations provided in response to the ESSA are summarized below:

1. The NGO confirmed that the current financial distress of the sector and observed inefficiencies are not surprising given that tariff-setting methodology for energy companies does not promote efficiency.
2. It is correct that the financial viability of the power sector is jeopardized given the non-core business related expenditures, borrowing and lending due to political reasons. It is also clear that legislative changes are required to discontinue the practice and all expenditures, which were non-core for ANPP and YTPC, should be financed from the state budget.
3. One has to keep in mind the overall economic development strategy and the power sector developments strategy/perspectives of the country. The Government’s “Long-term Development Directions of Power Sector (until 2036)” was informed by the World Bank’s analysis (Power Sector Policy Note, 2014). Several of the assumption used need to be updated because they are already obsolete. The updated should also answer the following main questions: (a) what is the objective of power sector development; (b) who will be the electricity consumers; (c) are new investments economically justified.
4. The environmental impacts of the proposed PforR operation are indeed quite limited.
5. Liquidation of Haigasard is a justified decision and its limited social impacts can be dealt with. However, in the longer term, given that the poverty does not reduce below 30%, the efficiency of the existing FPB system is questionable.