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Armenia: Strengthening Sector Management Capacity in Road and Water Sectors (Financed by the Asian Development Bank's Technical Assistance Special Fund)

Prepared by AARC Ltd.

For Ministry of Finance
Ministry of Transport and Communication, State Committee on Water Economy, and
Public Services Regulatory Commission

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TA-8710 ARM: Strengthening Sector Management Capacity in Road and Water Sectors

Project Final Report

AARC

AARC Ltd
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Abbreviations and Acronyms

ADB	Asian Development Bank
ARD	Armenian Roads Directorate
BAU	Business As Usual
CES	Consulting Engineers Salzgitter GmbH
DHI	DH Infrastructure
DMF	Design & Monitoring Framework
EBRD	European Bank for Reconstruction & Development
EIRRs	Economic Internal Rate of Return
FFM	Fact-Finding Mission
FS	Feasibility Study
GDP	Gross Domestic Product
GoA	Government of Armenia
GIS	Geographic Information System
IA	Internal Audit
IRI	International Roughness Index
ISSP	Infrastructure Sustainability Support Program
IWRM	Integrated Water Resource Management
KPIs	Key Performance Indicators
LRNIP	Lifeline Road Network Improvement Project
MCA	Multi-criteria analysis
MNP	Ministry of Nature Protection
MoF	Ministry of Finance
MoTC	Ministry of Transport and Communications
MTEF	Medium Term and Expenditure Framework
NPV	Net present value
NRW	Non-Revenue Water
NWE	National Water Engineer
PFM	Public Financial Management
PIU	Project Implementation Unit
PPP	Public Private Partnership
PSRC	Public Services Regulatory Commission
RAMS	Roads Asset Management System
RBMPs	River Basin Management Plans
RVS	Road Video Survey
SCWE	State Committee for Water Economy
TA	Technical Assistance
WE	Water Engineer
WSSD	Water Sector Strategy Document
WST	Water Sector Team

Executive Summary

This executive summary provides an overview of the accomplishments of the TA 8710- Strengthening Capacity in the Water and Roads Sector, of the Infrastructure Sustainability Support Program (ISSP) of the ADB support to the Government of Armenia. It highlights the main achievements of the project, as well as some recommendations for next steps. More extensive description and discussions of these accomplishments within the Design and Monitoring Framework are provided in the later sections of this Draft Final Report.

Water Sector

The following activities and accomplishments were achieved during this project:

DMF 4.7: Asset register protocol approved under State Committee for Water Economy (SCWE) resolution #37-A dated April 2, 2015. This was then translated into Armenian. Design and Monitoring Framework (DMF) condition 4.7 met. Asset data imported from 5 operators into a new Asset Registry software. Hayk Yeritsian (Local Data & Systems Management Specialist) can still provide hands-on training to SCWE staff in use of the new asset register system. The main problem is the lack of staff at SCWE to receive such training, as a replacement for the staff member dealing with asset management (who left SCWE in December 2014) is not yet in place. Providing such a unit is a priority recommendation for further development (see section 2.9).

DMF 1.4: Water Sector Strategy Document (WSSD) full report, 7 annexes (including a detailed Financing Plan) and 11 appendices submitted to SCWE in English on 11 May and Armenian on 20 May, respectively, with Annexes 6 and 7 submitted in English and Armenian on 8 June. Financial model submitted in English and presented to SCWE on 15 April and translated into Armenian in August.

Workshop successfully held on 2 June. This prompted good discussions that raised issues which the Water Sector Team (WST) were able to answer adequately. SCWE considers that this constituted their main public consultation on the draft strategy and that there was broad agreement to it, its main findings and proposed way forward. In his concluding comments at the workshop, Gagik Khachatryan said that he wanted a shorter version for circulation within Government of Armenia (GoA) and submission for GoA approval. Accordingly, WST prepared this shorter version (in English and Armenian) which SCWE then submitted for GoA approval.

By the end of their final mission (on 13 June), WST completed work on this shorter version. We finalized during week ending 19 June the English and Armenian version of all the strategy documents in the light of comments made at the workshop and in subsequent meetings. After the end of this final mission, SCWE had many further comments as they submitted the WSSD for GoA approval. The WST addressed these comments prior to GoA approving the WSSD on 13 August. This was posted on the GoA website on 30 August. Changes in the final approved Armenian version were then incorporated into the final English version of the short WSSD and supporting annexes. All final WSSD documents were then submitted to ADB.

DMF 1.5: On May 21, GoA approved the package of legislative amendments on the functional review of water sector responsible bodies, in particular SCWE and Public Services Regulatory Commission (PSRC). According to the package PSRC will provide licenses instead of water use permits; the enforcement tools application of penalties and the suspension/termination powers regarding licenses are strengthened. By this amendment PSRC will be authorized to issue the water and wastewater rules and approve the model contracts with the customers. The package was considered as urgent and submitted to Parliament. The legislative package for the functional review was approved by Parliament in early-July and the legal amendments were signed by the President on 16 July 2015.

WST received extensive comments on the draft Legal Action Plan in Table 3.2 of the full WSSD. Consequently this action plan was considerably streamlined in the final short version of the WSSD that was approved on 13 August. ADB has agreed with SCWE to mobilize additional technical assistance (TA) to support GoA in meeting this Action Plan. In particular, this TA will study the required improvements to the legal acts relevant to Wastewater/Sanitation and the regulatory issues for non-grid communities, and will prepare drafts of the required improvements.

Roads Sector

The TA consultants' inputs are complete and no further policy outputs are required. Recommendations for improving road maintenance activities are shown in section 3.10. The following paragraphs summarize the concluding positions on all relevant policy conditions.

DMF output 2 reads: strategies and processes to be developed to allocate investments more efficiently. Two TA outputs are related to this: the road maintenance financing strategy (DMF condition 2.1) and validation of road maintenance expenditure by the roads council (condition 2.2). A government decree (no 873-N, dated 25 June 2015) confirmed approval of the road maintenance financing strategy.

The approach to meeting condition 2.2 was to generate a table showing the approved 2015 rehabilitation program, together with the rationale for each road section and any relevant information (traffic, roughness, when last rehabilitated etc.). The roads council was to confirm the rationale in writing; this confirmation met condition 2.2. A letter from the first deputy minister (ref 02/17.1/7435-15, dated 30 June 2015) to ADB included a protocol of a roads council session on 26 May. This satisfied the condition.

DMF output 4 reads: monitoring systems strengthened. The policy conditions under this output are intended to support achievement of condition 2.2. There are three TA outputs related to this:

- 4.1: video inventory of entire network by May 2015. The TA consultants confirmed to ADB that this condition was met and a CD/DVD with screenshots of each road section has been given to ADB except for about 500 km (either withheld for security reasons or not processed because weather prevented access)

- 4.4: Roads Asset Management System (RAMS) (including video inventory) to be adopted by Nov 2014. This condition was partially met. Delays in procuring hardware and software for a RAMS has meant allocating expenditure using this new equipment will not be possible before the budget for 2017. However, the government was able to improve its current RAMS by using new tools, techniques and equipment provided under this TA. Specifically, indicators on road quality (international roughness index) were uniformly used across the road network, and the road video inventory helped compare sections of road in a more efficient and robust manner. Though a more comprehensive RAMS was not in place as envisaged, the current RAMS was improved upon, including using the road video inventory, to enable partial compliance with this condition. This policy action was partially complied with.
- 4.5: annual International Roughness Index (IRI) monitoring. The TA consultants developed an appropriate mechanism to show that the IRI monitoring process was being implemented. The consultants consider that this has been achieved; and thus the policy condition was met.

The road sector consultants delivered successive revisions of the draft financing strategy reports to the Ministry of Transport and Communications (MoTC) on 13 February, 27 February, 20 April and in early June in compliance with DMF condition 2.1. On each occasion ADB's prior approval was obtained and MoTC's comments sought. The Armenian Roads Directorate (ARD) deputy director for planning and evaluation, Mr. Aram Vardanyan, resigned in early March. As a result, no comments were received on the 27 February draft until the MoTC's chief of staff, Mr. Gagik Grigoryan, formed a working group at the end of March. The working group, which included two representatives of the Ministry of Finance (MoF), met on 3 April. Following a presentation by the TA roads economist, verbal comments were made, followed by written comments from MoTC and MoF on 8 April. The third draft of 18 April was discussed at a meeting at MoTC on 22 April. Following verbal and some written comments (largely concerning unit costs, the treatment of Value Added Tax (VAT) and the N-S Highway) a supposed final draft was prepared and submitted on 28 April. Unfortunately, at the Lifeline Road Network Improvement Project (LRNIP) workshop held on the same day it became clear that MoTC would not in fact accept this as the final draft and that modelling was required based on lower levels of expenditure. Such low levels will lead to continued core network deterioration. Following further amendments, the strategy was finalized in both Armenian and English in early June. Final approval was obtained on 25 June. The final English version of the Road Maintenance Financing Strategy is appended to this report as Annex 2A.

Audit Sector

Progress was slow in the beginning stages as the MoTC had objections to the scope of auditors' engagements. It was later agreed that the auditors would perform 4 out of 5 steps outlined in the initial Audit Work Plan. The one step excluded was related to the auditor's participation in the specific field audits. MoTC did not formally sign the acknowledgement of the Audit Work Plan, but it was verbally agreed to start the process, taking into consideration this excluded step. See the final version of Audit Work Plan with MoTC at Annex 3A.

The progress with SCWE was smooth and remained on schedule throughout the project. The scope of auditors' engagement was agreed in the beginning stage of the project and documented via the Audit Work Plan (see Annex 3B). All steps were accomplished in accordance with Audit Work Plan.

With the exception of the deliverable on Step 3 of the Audit Work Plan (audit methodology), all deliverables were on schedule and in accordance with the Audit Work Plans for both MoTC and SCWE. Below is the list of deliverables, the delivery dates and other comments.

1. Auditor's work plan for MoTC and SCWE. See Annexes 3A and 3B, respectively.
2. Compliance assessment. This step was completed by April 30, 2015. Compiled reports with findings for both SCWE and MoTC are in Annexes 3C and 3D, respectively.
3. Audit methodology package for MoTC and SCWE. Estimated deliverable submission date: Jun 1, 2015 (Draft), July 15, 2015 (Final). The package was submitted to both MoTC and SCWE for review and were accepted after certain changes were made. For additional details, see the relevant sections below.
4. Audit Reports for SCWE field audits. See Annexes 3G and 3H.
5. Final Report. Estimated deliverable submission date: Aug 15 2015 (draft), Sep 15 2015 (final). This report serves as the Final Report.

Regulatory Support Sector

The Public Utilities Regulatory Affairs Specialist (PURAS) was hired in mid-May and began reading and analyzing the voluminous record.

The PURAS conducted an initial mission from June 1-10, participating in several internal meetings, observing the Water Sector Strategy Workshop, attending a public hearing at the PSRC, and conducting meetings with PSRC Commissioners and staff, MoTC, and outside stakeholders.

The PURAS drafted a report in July that covered a basic assessment of the regulatory regime including a discussion of statutory and administrative issues, lack of public trust, and tools to assist the regulatory agency in improving its processes. Processes include improving consumer redress, improving consumer interaction and transparency, and improving consumer communication. The PURAS provided extensive examples of international best practices in each of those areas (see Annex 4A for the regulatory report).

Subsequent to the PURAS initial mission the PSRC increased the electricity tariff which was not well received by the public. The President of Armenia interceded, first offering to subsidize the increase then postponing it "while the government carried out an audit to assess whether the increase was really necessary." The response by the public did demonstrate that Armenia is characterized by a vibrant civil society that should be embraced and used effectively through increased consumer interaction with the PSRC. The PSRC is reluctant to form consumer consultative groups because of past adverse experience, but the PSRC should investigate other means of increasing public engagement.

1 Introduction

This is the Final Report for TA-8710 Strengthening Capacity in the Roads and Water Sectors and provides a summary of the work accomplished to specific deliverables and the implementation and status of the ADB DMF for this project. The following sections provide an overview and summary of the work accomplished as well as recommendations for further development.

1.1 Summary of ToR

A previous TA project, TA-8249-ARM helped prepare the ISSP for the Tranche 1 financing. The project activities of this TA were the following:

(i) sector assessments with gap analyses were completed and capacity development activities were initiated with on-the-job training and sector-thematic workshops; (ii) road and water sector key performance indicators (KPIs) were incorporated into the 2014-16 Medium Term Expenditure Framework (MTEF) and cascaded to the 2014 budget; (iii) streamlined user feedback and grievance redress systems were designed; (iv) reporting framework for calculation of water sector's financial position and financing flows (cash and non-cash) was prepared; and (v) GPS-referenced video inventory of 750kms of interstate and republican roads were completed with equipment provided under the TA.

This TA 8710-Strengthening Capacity in the Roads and Water Sectors built on the previous TA by focusing on the development of the strategies and financing plans in these sectors; supporting the capacity building of the sector ministries in areas of allocation of financial resources for the investment projects and the linkage with the MTEF and budgeting processes. Additional support will be provided in the areas of internal audit of MoTC and SCWE activities and projects. Support is also being provided to the public regulatory framework of the PSRC.

1.2 Timeframe of the Final Report

This Final Report covers the work accomplished under the Terms of Reference, as well as making recommendations for next steps in each sector. It also updates the DMF matrix with the final status of the DMF policy conditions.

2 Water Sector

2.1 Policy Outputs Achieved in the Report Period

1. DMF 4.7: Asset Register: Asset register protocol approved under SCWE resolution #37-A dated April 2, 2015. This was then translated into Armenian. DMF condition 4.7 met. Software was developed for asset registration purposes and submitted to the State Committee of Water Economy on 24 April 2015. The software may be downloaded from the following link:
<https://dl.dropboxusercontent.com/u/32751019/AssetManagementSystem.zip>
2. SCWE imported available asset data from five utility companies into the new database. The main problem is data harmonization among five utilities and the lack of staff at SCWE to use the software and the need for the current staff to receive more training on the software. The key person dealing with asset management (who left SCWE in December 2014) has not been replaced. Providing a fully functioning asset management unit is a priority recommendation for further development (see Section 2.9).
3. DMF 1.4:
 - a. WSSD full report, 7 annexes and 11 appendices submitted to SCWE in English on 11 May and Armenian on 20 May, respectively, with Annexes 6 and 7 submitted in English and Armenian on 8 June.
 - b. Financial model submitted in English and presented to SCWE on 15 April. Financial model translated into Armenian and submitted to SCWE. The supporting appendices give details explaining the data, assumptions and workings of the model. This not only provides the analysis for the financing plan and strategy, but also will enable SCWE to use it to inform and enrich its analyses to take forward and develop the strategy and to help in its discussions (e.g. with MoF) regarding the key policy choices that it and MoF face and which the financing plan and strategy highlight. This includes preparation (with the help of the Transaction Adviser Team) for the procurement of the new lease contract¹.
 - c. Workshop successfully held on 2 June. The presentations were available in both English and Armenian at the workshop. The workshop prompted good discussions. Participants raised issues that WST were able to answer adequately. SCWE considers that this constituted their main public consultation on the draft strategy and that there was broad agreement to it, and its main findings and proposed way forward. The workshop also highlighted some potentially interesting and useful parallels between the water and roads work (e.g. regarding the financial and economic outlook affecting 'realistic' investment plans for each, the benefits of improvements and the methodology and available evidence for assessing them).
 - d. Positive follow up meetings on 3 June with SCWE Chairman and then the Minister - Head of Staff of RA Government (Chairman of Intergovernmental Commission for organization of transfer under a lease contract of the right of use of water systems).

¹ GoA decree N888-N (August 2014) stipulated that it will procure a single operator for provision of water supply and waste water services for all the 'on-grid' areas under a new lease contract for the duration of 15 years.

- e. Final wrap up meeting on 11 June with SCWE chairman and 9 supporting SCWE experts. He agreed that a good report was provided, which they considered acceptable as setting out their general approach and strategy. SCWE experts then took forward the WSSD for discussion and approval in GoA. Mher Mkrtumyan (SCWE Head of Staff) had a meeting with WST national consultants to sort out SCWE queries. WST local consultants sought specific clarification from the international consultants as necessary on particular outstanding points. SCWE accelerated the revision of the strategy as much as possible while retaining its quality.
 - f. Meeting PSRC commissioner (Mushegh Koshetsyan), PSRC Head of Legal and Head of Financial Analysis on 11 June. WST amended the WSSD full report in the light of verbal comments. PSRC sent specific comments and the short Armenian version of the WSSD was amended.
 - g. Short version of the document submitted in English and Armenian on 10 and 11 June, respectively – as requested at the workshop. WSSD full report and Annexes 1, 2, 5, 8 & 9 and appendices to Annex 1 revised to take on board comments made at the workshop and raised orally in subsequent meetings c – e above.
 - h. A risk highlighted in the interim report came to fruition when, SCWE and PSRC later made many specific comments and other Ministries made comments when SCWE circulated it for government approval. Consequently, WST had to provide help over an extended period to SCWE to address these queries. The main changes to the WSSD concerned streamlining the legal action plan.
 - i. The WSSD was approved by the government on 13 August and posted on the government's website on 30 August.
4. DMF 1.5. On May 21 GoA approved the package of legislative amendments on the functional review of water sector responsible bodies, in particular SCWE and PSRC. According to the package PSRC will provide licenses instead of water use permits, the enforcement tools application of penalties and the suspension/termination powers regarding licenses are strengthened. By this amendment PSRC will be authorized to issue the water and wastewater rules and approve the model contracts with the customers. The package was considered as urgent and submitted to the Parliament. Legislative package for the Functional Review was approved by the Parliament in early-July and the Law Amendments were signed by the President on 16 July 2015.
 5. WST received extensive comments on the draft Legal Action Plan in Table 3.2 in the full WSSD. Consequently this action plan was considerably streamlined in the final short version of the WSSD that was approved on 13 August. ADB agreed with SCWE to mobilize additional TA to support GoA in meeting this action plan. In particular, this TA will study the required improvements to the legal acts relevant to wastewater/ sanitation, the regulatory issues for non-grid communities and prepare drafts of the required improvements.

2.2 Progress on Future Policy Outputs

Through the implementation of this TA, the WST sees a number of areas which require further work to entrench the gains made to date and ensure continuing development of the water sector which will ensure better outcomes for the government, water sector stakeholders and the public.

1. GoA Implement water strategy

SCWE should publish in the Public Private Partnership (PPP) bidding documents for the single operator for 2017 onwards:

- An agreement with donors on overall investment amount for the 15-year period, indicative financing plan and priorities for allocation between on/off grid and WW and WS. SCWE should use the WSSD as a credible strategy and way forward to discuss with donors to secure this agreement.
- A formula for the level of tariffs over the concession period 2016 – 2030
- The investment and financing plan with action plan on how to implement this.
- A review of costs to identify any high cost items due to design codes and a gap analysis of the existing codes with recommendations to amend them.

The first two tasks are essentially for the Transaction Adviser Team that the European Bank for Reconstruction and Development (EBRD) is providing to help SCWE prepare for the procurement of the lease concession.

Financial and Asset Management Information Systems

2. Better financial management and planning by SCWE:

- SCWE should develop a tailored financial model for SCWE (linked to their immediate needs but also refined looking forward).
- The financial model should link the outputs and use of the information system as described in point 3 below on asset management.

This activity is important but the SCWE Head of Financial and Economic Department (Elmira Papyan) said it was unlikely to be a priority as MoF is requiring new financial reporting systems.

3. Better asset management with supporting information system in the water sector

SCWE should:

- a. Complete the asset register for all current operators.
- b. Extend the asset register for assets for other SCWE activities (e.g. irrigation).
- c. Establish a team to use the asset register and management system.
- d. Develop a web based externally transparent information system on the state of assets and asset management activities.
- e. Operator to provide an annual report on the state of assets and effectiveness of asset management activities.

These are priority activities but should be supported through KfW's proposed TA, though SCWE needs to recruit staff immediately (item c above).

Technical, Monitoring and Data Improvements

4. Adopt appropriate design codes for Water Supply (WS) and Waste Water (WW)

SCWE needs to develop and adopt new, modern and harmonized design codes. SCWE does not see this as a priority and questions whether any revisions to the design codes are needed at all. As an intermediate step, SCWE should undertake a gap analysis regarding existing design codes as a progress report on implementing WSSD Action plan recommendation (see above). This should be linked to the review of costs of water projects to identify any high cost items due to the existing design codes.

5. Best practice guidance on efficient, low cost appropriate technologies for sanitation and waste water treatment for 'off-grid' rural communities.

SCWE should disseminate guidance and information for off-grid communities. Donors are currently carrying out or proposing a number of projects to treat waste water in rural communities. SCWE needs to review these projects' costs, performance and the conditions to which they are suitable so as to provide guidance to other rural communities. This would fit well with SCWE's current proposal to create a new division to develop and deliver such projects.

6. Better knowledge and information on water systems, and causes of Non-Revenue Water (NRW), etc.

This is a priority subject which is included in the recommendations (see section 2.9).

Regulatory: Stronger Appraisal Capabilities

7. Strengthening capabilities of SCWE to scrutinize costs, prioritize between projects and achieve greater benefits from the investment plan within the inevitably constrained financial resources available.

SCWE needs to strengthen its capability to scrutinize and appraise the operator's investment proposals and cost estimates to ensure that they maximize benefits. Specifically, SCWE needs to set out an agreed methodology, guidance and training on how to assess costs and benefits of WW and WS improvements. These are priority activities that are included in section 2.9.

Policy Development

8. Integrated Water Resource Management (IWRM)

SCWE needs to develop and deliver **River Basin Management Plans** (RBMPs) for two additional districts (Sevan and Hrazdan). The Ministry of Nature Protection (MNP) considers this a priority and would like to prepare draft RBMPs for two of their outstanding River Basin Districts – including one covering Lake Sevan and another for the Hrazdan district - which raise significant water resource management matters and on which they need better groundwater abstraction data. Such work, especially focused on the economic and financial analyses needed, would be useful for SCWE and the implementation of the water strategy since the future environmental requirements for IWRM in River Basin Management Plans could entail significant costs for water supply and waste water treatment for Armenia which would further increase the pressure on the limited financing resources available for such investments; so it would be important to understand the cost implications. In particular, it will be important to find more efficient and cost-effective alternatives to the requirements stipulated in the EU Urban Waste Water Treatment Directive which could otherwise be potentially excessively costly and inappropriate to Armenia.

9. Water scarcity and resource fees

- a) **MNP should publish a report on water scarcity** taking account of current and likely future pressures and climate change.
- b) **MNP should develop a schedule of resource fees proposed in (a).**

MNP consider this a priority subject which is of considerable interest to SCWE in determining the economically efficient level of NRW reduction. But it first requires establishment of the policy framework, information base, capacity and capability for IWRM (from 8 above). The proposed priority work on improving knowledge on sources of NRW would provide an important priority input to this.

2.3 Development of the Water Strategy

See 2.1 above.

2.4 Progress on Water Asset Registry

See 2.1 above.

2.5 Development of Financial Models

See 2.1 and 2.2 above.

2.6 Workshop Development

See 2.1 above.

2.7 Deliverables Schedule

See 2.2 above.

2.8 Problems/Constraints Encountered

DMF 4.7: Asset register:

1. Delays in getting the asset data on to the register (e.g. for Shirak) and gaps in some of the data.
2. SCWE do not have a team or a leader to develop and use the register. This is a major constraint to building and enhancing capacity to use the register and improve asset management in the water sector.

SCWE need to address these constraints and strengthen SCWE's capacity significantly in ISSP2 in order to deliver good outcomes from this useful initiative and work so far (see priority recommendation in section 2.9).

DMF 1.4: On the water and sanitation strategy, WST encountered the following problems which resulted in the delays in our being able to deliver the draft strategy document:

1. Right at the start of the services there was substantial expansion in the task for the WST. The TOR stipulated that the water sector strategy should cover the '*drinking water sector*'. But under Output 1.4 in the DMF issued to the WST on 26 January 2015, this had evolved to become the '*water supply and sanitation*' sector. Considering that the technical, environmental, social and financial issues for the wastewater/sanitation sub-sector are far more complex than for the '*drinking water sector*', it was immediately obvious that the resources foreseen in the TOR for its production were not sufficient.
2. On 22 January 2015, the GoA issued Guidelines for Sector Strategies. The scope of what is stipulated in this guideline is much wider and deeper than what ADB understood it to be when the TOR for the TA 8710 Services were drafted (in early-November 2013). This unforeseen development also added to the heavy workload of the two international members of the WST. Time was also consumed on clarifying the exact status of the new guideline and checking whether complying with it is mandatory – which it is. This was time well spent since in the final round of GoA approval of the strategy, the Ministry of Justice queried whether the strategy conformed to these new guidelines. WST was able to help SCWE answer adequately these queries.
3. When the WST mobilised on 28 January, the detailed technical annexes for the feasibility study (FS) for the 'off-grid' areas (from Consulting Engineers Salzgitter GmbH (CES)) had not yet been submitted to SCWE. SCWE received them on 2 March. But these very large annexes, mainly prepared using Excel, were only transmitted to SCWE in the form of pdf files. Also, the costings were based on a unit price database, which CES stated (on p. 125 of its FS) to be provided in the annexes, but which could not be found. This made scrutiny of the very large files virtually impossible. Accordingly, the WST first tried (on 11 March) to obtain the Excel files informally from CES (via its local partner Jrtuk) but this did not lead to a positive result. So, on 27 March, via an e-mail to the Deputy Chairman of SCWE, the WST requested the assistance of the SCWE in obtaining these Excel files from CES.

4. Once the WST examined the existing 5 main water sector studies that were previously carried out for GoA, it became evident that the work involved not just a 'consolidation' of these studies but rather a 'critical analysis and refinement' of them and their findings. This was a bigger task than originally envisaged because WST found that the studies had severe shortcomings. These included:
- a. They hid or down-played the extent of the financing problem that GoA will have to face as the full costs of water services will rise by 140% by 2030. This rise is largely because grace periods on existing concessional loans expire, and the GoA has to start repaying the principal of these loans. WST now estimate that debt service payments on new and existing loans will rise by 1000% (ten times) between 2014 and 2030, and in 2030 will account for 48% of total costs.
 - b. They moderated the impacts of these rising costs on bills by making various assumptions (e.g. on increasing efficiencies and increasing water consumption) some of which we have highlighted so that SCWE's Transaction Adviser Team can examine them carefully to determine a realistic position and outlook for them.
 - c. The Dorsch and CES studies appear to have substantially over-estimated the 'needs' and costs for water services. Our financing plan identifies key factors behind such over-estimation, which SCWE's Transaction Adviser will need to examine carefully to provide a sounder basis for the way forward and tendering for the lease contract.
 - d. Their estimates of capital expenditure 'needs' far exceeded the available financing.
 - e. One of Dorsch/ DH Infrastructure's (DHI) scenarios (Scenario B) was based on the previously published Armenian Development Strategy, which was predicated on a forecast Gross Domestic Product (GDP) growth rate of 5.5 - 6.5%, and was consistent with other estimates at that time. However, PFM team analysis showed that the economic outlook for Armenia has deteriorated significantly since then. Consequently, the outlook for financing water investments is bleak and the only realistic possibility is continued use of donor finance.

So the water sector investment plans needed to be scaled back.

5. Consequently, on 1 April, the WST had a 2-hour presentation and in-depth discussion with SCWE (Gagik Khachatryan and Mher Mkrtumyan) to clarify SCWE's views and position on these critical matters, so that WST could shape the draft strategy and analysis needed to support it. In this, SCWE confirmed that they expected WST to provide a 'critical' examination of the existing studies (not just consolidate them) and reiterated their demand for a detailed financial model to analyse the water sector's financing needs and inform their discussions within the GoA on the key policy issues they face regarding the water and sanitation sector.
6. Accordingly, WST carried out extensive original refined analyses of the existing material in order to provide SCWE with a draft 'realistic' investment plan. This took considerable time and effort and much more than was envisaged in the original TOR; but will have more traction than the optimistic estimates in the existing 5 studies.

7. DHI were revising their Tariff Projection Model to address some errors and take account of significant refinements (e.g. aligning the outputs to fit PSRC format). From February, we requested this revised version of the model and were told that it would be available 'shortly'. We finally received it on 1 April. It is now in a much clearer format – the previous version was difficult to navigate through and would have been difficult for SCWE to use.
8. The Public Financial Management (PFM) and WST teams then carried out major work to tailor this model to fit SCWE's needs for the strategy and to fill its gaps (e.g. to include the 'off-grid' communities, and sanitation expenditures and tariffs). This identified some anomalies which we rectified. WST and PFM teams had to carry out checks on the financial analysis – including, in particular, the debt-service payments for the existing loans, as, together with anticipated new loans, these will account for almost 50% of the total costs of water services by 2030.
9. As a result, it was not possible for the GoA to approve the strategy by 30 May since this requires a lengthy inter-ministerial and public consultation process. We suggested accordingly that ADB amend the timetable in their DMF condition 1.4.
10. Prior to the end of their final mission in June, WST received no written comments from SCWE on the draft strategy even though we pressed for this both orally and in writing (on 5 June). Therefore by the end of our mission (on 13 June) we completed our work on the revisions and then finalized during week ending 19 June the English and Armenian version of all the strategy documents in the light of comments made at the workshop and in subsequent meetings up to that time. As a risk highlighted in the interim report, SCWE and PSRC later made many specific comments and other Ministries made comments as SCWE circulated it for GoA approval. Consequently, WST had to provide assistance to SCWE to answer these queries over an extended period. The WSSD was finally approved by GoA on 13 August.
11. **DMF 1.5.** The implementation of the action plan in the tight deadlines was the subject of considerable comments and discussion which required considerable amendments to streamline the Legal Action Plan.

2.9 Recommendations for further development

The priority overall aim and desired impact of further development work is to enhance efficient delivery of water services. The desired outcome is to enable SCWE to develop and deliver a prioritised affordable investment and financing plan for the water sector that maximises benefits. The baseline situation is that there is currently no such systematic investment and financing plan with comprehensive and consistent estimates. There are just diverse investment projects which are not prioritized nor analyzed by categories. Consequently, achieving significant improvements on these matters is a priority for further development.

Prioritization criteria are that the further developments need to:

- Address key priority concerns and issues for the government in terms of:
 - Effectively deliver maximum net environmental benefits
 - Enhance efficiency and lower costs of improving water services
- Be realistic and deliverable within SCWE's resources and capabilities (including complementary donor support) and do not entail significant difficulties or costs
- Complement and not duplicate existing or proposed projects by other donors.

Accordingly, from our long list reviewed in light of our meetings with SCWE, ADB and other donors and our review, we have focused on the following streamlined short list of **priority water sector activities** comprising:

1. Improved asset management in terms of:
 - a) Enhanced capacity – including establishing an asset management unit in SCWE
 - b) Specify clearly how to manage the information from the asset register on state and value of assets to inform decisions in the asset management action plan/ strategy that SCWE (with KfW TA) should develop. Outline a master plan to design a transparent information system to do this.
 - c) Require operator to deliver at least annually a report on its asset management expenditures and the state of its assets.
2. Improved information on water networks and sources of NRW. In particular, this should include:
 - a) SCWE publish a report on main causes of NRW and a suite of options to reduce this in the priority networks.
 - b) Requiring the operator (in the contract for lease) to deliver annual report on their NRW reduction plan.
3. Strengthen SCWE capacity to develop strategically a prioritized efficient investment plan and to deliver this plan, and to strengthen SCWE's position vis a vis the monopoly operator.
4. Strengthen SCWE's capability to scrutinize cost estimates to rein in the cost estimates and assess cost-effectiveness of projects so as to improve prioritization and achieve the greatest benefits possible.
5. To make the WSSD a living document, SCWE needs to provide a progress report on implementing the WSSD by reporting on the following specific water strategy actions in the WSSD action plan and develop action plans for:
 - a) Developing and delivering affordable prioritized investment and financing plan that maximizes benefits.
 - b) Gap analysis to identify if any specific amendments are needed to design codes.

3 Roads Sector

3.1 Outputs achieved over the course of the TA

3.1.1 Introduction

The TA consultants' inputs are now complete and no further policy outputs are required. Recommendations for improving road maintenance activities are shown in section 3.10. The following paragraphs summarize the work done on all relevant policy conditions.

3.1.2 DMF output 2

DMF output 2 reads: strategies and processes to be developed to allocate investments more efficiently. Two TA outputs are related to this: the road maintenance financing strategy (DMF condition 2.1) and validation of road maintenance expenditure by the roads council (condition 2.2).

A government decree (no 873-N, dated 25 June 2015) confirmed approval of the road maintenance financing strategy.

The approach to meeting condition 2.2 was to generate a table showing the approved 2015 rehabilitation program, together with the rationale for each road section and any relevant information (traffic, roughness, when last rehabilitated etc.). The roads council was to confirm the rationale in writing; this confirmation was to be treated as meeting condition 2.2. A letter from the first deputy minister (ref 02/17.1/7435-15, dated 30 June 2015) to ADB included a protocol of a roads council session on 26 May. This is taken as satisfying the condition.

3.1.3 DMF output 4

DMF output 4 reads: monitoring systems strengthened. The policy conditions under this output are intended to support achievement of condition 2.2. There are three TA outputs related to this:

- 4.1: video inventory of entire network by May 2015. The TA consultants confirmed to ADB that this condition was met and a CD/DVD with screenshots of each road section has been given to ADB except for about 500 km (either withheld for security reasons or not processed because weather prevented access)
- 4.4: RAMS (including video inventory) to be adopted by Nov 2014. Meeting this condition was partially met. Delays in procuring hardware and software for a RAMS has meant allocating expenditure using this new equipment will not be possible before the budget for 2017. However, the government was able to improve its current RAMS by using new tools, techniques and equipment provided under this TA. Specifically, indicators on road quality (international roughness index) were uniformly used across the road network, and the road video inventory helped compare sections of road more efficiently and robustly manner. Though a more comprehensive RAMS was not in place as envisaged, the current RAMS was improved upon,

including using the road video inventory, to enable partial compliance with this condition. This policy action was partially complied with.

- 4.5: annual IRI monitoring. The TA consultants developed an appropriate mechanism to show that the IRI monitoring process was being implemented. The consultants consider that this has been achieved; and thus the policy condition was met

3.1.4 Workshop

A half-day workshop was held at the Best Western Congress hotel in Yerevan on 3 June. The focus of the workshop was on the practical aspects of pavement survey and data recording. There were twenty participants, mostly from MoTC and ARD.

3.2 Road maintenance financing strategy (condition 2.1)

Work on the road maintenance strategy started in January 2015 and was finally completed in early June. The final English version is shown as Annex 2A.

The approach throughout did not change materially, except that, at MoTC's request, work on raising additional sources of funds was dropped at a very early stage. HDM-4 was used in its strategy mode, based on the most recent aggregated network obtainable from ARD. A variety of interventions and budget constraints was tried until an outcome was achieved that was judged satisfactory by MoTC. Full details of unit costs, traffic data, interventions etc. are given in Annex 1 to the report.

The road sector consultants delivered successive revisions of the draft financing strategy reports to MoTC on 13 February, 27 February, 20 April and early June. What was expected to be the final draft was submitted on 28 April.

The 28 April draft became the basis for the final version. It extended earlier drafts and as well as accommodating comments received it included all the planned activities listed under section 3.4.1 of the inception report, namely:

- a proposed strategy (rather than alternatives, as in earlier drafts)
- an assessment of traffic growth
- calibration of the vehicle fleet used in HDM4
- extension to include the local roads network
- an assessment of the costs and benefits of deferring capital maintenance.

The April draft assessed three levels of road maintenance funding. Funding at or close to current levels (referred to as "business as usual" (BAU)) will result in a continuing deterioration in road network condition, with increased road user costs, ultimately passed to users in the form of higher freight rates and passenger fares. This deterioration is already evident from the decline in interstate network condition from 2010 to 2014.

If all economically worthwhile maintenance investments were taken, network condition would be significantly improved in the medium and long term (this is referred to in HDM as an unconstrained program). At least 60 percent of the paved network would be in a maintainable condition by 2020. However, implied expenditure would be 2.5 times current levels and a little over 0.9 percent of GDP. It would be similar to ADS target levels. This was considered unaffordable under current economic conditions.

The final version is similar to that submitted in late April. Differences arose from objections raised by an ARD staff member over the network lengths assumed, in particular over removing the north-south corridor highway improvement program from the network (in accordance with the wishes of the MoTC chief of staff) and removing some 200km that carry no traffic. As a result, network lengths increased and calculations repeated. The final proposed strategy adopts an annual target expenditure of AMD24bn, as before, but with somewhat inferior network condition. The final strategy therefore recommended concentrating capital maintenance on interstate and republican roads on the grounds that, other things being equal, the returns are higher on roads carrying higher traffic. Under this strategy, the condition of interstate and republican roads would remain much as it is today. The implied expenditure is AMD24bn per year. This represents a 20 percent increase on today's level, but is only slightly above the upper end of a range of BAU estimates. It represents 0.5 percent of 2015's expected GDP.

An assessment of the costs and benefits of timely capital maintenance, when compared with deferring it, shows that not deferring it is a sound investment, with the benefits of reduced road user costs approximately four times the additional costs of the maintenance.

3.3 Validation of road maintenance expenditure (condition 2.2)

Satisfying this condition was the subject of much discussion between the consultants and ADB. The roads council is the body charged with reconciling the competing demands of the various roads agencies and the constraints imposed by the MoF. Unfortunately, the one set of roads council meeting notes made available to the consultants did not shed any light on the process adopted.

At ADB's request an alternative approach was tried. The consultants drew up a table of the salient features of each road in the 2015 rehabilitation program. This table, shown in Annex 2B, lists the features of each road that are relevant to a decision to rehabilitate (traffic, roughness, observed speed etc.). Provided the roads council met and confirmed the rationale for the road sections selected for rehabilitation in 2015, as set out in the consultants' table, the condition would be judged to have been met. As indicated above, the condition was met.

The section on prioritization, while not forming one of the formal DMF conditions, appears below.

3.4 Video inventory (condition 4.1)

This condition was met by May 2015. The consultants undertook a physical check of the entire video stock to ensure that for all practical purposes the entire network has been covered. Sample screenshots were made available to ADB.

The table below shows the lengths of each network recorded and accounts for any lengths not recorded.

Table 1: Lengths of roads recorded by video

Designation	Total length, km	Length recorded, km	Explanation for length not recorded
Interstate (M)	1,759	1,660	99km = 45km Yerevan + 38km under construction + 16km impassable
Republican (H)	1,966	1,862	104km = 11km Yerevan + 28km impassable + 65km found not to exist
Local (T)	3,806	3,502	304km = 58km too dangerous to survey + 246km found not to exist or which are impassable
Total	7,530	7,024	

Source: MoTC, TA consultants (all lengths rounded to nearest km)

The reviewed road video data concluded that the road video can generally be used by someone familiar with the road in question and used to confirm the IRI status of the worst sections (condition 4.4). The qualification “generally” is necessary in view of the technical limitations of the record, as described in interim report no 1. It can also be used by engineers to confirm major features, such as the condition of side drains and shoulders, signage, vegetation encroachment, driveways or side roads, and black spots and other adequacy of safety features. It is already being used by the Project Implementation Unit (PIU). Elsewhere in the world, road video surveys (RVSs) are integrated into GIS environments and into central databases. Here, the scope is limited to integrating RVS output and Google Maps position data (see IRI monitoring below); it is not possible to extract accurate positional data from the RVS and use it in other applications such as the IRI database to mark specific start and ending sections of each link.

The limitations of present arrangements are, in summary:

- It is not clear that there is a plan for using the video. It appears to be used on an ad hoc basis as circumstances dictate (e.g. by the PIU);
- Ability to map the video recording is limited. Only someone who knows the road well can link visible road condition and approximate chainage;
- The surveys are poorly executed. Vehicle speed should be held at around 50km/h, but in practice speeds are between 30 and 100 km/h, with a tendency to drive at the upper end of this range, leading to blurred screen capture. Different vehicles are used and cameras are positioned poorly

(anywhere from dashboard to rear view mirror), leading to dashboard glare and poor capture of road features; and

- There is no audio commentary.

3.5 Interim RAMS (condition 4.4)

The current situation is that the hardware and software that will ultimately form a RAMS is currently under procurement. At the time of reporting the contracting party (the North-South Road Corridor Investment Program SNCO) is making enquiries of the sole bidder.

Implementation in 2015 is unlikely. This will have to be followed by training and survey planning. Survey using the new vehicles will not be possible before spring 2016, meaning that the first budget to be informed by the new RAMS will be that of 2017. In the meantime the current system will most likely persist. An assessment of current arrangements is given below.

The road sector consultants were to review current arrangements in order to see the state of the current RAMS. Current arrangements involve the use of limited network databases held in HDM4 format. There are many anomalies in the HDM4 data, but they are useable for planning purposes. However, they only cover all the maintainable interstate network and 10-20 percent of the maintainable republican network. This means that approximately 70-75 percent of the network (80-90 percent of the republican and all the local roads) are not covered; essentially road condition and traffic using this 70-75 percent are unknown in any formally recorded sense.

The government was able to improve its current RAMS by using new tools, techniques and equipment provided under this TA. Specifically, indicators on road quality (international roughness index) were uniformly used across the road network, and the road video inventory helped compare sections of road in a more efficient and robust manner. Though a more comprehensive RAMS was not in place as envisaged, the current RAMS was improved upon, including using the road video inventory, to enable partial compliance with this condition. This policy action was partially complied with.

3.6 IRI monitoring (condition 4.5)

Tranche 1 condition 4.5 required that an annual IRI monitoring process should be adopted by April 2014 and implemented from 2015. The adoption of the process is covered by MoTC decree N 131-A of 8 April 2014. Relevant to the current situation is an earlier MoTC decree, N 239-A of May 2011. According to the methodology contained in this decree, roughness measurement is limited to 30-40km/day. This is said to account for the limit of 1,500-1,600km monitored annually. The equipment used is a Roadmaster Class III (information from ARD). ARD will not expand their IRI measurement program, as required in condition 4.1, until the new pavement survey system has been delivered and implemented in late 2015. However, it is understood that some new IRI measuring equipment (purchased by the PIU and given to ARD) has been installed and tested. The equipment is reportedly sensitive and unsuitable for use on the worst pavements; it will be used on recently rehabilitated sections.

Summary confirmation of IRI monitoring can be confirmed as follows:

- mapping IRIs,
- using the video records to confirm the IRI status of the worst sections, and
- recording the confirmation.

This will be a slow process, given the technical shortcomings of the video records. Confirmation by video can only be completed by someone who is familiar with the road in question.

Longer sections describing IRI monitoring and mapping are shown in Annexes 2C and 2D.

3.7 Prioritization

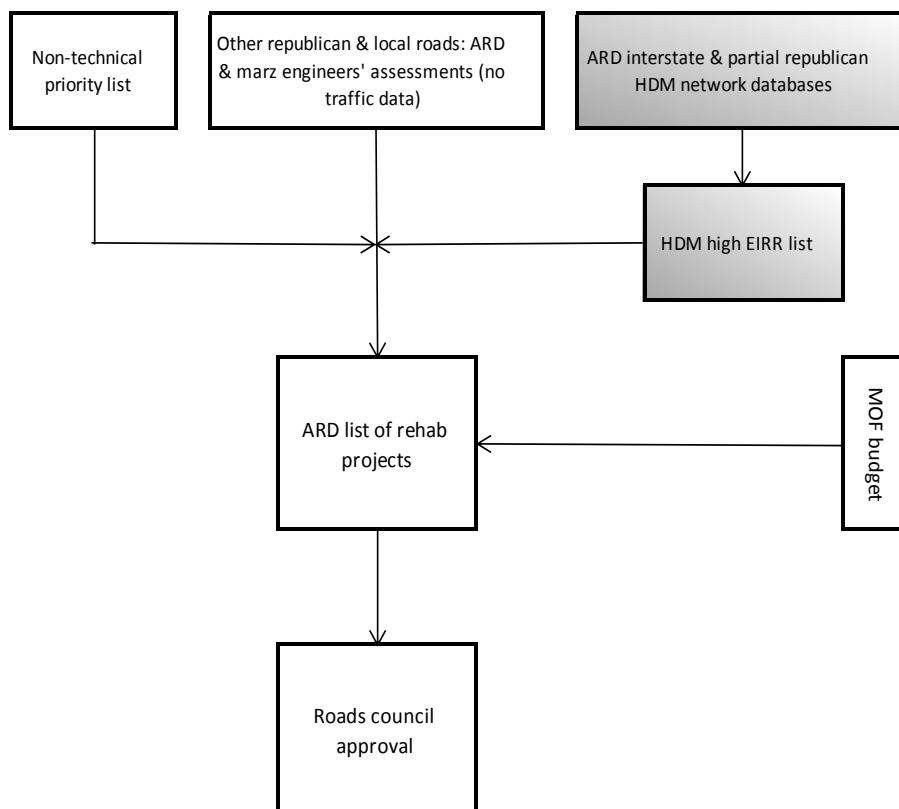
3.7.1 Introduction

Prioritization does not form part of a formal DMF condition but is included here as it is relevant to conditions 2.1 and 2.2.

3.7.2 Current arrangements

The chart below, extracted from the road maintenance strategy, shows those parts of the present budgeting and procurement cycle where prioritisation should take place. At present technical prioritisation is confined to the two shaded cells.

Figure 1 Current prioritisation arrangements



At present, ARD runs HDM4 for the interstate network and the 10-20 percent of the republican network for which it holds data. Each candidate road section (they are of variable length: interstate road sections vary from 1 to 18km) is analysed by comparing a do minimum option (probably routine maintenance) against a rehabilitation option. It does this two years before the budget year (e.g. analysis for the 2015 budget was carried out in 2013). Candidate sections are listed by Economic Internal Rate of Return (EIRR) (it would of course be better to rank in order of NPV÷cost). Proposed interventions are shown, but not IRI or traffic. The HDM4 list for 2015 shows 34 sections with a total length of 304km at a total cost of US\$88m (AMD42bn) and an average cost for two lane works of US\$0.31m/km. The total cost of the analyzed roads is several times the likely budget for capital maintenance (the planned GoA capital maintenance budget in 2014 was AMD13bn). Listed EIRRs range from 12.2 to 49 percent. For the 2015 budget the list only included interstate roads.

3.7.3 Future arrangements

3.7.3.1 *Post-RAMS situation*

Once the RAMS is fully implemented it will be possible to extend prioritization to the remainder of the network *provided* additional traffic data are collected. Recommendations for additional automatic traffic count stations are included in the action plan appended to the maintenance strategy. For the local roads it is unrealistic to expect systematic traffic data collection and it is suggested that marz engineers' assessments are based on pavement quality supplemented by moving observer counts.

3.7.3.2 *No role for decree 54 criteria?*

Decree 54 makes use of Multi-Criteria Analysis (MCA) obligatory when prioritizing capital maintenance or development investment in the roads sub-sector. It involves three criteria: economic efficiency (i.e. EIRR), population (number of beneficiaries), and a balanced regional development criterion (the percentage of roads in the region classified as "bad"). Details of the decree criteria are given in the financing strategy.

The decree contains a number of qualifications that make its use difficult. First, a note in the decree states that interstate roads should always assume the highest scores for population and regional development, meaning that, in effect, the only relevant criterion when comparing one interstate road with another is EIRR. Second, roads eligible for external funding are supposed to satisfy the EIRR condition before being ranked using the other two criteria, but the reader is left to guess what satisfying the EIRR condition means (presumably at least 12 percent). Third, the GoA may override decree 54 priorities for a wide range of reasons. Fourth, ARD may propose a revision to the scope of the MCA.

Using population as a criterion could be a useful proxy for traffic when prioritizing amongst roads that carry very little traffic and/or the road is so bad that most motorized vehicles cannot use it. An example would be rural access roads. However, generating and mapping populations within a given number of kilometers of the road center line would be a slow and costly process and hardly good value for money given the small budget allocated to local roads – using pavement condition and moving observer counts, as suggested above, is likely to be more productive. It is also difficult to see what contribution the addition

of this criterion will make to the prioritization of roads that do carry significant and readily measurable traffic.

The regional criterion may bring some regional equity to bear on the prioritization process. It is difficult to know how useful it will be until examples of its use are available. There will be a data issue, however: the criterion is supposed to take into account the condition of all roads in a region, but at the moment there are no systematically held data on local roads.

3.8 Workshops

The roads economist attended and presented at the Roads Financing Study Workshop held under the auspices of the LRNIP held in Yerevan on 28 April.

A workshop for TA-8710 was held at the Best Western Congress Hotel on 3 June. Twenty ARD and PIU staff attended the half day workshop and positive verbal feedback was communicated to the TA roads team.

The workshop agenda and presentations are appended to this report in annexes 2E and 2F respectively.

3.9 Problems and constraints during the course of the TA

3.9.1 Staffing

The resignation in early March by the ARD deputy director responsible for planning and evaluation, Mr. Aram Vardanyan, was a setback for the roads TA team. Mr. Vardanyan was the principal point of contact at ARD and the MoTC and was familiar with RAMS and investment prioritization. He was also technical secretary to the roads council. As far as the consultants are aware he has not been replaced.

3.9.2 Financing strategy

Developing a road maintenance financing strategy is limited by many factors that will remain in place until the planned RAMS is implemented. These factors are grouped below.

3.9.2.1 Database scope and quality

- Existing road network databases are limited in coverage.
- Existing network databases are of uncertain quality. Pavement condition indicators are often erratic. IRIs appear plausible (and are presumably based on the 1,500-1,600km monitored annually) but other pavement indicators such as potholes, raveling, etc. do not appear plausible and do not correlate satisfactorily with IRI. Traffic data appear to be satisfactory (ARD states that they collect ad hoc 24h traffic counts from some 80 sites in addition to the ten long term automatic counters installed on trunk roads), although it is not known how counts are allocated to road sections or whether

seasonality or other adjustments are made. (The action plan included in the current draft strategy recommends extending the network of ATC stations).

- Road sections are removed from the database once their quality falls to “bad” & they are earmarked for rehabilitation. This distorts reported network quality, but unfortunately their inclusion in the database is not consistent with decree 1419-N or with MoTC decree N131-A.

3.9.2.2 Database interval

- ARD state that sections are defined by uniform IRI. Whether true or not, it has led to a wide variety of section lengths and rehabilitation projects that do not coincide with sections used in the HDM4 database. Not only do section lengths vary, section definitions vary from year to year, meaning that the condition of a unique section cannot be tracked from year to year, making calibration of HDM4’s pavement deterioration parameters impossible.
- The 2014 interstate network database has 149 sections with an average length of 8.8km, but varying from 1km to 18km. The modal class of section lengths is 8-14km. Ideally a strategy devised using HDM4 should make use of a single uniform length of 1-2km (the ADB Yunnan Sustainable Road Maintenance Strategy uses 1km for a sampled network of 12,000km). This is not possible at the moment, but will become so once the RAMS is implemented.

3.9.2.3 HDM4 software

- ARD use version 1.3, which was superseded by version 2 nearly ten years ago. Version 2 (the current release is 2.08) incorporates significant improvements that are relevant to the ideal of an annually updated prioritized list of road sections. Version 2 cannot open version 1 database files; a migration tool has to be used. ARD has not calibrated their version of HDM4, as far as we are aware.
- Acquiring version 2 will be necessary once the new RAMS is in place.

3.10 Recommendations for further development

Recommendations are tabulated below. They are informed by recommendations in related reports: the road maintenance financing strategy developed as part of this project and the LRNIP Roads Financing Study (final report, July 2015).

Table 1: Roads sub-sector recommendations

Area	Recommendation	Rationale
Validation of the rehabilitation program	The approach recommended in this study for the 2015 program is continued for 2016.	Until a fully functioning RAMS is available, the approach adopted here for satisfying condition 2.2 offers the best way of bringing together the available data in order to ensure reasonable value for money.
Traffic	Develop seasonality factors from automatic traffic count (ATC) records.	Traffic in Armenia is considered highly seasonal, but ARD has no seasonal adjustment factors with which to adjust manual (or other short term) counts. There are 10+ years of records at around nine ATC stations. Their data could be interrogated to develop weekly or monthly seasonality factors.
Traffic	Traffic count guidance	As far as we are aware ARD has no traffic count guidance. A guidance document need not be a large document, but would be useful. It would specify: <ul style="list-style-type: none"> • standard vehicle classes • duration of counts (e.g. 7 days including 2x24h counts and 5x12h counts) • location of counts (distance from junctions etc.)
Condition measures	Revision of decree 1419-N (2010) ¹	Decree 1419 uses potholes to report pavement condition; it also mandates removal of a section from the maintenance schedule once its condition is reported as “bad”. Potholes patched may be a useful indicator for completion of routine maintenance but it is inadequate as a definition of condition. IRI could and should be added as a criterion. Sections should not be removed from the database once their condition is “bad”, even if they have passed beyond the stage of being maintainable.
Core network definition	Define a core network	In view of the lack of resources for maintenance, defining those road sections whose condition is most important for the national economy would be an aid to prioritization. This exercise might have to await installation of further ATC stations, as recommended in the road maintenance financing strategy. In addition to counts, OD surveys would also be needed.
Performance based maintenance contracts (PBMCs)	Develop PBMCs on a pilot scale ²	Existing maintenance contracts are not performance based. They do not incentivize contractors to do more than the bare minimum to secure payment. PBMCs have been used successfully elsewhere; the contractor would have responsibility for a section of road for (say) five years and be paid for keeping it at or better than a defined standard.
Standards for low volume roads	Develop a standard	The scope of current standards does not include a single lane, low volume road, and should do so.

Notes: (1) included in draft ISSP2 matrix
(2) included in LRNIP Roads Financing Study, July 2015

4 Auditing Support

4.1 Policy Outputs Achieved in the Report Period

Output 4.9 of DMF matrix below was previously achieved and verified and the supporting documentation was provided. All other policy outputs have been achieved.

4.2 Progress on Future Policy Outputs

There are no future policy outputs scheduled for the internal audit area.

4.3 Progress of Auditing Support in MoTC

The progress was slowed in initial stages of TA as the MoTC had objections to the scope of the auditors' engagements. It was agreed that the auditors would perform 4 out of 5 steps outlined in the initial Audit Work Plan. The one step excluded relates to the auditor's participation in the specific field audits. MoTC didn't formally sign the acknowledgement of Audit Work Plan, but it was orally agreed to start the process, taking into consideration this excluded step. See Annex 3A for MoTC's final Audit Work Plan.

As Step 2 of the Audit Work Plan, we have completed the work in regards to the assessment of MoTC's Internal Audit (IA) compliance with the applicable laws. We identified certain issues and accumulated our suggestions to address them. Both issues and suggestions have been communicated to MoTC's IA department and discussions were held for understanding and to come up with possible ways to address the issues. The complete report with identified issues and accumulated suggestions was compiled and included in this Final Report, see Annex 3C.

A final discussion of the findings on the Compliance Assessment step noted above was held with MoTC, which in turn have accepted our findings after minor wording changes. The following is the brief item list of the deficiencies identified during the procedures performed in order to assess the MoTC's compliance with applicable IA legal framework.

1. Lack of personnel to conduct the effectiveness assessment of the Risk Assessment process performed by various organizations within the entity;
2. Lack of financial resources to implement effective systems of personnel promotion and compensation;
3. Personnel don't participate in the training courses regarding the code of conduct and its applicability within the entity;
4. IA department doesn't provide consulting and certification services for other organizations within the entity;
5. Lack of financial resources to engage third-party specialist as needed;
6. Lack of technical resources for IA personnel to carry out their responsibilities;
7. Personnel retention issue, high-turnover rate;

8. Lack of documentation related to personnel training advancement levels;
9. Insufficient staff to meet the IA department goals and requirements;
10. IA department doesn't perform the testing of IA department employees every week as stipulated by the law;
11. IA department's audit reports do not classify the noted deficiencies according to the classes required by the law;
12. No external quality assessment is conducted by MoF or a third-party authorized service provider while the law requires such assessment every five (5) years;
13. No internal quality assessment is conducted within the Entity, mostly due to lack of human resources.

Additionally, we have compiled and delivered a comprehensive package of audit methodology (Step 3 of Audit Work Plan).

This package is meant to aid in understanding of the overall audit process, the audit procedures and methods as well as in documenting and effectively performing financial audits. This package was compiled in Armenian as IA department staff have limited English. It is fairly voluminous and structured including different file formats, structured folders and templates that wouldn't be practical to include as an annex to this report. For more detailed information regarding the content of the package, see Annex 3E – Summary Audit Methodology.

We submitted this package to the review of MoTC's IA department. In order to finalize this package and tailor it to the form most suitable to the needs of MoTC, we requested the IA's department input to make the appropriate changes. However, we've received little feedback from MoTC regarding their needs and any possible changes they want to make to the audit methodology package.

We have also tailored the audit methodology package based on the experience obtained from the work with SCWE's IA department as noted below. A final audit methodology package was delivered after considering all comments from the relevant parties.

Finally, we compiled and delivered a Procurement Audit package (Step 3 of Audit Work Plan). A Public Procurement Package entails the basic information, reference guide and practical verification programs needed for guidance, planning, performance and conclusion of procurement audits. For more detailed information regarding the content of the package, see Annex 3F – Summary Procurement Audit package.

4.4 Progress of Auditing Support in SCWE

The progress with SCWE was smooth and remained on schedule. The SCWE IA's staff was fairly forthcoming and accommodative to work with. At the initial stage of the TA, the scope of auditors' engagement was framed in the Audit Work Plan (see Annex 3B for SCWE's Audit Work Plan) which was followed during the entire term of the TA.

As Step 2 of the Audit Work Plan, we completed the work with them in regards to the assessment of SCWE's IA compliance with the applicable laws and regulations. We identified certain issues and accumulated our suggestions to address them. Both issues and suggestions have been communicated to SCWE's IA department and discussions were held for understanding and possible ways to address the issues. The complete report with identified issues and accumulated suggestions was compiled and included in this Final Report, see Annex 3D.

The following is a brief list of the deficiencies identified during the procedures performed in order to assess the SCWE's compliance with applicable IA legal framework.

1. Lack of personnel to conduct the effectiveness assessment of the Risk Assessment process performed by various organizations within the entity;
2. Increased risk of conflict of interests due to having only one (1) employee at IA department;
3. Lack of financial resources to implement effective systems of personnel promotion and compensation;
4. IA department doesn't provide consulting and certification services for other organizations within the entity;
5. High-turnover rate of personnel;
6. Lack of documentation related to personnel training advancement levels;
7. Insufficient staff to meet the IA department goals and requirements;
8. Entity doesn't have an established regulatory framework for communicating and information requests from IA departments of its organizations under the audit;
9. IA department doesn't perform the testing of IA department employees every week as stipulated by the law;
10. IA department's audit reports do not classify the noted deficiencies according to the classes required by the law;
11. No external quality assessment is conducted by MoF or a third-party authorized service provider while the law requires such assessment every five (5) years;
12. No internal quality assessment is conducted within the entity, mostly due to lack of human resources.

A complete compliance assessment report with identified deficiencies and recommendations may be found in Annex 3C and 3D. Additionally, we have compiled and delivered a comprehensive package of audit methodology (Step 3 of Audit Work Plan).

This package is meant to aid in understanding overall audit process, the audit procedures and methods as well as documenting and effectively performing financial audits. This package was compiled in Armenian as IA department staff have limited English. It is fairly voluminous and structured including different file formats, structured folders and templates that wouldn't be practical to include as an Annex to this report. For more detailed information regarding the content of the package, see Annex 3E – Summary Audit Methodology.

We submitted this package to the review of SCWE's IA department. In order to finalize this package and tailor it to the form most suitable to the needs of SCWE, we requested the IA's department input to make the appropriate changes. We also tailored the audit methodology package based on the experience obtained from the financial audit work with SCWE's IA department as noted below. A final audit methodology package has been delivered after considering all comments from the relevant parties.

Furthermore, we have compiled and delivered a Procurement Audit package (Step 3 of Audit Work Plan). A Procurement Audit package entails the basic information, reference guide and practical verification programs needed for guidance, planning, performance and conclusion of procurement audits. We have also tailored the Procurement Audit package based on the experience obtained from the procurement audit work with SCWE's IA department as noted below. For more detailed information regarding the content of the package, see Annex 3F – Summary Procurement Audit package.

Finally, as Step 4 of Audit Work Plan, we participated and completed both the financial and system (procurement) audits of SCWE's selected unit, "Arpa-Sevan Tunnel Reconstruction" Program Implementation Office (PIO). Both final reports for each of the audits were compiled in Armenian in the established format approved by MoF. We have compiled a Summary report for each of the audits, please see Annex 3G and Annex 3H for detailed information.

4.5 Deliverables Schedule

With the exception on the deliverable on Step 3 of the Audit Work Plan (audit methodology), all deliverables are on schedule and in accordance with the Audit Work Plan which can be found in Annex 3A and 3B. Below is the list of deliverables, the delivery dates and other comments as necessary.

1. Auditor's work plan for SCWE and MoTC. Deliverable submitted.
2. Compliance assessment. This was completed by April 30, 2015. No specific deliverable was arranged, however, we compiled a report included in this Final Report. Please see Annex 3C and 3D.
3. Audit methodology package for SCWE and MoTC. Estimated deliverable submission date: Jun 1, 2015 (Draft), July 15, 2015 (Final). The package was submitted to both SCWE and MoTC, see Annex 3E and 3F. For additional details, see also the relevant sections above.
4. Audit Reports for SCWE field audits. Both final reports for each of the audits were compiled in Armenian and in the established format approved by MoF. We compiled a summary report for each of the audits, please see Annex 3G and Annex 3H for detailed information.
5. Final Report. Draft approved in October 2015. This report serves as the Final Report.

4.6 Problems/Constraints Encountered in the Report Period

See the MoTC Progress section above.

Considering occasional slow responses from MoTC and other difficulties outlined in MoTC section above, we believe these factors had minimal impact in completing the Final Report.

4.7 Recommendations for further development

Based on our experience, there exist multiple directions for further development. While some of the current weaknesses are directly tied to the lack of financial and, as a result, human resources, others are more structural and perhaps can be strengthened within the existing capabilities.

We recommend to consider the following points as potential areas for further development:

A. Strengthening the independence of internal audit function.

The proper segregation of Internal Audit function and governing functions inhibits the proper activity of Internal Audit function at SCWE and especially at MoTC. There is a potential that Internal Audit function may not be performed to reach its inherent goal. There needs to be a lesser leverage on behalf governing functions towards Internal Audit department and more guarantees of independent activity.

B. Technical and professional training of internal audit staff and accountants of subordinate entities.

Based on our experience, both IA staff and accountants at subordinate entities lack technical and professional knowledge and skills to fully perform the duties of their respective positions. This is partially due to high turnover and lack of established professional training courses which can be organized by MoF or other relevant entities.

5 Regulatory Support

5.1 Deliverables in the Report Period

The Public Utilities Regulatory Affairs Specialist (PURAS) was hired in Mid-May and began reading and analyzing the voluminous record.

The PURAS conducted an initial mission from June 1-10, participating in several internal meetings, observing the Water Sector Strategy Workshop, attending a public hearing at the PSRC, and conducting meetings with PSRC Commissioners and staff, MoTC, and outside stakeholders.

Meetings at the PSRC with Commissioners and staff concerned their impression of statutory changes and the impact to the PSRC, general staff capacity needs, monitoring and legal staffing, enforcement powers, the level of consumer interaction, dispute resolution, the public hearing process, HR issues affecting capacity and morale, public information efforts, and funding issues affecting independence.

The meeting at the MoTC concerned their public information efforts and how they are objectively viewed by outside evaluations. The Institute for Information Freedom Development and the Committee to Protect Freedom of Expression rank the MoTC web site as the 8th most transparent in Armenia out of 34 evaluated. The MoTC was ranked 32nd as late as three years ago, so much progress has occurred. The PSRC web site ranked 27th by comparison, but they were undergoing significant self-funded improvements at the time of evaluation.

The goal of the mission and various meetings was to assess the effectiveness and capacity of the PRSC, estimate its readiness to absorb new duties contemplated by the changes in the water sector, review the independence of the PSRC and its ability to make transparent effective decisions, and to review and assess the effectiveness of public information plans currently being offered by the PSRC and the MoTC.

The PURAS also briefly participated in meetings regarding implementation of Tranche 2 policy actions and DMF Policy Condition 1.4.

The regulatory report is the deliverable corresponding to this work and is attached as Annex 4A to this report.

5.2 Deliverables Schedule

The PURAS filed a draft report by July 1st that covered a basic assessment of the regulatory regime including a discussion of statutory and administrative issues, lack of public trust, and tools to assist the regulatory agency in improving its processes. Processes include improving consumer redress, improving consumer interaction and transparency, and improving consumer communication. The PURAS provided extensive examples of international best practices in each of those areas. See Annex 4A for the final report with incorporated comments from PSRC that was finalized in September.

5.3 Problems/Constraints Encountered in the Report Period

- Due to the abundance of prior work the PURAS had not fully absorbed all of the prior recommendations and discussion prior to his initial mission.
- Given that few or no translations existed of documents and web sites, analysis was slowed a little.
- The PSRC was right in the middle of major policy and tariff changes in the electricity sector and meetings were somewhat difficult to schedule.
- The PSRC had prior adverse experience with formal consumer consultative groups and felt unwilling to pursue them again in the future.
- No fundamental problems were encountered.

5.4 Recommendations for further development

Recommendations to make the PSRC and MoTC more effective and responsive to consumer needs include:

1. Review the legal framework to make sure the PSRC possess the required authority to carry out its duties, especially enforcing its decisions,
2. Create a transparent set of investigatory procedures,
3. Conduct a thorough Capacity Assessment to ensure that the PSRC has all of the requisite skills, knowledge and abilities to carry out its duties today and into the future,
4. Conduct a Compensation Assessment to determine what salaries and benefits will attract and maintain levels of employees and performance,
5. Continue to collect monies from ratepayers to pay for PSRC activities, but deposit them in a dedicate reimbursement account to be used only for PSRC proposes,
6. Create a system of consumer feedback including a Customer Satisfaction Survey to gauge the public's perception of PSRC performance,
7. Review all internal procedures to ensure that they are in the public interest,
8. The PSRC should evaluate other ways of increasing informed public participation including developing reimbursement programs,
9. The PRSC and the MoTC should create comprehensive plans for improving public information plans along the parameters outlined by the Asian Development Bank and others,

10. The PRSC and the MoTC should adopt the Coefficient of Information Transparency calculated each year by the Institute for Information Freedom Development and the Committee to Protect Freedom of Expression as a Key Performance Indicator for internal evaluation,
11. The PSRC should review international best practices for complaint handling described herein and make necessary changes, and
12. The PSRC or GoA should develop and adopt a Consumer Protection Code describing consumer rights and responsibilities, expectations for the regulatory system, and Key performance Indicators for evaluating regulatory performance.

6 Updated DMF

DESIGN AND MONITORING FRAMEWORK (DMF) STATUS – 9 APRIL 2015

UPDATED BY AARC TA8710 TEAM AS OF 31ST AUGUST 2015

Outputs	Tranche 1	Tranche 2	Reporting Agency	Status
1. Sector management systems improved	1.1 Road council, a ministerial body on national road maintenance, established with clearly identified mandate for allocative efficiency by March 2014		MOTC	
	1.2 Organogram and departmental terms of reference to streamline road sector agencies approved by MOTC by March 2014		MOTC	
	1.3 MTA-led functional review of key water sector agencies initiated by March 2014 and completed by December 2014	1.3 MTA-led functional review of key water sector agencies initiated by March 2014 and completed by December 2014	MTA	Policy condition met. Functional review completed and ADB has received the report. Govt approval received for SCWE to continue within the Ministry of Agriculture. Mr. Tetaryan leading the Working Group for next steps. Government protocol issued and received by ADB. Protocol being translated.
		1.4 Water supply and sanitation sector strategy with financing plan approved by 13 August 2015	SCWE, MOF	New agreed deadline met. Armenian version currently being translated into English.
		1.5 Government decision taken to align the Water Code 2002 and related legal acts with the	Ministry of Nature Protection, SCWE, MOF	Legislative package for the Functional Review was approved by the Parliament in early-July and the Law amendments were signed by the President on 16 July 2015. The action plan has been extensively

Outputs	Tranche 1	Tranche 2	Reporting Agency	Status
		functional review recommendations and the water sector strategy by June 2015		discussed with SCWE and PSRC. Accordingly, the action plan was considerably streamlined and subsequently agreed. Aligning the Water code to the Water Supply and Sanitation Sector strategy will require substantial changes and require a lot of consultation. ADB are providing further follow on TA support for this.
Actions				
	1.1. Terms of reference of the road council identified by March 2014			
	1.2. MTA and MOTC road network maintenance coordination plan drafted by the end of March 2014			
	1.3. Recommendations provided for enhancing SCWE capacity for policy, strategy, public-private partnerships, asset register management responsibilities by the end of March 2014. Staff with requisite skills to manage public private partnership contracts, assets appointed by December 2014			
	1.4. Staff appointed for road network management in all <i>marzpeterans</i> (provincial administrative offices) in accordance with MOTC's job			

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Outputs	Tranche 1	Tranche 2	Reporting Agency	Status
	descriptions from April 2014			
		1.5. Provisions for adequate financing of maintenance and loan servicing identified for future water sector public-private partnership contracts by February 2015		Policy condition met. Decree N883 outlines the action plan for the drinking water sector. Email from SCWE to CD of 14 January 2015 outlines financing arrangements of the sector (as explained in decree N883). ADB has received decree in English.
Outputs				
2. Strategies and processes to allocate investments more efficiently developed		2.1 Financing strategy for road maintenance 2015 budget targets adopted by December 2014.	MOTC, MOF	Revised deadline met. Agreed with MoTC for them to prepare a draft by 31 December 2014. Draft sent to ADB on 28 December in Armenian. Draft translated. ADB consultants to work with MoTC in January/February with suggested changes to MoTC by end of February. The agreed draft final paper began circulation within government at the end of May. Government decree no 873-N of 25 June 2015 confirms approval of the strategy.
		2.2 RAM-based road maintenance expenditure validated by the road council by September 2015	MOTC	Policy condition met. Road Council to provide meeting minutes that confirm selection of roads in annual program As an interim measure the roads council to be asked to confirm in writing the rationale behind the 2015 rehabilitation program. A letter from the first deputy minister (ref 02/17.1/7435-15, dated 30 June 2015) to ADB included a protocol of a roads council session on 26 May. This is taken as satisfying the condition.
		2.3 A KPI-based MTEF adopted for road and water sector with quality indicators by August 2014	MOF, MOTC, SCWE	Policy condition met. MTEF approved on 4 July 2014. ADB consultants have reviewed MTEF and collated into one document the relevant sections. Armenian version received and translated.
		2.4 An explicit policy statement on government's	MOF	Policy condition met. MTEF approved on 4 July 2014. ADB consultants have reviewed MTEF and

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Outputs	Tranche 1	Tranche 2	Reporting Agency	Status
		shareholder role in the water sector included in the MTEF by July 2014		collated into one document the relevant sections. Armenian version received and translated.
		2.5 Water sector subsidy objectives explicitly stated in the budget, and classified accurately by August 2014	SCWE, MOF	Policy condition met. MTEF approved on 4 July 2014. ADB consultants have reviewed MTEF and collated into one document the relevant sections. Armenian and English translation with ADB.
Actions				
	2.1. Performance indicators for government's shareholder role in water utilities established by April 2014			
	2.2. An explicit policy statement on government's shareholder role in the water sector, stating water subsidy objectives, prepared by June 2014			
		2.3. Government policy on its shareholder role in water sector formally communicated to Board members by August 2014		Policy condition met, but late. Letter from SCWE sent to AWSC in January 2015. ADB has copy of letter and translation.
	2.4. Latest annual reports of water companies published on website from February 2014			
	2.5. KPIs developed under the TA for road and water sectors integrated in annual budgets starting with the 2014			

Outputs	Tranche 1	Tranche 2	Reporting Agency	Status
	budget ^a			
	2.6. Financial information framework with financing gap developed by SCWE for water sector operators by December 2013			
		2.7. Financial information framework for MTEF 2015–2017 used by SCWE and MOF by July 2014	SCWE/MOF	Policy condition met. MTEF approved on 4 July 2014. ADB consultants have reviewed MTEF and collated into one document the relevant sections. Armenian version received and translated.
		2.8. Actions and targets with tariffs based on its shareholder role and the sector's financial position developed by SCWE and MOF by October 2014	SCWE/MOF	Policy condition met. Budget excerpt received. ADB has copy of excerpt and translation.
		2.9. Water sector financing flows (including exemptions) explicitly presented in the government's 2015 budget message by December 2014	SCWE	Policy condition met. ADB has copy of letter and translation.
Outputs				
3. Regulatory frameworks improved	3.1 Regulator functions of MOTC specified for state, republic and local roads by March 2014		MOTC	
	3.2 Sector regulator set up by MOTC for the entire road network of Armenia by April 2014		MOTC	
	3.3 A streamlined user feedback and grievance		PSRC, MOTC	

Outputs	Tranche 1	Tranche 2	Reporting Agency	Status
	redress system adopted in PSRC and MOTC regulatory body by March 2014			
Actions	3.1. Road network data collected by MOTC and its regulatory activities reported, starting with 2014.			
Outputs				
4. Monitoring systems strengthened	4.1 Video inventory of 1,500 km of all interstate and republic roads maintained, and 100% of rehabilitated roads in Armenia prepared by March 2014 and the entire road network by January 2015	4.1 Video inventory of 1,500 km of all interstate and republic roads maintained, and 100% of rehabilitated roads in Armenia prepared by March 2014 and the entire road network by January 2015	MOTC	Revised target has been met. TA consultants have confirmed to ADB and provided evidence that all accessible roads were covered by the revised deadline of 31 May. MoTC confirmed this in writing to ADB on 30 June 2015.
	4.2 SCWE approved calculation framework for water sector's financial position and financing flows (cash and noncash) by February 2014		SCWE	
		4.3 Risk-based audit planning adopted in road and water sectors by February 2015	SCWE, MOTC	Policy condition met. Armenian versions of audit plans received and translated.
		4.4 Road asset management system, including a road video inventory, adopted as a tool for investment decisions by November 2014	MOTC	Policy condition remains off-track. RAMS to be procured under ADB MFF is still 4 months from completion. ADB consultants to review current RAMS, based on HDM4, and see what could work to meet this policy condition. Consultants conclude that while video records may be used to identify major features (drainage, junctions, etc.) and support compliance with condition 2.2 it cannot be used to extend the existing HDM4 databases to guide investment

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Outputs	Tranche 1	Tranche 2	Reporting Agency	Status
				decisions elsewhere in the network. The first budget likely to benefit from the new RAMS will be that of 2017
	4.5 Annual IRI monitoring process adopted by April 2014 and implemented from 2015 onwards	4.5 Annual IRI monitoring process adopted by April 2014 and implemented from 2015 onwards	MOTC	Partially met. IRI data being collected on most interstate and republican road. Mechanism for implementation collaboration can be improved with adoption of road video surveys and mapping of entire road network for interstate, republican and marz roads.
	4.6 Action plan for water supply asset management approved by January 2014		SCWE	
		4.7 Water asset register protocol for assets managed by state-regulated operators completed by December 2014	SCWE	Policy condition met, but late. ADB received signed SCWE resolution dated 2 April 2015. It has been sent for translation.
		4.8 Budget-linked regular road and water sector KPI monitoring (including IRI) endorsed by the government by January 2015	MOF	Policy condition met. Government endorsed KPI monitoring. ADB has copy of the decree and translation.
		4.9 Audit committees appointed in MOTC and SCWE with independent non-executive members by January 2015	MOF, MOTC, SCWE	Policy condition met. SCWE and MoTC have internal audit committee in place with non-executive members from a NGO. Decrees have been received in Armenian and translated.
	4.10 Enhanced internal auditors qualification procedures adopted from February 2014		MOF	
		4.11 A practice-based	MOF, MOTC	Policy condition met, but late. MoF has provided

Outputs	Tranche 1	Tranche 2	Reporting Agency	Status
		component in the certification for the internal auditors of MOTC piloted from July 2014		signed copy of the decree in Armenian and it has been translated.
	4.12 The latest complete audited financial statements of the water operators (closed joint stock companies) published on the SCWE website from March 2014		SCWE	
	4.13 Public information plan adopted and implemented for roads and water sectors from March 2014		MOTC, SCWE	
	4.14 Explicit composition and inter-utility comparison of water supply tariffs made publicly available by February 2014		PSRC	
Actions				
	4.1. Internal audit committee established in SCWE by February 2014.			
	4.2. Decree on initiating the RAM reform process submitted for approval by April 2014.			
	4.3 MOF order amended to include independent, non-executive members in audit committees by February 2014			

ADB = Asian Development Bank, IRI = international roughness index (meter/kilometer), KPI = key performance indicator, MOF = Ministry of Finance, MOTC = Ministry of Transport and Communication, MTA = Ministry of Territorial Administration, MTEF = medium-term expenditure framework, PSRC = Public Services Regulatory Commission, RAM = road asset management, SCWE = State Committee on Water Economy, TA = technical assistance.

7 Deliverables

All deliverables submitted during the course of the TA are attached as annexes to this report.

8 Annexes

Please see this list of annexes which are available upon request from mhodge@adb.org.

8.1 Annex 1- Water

8.1.1 Annex 1A- Summary WSSD

8.2 Annex 2- Roads

8.2.1 Annex 2A: Roads Financing Strategy

8.2.2 Annex 2B: Validation of 2015 rehabilitation projects

8.2.3 Annex 2C: IRI mapping

8.2.4 Annex 2D: IRI monitoring

8.2.5 Annex 2E: Workshop program

8.2.6 Annex 2F: Workshop presentations

8.3 Annex 3- Audit

8.3.1 Annex 3A: MOTC Auditor's Work Plan

8.3.2 Annex 3B: SCWE Auditor's Work Plan

8.3.3 Annex 3C: MOTC Compliance Observations

8.3.4 Annex 3D: SCWE Compliance Observations

8.3.5 Annex 3E: Audit Methodology Package

8.3.6 Annex 3F: Summary Procurement Package

8.3.7 Annex 3G: SCWE Financial Audit Summary

8.3.8 Annex 3H: SCWE Procurement Audit Summary

8.4 Annex 4- Regulatory

8.4.1 Annex 4A: Regulatory report