Workshop Report

CAREC Road Asset Management: In-Country Workshop and Maturity Assessment

Azerbaijan

October 2022

Disclaimer

This report is the outcome of the CAREC Institute's in country RAM training and maturity assessment for Azerbaijan that took place in September 2022. It is drafted by Dr. Ian Greenwood, CAREC Institute Infrastructure Consultant, it is edited by Eisa Khan Ayoob Ayoobi, the CAREC Institute Chief of Capacity Building Division.

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Glossary

Abbreviation	Description
ADB	Asian Development Bank
AM	Asset Management
AMIS	Asset Management Information System
AMP	Asset Management Plan
CAREC	Central Asia Regional Economic Cooperation
CI	CAREC Institute
IIMM	International Infrastructure Management Manual
NDC	Nationally Determined Contributions
O&M	Operation and Maintenance
PMS	Pavement Management System
RAM	Road Asset Management
RAMIS	Road Asset Management Information System
RAMS	Road Asset Management System
SDG	Sustainable Development Goals

Executive Summary

In September 2022, a four-day workshop was held in Azerbaijan (Baku) on the topic of Road Asset Management (RAM). Funded by ADB TA and conducted by the CAREC Institute, the workshop was delivered through a combination of in-person and virtual trainers to 18 participants representing various ministries and state departments involved in the management of the national road network of Azerbaijan.

The workshop was effectively the third stage of RAM engagement between the CAREC Institute and the CAREC member countries. The first stage occurred in 2020 and consisted of an online training program in RAM; and the second stage occurred in 2021 and was focused around the completion of a self-assessed RAM Maturity Assessment. This third stage built upon that earlier work to:

- move to a combination of in-person and virtual training (rather than 100% virtual as per the earlier stages);
- deliver a more focused training program based on specific needs (prioritized based on the proposed action plan drafted as part of the earlier maturity assessment); and
- produce an updated maturity assessment and associated RAM Improvement Plan.

The workshop achieved a very high satisfaction rating with 83% of participants rating it Excellent and 17% rating it Good.

Introduction

Background to Workshops

Since 2020 the CAREC Institute, in collaboration with the Asian Development Bank (ADB), has been supporting the CAREC member countries in a range of Road Asset Management (RAM)[1] initiatives from online training program delivery, through to country specific RAM maturity assessments,[2] and the use of RAM to address a range of other challenges such as cross-border transportation needs and climate change adaptation.

During 2020/21 a RAM maturity assessment was attempted to be completed via self-assessment for each CAREC member country, with the results indicating a significant range of competency both across the various aspects of RAM and also across the member countries.

Figure 1: Summary from 2021 Maturity Self-Assessments.
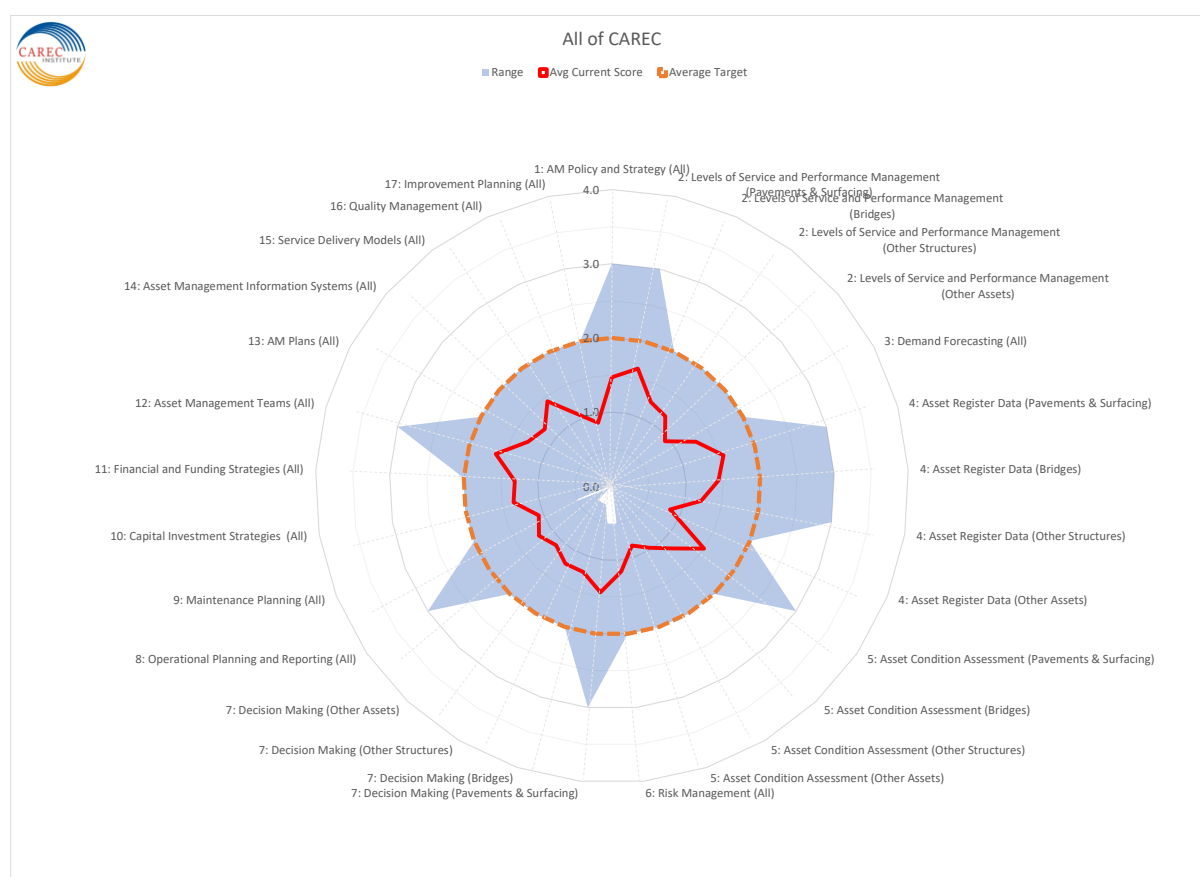
Source: CAREC Region Road Asset Management, Maturity Assessment, Final Report. CAREC Institute, 2021.

This in-country workshop ties in with the prior online training and RAM maturity assessment initiatives, taking the RAM discussions from a regional level down to the country level. The 2020 training was about awareness raising and for many participants was their first encounter with the full range of RAM activities. The training was not customised to any one country, and besides Q&A sessions it was a one-way delivery. In 2021 the maturity assessment was a more focussed exercise,

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[1]CAREC Institute E-Learning Platform: https://elearning.carecinstitute.org/learning-modules/workshops/124.html
[2]CAREC Institute E-Learning Platform: https://elearning.carecinstitute.org/learning-modules/workshops/160.html

with a smaller group of participants from each country and much more of a two-way interactive session – although not all countries completed the maturity assessment.

Figure 2: Stages of Road Asset Management Capacity Building Activities.
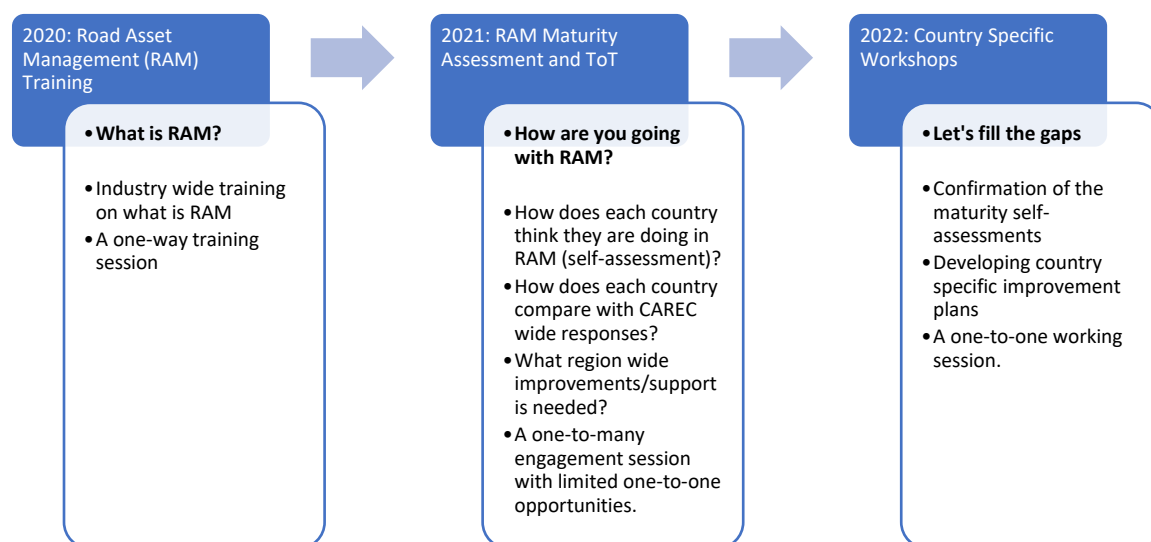
Two countries have been included in the first round of Country Specific Workshops – Azerbaijan and Georgia – with each subject to a standalone report.

The core objectives of the workshops were:

i.   to carry out country review on the implementation of RAM and to further develop the target participants' knowledge and skills on asset data collection, management and maintenance;

ii.   to introduce the road related Greenhouse Gas (GHG) emissions and counter measures as well as to produce country specific improvement plan in GHGs reduction;

iii. to enhance member countries' capabilities (bridging capacity gaps among member countries on RAM) for enhanced cooperation among experts and policymakers and influencers;

iv.   to create a core group of competent asset managers within each country and ultimately across the CAREC region who can support each other in RAM; and

v.   to facilitate and further enhance knowledge and best practices sharing among member countries for effective and sustainable regional development under the ADB CAREC Program.

The workshops are expected to achieve these outcomes:

i.   country review on the implementation of RAM achieved and to target participants' knowledge and skills on asset data collection, management and maintenance is improved;

ii.   the road related Greenhouse Gas (GHG) emissions and counter measures as well as country specific improvement plan in GHGs reduction are introduced;

iii. enhance member countries capabilities for capacity gaps among member countries on RAM are bridged and cooperation among experts and policymakers and influencers are promoted; and

iv.   knowledge and best practices sharing among member countries for collective sustainable regional development under the ADB CAREC Program is further enhanced.

Presenters & Facilitators

The CAREC Institute provide the facilitators for the workshop, with key staff being:

- Dr Iskandar Abdullaev, Opening address and Keynote Presentation
- Dr Ayoob Ayoobi, Overview of training
- Mr Rovshan Mahmudov, Facilitation and Daily Summary

The workshop training was delivered by:

- Dr Ian Greenwood (in person, and overall workshop lead)
- Dr Theunis Henning (via video link)
- Mr Serge Cartier (via video link)

Other key participants include:

- Ms Dildar Zakir, CAREC Institute
- Mr Gary Huang, CAREC Institute
- Mr Mirhemid Bagirov, National consultant

Participants

There were 18 participants registered for the workshop as per the table below.

Table 1: List of Workshop Participants.

List of Participants
1. Mr. Jeyhun Yusifov, Director of Project Implementation Unit, Investment Department, State Agency of Azerbaijan Automobile Roads
2. Mr. Vugar Guliyev, Acting Deputy Director of Project Implementation Unit, Investment Department, State Agency of Azerbaijan Automobile Roads
3. Mr. Anar Sadikhov, Specialist of Organization and Traffic Safety Department, State Agency of Azerbaijan Automobile Roads
4. Mr. Ali Najafzade, Lead Engineer of Project Implementation Unit, Investment Department, State Agency of Azerbaijan Automobile Roads
5. Mr. Elton Ibrahimli, Specialist of Management of Investment Projects Division, Investment Department, State Agency of Azerbaijan Automobile Roads
6. Mr. Anar Mammadov, Chief Advisor of Transport Sector Regulation Department, Ministry of Digital Development and Transport
7. Mr. Rauf Safarov, Chief Advisor of Transport Sector Regulation Department, Ministry of Digital Development and Transport
8. Mr. Emil Gasimov, Head Scientific Researcher of Macroeconomic Research Department, Economic Scientific Research Institute under the Ministry of Economy
9. Ms. Nigar Alasgarova, Senior Researcher of Macroeconomic Research Department, Economic Scientific Research Institute under the Ministry of Economy
10. Ms. Ulkar Salifova, Senior Researcher of Macroeconomic Research Department, Economic Scientific Research Institute under the Ministry of Economy
11. Ms. Shahla Babayeva, Chief Specialist of Analytical Analysis and Economic Modelling Department, Economic Scientific Research Institute under the Ministry of Economy
12. Mr. Karim Hajiyev, Specialist of Macroeconomic Research Department, Economic Scientific Research Institute under the Ministry of Economy
13. Mr. Ikram Mammadov, Inspector of Organizational Inspector Department, Chief State Police Department, Ministry of Internal Affairs

14. Mr. Toghrul Mustafayev, Chief State Vehicle Inspector of Auto-Technical Inspection Department, Chief State Police Department, Ministry of Internal Affairs
15. Mr. Yusif Atakishiyev, Engineer of Traffic Management Department, Chief State Police Department, Ministry of Internal Affairs
16. Mr. Tarlan Safarov, Head of Traffic Management Department, Baku Transport Agency
17. Mr. Sabuhi Mursalov, Senior Adviser of Traffic Management Department, Baku Transport Agency
18. Mr. Huseyn Abdullayev, Deputy Head of Strategic Planning and Development Department, Baku Transport Agency

Special Guests

19. Ms. Candice Mcdeigan, Country Director, Azerbaijan Resident Mission, ADB
20. Mr. Ashraf Kuliyev, Advisor to CAREC NFP, Republic of Azerbaijan
21. Mr. Nail Valiyev, Senior Economics Officer, Regional Cooperation Coordinator, Azerbaijan Resident Mission, ADB

Figure 3: Workshop Group Photograph.

Agenda

The workshop agenda was as follows. All training materials were provided in both English and the Azerbaijan languages, with electronic copies made available via the CAREC Institute e-learning platform.

Day 1 (Tuesday, 6 September 2022)

08:30-09:00	**Registration**
09:00-09:30	**Welcome and Opening Remarks**

- Candice McDeigan, Country Director, Azerbaijan Resident Mission, ADB
- Iskandar Abdullaev, Deputy Director II, CAREC Institute
- Vugar Guliyev, Acting Deputy Director of Project Implementation Unit, Investment Department, State Agency of Azerbaijan Automobile Roads

09:30-10:00	**Keynote Presentation: Performance of CAREC Corridors**
	Presenter: Iskandar Abdullaev, Deputy Director II, CAREC Institute
10:00-10:10	**Overview of the Training**
	Presenter: Ayoob Ayoobi, Chief of Capacity Building Division, CAREC Institute
10:10-10:30	**Tea/Coffee Break – Photo Session**
10:30-11:10	**Refresh on RAM**
	Presenter: Ian Greenwood, Greenwood Associates Infrastructure Consultants, New Zealand
11:10-12:00	**The Prior RAM Maturity Assessment and Improvement Plan**
	Presenter: Ian Greenwood, Greenwood Associates Infrastructure Consultants, New Zealand
12:00-13:00	**Lunch:** Amirov Room, Hyatt Regency Baku
13:00-14:00	**Road Funding**
	Presenter: Serge Cartier, Cartier Consult
14:00-14:15	**Tea/Coffee Break**
14:15-15:15	**Developing Service Levels for All Asset Types**
	Presenter: Theuns Henning, Consulting Engineer, New Zealand
15:15-16:15	**The AM Team – including potential to outsource**
	Presenter: Ian Greenwood, Greenwood Associates Infrastructure Consultants, New Zealand
16:15-16:30	**Wrap-up of Day 1**

- Rovshan Mahmudov, Senior Capacity Building Specialist, CAREC Institute

Day 2 (Wednesday, 7 September 2022)

08:30-09:00	**Registration**
09:00-09:45	**Asset Register – Developing and Maintaining**

Develop Guidance on Minimum Data to be Collected for Major Asset Types

Presenter: Ian Greenwood, Greenwood Associates Infrastructure Consultants, New Zealand

09:45-10:30	**Asset Condition Data Collection for Major Asset Types**
	What to Collect, With What and How Often
	Presenter: Theuns Henning, Consulting Engineer, New Zealand
10:30-10:45	**Tea/Coffee Break**
10:45-11:30	**Lifecycle Decision Making & Pavement Prediction Modelling**
	Presenter: Theuns Henning, Consulting Engineer, New Zealand
11:30-12:00	**Operations, Maintenance, Emergency, and Capital Works**
	Presenter: Ian Greenwood, Greenwood Associates Infrastructure Consultants, New Zealand
12:00-13:00	**Lunch:** Amirov Room, Hyatt Regency Baku
13:00-18:00	**Site Visit**

Day 3 (Thursday, 8 September 2022)

08:30-09:00	**Registration**
09:00-09:45	**Asset Management Plans**
	Presenter: Ian Greenwood, Greenwood Associates Infrastructure Consultants, New Zealand
09:45-10:30	**Asset Management Information Systems, and Decision Support Tools**
	Presenter: Theuns Henning, Consulting Engineer, New Zealand
10:30-10:45	**Tea/Coffee Break**
10:45-12:00	**Service Delivery Models**
	Presenter: Ian Greenwood, Greenwood Associates Infrastructure Consultants, New Zealand
12:00-13:00	**Lunch:** Amirov Room, Hyatt Regency Baku
13:00-15:00	**Carbon Emission Modelling, Policies and Integrating Climate Change into RAM, including Infrastructure Resilience**
	Presenters:
	Ian Greenwood, Greenwood Associates Infrastructure Consultants, New Zealand
	Theuns Henning, Consulting Engineer, New Zealand
	Ayoob Ayoobi, Chief of Capacity Building Division, CAREC Institute
15:00-15:15	**Tea/Coffee Break**
15:15-16:15	**Developing a RAM Policy**
	Presenter: Ian Greenwood, Greenwood Associates Infrastructure Consultants, New Zealand
16:15-16:30	**Wrap-up of Day 3**

- Rovshan Mahmudov, Senior Capacity Building Specialist, CAREC Institute

Day 4 (Friday, 9 September 2022)

08:30-09:00	**Registration**
09:00-10:30	**Produce Country Specific Improvement Plan**
	Presenter: Ian Greenwood, Greenwood Associates Infrastructure Consultants, New Zealand
10:30-10:45	**Tea/Coffee Break**
10:45-12:00	**Review of Training / General Q&A**
12:00-13:00	**Lunch:** Amirov Room, Hyatt Regency Baku
13:00-14:30	**Feedback and Networking**
	By having Tea/Coffee
14:30-15:00	**Final Wrap-up and Workshop Close**

- Iskandar Abdullaev, Deputy Director II, CAREC Institute

Site Visit

A site visit was made to a under construction toll road that will ultimately connect to the Russian border and be part of the key north-south route through Azerbaijan. The site visit provided an opportunity to see how RAM practices are implemented – including discussions around life-cycle cost decisions on pavement designs; maintenance practices; traffic management and the like.

The State Agency of Azerbaijan Automobile Roads is thanked for their arrangement of the site visit, including making key staff involved with the delivery of the works available for discussions with the workshop participants. A selection of photos from the site visit is included in the table below.

Table 2: Photos from Site Visit.

National highway through Baku.

National highway heading out of Baku

National highway heading out of Baku

National highway in largely rural area.

Control centre for new toll road

Newly constructed (not yet open to the public) toll road, with rest areas.

Newly constructed (not yet open to the public) toll road

Newly constructed (not yet open to the public) toll road

Pavement under construction

Pavement under construction.

Maturity Assessment & Improvement Plan

During the course of the workshop, a draft RAM Maturity Assessment was completed by Ian Greenwood based on discussions and observations made throughout the 4-days. This was then presented and debated with the workshop participants on the final day with the resultant assessment presented below. The maturity assessment followed the overall RAM process diagram (refer to Figure 4) that is based upon the International Infrastructure Management Manual (IIMM), which has been used as the basis of the training for the past 2-years.

Figure 4: Asset Management Process.
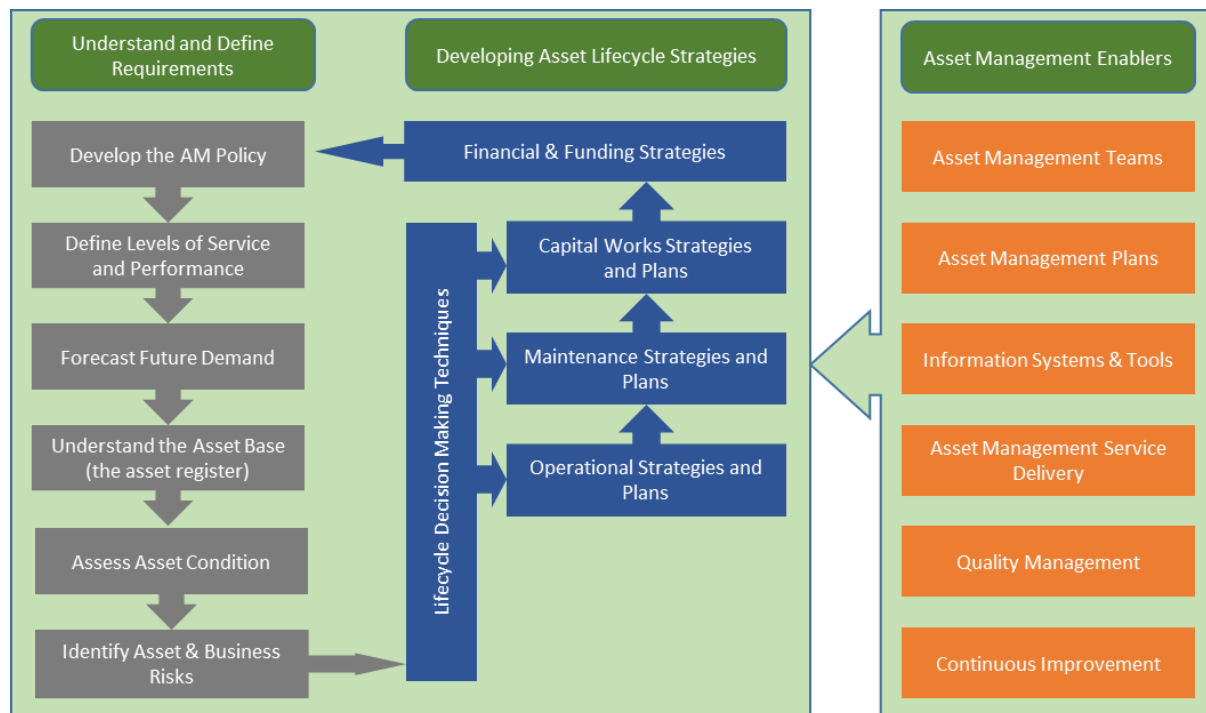
*Source:* International Infrastructure Management Manual.

For each component of RAM, a score was assigned as follows:

- 0 = Aware
- 1 = Basic
- 2 = Proficient
- 3 = Advanced
- 4 = Advanced +

The results of the assessment are shown in Figure 5 below, with the following legend:

- Target (blue line): This has been set at a maturity level of 2 = Proficient
- CAREC Avg (red line): This is the average result from the submitted self-assessments from the 2020/21 maturity assessments
- Azerbaijan (green line).

Figure 5: RAM Maturity Assessment.
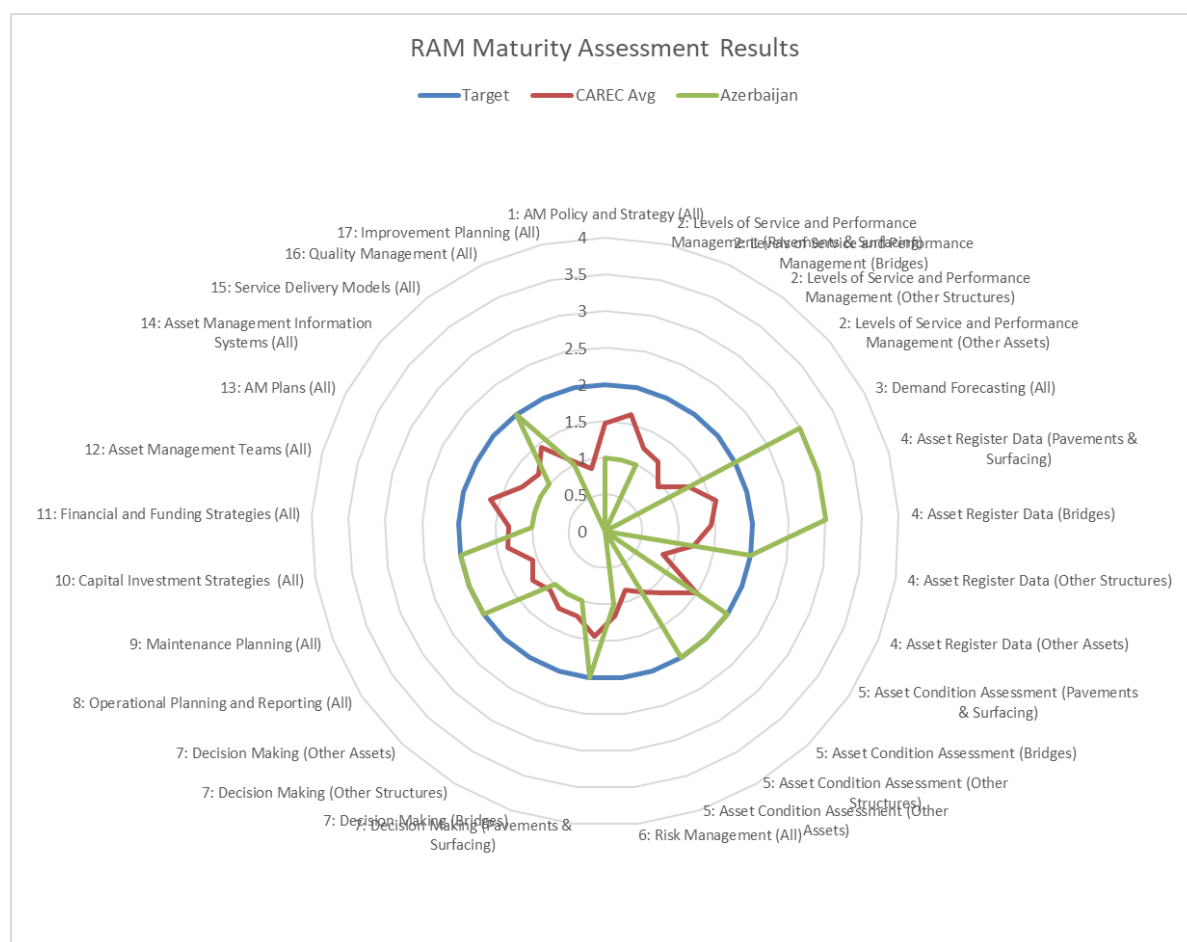
As is common, Azerbaijan ranges from very good practice in some components of RAM to only just commencing in others. Like many road authorities, the results show strength around the management of the pavement and (to a lesser extent) bridges, with relative weakness around aspects such as the implementation of a formal RAM policy, having customer focussed service levels, and ensuring an Asset Management Plan is produced.

From the results of the maturity assessment, an improvement plan was drafted to lift the minimum maturity rating to a level of 2 (proficient). For each improvement action (one action per component of the RAM Process), a priority has been set based on the following timeline:

- High = completion within the next 1-2 years
- Medium = completion within the next 3-5 years
- Low = completion within the next 6-10 years

Table 3: RAM Maturity Assessment and Improvement Plan.

Question	Section	Asset Class	Questions	Azerbaijan	CAREC Average	Improvement Action	Priority
1	AM Policy and Strategy	All	Does your organization have a clearly articulated and widely understood commitment to AM that forms its AM Policy and Strategy?	1	1.5	Prepare an AM Policy and have it approved by the relevant Minister. Include commitment to ISO55000 by 2030.	H
2	Levels of Service and Performance Management	Pavements & Surfacing	What type of service levels are in place, and how are targets set and achievements reported?	1	1.6	Introduce customer based service levels and ensure public reporting is in place.	H
		Bridges	What type of service levels are in place, and how are targets set and achievements reported?	1	1.3	Introduce customer based service levels and ensure public reporting is in place.	H
		Other Structures	What type of service levels are in place, and how are targets set and achievements reported?	0	1.2	Introduce technical measures for critical assets.	M
		Other Assets	What type of service levels are in place, and how are targets set and achievements reported?	0	0.9	Introduce technical measures for critical assets.	L
3	Demand Forecasting	All	How do you go about predicting the future demand on the assets?	3	1.3	Continue with current practices, review and update as needed over time.	L
4	Asset Register Data	Pavements & Surfacing	What asset data (inventory, construction dates etc) do you hold and how is it updated and linked with financial data/	3	1.6	Continue with current practices, review and update as needed over time.	L
		Bridges	What asset data (inventory, construction dates etc) do you hold and how is it updated and linked with financial data/	3	1.4	Move from paper based passports to the use of a centralised AMIS for holding the data.	H
		Other Structures	What asset data (inventory, construction dates etc) do you hold and how is it updated and linked with financial data/	2	1.2	Move from paper based passports for tunnels to the use of a centralised AMIS for holding the data.	M

|							
						Ensure basic data on all critical assets is held within 5yrs.	
		Other Assets	What asset data (inventory, construction dates etc) do you hold and how is it updated and linked with financial data/	0	0.8	Collect basic data on the location of other assets, and only add details on an as-required basis.	M
5	Asset Condition Assessment	Pavements & Surfacing	How do you measure the condition of the assets?	2	1.5	Continue with current practices, review and update as needed over time.	L
		Bridges	How do you measure the condition of the assets?	2	1.2	Continue with current practices, review and update as needed over time. Ensure data moves into a central AMIS.	M
		Other Structures	How do you measure the condition of the assets?	2	1.0	Move from paper based passports for tunnels to the use of a centralised AMIS for holding the data. Ensure basic data on all critical assets is held within 5yrs.	M
		Other Assets	How do you measure the condition of the assets?	0	0.8	Collect condition data on critical assets only.	M
6	Risk Management	All	What processes do you have to identify and manage risks to the network?	1	1.2	Establish a risk assessment guideline and undertake a network level assessment to identify critical routes; high risk locations; and associated mitigation measures	M
Lifecycle Decision Making							
7	Decision Making	Pavements & Surfacing	How do you make decisions on the renewal or rehabilitation of the assets?	2	1.4	Continue with current practices, review and update as needed over time.	L
		Bridges	How do you make decisions on the renewal or rehabilitation of the assets?	1	1.2	With transition of data to a centralised AMIS, proceed to implement more advanced decision making tools for bridges.	M

		Other Structures	How do you make decisions on the renewal or rehabilitation of the assets?	1	1.2	Include for critical assets only.	M
		Other Assets	How do you make decisions on the renewal or rehabilitation of the assets?	1	1.1	Include for critical assets only.	M
8	Operational Planning and Reporting	All	What activities are undertaken to ensure the optimal use of the assets occurs?	2	1.2	Continue with current practices and review as necessary	M
9	Maintenance Planning	All	How does the organisation deliver maintenance activities?	2	1.1	Continue with current practices and review as necessary.	M
10	Capital Investment Strategies	All	How does the organization prepare its renewal and capital expansion projects?	2	1.3	Continue with current practices and review as necessary.	M
11	Financial and Funding Strategies	All	How does the organization plan to fund all of its needs?	1	1.3	Ensure a long term (10yr) plan is in place for the maintenance, renewal and capital expansion of the network. Undertake an asset valuation.	M
Asset Management Enablers							
12	Asset Management Teams	All	What is the level of organisational commitment to RAM? Is RAM seen as a organizational wide responsibility? Is RAM a viable career path?	1	1.6	Review the capability and capacity of those leading RAM and expand as need be. Ensure that RAM is part of senior management reporting.	H
13	AM Plans	All	Is an asset management plan prepared and made available?	1	1.3	Prepare a full AMP, and use this to identify the gaps in knowledge and processes. Also include the improvement plan in the AMP.	H

14	Asset Management Information Systems	All	What AMIS is in use to manage the AM data sets and how does this link to the financial management systems?	1	1.2	Implement a full AMIS that covers all asset types. To be web based, GIS linked etc. Initially bring in the pavements and bridges, then expand to other asset types.	H
15	Service Delivery Models	All	How do you procure and deliver works? Are alternative ways of using in-house and external suppliers considered?	2	1.4	Review the current 100% in-house maintenance delivery model to a mix of models to understand how these impact RAM.	M
16	Quality Management	All	Is there a QA process around the RAM activities?	1	1.1	Document all RAM processes and undertake a sample of audits to check for compliance with the documented processes.	M
17	Improvement Planning	All	Is there a RAM improvement plan? Is it funded and managed like a formal project? Is it delivering improvements to RAM processes?	0	0.9	Formalise/adopt this improvement plan and manage the actions accordingly. Include reporting on it within the AMP.	H

Feedback from participants

At the end of the workshop, participants were provided with a feedback form. The results of this are presented in the figures below and the written comments that follow the figures. The overall results are very positive, with the suggestions of areas for future workshops worth noting.

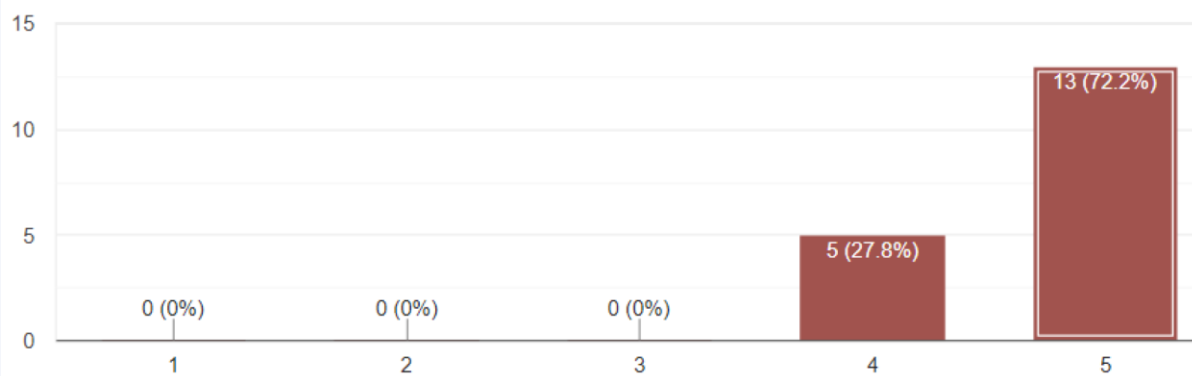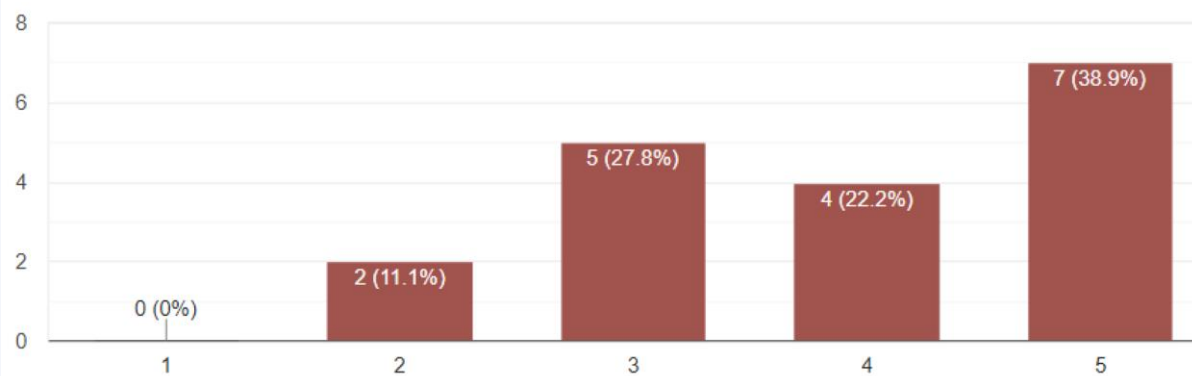**Figure 6: Workshop Evaluation by Participants.**
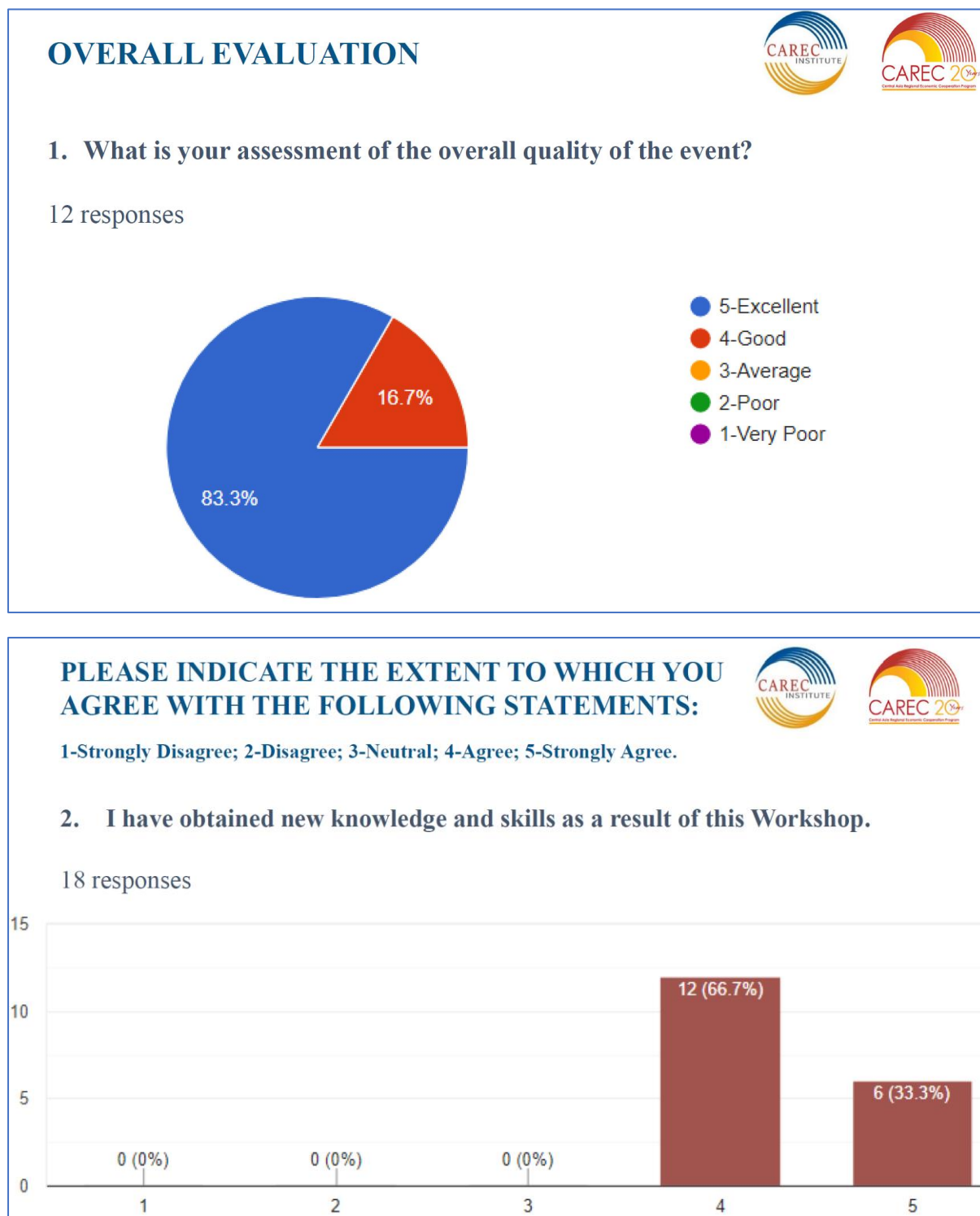
PLEASE INDICATE THE EXTENT TO WHICH YOU AGREE WITH THE FOLLOWING STATEMENTS:

1-Strongly Disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly Agree.

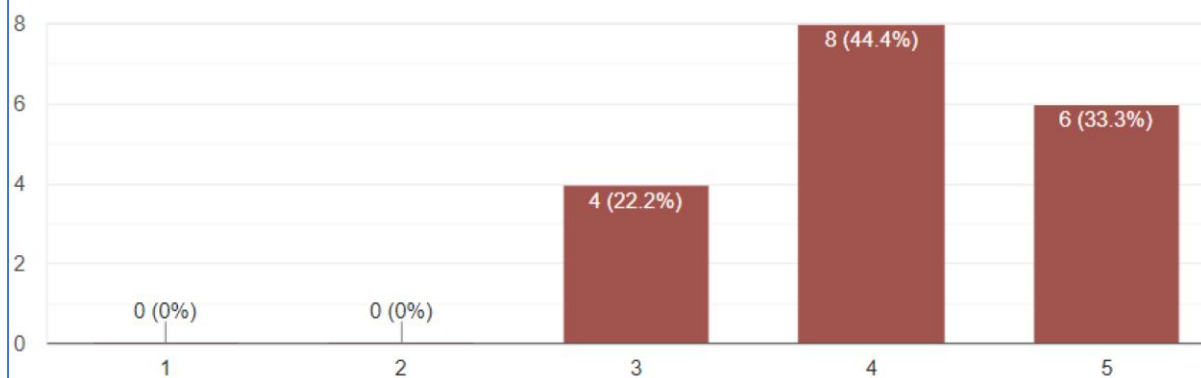### 3. The conference objectives were clear.

18 responses

PLEASE INDICATE THE EXTENT TO WHICH YOU AGREE WITH THE FOLLOWING STATEMENTS:

1-Strongly Disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly Agree.

4. The topics discussed are relevant to my current position and my organization.

18 responses

PLEASE INDICATE THE EXTENT TO WHICH YOU AGREE WITH THE FOLLOWING STATEMENTS:

1-Strongly Disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly Agree.

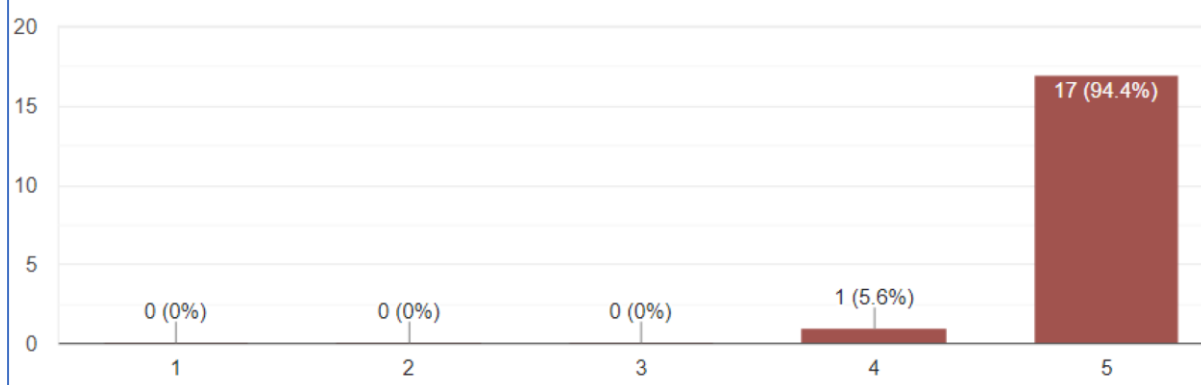### 5. I will be able to use new knowledge gained in the event in my work.

18 responses

PLEASE INDICATE THE EXTENT TO WHICH YOU AGREE WITH THE FOLLOWING STATEMENTS:

1-Strongly Disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly Agree.

### 6. Presentation materials were useful and well-aligned with the Workshop objectives.

18 responses

PLEASE INDICATE THE EXTENT TO WHICH YOU AGREE WITH THE FOLLOWING STATEMENTS:

1-Strongly Disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly Agree.

7. The presentations and discussions were useful in considering practical applications for the Workshop content.

18 responses
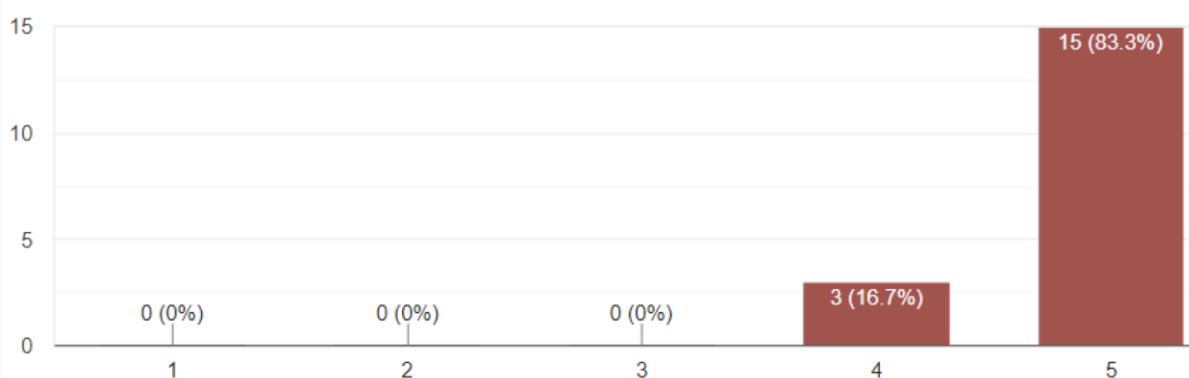
Written feedback was also provided by a number of participants. These comments are grouped below through representative statements, into ways to make the current training program better, and what additional training areas the participants would like to see offered.

Ways to Improve the Current Training:

- The active discussions during sessions was good and more of this should be encouraged;
- Due to the new knowledge we have gained in the field of road asset management, it would be more appropriate to conduct such events regularly;
- It would be appropriate to hold more such events and to learn from the practice of foreign countries and apply them to the operation of Azerbaijani roads;
- Adding examples and issues to the presentation about the country where the training took place would be of use;
- Suggest to include the participation of the road workers working in Azerbaijan with a seminar on the management of road assets.

Future Training Areas:

- The organization and safety of traffic and traffic management;
- Providing practical information about the computer hardware system (HDM) using RAM;
- Investment project management and reports on project risk management;
- Actions to be taken in the organization of traffic during floods, rainwater, natural disasters on highways and preparation for natural disasters;
- Environmental issues, such as electric cars that cause less damage to nature, and conversations can be held in the direction of freeing traffic jams;
- City streets designing, traffic safety, public transport;
- Conducting events abroad and getting to know the construction process practically on site.