

Bi-annual Environmental Monitoring Report

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Report for the period 01.10.2015-31.03.2016
April 2016

ARM: Water Supply and Sanitation Sector Project – Additional Financing

(Financed by the Asian Development Bank)

Prepared by the Armenian Water and Sewerage Closed Joint Stock Company (AWSC) for the Asian Development Bank.

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C U R R E N C Y E Q U I V A L E N T S

(As of 31 March 2016)

Currency Unit	–	dram (AMD)
AMD1.00	=	\$0.0020
\$1.00	=	AMD 480.79

A B B R E V I A T I O N S

ADB	–	Asian Development Bank
AWSC	–	Armenian Water and Sewerage Company
EMP	–	Environmental management plan
GRA	–	Government of the Republic of Armenia
SSEMP	–	Site specific EMP
IEE	–	Initial environmental examination
LSGB	–	Local Self-Government Bodies
NGO	–	Non-Governmental Organization
PAM	–	Project Administration Memorandum of January 2012
PCU	–	Project coordination unit
PDSC	–	Project Design and Supervision Consultant
PGC	–	Project governing council
PMU	–	Project management unit
PPE	–	Personal Protective Equipment
PPMS	–	Project performance management system
RA	–	Republic of Armenia
SCWS	–	State Committee of Water Systems
SPS	–	Safeguard policy statement
TA	–	Technical assistance
TOR	–	Terms of Reference
TSC	–	Technical Supervision Consultant
WSSP	–	Water Supply and Sanitation Sector Project
WSSP-AF	–	Water Supply and Sanitation Sector Project – Additional Financing

N O T E S

- (i) The fiscal year of the Government of Armenia and its agencies ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

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I. INTRODUCTION

A. Project Description

1. Impact and Outcome

1. The Water Supply and Sanitation Sector Project (Project) is aimed at improving the public health and environment for about 576,000 people living in 16 towns and about 125 villages through safe and reliable water supply and improved sewerage and sanitation facilities. Based on the submission made by the Government of the Republic of Armenia (GRA) and as appraised by the Asian Development Bank (ADB), there are approximately 18 subprojects covering towns and villages where there is an urgent need for WSS improvements. The Project will help the Government provide the required institutional and management support to the Armenia Water and Sewerage Company (AWSC) and local municipal governments to enable them to be more self-disciplined in financial, managerial, and technical aspects.

2. On the back of the likely successful implementation of the original project, the Government through the State Committee for Water Economy (SCWE) has requested ADB to support the funding of the new project and further support the Government's continued efforts in the rehabilitation and extension of the WSS systems across 10 subprojects and improvements in operational efficiency and financial management of Armenia Water and Sewerage Company (AWSC), a government-owned commercial company that is managed and operated through a management contract by an international water utility company, SAUR.

3. The new project- Water Supply and Sanitation Sector Project-Additional Financing (the Project) is included in the country operational business plan and it strongly supports the Government's objective of human development by providing better access to safe, reliable and sustainable water supply which will improve the lives of households in 18 towns and up to 92 villages in Armenia.

4. The outcome of the Project is improved access to safe, reliable, and sustainable water supply service managed on commercial principles and environmentally sound practices. The Project will focus first on optimizing the operation of existing infrastructure and maximizing the operating efficiency of WSS service providers, followed by constructing new infrastructure.

5. The Project will improve public health and environment for about 400,000 people (households and other consumers) living in 18 towns and up to 92 villages¹ through safe, reliable and sustainable water supply.

¹ The number of towns and villages may change subject to further detailed assessments.

2. Outputs

6. The Project comprises the following main components: (i) municipal infrastructure rehabilitation and improvement; and (ii) management improvement and development.

3. Municipal Infrastructure Rehabilitation and Improvement

7. Similar to the original project, the Project funds two project components which include: (i) municipal infrastructure rehabilitation and improvement; and (ii) management improvement and development which include gender features.

8. This Component will address the rehabilitation and replacement of the existing water supply infrastructure. Works will include construction of about 600 km of new mains and pipe network to connect about 110,000 new and existing households, rehabilitation of about 5 pumping and about 3 chlorination stations, 1 water treatment plants, about 15 daily regulation reservoirs as well as installation of about 20,000 water meters to commercial and domestic consumers. Further, this component will include the re-designing of the water supply systems.

9. By redesigning the overall WSS systems, this component addresses the existing problems of the systems being oversized/under-designed. It also includes updating of consumer databases, conversion of illegal connections to registered accounts, and monitoring of water quality. To demonstrate 100% water supply coverage, 100% metering, 24-hour water supply with the desired pressure, and 100% collection efficiency, the Project will select a pilot zone and concentrate resources to undertake the related actions. This will help gain the confidence of all consumers in the Project area in an efficient and strongly governed WSS system, and help the implementing agency (IA) to replicate it smoothly. Selection of the pilot zone will be based on active participation and strong commitment of the users, apart from technical considerations to isolate the zone hydraulically for the required water pressure after addressing all the water losses.

B. Environmental and Social Safeguards Framework

10. The Project has been classified as Environmental Category B and provides environmental benefits by improving sanitation and providing safe, reliable water supply to towns, villages, and communities. Initial environmental examinations (IEEs) were carried out in accordance with ADB's Safeguard Policy Statement (2009), Environmental Assessment Guidelines (2003), and Armenian environmental/social legislation and guidelines.

11. Subprojects have been classified as an Environmental Category B, IEE preliminary reports were developed for all subprojects and EMPs were developed for each packages included in subprojects. After all EMPs for each subproject were approved by ADB, the respective subproject's IEE was updated and got final approval. Sight Specific EMP (SSEMP) table have been included in each EMP.

12. The screening process carried out for the IEEs has identified local possible adverse environmental impacts likely to be caused by the Subprojects. Most potential negative impacts may occur during construction. However, they are temporary and were mitigated to acceptable levels. Effort are being be made to (i) protect the sources, (ii) minimize construction pollution and waste, and (iii) limit specific impacts related to the pipeline routes. Overall, according to the findings of the IEEs, the Subprojects were have significant positive impacts on the quality of life and environment for beneficiaries; and were ensure environmental safeguards for implementing a continuous, reliable water supply and adequate sanitation facilities.

C. Construction activities and Project Progress

13. During reporting period (01.10.2015 - 31.03.2016) one new contract has been signed. Detailed information on ongoing projects, IEE, EMP and SSEMP development, Bid opening and submission to ADB is presented in the table below.

Sub-project / Region	Project title	IEE development	Status of IEE disclosure on ADB web page	EMP development /approval	Bid opening	EMP submission date to ADB	Status of EMP disclosure on ADB web page	Contract signing	Status of construction work	Completion date	Status of PCA
Arnavir	L2860-ICB-1-01/1 Improvement of water supply systems in Oshakan, Voskevaz, Voskehat villages	30.01.2013	January 2013	11.03.2013 Rev. 10.07.2015	10.06.2013	11.03.2013	OCT-2013 Rev. 16-JUL-2015	24.07.2013	Completed	27.10.2015	May 2016
	L2860-ICB-1-01/2 Improvement of water supply systems in Amberd, Aygeshat, Dasht, Doghs, Lernamerdz, Aghavnatur villages			11.03.2013	10.06.2013	11.03.2013	OCT-2013	24.07.2013 22.06.2015	Completed	19.12.2015	June 2016
	L2860-ICB-1-01/3 Improvement of water supply systems in Musaler, Shahumyan, Shahumyan PF, Ptghunk, Norakert villages			11.03.2013	10.06.2013	11.03.2013	OCT-2013	25.07.2013	Completed	10.12.2014	July 2016
Ararat	L2860-ICB-1-02/1 Improvement of water supply systems in Vedi and Ararat towns and Banavan GMF, Ararat, Vosketap villages	21.03.2013	March 2013	19.04.2013	09.07.2013	19.04.2013	20-OCT-2014	21.08.2013	Completed	22.12.2015	May 2016
	L2860-ICB-1-02/2 Improvement of water supply systems in Masis, Burastan, Azatavan, Baghramyan, Berkanush, Dalar, Mrgavan, Shahumyan and Dimitrov villages			19.04.2013	09.07.2013	19.04.2013	20-OCT-2014	04.09.2013	Completed	04.05.2015	May 2016
	L2860-ICB-1-02/3 Improvement of water supply systems in Aygezard, Verin Artashat, Mrganush, Byuravan, Nshavan, Hovtashen, Mrgavet and reconstruction of Abovyan village external water main			19.04.2013	09.07.2013	19.04.2013	20-OCT-2014	22.08.2013	Completed	28.02.2015	August 2016

Sub-project / Region	Project title	IEE development	Status of IEE disclosure on ADB web page	EMP development / approval	Bid opening	EMP submission date to ADB	Status of EMP disclosure on ADB web page	Contract signing	Status of construction work	Completion date	
Lori	L2860-ICB-1-04/1 Improvement of water supply systems in Stepanavan town and Mets Parni village	15.04.2013 Rev. 27.10.2013	October 2013	09/07/2013	20.09.2013	09.07.2013	OCT-2013	13.11.2013	Completed	30.10.2015	April 2016
	12/08/2013			07.10.2013	12.08.2013	OCT-2013	26.11.2013	In Progress	01.07.2016		
	16/10/2013			18.12.2013	16.10.2013	OCT-2013	17.01.2014	Completed	30.12.2015	May 2016	
Kotayk	L2860-ICB-1-03 Improvement of water supply systems in Hrazdan town and Qaghsi village	17.10.2013 Rev. 05.04.2014 Rev. 14.07.2015	23-APR-2014 Rev. 05-OCT-2015	20.05.2013	09.07.2013	20.05.2013	20-OCT-2014	11.10.2013	Completed	01.04.2015	July 2016
	25.03.2014			11.04.2014	27.03.2014	23-APR-2014	18.07.2014	Completed	16.11.2015	July 2016	
	13.03.2015			-	25.03.2015	30-MAR-2015	19.08.2015	In Progress	26.03.2017		
Tavush	L2860-ICB-1-05/1 Improvement of water supply systems in Noyemberyan Town and Berdavan village	17.01.2014 Rev. 05.02.2014 14.07.2015	11-FEB-2014 16-SEP-2015	05.02.2014 Rev. 14.07.2015	17.01.2014	08.01.2014	27-JAN-2014 27-JUL-2015	03.03.2014	Completed	30.10.2015	May 2016
	L2860-ICB-1-05/ Improvement of water supply systems in Berdavan town			05.02.2014	13.03.2014	05.02.2014	11-FEB-2014	12.05.2014	Completed	07.08.2015	April 2016

Sub-project/ Region	Project title	IEE develop ment	Status of IEE discloser on ADB web page	EMP development / approval	Bid opening	EMP submission date to ADB	Status of EMP discloser on ADB web page	Contract signing	Status of constructio n work	Completion date	
Tavush	L2860-ICB-1-05/3 Improvement of water supply systems in Dilijan Town and Bagratashen, Ptghavan and Zorakan Villages	17.01.2014 Rev. 05.02.2014	11-FEB- 2014	13.03.2015 Rev. 14.07.2015	-	25.03.2015	30-MAR-2015 27-JUL-2015	24.08.2015	In Progress	31.03.2017	
Gegharkunik	L2860-ICB-1-06/1 Improvement of water supply systems in Noratus and Sarukhan villages	11.10.2013 Rev. 16.07.2014	21-JUL-2014	06/11/2013	19.12.2013	19.12.2013	13-DEC-2013	18.02.2014	Completed	16.06.2015	July 2016
	L2860-ICB-1-06/2 Improvement of water supply systems in Gavar town and Karmirgyugh village			21.01.2014	17.03.2014	22.01.2014	01-APR-2014	22.05.2014	Completed	30.11.2015	July 2016
	L2860-ICB-1-06/3 Improvement of water supply systems in Ddmashen and Gandzak villages			28/03/2014	14.05.2014	07.04.2014	23-APR-2014	13.08.2014	In Progress	09.07.2016	
	L2860-ICB-1-06/4 Improvement of water supply systems in Sevan town			01/01/2014	19.12.2013	13.01.2014	21-JAN-2014	05.02.2014	Completed	15.03.2015	June 2016
	L2860-ICB-1-06/5 Improvement of water supply systems in Lchashen, Norashen and Chkalovka villages			18/06/2014	19.08.2014	20.06.2014	02-JUL-2014	29.10.2014	In Progress	27.04.2016	
Syunik	L2860-ICB-1-07/1 Improvement of water supply systems in Goris Town and Brnakot village	18.03.2014 Rev. 07.07.2014	09-JUL-2014	21.02.2014	16.03.2014	24.02.2014	01-APR-2014	26.04.2014	Completed	25.09.2015	April 2016
	L2860-ICB-1-07/2 Improvement of water supply systems in town Meghri			15/06/2014	20.08.2014	20.06.2014	02-JUL-2014	01.12.2014	In Progress	28.05.2016	
	L2860-ICB-1-07/3 Improvement of water supply systems in Kapan town, Achanan and Syunik villages			28/03/2013	19.05.2014	11.04.2014	16-APR-2014	18.07.2014	In Progress	15.06.2016	

Sub-project / Region	Project title	IEE development	Status of IEE disclosure on ADB web page	EMP development / approval	Bid opening	EMP submission date to ADB	Status of EMP disclosure on ADB web page	Contract signing	Status of construction work	Completion date	
Vayots Dzor	L2860-ICB-1-08/1 Improvement of water supply systems in Vayk and Jermuk towns and Zaritap village	18.03.2014	21-MAR-2014	18.03.2014	11.04.2014	18/03/2014	21-MAR-2014	10.06.2014	In Progress	02.06.2016	
Aragatsotn	L2860-ICB-1-10/1 Improvement of water supply systems in Tallin town	18.10.2013 Rev 13.03.2015	30-MAR-2015	15.07.2014	03.10.2014	04.09.2014	10-SEP-2014	01.12.2014	In Progress	15.05.2016	
	L2860-ICB-1-10/2 Improvement of water supply systems in Aruch, Partizak, Nor Amanos, Arevut, Kanch, Hakko, Sorik, Karaberd Villages			16.11.2014	18.12.2014	21.11.2014	21-NOV-2014	27.03.2015	In Progress	05.06.2016	
Shirak	L2860-ICB-1-09/1 Improvement of water supply systems in Artik town and Nor Kyanq, Vardakar, Hovtashen, Geghanist and Mets Mantash Villages	17.12.2014	10.02.2015	18/03/2015	26.08.2015	23.03.2015	30-MAR-2015	02.11.2015	In Progress	30.04.2017	
	L2860-ICB-1-09/2 Improvement of water supply systems in Meghrashen, Panik and Spandaryan villages			13.03.2015	15.04.2015	23.03.2015	30-MAR-2015	05.08.2015	In Progress	7.03.2017	

D. Changes in project organization and Environmental management team

14. No changes have been made in Environmental Team of AWSC for last half year. Environmental specialists in Project Design and Supervision Consultant's JV (hereinafter Consultant / PDSC) team were responsible for IEE, EMP and SSEMP development as well as for field visit and environmental monitoring. No changes have been made in the Consultants' environmental teams as well.

E. Relationships with Contractors, owner, lender, etc.

15. One new contract has been signed with Contractor during reporting period. Dates of signing are in the table above. Site engineers of Contractors are responsible for health and safety and environmental supervision during construction works. During the Reporting period EMP and SSEMP mitigation measures explanation meeting has been held for the new Contractors site engineers as well as for technical supervision team. Importance of environmental [mitigation measures](#) ([Appendix 2](#)) included in site specific Environmental Management Plans has been explained during site visits as well. Photos taken at construction sites ([Figure 1](#)) and field visit checklist are attached as an Appendices ([Appendix 1](#) and [Appendix 3](#)). Workshop ([Figure 2](#)) for Consultant's Environmental specialist, Technical supervisors and Contractors' engineers was organized at AWSC on 23rd of October, 2015, to present and discuss issues related to the improvement of Environmental monitoring, environmental impact mitigation measures and workers Occupational Health & Safety compliance with EMP requirements. They were instructed to disseminate provided information among workers and responsible employees working at construction sites.

II. ENVIRONMENTAL MONITORING

16. **AWSC**, through its **PMU**, carries overall responsibility for environmental compliance of works performed under the WSS Project – Additional financing and to meet this responsibility provides environmental supervision of the project implementation. PDSC is in charge to provide technical supervision of works, including environmental supervision. AWSC's PMU environmental specialist oversees performance of the PDSC/TSC for the purpose of quality assurance, which implies review of TSC's monthly reports and validation of the provided information through periodic field visits of AWSC's environmental specialist.

17. According to the Framework Initial Environmental Examination Report, developed for the Project and disclosed to ADB web page, new baseline monitoring is not required for the Project.

18. Field visit checklist ([Appendix 3](#)) is used for monitoring of the projects in progress. Environmental impact mitigation measures implementation strongly supervised for all abovementioned contracts during construction implementation period. No serious omissions or violations of environmental standards and norms have been identified. Within the reporting period of implementing the construction works accidents and incidents weren't registered, cultural values have not been revealed or damaged. During the reporting period, the environmental supervision visits revealed some non-

compliance related to the removal of construction wastes and absence of traffic warning signs or improper installation of traffic signs. Those non-compliances are not permanent but from time to time such omissions are existing. The contractors were instructed to undertake relevant measures, particularly keep clean the construction sites and reinstallation of the traffic signs logically and based on traffic requirements. The technical supervisors and environmental specialist notified the heads of Contractor companies requiring the elimination all the defects within a short period of time. It should be mentioned that during the reporting period complaints from beneficiaries about the construction activities have not been registered. At the same time the beneficiaries are not indifferent and sometimes initiate minor changes such as reconstruction of entry lines for making private access more comfortable which are properly addressed by contractor and designer.

19. Implementation of the SSEMP is continuously monitored by inspection on and ongoing basis by the PDSC and audited by the PMU Environmental and Social impact Specialist. On-going environmental monitoring helps construction companies to demonstrate ultimate responsibility for occupational health and safety issues as well as take environmental mitigation measures in due time. The PDSC strictly followed the environmental mitigation measures prescribed in the EMP and SSEMP. According to EMP requirements, a Notice on the failure to implement measures prescribed by the PDSC should be sent to the Contractor in written. After the Notice to Correct, the next recorded violation would trigger charging of liquidated damages in the amount of 0.1% of the total value of the contract. The liquidated damages do not relieve the Contractor from remedying the violation. In case of three liquidated damages the Contract could be terminated unilaterally. For this reporting period, no Notice on the failure was issued.

20. A few state agencies (stated below), authorized to carry out monitoring of respective thematic aspects relating WSSP-AF at its construction and operation phases, had random monitoring visits. In case of violation, we are kept informed. No violations had been recorded in this reporting period.

- **Local self-governance bodies**
- **State Environmental Inspectorate** of the RA Ministry of Nature Protection, in case of discharges and emissions.
- **Public Health State Inspectorate** under the Ministry of Healthcare, RA

III. Grievance Redress Mechanisms

During reporting period, complaints from Kapan was addressed directly to ADB office (to Mr. Dole) by Kapan-based “Regional Monitoring Institute” NGO (29.09.2015) at the same time publishing complaint-letter on environmental website www.ecolur.org. The NGO claimed that “...funds provided for the improvement of the Kapan water supply system are utilized inefficiently”. The NGO misinterpreted public awareness campaign discussions for public hearings and discussions, thus expecting its performance according to the law

requirements. Actually, the NGO representatives capitalizing on the phrase «public discussion», associated it with the term “public notice, discussions and hearings”. On 20.10.2015 the consultant (HGSN) who was responsible for public awareness campaign provided explanation and “blamed” local municipality who informed local parties about the meeting non-relevantly and the same day and therefore raised reasonable concerns of NGOs.

Then, the same NGO, with other complains continued sending letters to ADB to Mr. Llorens (19.11.2015). Particularly, the NGO mentioned, that “...*The procedures set by law were not kept while realizing the improvement project of Kapan water supply chain which resulted violation of the norms of public rights. ...the failure of the Environmental Impact Assessment necessary for the implementation of the project, as well as the failure to properly organize public hearings, which led to the failure of the overall project...*”.

The Consultant (HGSN) responsible for ensuring environmental compliance of the project answer letter sent to ADB and published an article (08.12.2015) to disprove the inexactitudes presented in the letter sent by “Regional Monitoring Institute” NGO. The detailed answer described what was done and according to what regulations and requirement of RoA laws and ADB documents.

In addition, Mr. Cesar Llorens Alvarez, Deputy Country Director of ADB Armenia answered (04.12.2015 and 18.01.2016) explained in his letter the details of law requirements which was followed adequately. Also, Mr. Llorens agreed that “... *the main goal of project is infrastructure rehabilitation and improvement. ...The project activities are not subject to environmental expertise*”.

Finally, the NGO got the comprehensive clarification and stopped raising non-relevant and non-adequate questions.

IV. ENVIRONMENTAL MANAGEMENT

21. IEE and SSEMP have been developed for all abovementioned projects (see table above). Dates of submission of all environmental documentation are in the table. All documents were disclosed on ADB and AWSC official web sites: <http://www.adb.org/> and <http://www.armwater.am/en/current-activities.html>. At AWSC website disclosed documents are in two languages (Armenian and English).

22. In the reporting period construction works continued. Sixteen packages have already completed in total with 11 urban and 47 rural communities. Site inspections and random visits have been organized during construction period. Average number of visits is twice per quarter to each construction site. The compliance of environmental impact mitigation measures during construction works has been supervised by the Environmental specialists of PDSC and ESIS of AWSC’s PMU.

23. In general, during ESIS’s site visits, no negative environmental impact was registered. Some omissions and negligence on safety was identified during random visits. Verbal notifications have been provided to Contractors and Technical Supervisors. During meetings with Contractors issues on mandatory implementation of environmental impact and safety mitigation measures were discussed.

24. QPRs were sent to ADB on time. Separate part of Safeguard Compliance is detailed all issues concerning EMP development and environmental impact mitigation measures implementation, public participation component, resettlement and gender points.

25. During the reporting period (October 30 - November 3, 2015) within the framework of annual environmental mission of ADB project senior environmental specialist of ADB, Mrs. Phuong and National environmental consultant Mrs. A. Yedigaryan paid visits to some construction sites: Kapan town, Charentsavan town, Panik village, Meghrashen village (see [Figure 3](#)).

The required norms of the project were presented by HGSN LLC technical supervisors in the visited sites. The norms were maintained almost in all construction sites. All the sites of Kapan town and Meghrashen and Panik villages were evaluated positively. Some shortcomings were registered only in Charentsavan town (improper installation of traffic signs, absence of breathing masks). All the technical supervisors and contractors were duly informed about the omissions revealed during the ADB mission to pay special attention to these issues during future technical supervision and environmental monitoring visits.

In particular, some omissions in Charentsavan town revealed during the mission visit are as follows:

- The Mission requested that necessary signboard with project information and appropriate traffic safety signage be placed in right places.
- Additional PPE (masks) is needed for workers.
- The Mission requested PIU, with assistance from the ADB's national environmental consultant, to work on improving working relationship between the environmental specialist and site engineers of DSC, given the fact that the only environmental specialist cannot be available for day-to-day site inspection in every package.
- The Mission requested a post-construction environmental audit be conducted by DSC after full completion of each package and provided an example of audit checklist.

Annual environmental audit was generally evaluated as positive.

ADB provided checklist for post-construction environmental audit ([Appendix 6](#)). It is planned to conduct PCA from April 2016, completing one checklist for each package included in Subprojects. By the end of March, 2016, in total 16 subprojects were completed and ready to pass post-construction environmental audit.

Appendix 1: Photos

Figure 1: Improvement of water supply systems in Armenia



Kapan town, safety traffic measures



Nor Amanos village, existence of safety road signs



Meghrashen village, plugged pipes



Panik village, working cloths



Tsaghkadzor town, final appearance of the DRR



Meghri town, information board



Talin town, newly built chlorine plant



Gavar town, asphalted trench

Figure 2: Workshop at AWSC on environmental impact mitigation measures and workers Occupational Health & Safety compliance



Figure 3: ADB senior environmental specialist's visit within the framework of annual mission of ADB project



Appendix 2: Implementation report on EMP/SSEMP Mitigation Measures

Works and possible impact	Proposed mitigation measures	Monitoring	Responsible authorities	Comments
1. Air pollution, noise, disturbance and heavy traffic of motor roads and pedestrian roads				
Dust and noise occurred during the construction works	<ul style="list-style-type: none"> - Install fencing around construction site - regularly water the construction site and roads, - limit night work in residential areas, - Avoid usage of machines/equipment with extra noise; installation of silencers if needed 	Everyday inspection of the area	Construction Contractor, Supervisor, PMU	<ul style="list-style-type: none"> - The construction site is fenced, - Spraying of the construction site is implemented from time to time, - Works are carried out in specified working hours
Disturbance to the population caused by the heavy traffic of the roads	<ul style="list-style-type: none"> - Provide safe area for trucks, - Prevention from firing and accumulating the household waste in the construction site, - Construction implementation according to phases and time schedule providing the population proper information about the works, - Provide corresponding road signs, barricades, organize bypasses, parking - Provide adequate lighting for the construction site, if necessary, - Proper lighting in suitable places where passers-by or entry by public is likely, - Provision of the community participation in the works of the subproject which will reduce the disturbance to the community caused by the construction works. 	Everyday inspection of the area	Construction Contractor, Supervisor, PMU, LSGB	<ul style="list-style-type: none"> - Special storage areas were rented for technical equipment, - Soil and the construction waste were transported to special areas, - Population awareness is carried out according to the working schedule (organization of meetings and public hearings, provision of information sheets), - There exist road signs and safety tapes, temporary bypassing roads were constructed in some sections, - Information sheets are placed in construction sites

2. Disturbance and the pollution of the environment

Soil erosion and land slide	<ul style="list-style-type: none"> - Implementation measures to keep the inclinations in the slope areas of pipe laying to prevent earth erosion and land slide. - Reducing of trenches of waterlines, as well as the period of leaving open the pits for regulation and water metering nodes, 	Everyday inspection of tech. service phases of the construction and contract	Construction Contractor, Supervisor, PMU	- Backfill was carried out in trenches of the pipeline and water metering wells according to the time schedule
Damage of the fertile layer of the land, degradation of landscape	<ul style="list-style-type: none"> - Storage of the earth layer in the area intended for that purpose for the further usage of rehabilitation, - Rehabilitate disturbed surfaces/ landscape as soon as possible after completion of construction activity, according to the design 		Construction Contractor, Supervisor, PMU, LSGB	- Storage of the earth layer in the areas intended for that purpose (see point 3).
Pollution of the construction site with the construction waste	<ul style="list-style-type: none"> - Remove construction waste to corresponding landfill of the community, having in advance a contract agreement with the community heads or landfill operators, - Repair of damaged surfaces as soon as possible according to the design after the construction works, 	Inspection of the implemented required measures after the implementation of construction works	Construction Contractor, Supervisor, PMU, LSGB	- written agreement for the transportation of the construction waste to special areas was acquired from LSGBs.
Pollution of the earth and water resources with fuel materials and lubricants	<ul style="list-style-type: none"> - Storage of fuel materials and lubricants on the isolated/sealed surface in the areas far from the earth and water resources, - For collection of used lubricants special containers are foreseen to be used, which will be equipped with leakage collection system 	Everyday inspection of construction phases	Construction Contractor, Supervisor, PMU	- Special areas were rented for the storage of fuel and lubricants

Contamination of water and land resources with chlorine	<ul style="list-style-type: none"> - Organization of the rinsing and disinfection of water supply distribution network with chlorine according to the corresponding calculations and technological conditions - After rinse of pipes the realization of the chlorine outflow into the water object or land area according to the established procedures and calculations. 	Control over the realization of the required measures after implementation of construction works	Construction Contractor, Supervisor, PMU	These measures are not applicable for this period
3. Sanitation and Safety				
Threats to the population and constructors	<ul style="list-style-type: none"> - To fence the construction site, - To control the access of unauthorized persons into the construction site, - Place warning signs in dangerous places - To realize periodic tests of the equipment with the help of qualified employees, as well as periodic security audits, - Organize First Aid Safety Training for construction staff 	Daily observation in construction phases. Monthly observation of accident reports and protests.	Construction Contractor, Supervisor, PMU, inhabitants	<ul style="list-style-type: none"> - The construction site is fenced, warning signs are installed - Periodic observation of the equipments is realized

Appendix 3: Field Visits Checklist

Mitigation implemented:

“Yes” = mitigation program has been implemented,

“No”= the mitigation

“N/A” = not applicable program has not been implemented

<u>General information</u>	DD/MM/YY				Corrective Action Request
	Subproject				
	Location				
	Constriction contractor				
	Marz				
	Community				
<u>1. Design</u>					
Required permissions	1.1 EEC	Yes	No	N/A	
	1.2 / written consent on land acquisition	Yes	No	N/A	
	1.3 Assessment of impact on cultural heritage	Yes	No	N/A	
<u>2. Construction</u>					
Required permissions	2.1 written consent on disposal of construction waste	Yes	No	N/A	
	2.2 Contractor holds license for extraction of natural resources	Yes	No	N/A	
	2.3 Contractor holds permit for operating concrete/asphalt plant	Yes	No	N/A	
	2.4 written consent in case of sudden discovery of cultural heritage	Yes	No	N/A	
<u>3. Public awareness</u>					
	3.1 Is the awareness of population done by relevant notification regarding construction works according to the project design?	Yes	No	N/A	
	3.2 Is there community's participation in construction works according to the project design?	Yes	No	N/A	
	3.3 Are there notes providing proper operation of grievance redress mechanism according to the project design (contacts of responsible person/company)?	Yes	No	N/A	

	3.4 The complaint stated in the Grievance Log was resolved in reasonable time period.	Yes	No	N/A	
<u>4. Safety</u>					
Safety of workers	4.1 Did workers receive safety training before starting work - site induction? Is there a journal?	Yes	No	N/A	
	4.2 Are safety uniforms available (eg. vests, helmets, high boots, gloves, glasses, mask)?	Yes	No	N/A	
	4.3 Are there bridges installed over the trenches in residential areas (particularly the areas actively used by pedestrians)?	Yes	No	N/A	
	4.4 Do workers dealing with hazardous materials wear special protective uniform?	Yes	No	N/A	
	4.5 Are equipment fitted with effective silencers?	Yes	No	N/A	
	4.6 Do workers in the vicinity of sources of high noise use ear-protection gear?	Yes	No	N/A	
	4.7 Are regular studies of equipment used for construction for safety matter?	Yes	No	N/A	
	4.8 Is first aid kit available at the construction sites/ camps?	Yes	No	N/A	
	4.9 Have First aid training organized for construction staff?	Yes	No	N/A	
	4.10 Are fire-resistant measures available on construction sites/ camps (fireproof shield, fire extinguisher, existence of tools/equipment, sand, etc.)?	Yes	No	N/A	
	4.11 Has an incident (if any) report form been filled up after the last oversight?	Yes	No	N/A	
Safety of population	4.12 Are there road signs or fences installed, as well as bypass organized during interrupted or limited traffic?	Yes	No	N/A	
	4.13 Are there provided adequate street lighting, as well as proper signage and lighting in suitable places when passers-by or entry by public is likely?	Yes	No	N/A	
<u>5. Management measures during construction</u>					
Operation on area/construction site	5.1 Is there available safe place at the construction site for vehicles?	Yes	No	N/A	
	5.2 Are there available storage for oils and lubricants at the appropriate part of the construction site?	Yes	No	N/A	
	5.3 Is construction site/camp properly placed (ex. fencing, dressing room, etc.)?	Yes	No	N/A	
	5.4 Is mobile toilet available at the construction sites/ camps?	Yes	No	N/A	

	5.5 Are construction machinery and equipment in order (prevention of leakage of fuel, oil, lubricants, etc.)?	Yes	No	N/A	
	5.6 Are excavated and demolished materials and construction waste timely removed from the places of preliminary accumulation and disposed to initially planned and agreed places?	Yes	No	N/A	
	5.7 Are workers at the construction site provided with proper sanitary and hygienic conditions?	Yes	No	N/A	
	5.8 Is use of fertile lands or other environmentally sensitive areas located outside the easement zone and other than the areas envisaged in design for establishment of construction sites/camps and waste temporary accumulation sites during construction works overseen?	Yes	No	N/A	
	5.9 Do endemic species of flora and fauna exist in the area of construction site?	Yes	No	N/A	
<u>6. Temporary air pollution/dust</u>					
	6.1 Are they using cover for the vehicles transporting construction waste?	Yes	No	N/A	
	6.2 Are they moisturizing of the construction site by water?	Yes	No	N/A	
<u>7. Soil erosion</u>					
	7.1 Are there soil erosion prevention measures at the slope places according to the project design?	Yes	No	N/A	
	7.2 Was the backfill of pits done timely?	Yes	No	N/A	
	7.3 Is the vegetative soil moved and stored according to the project design?	Yes	No	N/A	
	7.4 Is the damaged surface restored/ repaired/developed after completion of construction works? (Pay special attention to the vegetative soil)	Yes	No	N/A	
<u>8. Water pollution</u>					
	8.1 Is it provides the water is not polluted with fuel and lubricants?	Yes	No	N/A	
	8.2 Is there leakage of chlorine after wash up of the pipes according to the scheduled regime?	Yes	No	N/A	
	8.3 Vehicles and machinery are washed away from natural water bodies in the way preventing direct discharge of runoff into the water bodies	Yes	No	N/A	

<u>9. Noise close to settlements</u>					
	9.1 Are the works implemented during working hours, otherwise in projected manner?	Yes	No	N/A	
<u>10. Construction west disposal</u>					
	10.1 Is transportation and disposal of construction and consumer waste done in appropriate community landfill?	Yes	No	N/A	
<u>11. Operation</u>					
Drinking water pollution	11.1 Is the quantity of residual chlorine in compliance with the standards of potable water quality?	Yes	No	N/A	

Other remarks/ clarifications

Appendix 3.1: Field Visits Checklist for November 2015

General information	DD/MM/YY	01.11-30.11.2015			Corrective Action Request
	Subproject	III.3;IV.2;V.3;VI.3;VI.5; VII.2, VII.3; VIII.1; IX.2; X.1; X.2			
	Location	Lori – 3 settlements Kotayk - 2 settlements Tavush - 4 settlements Gegharkunik - 5 settlement Syunik - 4 settlements Vayots dzor - 3 settlement Aragatsotn – 9 settlement Shirak – 3 settlement			
	Construction contractor	III.2 – “Agat 777” LLC IV.3 - “Agat 777” LLC V.3 - „Gaskomshin“ LLC - “SHMSH-23” OJSC consortium VI.3-“Agat 777” LLC VI.5 “Gaskomshin“ LLC - “Baghramyanshin“ OJSC consortium VII.2- “Meghri TSHSHD” LLC VII.3-“Kapan RCO” LLC- “Ararat Janshin” LLC consortium VIII.1- “SHMSH-23” OJSC IX.2 – “AraratChanShin” LLC X.1 –“Baghramyanshin” OJSC X.2 – “Evropa” LLC- “Artezia” LLC consortium			
	Marz	Lori, Kotayk, Tavush, Gegharkunik, Syunik, Vayots Dzor, Aragatsotn, Shirak			
Community	7 urban and 27 rural communities				
<u>1. Design</u>					
Required permissions	1.1 EEC	Yes	No	<u>N/A</u>	
	1.2 written consent on land acquisition	Yes	No	<u>N/A</u>	
	1.3 assessment of impact on cultural heritage	Yes	No	<u>N/A</u>	
<u>2. Construction</u>					
Required permissions	2.1 written consent on disposal of construction waste	Yes	No	<u>N/A</u>	
	2.2 Contractor holds license for extraction of natural resources	Yes	No	<u>N/A</u>	
	2.3 Contractor holds permit for operating concrete/asphalt plant	Yes	No	<u>N/A</u>	
	2.4 written consent in case of sudden discovery of cultural heritage	Yes	No	<u>N/A</u>	
<u>3. Public awareness</u>					
	3.1 Is the awareness of population done by relevant notification regarding construction works according to the project design?	Yes	No	<u>N/A</u>	

	3.2 Is there community's participation in construction works according to the project design?	<u>Yes</u>	No	N/A	
	3.3 Are there notes providing proper operation of grievance redress mechanism according to the project design (contacts of responsible person/company)?	<u>Yes</u>	No	N/A	
	3.4 The complaint stated in the Grievance Log was resolved in reasonable time period.	Yes	<u>No</u>	N/A	There were not any complaint
<u>4. Safety</u>					
Safety of workers	4.1 Did workers receive safety training before starting work - site induction? Is there journal?	<u>Yes</u>	No	N/A	
	4.2 Are safety uniforms available (eg. vests, helmets, high boots, gloves, glasses, mask)?	<u>Yes</u>	No	N/A	
	4.3 Are there installed bridges on the trenches in residential areas (particularly the areas used by pedestrians intensively)?	<u>Yes</u>	No	N/A	
	4.4 Do workers dealing with hazardous materials wear special protective uniform?	Yes	No	<u>N/A</u>	
	4.5 Are equipment fitted with effective silencers?	<u>Yes</u>	No	N/A	
	4.6 Do workers in the vicinity of sources of high noise use ear-protection gear?	<u>Yes</u>	No	N/A	
	4.7 Are technical means used for construction regularly examined for safety matter?	<u>Yes</u>	No	N/A	
	4.8 Is first aid kit available at the construction sites/ camps?	<u>Yes</u>	No	N/A	
	4.9 Has First aid training been organized for the construction staff?	<u>Yes</u>	No	N/A	
	4.10 Are fireproof means available on construction sites/ camps (fireproof shield, fire extinguisher, existence of tools/equipment, sand, etc.)?	<u>Yes</u>	No	N/A	
	4.11 Has an incident (if any) report form been filled up after the last oversight?	Yes	<u>No</u>	N/A	
Safety of population	4.12 Are there installed road signs or fences, as well as organized bypass during interrupted or limited traffic?	Yes	<u>No, partial</u>	N/A	
	4.13 Is there adequate street lighting provided, as well as proper signage and lighting in suitable places when passers-by or entry by public is likely?	<u>Yes</u>	No	N/A	
<u>5. Management measures during construction</u>					
Operation on area/constructi on site	5.1 Is there s safe place on the construction site for vehicles?	<u>Yes</u>	No	N/A	
	5.2 Is there available storage for oils and lubricants at the appropriate part of the construction site?	<u>Yes</u>	No	N/A	

	5.3 Is construction site/camp properly equipped (ex. fencing, dressing room, etc.)?	<u>Yes</u>	No	N/A	
	5.4 Is mobile toilet available at the construction sites/camps?	<u>Yes</u>	No	N/A	
	5.5 Are construction machinery and equipment in order (prevention of leakage of fuel, oil, lubricants, etc.)?	<u>Yes</u>	No	N/A	
	5.6 Are excavated and demolished materials and construction waste timely removed from the places of preliminary accumulation and disposed to initially planned and agreed places?	<u>Yes</u>	No	N/A	
	5.7 Are workers at the construction site provided with proper sanitary and hygienic conditions?	<u>Yes</u>	No	N/A	
	5.8 Is use of fertile lands or other environmentally sensitive areas located outside the easement zone and other than the areas envisaged in design for establishment of construction sites/camps and waste temporary accumulation sites during construction works overseen?	<u>Yes</u>	No	N/A	
	5.9 Are endemic species of flora and fauna under protection on the construction site?	<u>Yes</u>	No	N/A	
<u>6 Temporary air pollution/dust</u>					
	6.1 Are they using cover for the vehicles transporting construction waste?	<u>Yes</u>	No	N/A	
	6.2 Are they moisturizing the construction site by water?	<u>Yes</u>	No	N/A	
<u>7. Soil erosion</u>					
	7.1 Are there soil erosion prevention measures at the slope places according to the project design?	<u>Yes</u>	No	N/A	
	7.2 Is the backfill of pits done timely?	<u>Yes</u>	No	N/A	
	7.3 Is the top soil hauled and stored according to the project design?	<u>Yes</u>	No	N/A	
	7.4 Is the damaged surface restored/ repaired/developed after completion of construction works? (Pay special attention to the top soil)	<u>Yes</u>	No	N/A	
<u>8. Water pollution</u>					
	8.1 Is water protected from being polluted with fuel and lubricants?	<u>Yes</u>	No	N/A	
	8.2 Does the chlorine outflow after pipe washing meet the design regime?	<u>Yes</u>	No	<u>N/A</u>	
	8.3 Are vehicles and machinery washed far away from natural water bodies so that prevent direct discharge of runoff into the water bodies	<u>Yes</u>	No	N/A	

<u>9. Noise close to settlements</u>					
	9.1 Are the works implemented during working hours, otherwise in established order?	<u>Yes</u>	No	N/A	
<u>10. Construction waste disposal</u>					
	10.1 Are construction and consumer wastes disposed on the appropriate community landfill?	<u>Yes</u>	No	N/A	
<u>11. Operation</u>					
Drinking water pollution	11.1 Is the residual chlorine amount in compliance with the standards of potable water quality?	Yes	No	<u>N/A</u>	

Appendix 4: Action plan for the reporting period from April-September, 2016

#	Activity	Scheduled period of time	Responsible body
1.	Consultancy provided to Contractor's environmental team on ADB Safeguard Policy Statement	April 2016	PMU and Consultant
2.	Consultancy provided to Contractor's environmental team on the Armenian Environmental legislation requirements	April 2016	PMU and Consultant
3.	Monitor the Contractor's construction works to ensure the compliance with EMP and SSEMP requirements	Every month during April –September, 2016	Consultant and PMU
4.	Improve working relationship between the environmental specialist and site engineers of DSC. Frequent meetings, workshops and consultation with site engineers and technical supervisors who are responsible for day-to-day site inspection in every package.	Every month during April –September, 2016	Consultant and PMU
5.	Review the outputs of the construction monitoring program with regard to measurement of dust, noise, water quality and vibration.	Every month during April –September, 2016	PMU
6.	The post-construction environmental audit will be conducted by DSC after full completion of each package, using an example of audit checklist provided by ADB environmental national consultant. By the end of March, 2016 in total 17 packages were completed.	April –September, 2016	Consultant and PMU
7.	Other routine issues like unscheduled site visits, follow up of the detected defects, environmental assessment of re-designs, etc.	Upon the need	PMU
8.	Reporting on environmental safeguards	Monthly, Bi-annual	PMU and Consultant

Appendix 5: List of registered non-compliances in the construction sites and the Corrective Actions (as of 31 Martch, 2016)

#	Date Of Site Visit/ Request	Requested Corrective Actions	Date Of Corrective Actions	Taken Corrective Actions	Project Number/Location Of The Construction Site (Marz/Community)
1	07.10.15	Absence of information board	12.10.15	After the notice correspondent information boards have been installed.	L2860-ICB-1-04/2 Kotayk/Charentsavan
2	14.10.15	Removal of construction wastes,	19.10.15	After the notice the the construction site was cleaned from construction wastes	L2860-ICB-1-03/1 Lori/ Mets Parni
3	02.11.15	Improper installation of traffic signs	02.11.15	Immediately after the verbal notice the installation of traffic signs have been improved.	L2860-ICB-1-04/2 Kotayk/ Charentsavan
4	10.11.15	Absence of traffic warning signs	13.11.15	After the notice the traffic signs have been installed	L2860-ICB-1-03/3 Lori/Alaverdi

Appendix 6: Post-Construction Environmental Audit Checklist

Subproject: _____ Site: _____

Date: _____

No.	Activity	Impacts	Measure/s suggested as per	Check	Measures Implemented
1	Project site vegetation rehabilitation (re-vegetation)	Change of land cover, erosion resulting from the construction activities	Plantation and vegetation measures (trees, grass etc.) Proper landscaping with drainage		
2	Demolishing old buildings	Exposure to Asbestos dust causes cancer, Accumulation of salvaged materials from removed buildings	Asbestos containing roofing materials not broken, removed in sealed packages and disposed in designated sites (under control of PIU and supervision consultant) Other construction debris removed		
3	Oil management	Equipment and machinery repairing	Avoid oil spill to open soil. Repair works to be taken on concrete cover area.		
4	Waste management	Waste accumulation, air and soil pollution	Collect and disposal all wastes including construction debris at designated location; Scrap metals properly stored to be sent to designated organization for recycling Dumping sites restored and submitted officially to local communities		
	Top soil management	Erosion of soil	Storing and managing removed topsoil for re-use for landscaping activities or according RA legislation		
5	Remove disabled equipment	Housekeeping matters	Contractor equipment and machinery removed;		
6	Road reinstatement	Road damages causing pollution, traffic disturbance and accidents	Streets with installed network reinstated to pre-construction or better conditions, Trees replanted as needed Access road reinstated to pre-construction or better conditions		
7	Borrow sites and quarries	Land slide, soil erosion, change in riverbed and landscape, accidents	Borrow sites and quarries restored		
8	Existing Infrastructure facilities	Damage or disturbance to existing services (supply of electricity, water, gas, telecom etc.)	Reinstatement to pre-construction conditions or proper relocation, to be certified by the service companies		
9	Camp site facilities	Residual pollution and disturbance to the localities	All temporary/field plants (asphalt, crushing, etc.) have been dismantled and removed. Permanently operating plants (asphalt, concrete, crushing, etc.) have been properly handled and closed/surrendered. All temporary facilities removed and cleaned up		
	GRM (Grievance Redress Mechanism)	Unresolved complaints from Affected People	All grievances have been solved and AP's satisfied		
	Others...				

Photos: