

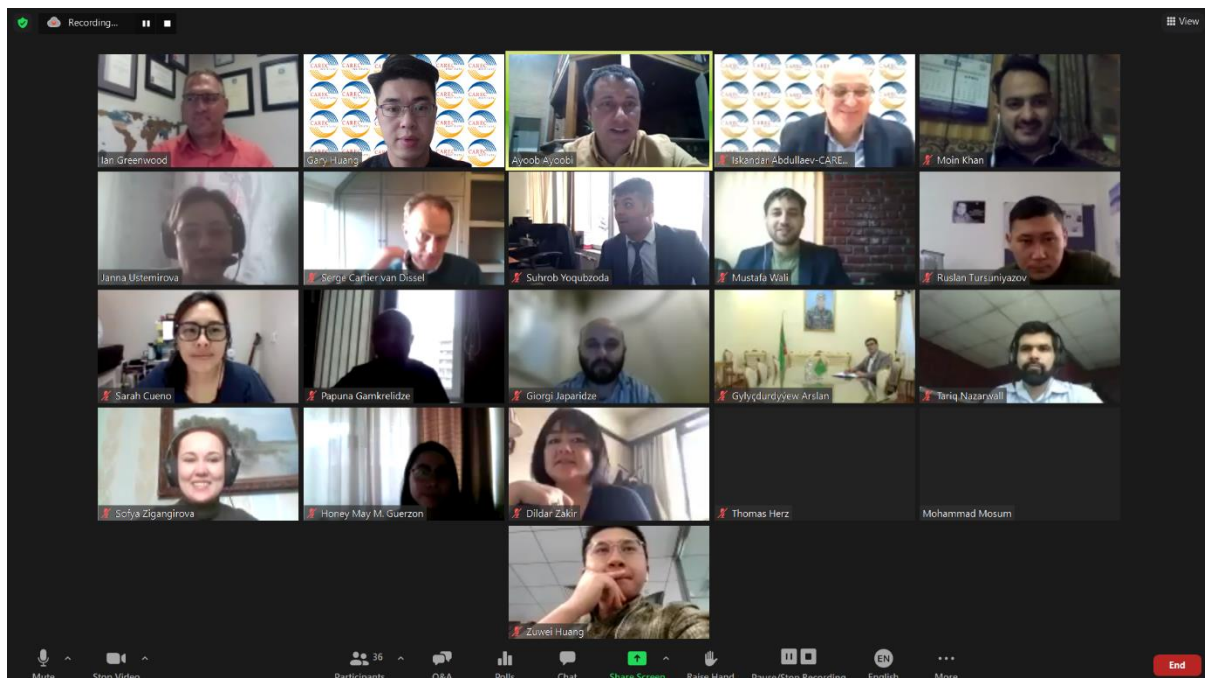


CAREC Institute

**CAREC Region Road Asset Management
Maturity Assessment**

FINAL REPORT

June 2021



Disclaimer

This final report is the outcome of the CAREC Institute's inaugural Training of Trainers (ToT) program in CAREC Road Asset Management (RAM) Maturity Assessment that took place during the first half of 2021. It is drafted by Dr. Ian Greenwood, CAREC Institute Infrastructure Consultant, and Ms. Dildar Zakir, CAREC Institute Capacity Building Specialist. It is edited by Eisa Khan Ayoob Ayoobi, the CAREC Institute Chief of Capacity Building Division. Mr. Rovshan Mahmudov, Senior Capacity Building Specialist and Mr. Gary Huang, E-Learning Specialist of the CAREC Institute, have contributed to the report.

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Central Asia Regional Economic Cooperation (CAREC) Institute
No. 376 Nanchang Road, Urumqi, Xinjiang, the PRC
f: +86-991-8891151
cbd@carecinstitute.org

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Last but not least, we express sincere gratitude to the CAREC National Focal Points and Regional Cooperation Coordinators of the ADB Resident Missions for the facilitation of timely nomination and their constructive participation in all activities of the ToT.

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Glossary

Abbreviation	Description
AADT	Annual Average Daily Traffic
ADB	Asian Development Bank
AM	Asset Management
AMIS	Asset Management Information System
AMP	Asset Management Plan
BMS	Bridge Management System
CAREC	Central Asia Regional Economic Cooperation
CI	CAREC Institute
EV	Electric Vehicle
IDA	International Development Association
IIMM	International Infrastructure Management Manual
NDC	Nationally Determined Contributions
O&M	Operation and Maintenance
PBC	Performance Based Contract
PMS	Pavement Management System
QII	Quality Infrastructure Investment
RAM	Road Asset Management
RAMIS	Road Asset Management Information System
RAMS	Road Asset Management System
SDG	Sustainable Development Goals
ToR	Terms of Reference
ToT	Training of Trainers

Executive Summary

The CAREC Institute, with the support of ADB, undertook its first training of trainers (ToT) program in Road Asset Management (RAM) maturity assessment of the CAREC member countries. This project entailed the development of a maturity assessment tool suitable for the CAREC region; training of trainers who will undertake the assessment within their respective countries; the development of improvement programs for each country; and the identification of how the CAREC Institute can assist those improvement programs.

In total eight out of the eleven CAREC countries submitted completed maturity assessment templates for inclusion into the analysis, with two other countries participating in the process but not submitting an assessment. **Error! Reference source not found.** summarizes which countries participated in different aspects of the project. While 100% participation and response would have been desirable, having eight responses out of 10 is considered sufficient to provide a sound basis for understanding the range of practices across the CAREC region.

From the analysis, Figure 1 presents the overall findings. The solid red line is the average response received and indicates that, in general, there is work to be done to improve the standard of RAM across the full range of activities. However, the figure also demonstrates by way of the blue shading that the best practices (the outer extent of the blue shading) that exist within the CAREC region are for all aspects of RAM equal to the defined standard of 'proficient' (the dashed line). Equally, the figure indicates through the blue shading extending to the 0 value for most aspects that there are also road authorities that are just commencing their RAM journey.

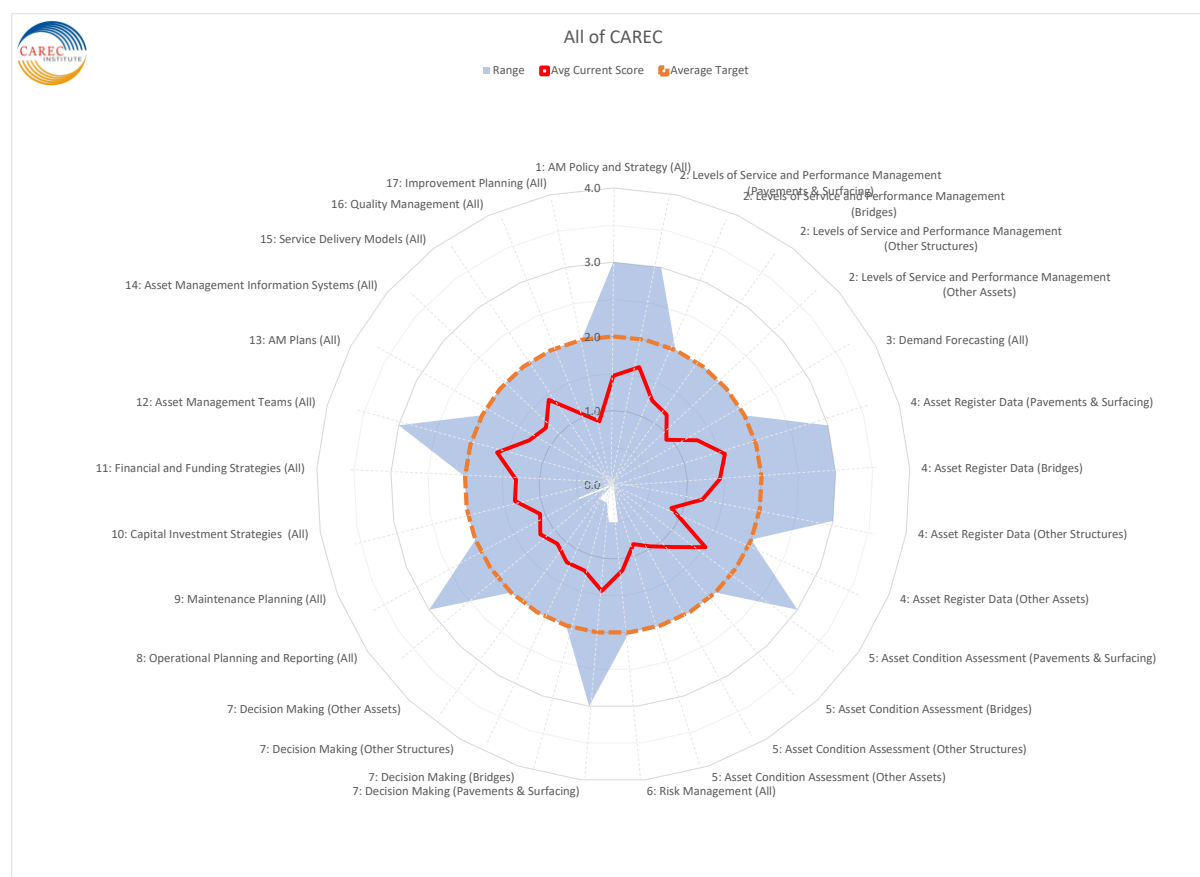


Figure 1: Overall Findings

Depending on where each road authority is on its RAM journey will determine the time it will take to become proficient overall. At the ADB RAM Workshop¹ Dr Chris Bennett presented an overview of World Bank experience and noted that the timeline for achieving proficiency in RAM (assuming there is good level of internal and external support) would range from 8 years for a road authority with no prior RAM focus, down to 3 years for a road authority with the basics in place. Achievement of what could be considered best practice on a global comparison is typically a further 2-5 years of sustained effort.

Based on analysis of the findings, Table 1 presents the high priority improvement actions that the CAREC Institute could assist with. Improvement actions for the full range of RAM activities is contained in Table 6

Table 1: High Priority Improvement Plan

Aspect of RAM	Improvement Action	Priority
Policy	Develop a RAM policy template.	High
Levels of Service	Develop a range of service level indicators and performance measures for all asset types that countries can adopt if desired.	High
Asset Register	Develop guidance on minimum data to be collected for major asset types.	High
Asset Condition	Develop guidance on recommended data collection for major asset types (what to collect and how often). Include discussion on equipment to use, and indicative costs (equipment + staff) to complete the data collection on an annual basis.	High
AM Team	Provide some benchmark indicators for the human resources needed to appropriately manage a road network under various delivery models.	High
AM Plans	Produce an AMP template.	High
Improvement Plan	Produce country specific support to take findings from this Maturity Assessment and turn into a country level Improvement Plan.	High

Country specific results were also produced and provided back to those who completed the study. These were agreed not to be shared amongst the wider participants as part of this work. Figure 2 illustrates how the combination of CAREC regional improvement actions (as identified in this report) and country specific improvement actions are brought together to address all gaps.

¹ Asian Development Bank, Transport Community of Practice, Road Asset Management Workshop - Recent Trends in Road Asset Management and Case Studies, 25–26 November 2013, ADB Headquarters, Manila, Philippines.

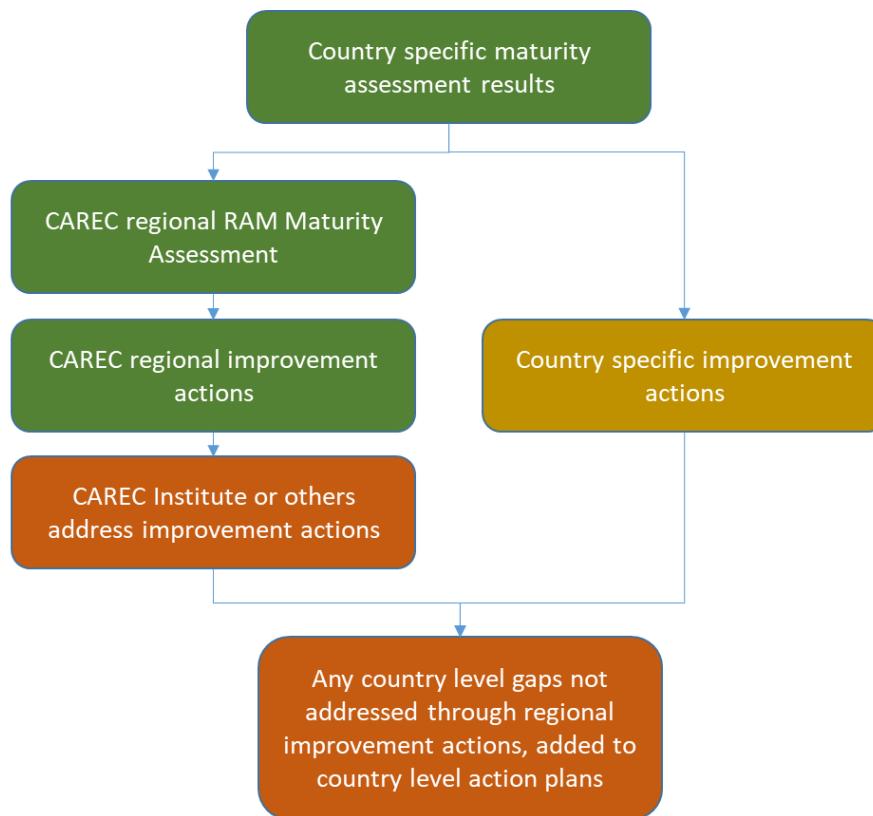


Figure 2: Inter-relationship between CAREC Wide and Country Specific Improvement Actions

1 Introduction

1.1 Project Overview

Roads are the lifeblood of the CAREC communities – transporting people and goods, connecting both within and across countries, and playing a major role in the economic and social development of all states. While there has been significant investment in the building of the road infrastructure over many decades, investment in the management and maintenance of those roads has generally not kept pace.

Road Asset Management (RAM) is the process of managing the road assets – comprising of people, processes, data, and information management systems – to deliver the desired level of service at the lowest possible lifecycle cost. While there is often a focus on the information system, data collection and decision support tools – RAM is a much broader set of practices.

The CAREC Institute delivered a four-day RAM workshop during 10-13 August 2020, involving relevant senior CAREC government officials and experts. This marked the first CAREC Institute-led activity in RAM field in line with the CAREC Transport Strategy 2030, in which the CAREC Institute, as the CAREC Program knowledge arm, is mandated to lead such activities in the implementation process of the strategy. The workshop was a success and effective despite the online delivery. It provided a broad platform to engage with leading CAREC RAM policy influencers and experts as well as to facilitate expert discussions on various aspects of RAM. It also set the stage for the CAREC Institute to plan its future capacity building activities in this area in a holistic and systemic way going forward. Implementing partners and country experts participating in the August 2020 workshop highlighted some of the gaps in RAM and RAM information systems (RAMIS) across CAREC countries and discussed potential areas of intervention.

Among other follow-up actions recommended, a maturity assessment of RAM in CAREC countries was prioritized. This was to conduct a preliminary assessment of RAM practices (i.e., policies, procedures, information systems) across all CAREC countries and establish a systematic capacity building program in this area that is based on pressing needs. The CAREC Institute has transformed its capacity building interventions to offer research-based capacity building to member countries. Hence, the Institute conducted this maturity assessment in a ToT mode which served as a basis for design of future interventions in close coordination with the CAREC leading experts of the field.

The assessment was based around the International Infrastructure Management Manual RAM process diagram used in the recent workshop, which is now familiar to CAREC countries. For each of the stages in the process, a series of questions (3-5 for each stage) were developed that reflected the specifics of RAM, with responses reflecting the level of progress the country has made on that specific item. Guidance was provided on the process, to ensure the results are robust and compatible across all member countries. The use of a CAREC-specific RAM maturity assessment, as opposed to more generic maturity assessments that are available, was that the RAM specific version can focus the questions on matters of importance for CAREC countries. It was also to help them manage road assets and consequently create a more useful improvement plan going forward.

The project involved the following major steps:

1. Task 1: Conducting of a literature review to understand the status of RAM across the CAREC region to enable for appropriate setting of the maturity assessment framework.
2. Task 2: Preparation of a Microsoft Excel template for conducting of the assessment.
3. Task 3: Delivery of training on the template to the identified Training of Trainers (ToT) participants.
4. Task 4: Ad-hoc support to the ToTs during the assessment process.
5. Task 5: Consolidation of assessment reports into a report and drafting improvement actions.

6. Task 6: Updating the assessment template based on feedback from the ToTs.
7. Task 7: Delivery of workshop to share all findings
8. Task 8: Finalizing the maturity assessment report based on the Task 7 workshop feedback and providing a framework for future RAM workshops based on the priorities identified from the assessment process.

This is the final report of the project mainly reflective of maturity assessment findings, improvement action plan and some key recommendations on way forward. Consistent with the prior RAM training, the project makes use of the International Infrastructure Management Manual (IIMM) Asset Management Process (refer to Figure 3) to provide a framework around which to examine the various components of RAM.

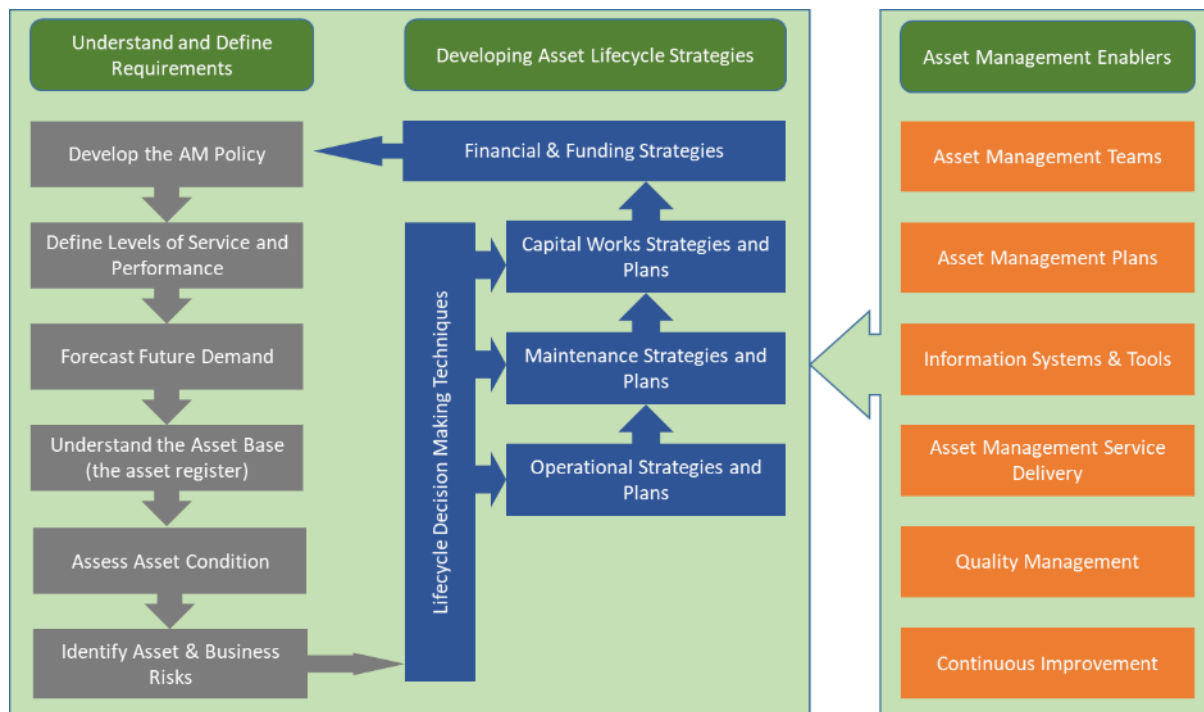


Figure 3: International Infrastructure Management Manual, Asset Management Process

2 Maturity Assessment Support

2.1 Approach

While the initial plan was to provide a one-off workshop (held on 10 February 2021) with subsequent support provided on an ad-hoc basis as countries needed it, in practice, the participants indicated a strong preference for a weekly workshop session where all could learn from each other. Task 4 was therefore modified to accommodate this need, with only a small number of country specific sessions held (primarily to confirm they had correctly completed the template). This approach was also in line with the CAREC Institute knowledge service transformation to break away from one-off events and offer cascading series of strongly interlinked workshops. Hence, a series of workshops were delivered throughout this activity, reflected in Table 2.

Table 2: List of All Workshops Delivered

Date	Audience/Topic
10 Feb 2021	CAREC member countries – Introductory workshop
18 Feb 2021	CAREC member countries – Follow-up session
25 Feb 2021	CAREC member countries – Follow-up session
3 March 2021	CAREC member countries – Follow-up session
5 March 2021	Tajikistan – country specific support
11 March 2021	CAREC member countries – Follow-up session
18 March 2021	CAREC member countries – Follow-up session
24 March 2021	Kyrgyzstan – country specific support
30 April 2021	CAREC member countries – Presentation of draft findings and recommended Improvement Plan
6 th April 2021	CAREC member countries – Finalization of Improvement Plan

It is recommended that if a similar project were to be undertaken in the future by implementing partners, the weekly engagement approach be adopted as this provided an environment in which participants appeared more at ease than during one-on-one approaches.

2.2 Feedback

During the completion of the project, a number of small refinements were identified for the maturity assessment template² as follows:

1. Greater clarity around the road network length statistics that are requested.
 - This has been addressed in a subsequent update by separating road types into paved, gravel, and earth road lengths.
2. Clear differentiation between the following columns: “Provide Context to this Issue for the Organization” and “Reason for scores.”
 - It is proposed to merge these two columns into a single column.
3. Various minor grammatical/spelling corrections
 - All rechecked.

² It is noted that the ADB have adopted the same template for use in their current project for the SASEC region. Additional worksheets have been added that specifically address issues around funding sources; Sustainable Development Goals (SDGs); G20 Quality Infrastructure Investment (QII); Nationally Determined Contributions (NDCs); and transport foresights. While not impacting the maturity assessment itself, these changes provide an enhanced focus on the context within which the roads are being managed.

3 Consolidation of Responses and Action Plan

3.1 Respondents

In total, eight out of eleven CAREC countries submitted completed maturity assessment templates for inclusion into the analysis, with a further two countries participating in the process but not submitting an assessment. Table 3 summarizes which countries participated in the different aspects of the project. While 100% participation and response would have been desirable, having eight responses is considered sufficient to provide a sound basis for understanding the range of practices across the CAREC region.

Table 3: Summary of Participation

Country	Participated in Workshops	Submitted Template
Afghanistan	✓	✓
Azerbaijan	✓	-
China	✓	✓
Georgia	✓	✓
Kazakhstan	✓	✓
Kyrgyz Republic	✓	✓
Mongolia	✓	-
Pakistan	✓	✓
Tajikistan	✓	✓
Turkmenistan	✓	✓
Uzbekistan	-	-

3.2 The Questions

The overall RAM maturity assessment consists of 17 questions that are aligned to the IIMM AM process. In some cases, the questions have been further segmented depending upon the infrastructure type (pavement and surfacing; bridges; other structures; and other assets) as shown in Table 4. When viewed overall, the above questions fit into three general areas as illustrated in Figure 4, with strengths and weaknesses observed in each area.

Table 4: Structure of Questions

AM Component	Asset Types
AM Policy and Strategy	All
Levels of Service and Performance Management	Pavements & Surfacing
	Bridges
	Other Structures
	Other Assets
Demand Forecasting	All
Asset Register Data	Pavements & Surfacing
	Bridges
	Other Structures
	Other Assets
Asset Condition Assessment	Pavements & Surfacing
	Bridges
	Other Structures
	Other Assets
Risk Management	All

AM Component	Asset Types
Decision Making	Pavements & Surfacing
	Bridges
	Other Structures
	Other Assets
Operational Planning and Reporting	All
Maintenance Planning	All
Capital Investment Strategies	All
Financial and Funding Strategies	All
Asset Management Teams	All
AM Plans	All
Asset Management Information Systems	All
Service Delivery Models	All
Quality Management	All
Improvement Planning	All

For each question, the respondents compared their current practices against a series of statements that equated to a maturity from 0-4 as per the definitions below. Ideally all road authorities would be achieving at least a result of 2 (= proficient) with the next 5-10 years across all areas of RAM, and it was agreed that this was a suitable target to aim for at this stage. Within Figure 4, the dashed line reflects this value of 2.

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

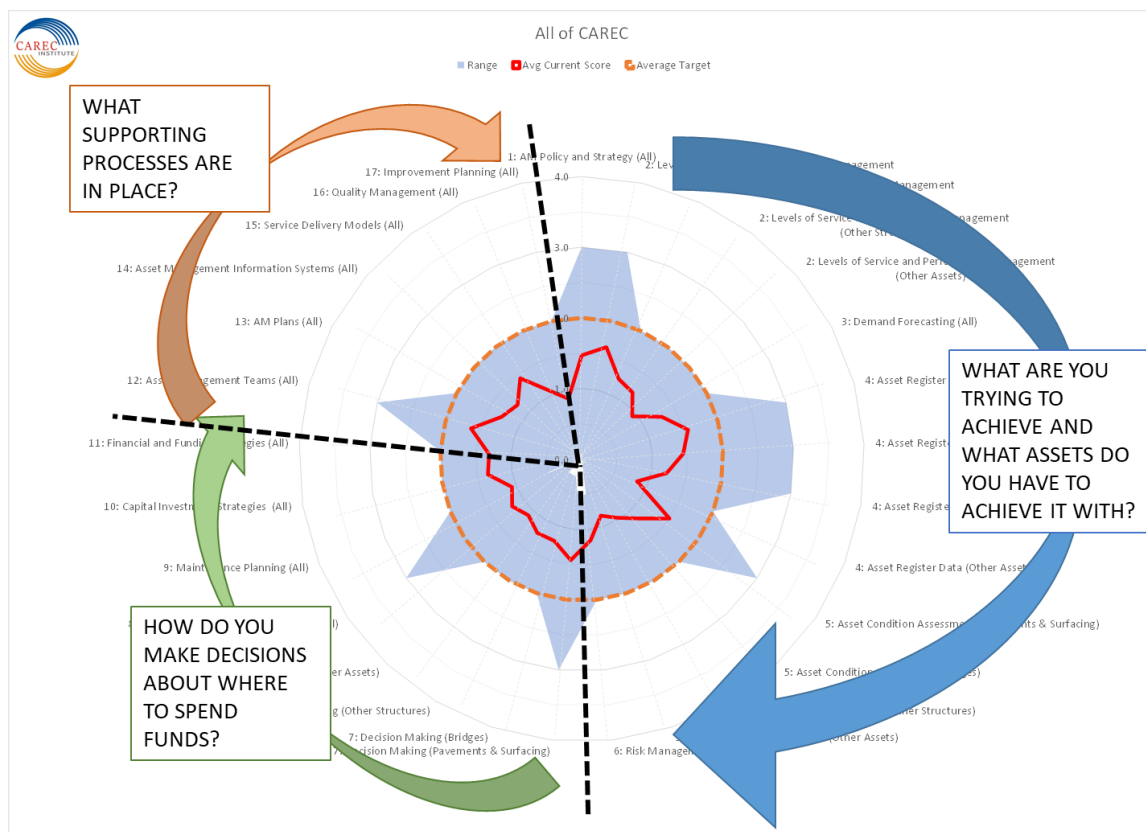


Figure 4: Coverage of RAM Maturity Assessment Questions

3.3 The Responses and Improvement Actions

The following section presents the results of the assessment, along with the recommended improvement actions that the CAREC Institute could undertake to support the region to improve their RAM practices. These improvement actions are further summarized and prioritized in Section 3.4.

The high-level summary analysis is presented in Figure 5 and Table 5. The solid red line in Figure 5 is the average response received and indicates that in general there is work to be done to improve the standard of RAM across the full range of activities to achieve Proficient status. However, the figure also demonstrates by way of the outer extent of the blue shading that the best practices that exist within the CAREC region are for all aspects of RAM are at least equal to Proficient status (the dashed line). Equally, the figure and data in the following table indicates by way of the inner extent of the blue shading (the lowest score), that for each aspect of RAM there are those road authorities that are just commencing their RAM journey.

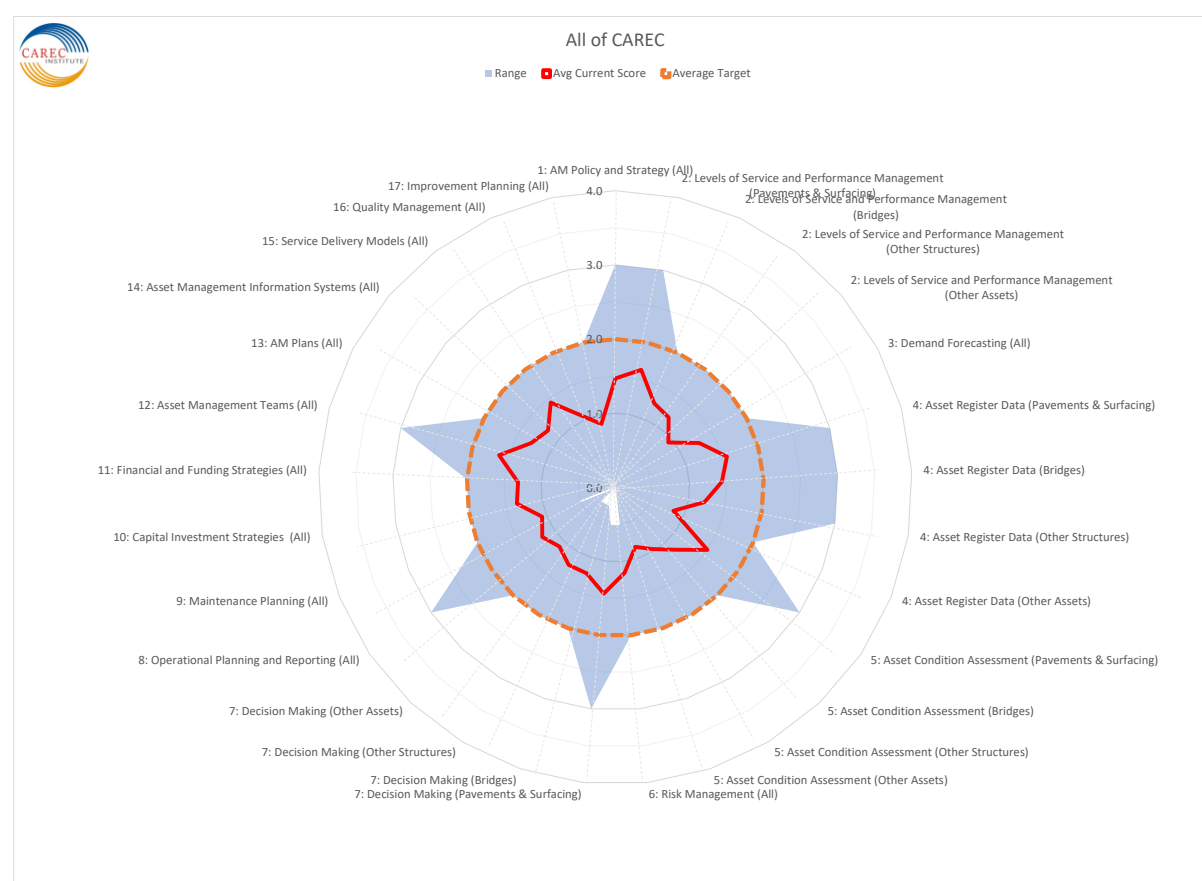


Figure 5: Summary Maturity Assessment Ratings

Table 5: Summary Maturity Assessment Ratings

RAM Component	Low Current Score	High Current Score	Avg Current Score
1: AM Policy and Strategy (All)	0	3	1.47
2: Levels of Service and Performance Management (Pavements & Surfacing)	0	3	1.63
2: Levels of Service and Performance Management (Bridges)	0	2	1.25
2: Levels of Service and Performance Management (Other Structures)	0	2	1.19
2: Levels of Service and Performance Management (Other Assets)	0	2	0.94
3: Demand Forecasting (All)	0	2	1.28
4: Asset Register Data (Pavements & Surfacing)	0	3	1.56
4: Asset Register Data (Bridges)	0	3	1.44
4: Asset Register Data (Other Structures)	0	3	1.22
4: Asset Register Data (Other Assets)	0	2	0.84
5: Asset Condition Assessment (Pavements & Surfacing)	0	3	1.50
5: Asset Condition Assessment (Bridges)	0	2	1.16
5: Asset Condition Assessment (Other Structures)	0	2	0.97
5: Asset Condition Assessment (Other Assets)	0	2	0.84
6: Risk Management (All)	0.5	2	1.16
7: Decision Making (Pavements & Surfacing)	0.5	3	1.44
7: Decision Making (Bridges)	0.25	2	1.22
7: Decision Making (Other Structures)	0.25	2	1.22
7: Decision Making (Other Assets)	0.25	2	1.09
8: Operational Planning and Reporting (All)	0	3	1.19
9: Maintenance Planning (All)	0.5	2	1.06
10: Capital Investment Strategies (All)	0	2	1.34
11: Financial and Funding Strategies (All)	0	2	1.31
12: Asset Management Teams (All)	0	3	1.63
13: AM Plans (All)	0	2	1.28
14: Asset Management Information Systems (All)	0	2	1.19
15: Service Delivery Models (All)	0	2	1.44
16: Quality Management (All)	0	2	1.06
17: Improvement Planning (All)	0	2	0.88

Appendix A contains detailed assessment charts and associated improvement actions, with Figure 6 provided as an example for one of the responses. In each of the equivalent charts in Appendix A, the vertical dashed line reflects the status of ‘proficiency.’ Ideally all results would be to the right of the dashed line, and the improvement actions are in effect seeking to assist with this transition of RAM maturity. Appendix A also contains additional figures relating to the data analysis, with the PowerPoint presentation used for dissemination of the results contained in Appendix B.

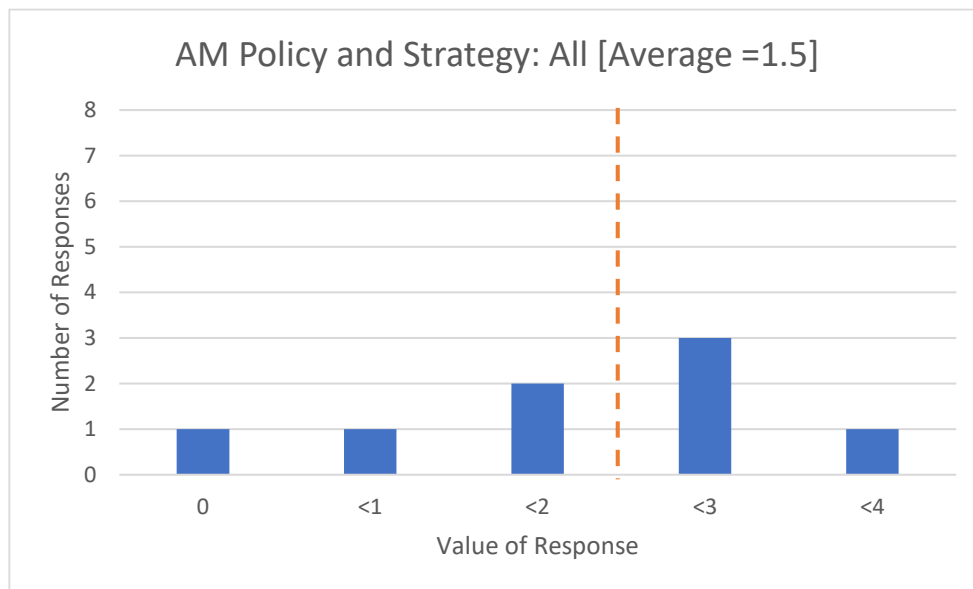


Figure 6: Example Detailed Assessment Result Chart

3.4 Improvement Plan

The improvement actions were extracted from Table 7 in Appendix A and are summarized into Table 6 and subject to a further workshop session with all participants. This provided for the confirmation of the nature of the improvement actions, and for the prioritization of the support from CAREC Institute as illustrated in the table below.

When preparing the improvement plan, it is necessary to consider the overall timeline for achieving proficiency in RAM. At the ADB RAM Workshop³ Dr Chris Bennett presented an overview of World Bank experience and noted that the timeline for achieving proficiency in RAM (assuming there is good level of internal and external support) would range from 8 years for a road authority with no prior RAM focus, down to 3 years for a road authority with the basics in place. Achievement of what could be considered best practice on a global comparison is typically a further 2-5 years of sustained effort. Depending on where each road authority is currently at on its RAM journey will determine the time it will take to become proficient overall. Within this timeline of expectation, high priority could be considered as actions to completed within the next 1-2 years; medium priority 2-4 years; and low priority being beyond that period.

Table 6: Improvement Plan

Aspect of RAM	Improvement Action	Priority
Policy	Develop a RAM policy template.	High
Levels of Service	Develop a range of service level indicators and performance measures for all asset types that countries can adopt if desired	High
Future Demand	Develop a TOR for the development of a network level traffic monitoring program.	Low
Asset Register	Develop guidance on minimum data to be collected for major asset types.	High
Asset Condition	Develop guidance on recommended data collection for major asset types (what to collect and how often). Include discussion on equipment to use, and indicative costs (equipment + staff) to complete the data collection on an annual basis.	High
Risks	Develop guidance on defining route criticality, and a risk management framework	Low
Lifecycle Decision Making	Ensure that investment decisions are aligned with RAM Policy, and appropriately utilize maintenance cost data to generate lifecycle cost forecasts.	Medium
Operations	Assistance in developing emergency response plans.	Low
Maintenance	Business case for increasing maintenance funding.	Medium
Capital Works	Support to produce an evidence based 5 year rolling capital investment plan (including renewals, capacity expansion, asset condition and asset valuation).	Medium
Funding Strategies	Align with development of 5 year rolling capital investment plan, to identify funding needs for all aspects of the asset (including RAM, operations, maintenance, and capital). Produce a knowledge product on the various sources of funding covering Road User Charges (RUCs), Tolling, Vehicle	Medium

³ Asian Development Bank, Transport Community of Practice, Road Asset Management Workshop - Recent Trends in Road Asset Management and Case Studies, 25–26 November 2013, ADB Headquarters, Manila, Philippines.

Aspect of RAM	Improvement Action	Priority
	Registration Fees, Fuel Taxes (including electric vehicle issues), General Budget allocation and Road Funds.	
AM Team	Provide some benchmark indicators for the human resources needed to appropriately manage a road network under various delivery models.	High
AM Plans	Produce an AMP template.	High
AMIS & Tools	Produce ToR for consultant to work with road authority to determine needs and support procurement of an AMIS. [Consider further if this is better off provided as support on a country-by-country basis, rather than as a CAREC wide initiative]	Medium
Service Delivery	Workshop (online) on various contractual models (from force account to PBC).	Medium
Quality Management	Encourage ongoing documenting of processes.	Low
Improvement Plan	Produce country specific support to take findings from this Maturity Assessment and turn into a country level Improvement Plan.	High

3.5 Country Specific Outputs

Country specific results were also produced and provided back to those who completed the study. These were agreed not to be shared amongst the wider participants as part of this work. Figure 2 illustrates how the combination of CAREC regional improvement actions (as identified in this report) and country specific improvement actions are brought together to address all gaps.

4 Conclusions

The following points are concluded from the overall CAREC Maturity Assessment:

- i. The completion of the RAM Maturity Assessment for the CAREC region has been completed successfully using a Training of Trainers (ToT) approach. Through this process, not only has significant insight to the status of RAM occurred, but also a group of trained personnel from across the CAREC region have been trained and are now experienced in the completion of the assessment.
- ii. The template was found to be robust; however, some minor refinements have been made to reflect the user feedback. It is noted that the ADB has adopted the same template as the basis of its assessment for the SASEC region.
- iii. During the engagement with the CAREC members, it was agreed that a reasonable target level of maturity is that of being 'proficient', which equates to a value of 2. The recorded assessments yield an average response across each of the questions ranging from 0.8 to 1.6, with an average of 1.2. However, the best practices that exist within the CAREC region range from a score of 2 to 3, which indicates that simply replicating the current best practice⁴ from within the CAREC region, across all member countries would be sufficient to achieve the 'proficient' status.
- iv. Based on the findings from the assessment, an improvement plan has been prepared. The high priority activities for the CAREC Institute to support were agreed as:
 - a. Develop a RAM policy template.
 - b. Develop a range of service level indicators and performance measures for all asset types that countries can adopt if desired.
 - c. Develop guidance on minimum data to be collected for major asset types.
 - d. Develop guidance on recommended data collection for major asset types (what to collect and how often). Include discussion on equipment to use, and indicative costs (equipment + staff) to complete the data collection on an annual basis.
 - e. Provide some benchmark indicators for the human resources needed to appropriately manage a road network under various delivery models.
 - f. Produce an AMP template.
 - g. Produce country specific support to take findings from this Maturity Assessment and turn into a country level Improvement Plan.

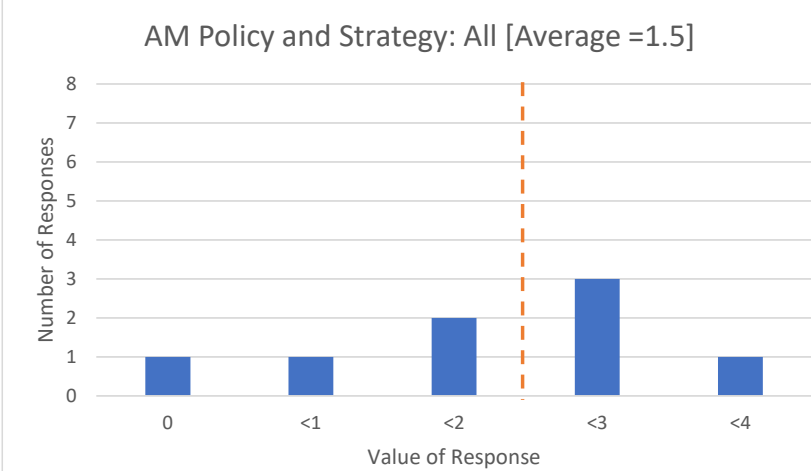


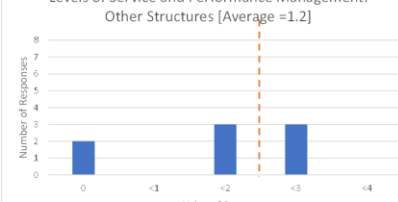

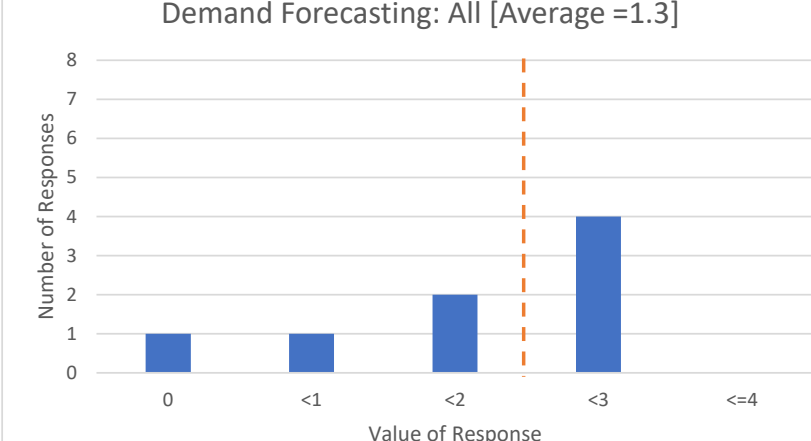
⁴ No one country was responsible for all the highest assessed scores, rather different countries reported strengths and weaknesses in a variety of different areas.

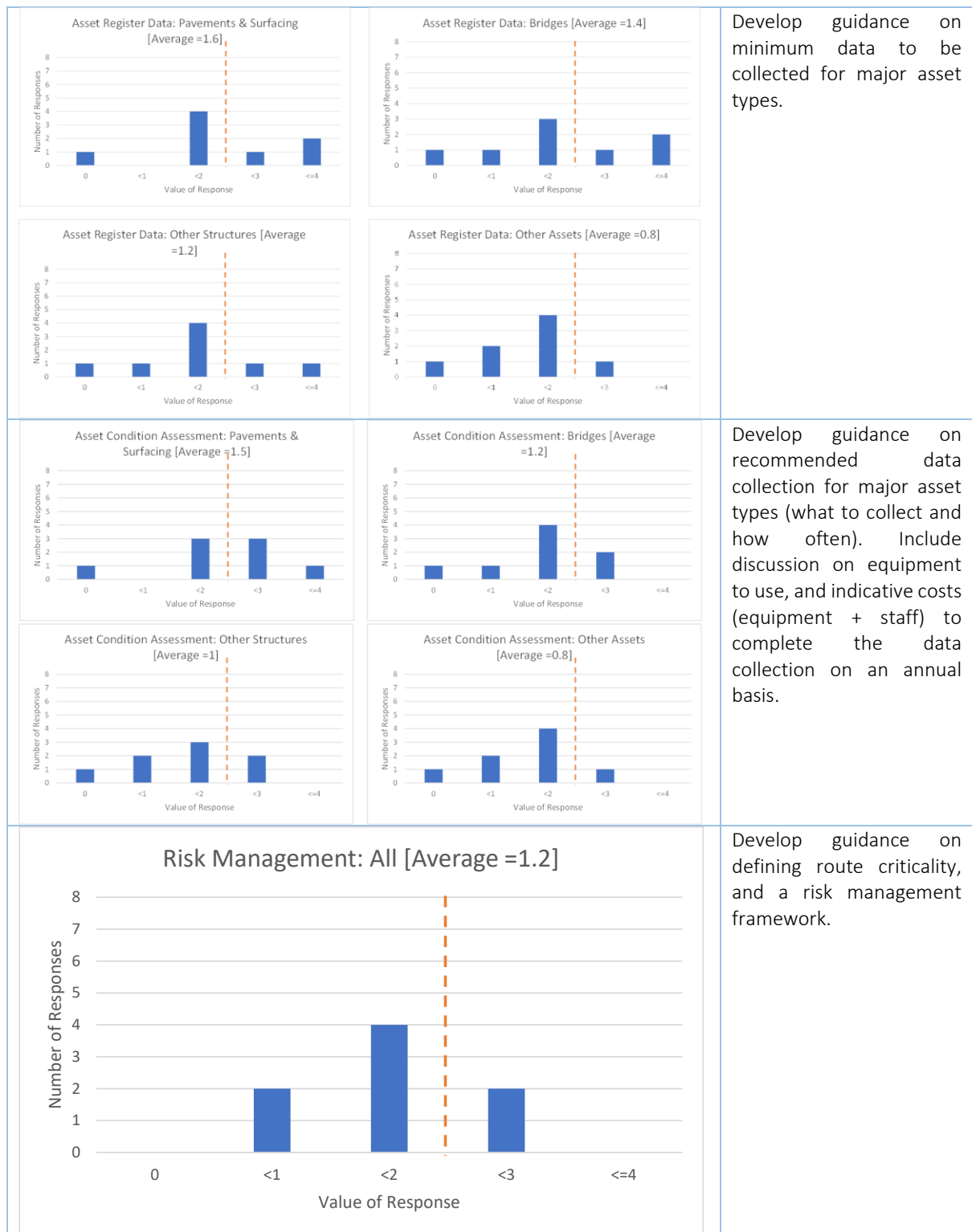
5 Appendices

5.1 Appendix A: Assessment Outputs

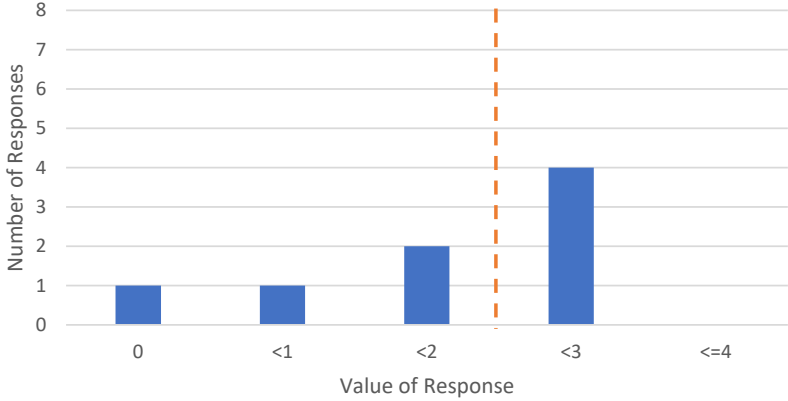
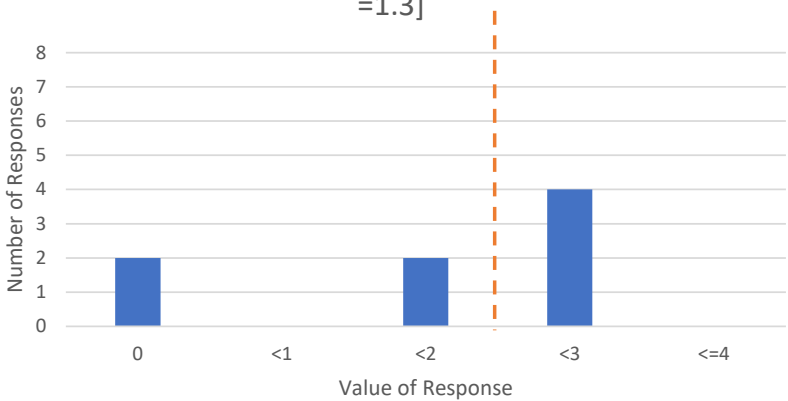
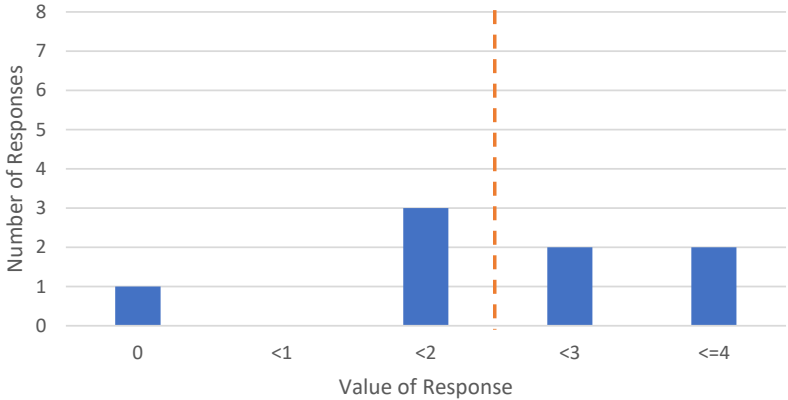
This appendix contains the detailed histograms showing how the responses were given for each component of RAM, along with the associated improvement actions that were identified from the responses.

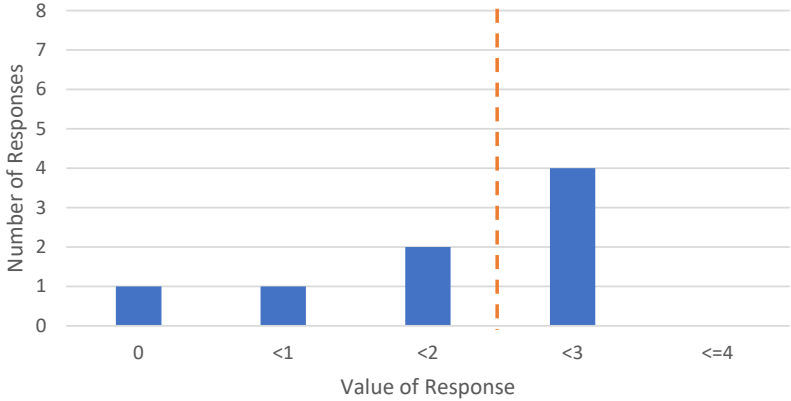
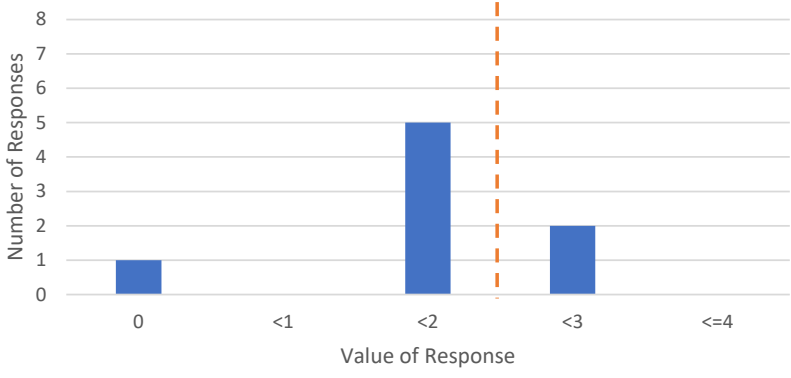
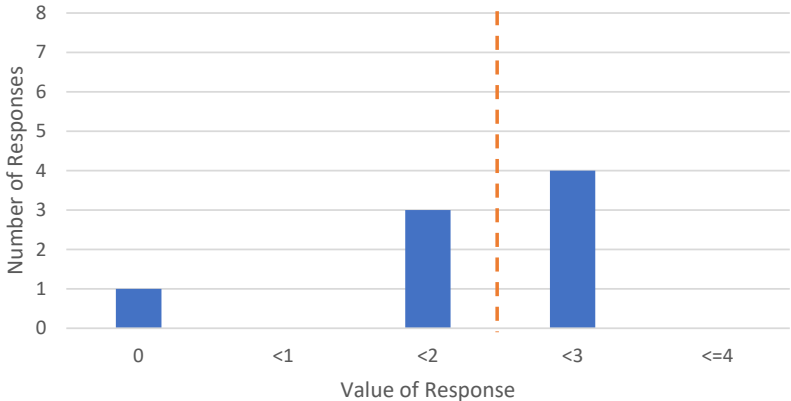
Table 7: Assessment Results and Improvements

RAM Component Results	Associated Improvement Action																																		
<p>AM Policy and Strategy: All [Average =1.5]</p>  <table border="1"> <caption>AM Policy and Strategy: All [Average =1.5]</caption> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> </tr> <tr> <td><1</td> <td>1</td> </tr> <tr> <td><2</td> <td>2</td> </tr> <tr> <td><3</td> <td>3</td> </tr> <tr> <td><4</td> <td>1</td> </tr> </tbody> </table>	Value of Response	Number of Responses	0	1	<1	1	<2	2	<3	3	<4	1	<p>Develop a policy template for road authorities to adopt and complete.</p>																						
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<div> <div> <p>Levels of Service and Performance Management: Pavements & Surfacing [Average =1.6]</p>  <table border="1"> <caption>Levels of Service and Performance Management: Pavements & Surfacing [Average =1.6]</caption> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> </tr> <tr> <td><2</td> <td>2</td> </tr> <tr> <td><3</td> <td>4</td> </tr> <tr> <td><4</td> <td>1</td> </tr> </tbody> </table> </div> <div> <p>Levels of Service and Performance Management: Bridges [Average =1.3]</p>  <table border="1"> <caption>Levels of Service and Performance Management: Bridges [Average =1.3]</caption> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> </tr> <tr> <td><2</td> <td>4</td> </tr> <tr> <td><3</td> <td>3</td> </tr> </tbody> </table> </div> <div> <p>Levels of Service and Performance Management: Other Structures [Average =1.2]</p>  <table border="1"> <caption>Levels of Service and Performance Management: Other Structures [Average =1.2]</caption> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>2</td> </tr> <tr> <td><2</td> <td>3</td> </tr> <tr> <td><3</td> <td>3</td> </tr> </tbody> </table> </div> <div> <p>Levels of Service and Performance Management: Other Assets [Average =0.9]</p>  <table border="1"> <caption>Levels of Service and Performance Management: Other Assets [Average =0.9]</caption> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>2</td> </tr> <tr> <td><2</td> <td>5</td> </tr> <tr> <td><3</td> <td>1</td> </tr> </tbody> </table> </div> </div>	Value of Response	Number of Responses	0	1	<2	2	<3	4	<4	1	Value of Response	Number of Responses	0	1	<2	4	<3	3	Value of Response	Number of Responses	0	2	<2	3	<3	3	Value of Response	Number of Responses	0	2	<2	5	<3	1	<p>Developing a range of service level indicators and performance measures for all asset types that countries can adopt if desired</p>
Value of Response	Number of Responses																																		
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<2	2																																		
<3	4																																		
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<p>Demand Forecasting: All [Average =1.3]</p>  <table border="1"> <caption>Demand Forecasting: All [Average =1.3]</caption> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> </tr> <tr> <td><1</td> <td>1</td> </tr> <tr> <td><2</td> <td>2</td> </tr> <tr> <td><3</td> <td>4</td> </tr> </tbody> </table>	Value of Response	Number of Responses	0	1	<1	1	<2	2	<3	4	<p>Develop a TOR for the development of a network level traffic monitoring program – covering both traffic volumes (AADT) and traffic loading (axle loads)</p>																								
Value of Response	Number of Responses																																		
0	1																																		
<1	1																																		
<2	2																																		
<3	4																																		



<p>Decision Making: Pavements & Surfacing [Average =1.4]</p>	<p>Decision Making: Bridges [Average =1.2]</p>	<p>Ensure that investment decisions are aligned with RAM Policy, and appropriately utilize maintenance cost data to generate lifecycle cost forecasts.</p>
<p>Decision Making: Other Structures [Average =1.2]</p>	<p>Decision Making: Other Assets [Average =1.1]</p>	
<p>Operational Planning and Reporting: All [Average =1.2]</p>		<p>Assistance in developing emergency response plans.</p>
<p>Maintenance Planning: All [Average =1.1]</p>		<p>Business case for increasing maintenance funding.</p>

<p>Capital Investment Strategies : All [Average =1.3]</p>  <table border="1"> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> </tr> <tr> <td><1</td> <td>1</td> </tr> <tr> <td><2</td> <td>2</td> </tr> <tr> <td><3</td> <td>4</td> </tr> <tr> <td><=4</td> <td>0</td> </tr> </tbody> </table>	Value of Response	Number of Responses	0	1	<1	1	<2	2	<3	4	<=4	0	<p>Support to produce an evidence based 5 year rolling capital investment plan (including renewals, capacity expansion, asset condition and asset valuation).</p>
Value of Response	Number of Responses												
0	1												
<1	1												
<2	2												
<3	4												
<=4	0												
<p>Financial and Funding Strategies: All [Average =1.3]</p>  <table border="1"> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>2</td> </tr> <tr> <td><1</td> <td>0</td> </tr> <tr> <td><2</td> <td>2</td> </tr> <tr> <td><3</td> <td>4</td> </tr> <tr> <td><=4</td> <td>0</td> </tr> </tbody> </table>	Value of Response	Number of Responses	0	2	<1	0	<2	2	<3	4	<=4	0	<p>Align with development of 5 year rolling capital investment plan, to identify funding needs for all aspects of the asset (including RAM, operations, maintenance, and capital).</p>
Value of Response	Number of Responses												
0	2												
<1	0												
<2	2												
<3	4												
<=4	0												
<p>Asset Management Teams: All [Average =1.6]</p>  <table border="1"> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> </tr> <tr> <td><1</td> <td>0</td> </tr> <tr> <td><2</td> <td>3</td> </tr> <tr> <td><3</td> <td>2</td> </tr> <tr> <td><=4</td> <td>2</td> </tr> </tbody> </table>	Value of Response	Number of Responses	0	1	<1	0	<2	3	<3	2	<=4	2	<p>Provide some benchmark indicators for the human resources needed to appropriately manage a road network under various delivery models.</p>
Value of Response	Number of Responses												
0	1												
<1	0												
<2	3												
<3	2												
<=4	2												

<p style="text-align: center;">AM Plans: All [Average =1.3]</p>  <table border="1"> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> </tr> <tr> <td><1</td> <td>1</td> </tr> <tr> <td><2</td> <td>2</td> </tr> <tr> <td><3</td> <td>4</td> </tr> <tr> <td><=4</td> <td>0</td> </tr> </tbody> </table>	Value of Response	Number of Responses	0	1	<1	1	<2	2	<3	4	<=4	0	<p>Produce an AMP template.</p>
Value of Response	Number of Responses												
0	1												
<1	1												
<2	2												
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<p style="text-align: center;">Asset Management Information Systems: All [Average =1.2]</p>  <table border="1"> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> </tr> <tr> <td><1</td> <td>0</td> </tr> <tr> <td><2</td> <td>5</td> </tr> <tr> <td><3</td> <td>2</td> </tr> <tr> <td><=4</td> <td>0</td> </tr> </tbody> </table>	Value of Response	Number of Responses	0	1	<1	0	<2	5	<3	2	<=4	0	<p>Produce ToR for consultant to work with road authority to determine needs and support procurement of an AMIS. [Consider further if this is better off provided as support on a country-by-country basis, rather than as a CAREC wide initiative]</p>
Value of Response	Number of Responses												
0	1												
<1	0												
<2	5												
<3	2												
<=4	0												
<p style="text-align: center;">Service Delivery Models: All [Average =1.4]</p>  <table border="1"> <thead> <tr> <th>Value of Response</th> <th>Number of Responses</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> </tr> <tr> <td><1</td> <td>0</td> </tr> <tr> <td><2</td> <td>3</td> </tr> <tr> <td><3</td> <td>4</td> </tr> <tr> <td><=4</td> <td>0</td> </tr> </tbody> </table>	Value of Response	Number of Responses	0	1	<1	0	<2	3	<3	4	<=4	0	<p>Workshop (online) on various contractual models (from force account to PBC).</p>
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<=4	0												

