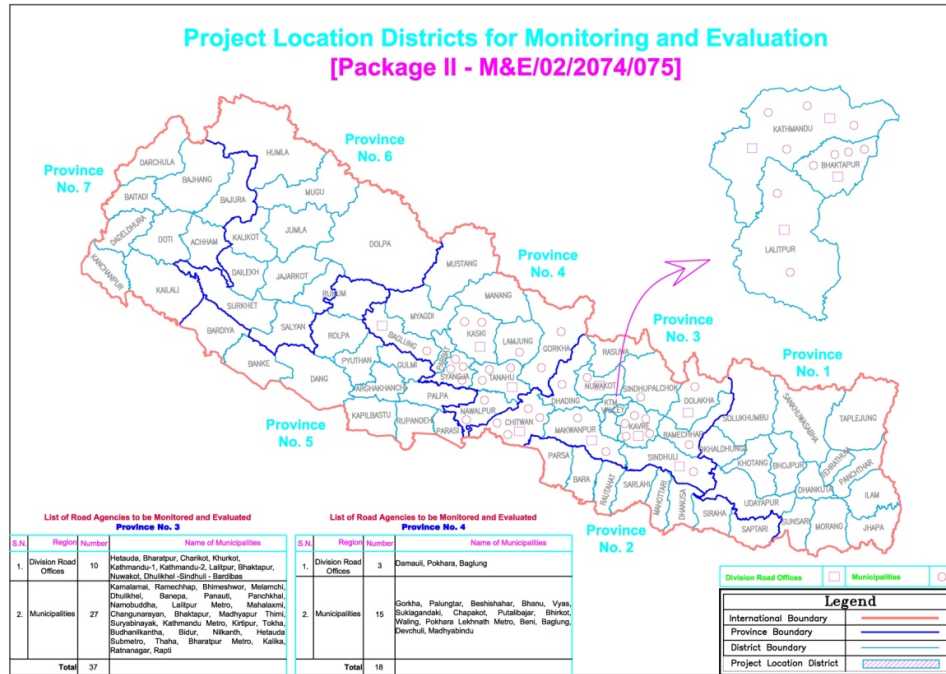




Roads Board Nepal

Araniko Building, Min Bhawan Kathmandu

FINAL REPORT



MONITORING AND EVALUATION OF ROAD MAINTENANCE WORKS EXECUTED BY ROAD AGENCIES

Package No II. : M&E/02/2074/75
Road Agencies under Province No. 3 & 4 (55 Agencies)

Kathmandu, April 2019



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ACKNOWLEDGEMENT

This Report on “Monitoring and Evaluation of road maintenance works executed by Road Agencies for **Package No. II : M&E/02/2074/075 (55 Agencies)** has been prepared as per the agreement between Roads Board Nepal, Min Bhawan, Kathmandu and North Star Engineering Consultant (P) Ltd, Jawalakhel, Lalitpur.

We would like to express our sincere appreciation to Roads Board Nepal, for entrusting us the responsibility to carry out the task of “Monitoring and Evaluation of Road Maintenance Works Executed by Road Agencies under **Package No II: M&E/02/2074/075**. As we get the responsibility, we have completed the task as per the best of our knowledge and belief.

We would like to express our sincere gratitude to Executive Director Mr. Krishna Singh Basnet for his coordination and sincere help for executing the assigned task in inspirational environment. We would also like to express our sincere appreciation to Administration Director Ms. Chetana Thapa, Technical Director Mr. Sagar Gyanwali, Senior Engineer Mr. Sanobabu Prajapati, Sr. Finance & Account Officer Mr. Nirmal Prasad Koirala for their regular coordination and guidance in the office work as well as field work. Other staffs of Roads Board Nepal are also really thankful for providing their sincere help, delivering required information and coordinating from time to time during the field and office work.

We would also like to convey our sincere appreciation to the responsible personnel of Municipalities/Sub-Metros/Metros for their sincere cooperation in the office as well as field work.

We wish that the Monitoring and Evaluation of Maintenance Works executed by Road Agencies under RBN funding as presented in this report will be highly beneficial to the Roads Board Nepal for further improvement of maintenance work implementation by the concern RAs.

Dhruba Raj Tripathi

Managing Director

Jawalakhel, Lalitpur

EXECUTIVE SUMMARY

This Final Report for Monitoring and Evaluation of Road Maintenance Works executed by Road Agencies under Province No. 3 & 4 (55 Agencies) has been prepared as per the contract agreement between Roads Board Nepal as the Client and North Star Engineering Consultant (P) Ltd. as the Consultant, made on Kartik 25, 2075, in accordance with Terms of Reference of the Consultants' Services. Draft report has been prepared after the site visit of the respective DROs/municipalities. Final report is prepared incorporating all the comments received from the client and comments and suggestions raised during draft report presentation on 4th April 2019. This report briefly outlines the plan, procedures, approach and methodologies adopted and the findings of the study in the course of fulfilling the requirements of the present assignment by the consultant.

The main objective of the consultancy service is to review the existing Monitoring and Evaluation reports and conduct **Detailed Monitoring and Evaluation of Road Maintenance works executed by the Road Agencies** and reporting to the RBN. Scope and nature of the work is clearly mentioned in the ToR and agreement paper. The study team comprising of a team leader, a civil engineer and an accountant officer is formed to accomplish the job within timeframe as per ToR.

This report has Eight Chapters. The first chapter reflected the general background, objectives and scopes of the present study while the chapter two explained the overall planning of whole monitoring and evaluation process. In chapter three, methodology adopted in carrying out the assigned task has been explained while the process, indicators considered and the development of questionnaires/ checklists have been explained in chapter four. General observations, analysis and interpretation of raw data collected at site have been given in chapter five. Evaluation methods and the result of the evaluation of each RA are given in Chapter VI. Finally the RA wise findings derived from the whole monitoring and evaluation; and the recommendations are given in seven and eight chapter respectively.

Whole process of present study consisted of three parts:

- Desk Study and Literature Review,
- Field Data Collection and Site Inspection; and
- Data Analysis, Interpretation, Evaluation and Report Preparation.

Consultant's team has visited all the RAs mentioned in ToR. During the field data collection, the consultant has broadly considered the following major activities of maintenance management system of each RA:

- Planning and programming of maintenance work.
- Procurement process and management
- Physical verification of implemented works at site
- Record keeping and documentation of the related project
- Resource strength of the RAs

While collecting the information on either of the above activities, M & E team has considered the effectiveness, efficiency, quality of executed works, timeliness in completion, and any other miscellaneous item such as, safety, proper address to social and environmental issues.

Some of the general impression, the consultant team had observed during the monitoring and evaluation process is listed below:

- Contractors seem either ignorant or less competent in complying with the norms, specifications and proper workmanship in carrying out the maintenance works.

- RAs seem to be overloaded and as such paying less attention to maintenance works. There is inadequate supervising staff.
- Some RAs lack proper planning for implementation of maintenance work. They don't prepare proper ARMP and sent to RBN.
- Contractor seems to give more priority to the completion rather than quality of the work and it seems that there is lack of proper mechanism to control it.
- Comparing to the DROs, the Municipalities are not found equipped with laboratory facilities.

Consultant has made the evaluation of each RA on the basis of scoring system assigned to each of data collected at site. Weightage to each of the activities was based upon the degree of its importance in the maintenance management process. Maximum score assigned to various activities in maintenance works are as follows:

i. Planning and programming	15
ii. Procurement / Management	15
iii. Implementation	50
iv. Record Keeping / Documentation	10
v. Resource Strength	10
Total Score	100

From such evaluation, performance of each RA has been categorized as:

Score < 60	Poor
Score 60~70	Satisfactory
Score 70~80	Good
Score 80~90	Very good and
Score > 90	Excellent

Details of the scoring system and output of the evaluation of each RA are given in respective chapter. From the evaluation, it has been observed that the performance of majority of RAs is found good to excellent. Out of 13 DROs, the performance grading of 3 RAs found *excellent* by obtaining more than 90 score and ranked on top position. Other 10 RAs have obtained 80 to 90 score and performance grading is found very good. Out of 42 Municipalities (including Metro/Sub-Metro), the performance grading of 12 RAs found *very good* by obtaining score ranges 80 to 90 and ranked on top position. Other 22 RAs have obtained 70 to 80 score and performance grading is *good*.

Similarly, overall findings on basic information, overall performance and general remarks with photographic evidences have been given for each RA separately.

Top Five best performing DROs with ranking are given in the following table:

S. No.	Name of RA (DRO)	District	Province	Ranking
1	Bharatpur	Chitwan	3	1
2	Lalitpur	Lalitpur	3	2
3	Pokhara	Kaski	4	3
4	Damauli	Tanahu	4	4
5	Hetauda	Makawanpur	3	5

Similarly, Top Five best performing Municipalities (including Metros & Sub-Metros) with ranking are given in the following table:

S. No.	Name of RA	District	Province	Ranking
1	Tokha	Kathmandu	3	1
2	Kathmandu (Metro)	Kathmandu	3	2
3	Bhaktapur	Bhaktapur	3	3
4	Waling	Syangja	4	4
5	Palungtar	Gorkha	4	5

Finally, the consultant has made conclusion and some recommendations for further improvement as follows:

- With the limited budget allocated, it is highly recommended to undertake minimum number of roads for specific and periodic maintenance in each RA.
- For emergency maintenance works during rainy season, separate provision with nominal percentage of previous year's budget should be made available for the RAs.
- It is also recommended that RBN has to manage Monitoring and evaluation work separately with introducing clearly defined TOR and scope of work before hiring the consultant.
- Practice of implementing road maintenance work in last months of FY to be discouraged by RAs and RBN.
- It is recommended that the frequency of supervision need to be increased which will be helpful to improve the quality of maintenance work.
- It is suggested for establishing the laboratory facilities in all municipalities.
- RBN has to organize orientation/training in RBN Policy and Guidelines, norms and standard and quality of work to the newly formed Municipalities and Rural municipalities.
- Roads Board Nepal requested to arrange sufficient trainings, workshops and seminar for different types of personnel involved in the maintenance of road funded by the board. Road maintenance trainings for Engineers, Sub Engineers, Assistant Sub Engineers and Supervisors are necessary.
- ARMP preparation and approval should be mandatory to all RAs.

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List of Acronyms

ARMP	Annual Road Maintenance Plan
BoQ	Bill of Quantity
CBR	California Bearing Capacity
DoLIDAR	Department of Local Infrastructure Development and Agriculture Roads
DOR	Department of Roads
DRO	Division Road Office
GON	Government of Nepal
FY	Fiscal Year
IAP	Integrated Annual Plan
LD	Liquidated Damage
NCB	National Competitive Bidding
MB	Measurement Book
M & E	Monitoring and Evaluation
MC	Municipalities
MoF	Ministry of Finance
MTMP	Municipal Transport Master Plan
MoU	Memorandum of Understanding
PCC	Plain Cement Concrete
PPA	Public Procurement Act
RA	Road Agency
RBN	Roads Board Nepal
SDE	Senior Divisional Engineer
SRN	Strategic Road Network
SSRN	Statistics of Strategic Road Network
ToR	Terms of Reference
UC	Users' Committee

1. CHAPTER I - INTRODUCTION

1.1 General

A Contract Agreement has been made between Roads Board Nepal as the Client and North Star Engineering Consultant (P) Ltd. as the Consultant on 25th day of Kartik, 2075 (11th November, 2018) for carrying out the task of Monitoring and Evaluation of Road Maintenance Works executed by Road Agencies (Road Agencies under Province No. 3 & 4 - 55 Agencies). Accordingly, this Final Report has been prepared with the description of the services as included in Appendix A of the agreement. This report briefly outlines the plan, procedures, approach and methodologies to be adopted in the course of fulfilling the requirements of the present assignment by the consultant.

1.2 Background

Roads Board Nepal, established under the Road Board Act (2002), has been officially effective since 1st January, 2003. Its main objective is to generate and provide adequate fund for road maintenance through various Road Agencies in a planned way. With the planned maintenance approach, it is possible to reduce vehicle operating cost, improve riding quality and save travel time.

Roads Board Nepal [RBN] works together with the road agencies [RAs] that are responsible for implementation of the road maintenance works. The Road Agencies involved in the road maintenance works are Department of Roads [DOR] for Strategic Road Network [SRN] and Municipalities [MC] for Urban Road.

RBN prepares Integrated Annual Plan [IAP] each year based on Annual Road Maintenance Plan [ARMP] and Integrated Annual Road Maintenance Plan [IARMP] submitted by the RAs. RBN works for optimum utilization of available resources on priority basis. Priority is linked with the traffic volume, pavement condition, terrain and maintenance type (e.g. routine, recurrent, periodic, emergency, rehabilitation, reconstruction and upgrading).

RBN has been providing fund to various Road Agencies for road maintenance since last Fourteen years. To achieve its objectives, RBN has been encouraging the RAs towards providing quality service to the road users through their effective and transparent works. The maintenance works are carried out as per the accepted practice under the Public Procurement Act-2063, Public Procurement Regulation-2064 and concerned financial rule and regulation (if any) that are applicable to the concerned RAs.

In order to ensure the desirable satisfaction among the road users and value for the money on the spent amount for road maintenance, RBN needs to monitor the road maintenance works carried out by RAs on regular basis. RBN has the authority to monitor, control, check and evaluate the work done by RAs and can withhold the fund release if found to be non-performing or against the prevailing rules and regulations, if necessary.

On behalf of RBN, this consultant has been entrusted to carry out the monitoring and evaluation of road maintenance works under RBN funding for the RAs as mentioned on TOR. The field work for this job is already accomplished.

1.3 Objectives and Scope of Consulting Services

The objective of this consultancy service is to conduct Monitoring and Evaluation of road maintenance works executed by road agencies.

Specifically, the objectives can be broadened as;

- To make standard format and indicators for Monitoring and Evaluation of Road Maintenance works executed by road agencies
- To evaluate the quality of road maintenance works executed by road agencies against the prevailing standards specification of Roads and Bridges

- To analyze and recommend the road maintenance works executed by road agencies against the standard procedure of Road maintenance for effective and efficient utilization of fund of planned road maintenance works.
- To demonstrate the clear picture of road maintenance works.

The objectives for the Consultant services stated in the TOR form the basis to our Approach and Methodology. The assignment's logical framework hierarchy is thus summarized as follows and these objectives are related to our principal groups of assigned tasks in **Table 2-1** below:

Table 2-1: Related Objectives, Scope, Activities

Consulting Objective	Review of the prevailing Monitoring and Evaluation Reports, conduct Detailed Monitoring and Evaluation of Road maintenance works Executed by Road Agencies.
Component of Study	<ul style="list-style-type: none"> • Review of Prevailing Monitoring and Evaluation Reports and Prepare Indicators for assessment • Carry out Monitoring and Evaluation work as prescribed in TOR • Analyze the information/data obtained and interpret the findings, provide feedback • Preparation of Evaluation and Monitoring Report with recommendations
Task	<p>1. Review of Prevailing Monitoring and Evaluation Reports (Section 3.1a of TOR)</p> <p>1.1 Review of previously Studied Monitoring and Evaluation Reports:</p> <ul style="list-style-type: none"> • Review on findings and Conclusion and recommendations of previously studied reports • Comparison of performance in planning programming and maintenance works • Study of additional documents whatever the consultant's team identified during review • Review of existing and proposed indicators and modify if required on the effectiveness of Monitoring and Evaluation Process <p>2. Monitoring and Evaluation works as per the Prevailing Acts, Regulation, Directives and Board's decisions(Section 3.1b of TOR):</p> <ul style="list-style-type: none"> • Verification of Roads and its location as per Annual Programme • Verify the work with approved program and its implementation • Ensure compliance with Standard Specification of Road and Bridge • Ensure with public procurement act 2063, Public procurement Regulation 2064, Roads Board Regulation -2060, Roads Boards Guidelines -2061 and Roads Board Executive decisions <p>3. Evaluate Annual Programme, Budgeting and Disbursement as per accepted rules and regulations, suggestion on improvement of road maintenance works (Section 3.1d of TOR)</p> <ul style="list-style-type: none"> • Study of Road Status of the concerned Road Agencies (for RAs- updated MTMP), ARMP of RAs. • Study of Estimate, abstract of cost and bill of quantity of maintenance work, • Study of Approved annual programme and progress report • Study of Bill of Quantity (BoQ), Tender documents and agreements with contractors and UCs • Study of test report and work completion report
Reporting Requirement	<p>Reporting:</p> <ul style="list-style-type: none"> • Inception report • Field report • Draft report • Final report
Achievements from the Assignment	<p>Study Outputs:</p> <ul style="list-style-type: none"> • Monitoring and Evaluation Report of each Road Agencies with all information in

	<p>prescribed Format which includes:</p> <ul style="list-style-type: none">- Detailed information of the works in terms of quality, quantity and payments- Photographic details of physical inspection of maintenance works, clearly identification of name of road sections, date and package and location of the maintenance works carried by the RAs under RBN funding- Recommendations on further improvements of maintenance works
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1.4 Team Composition

Proposed team composition of the consultant, as prescribed in the ToR was as follows:

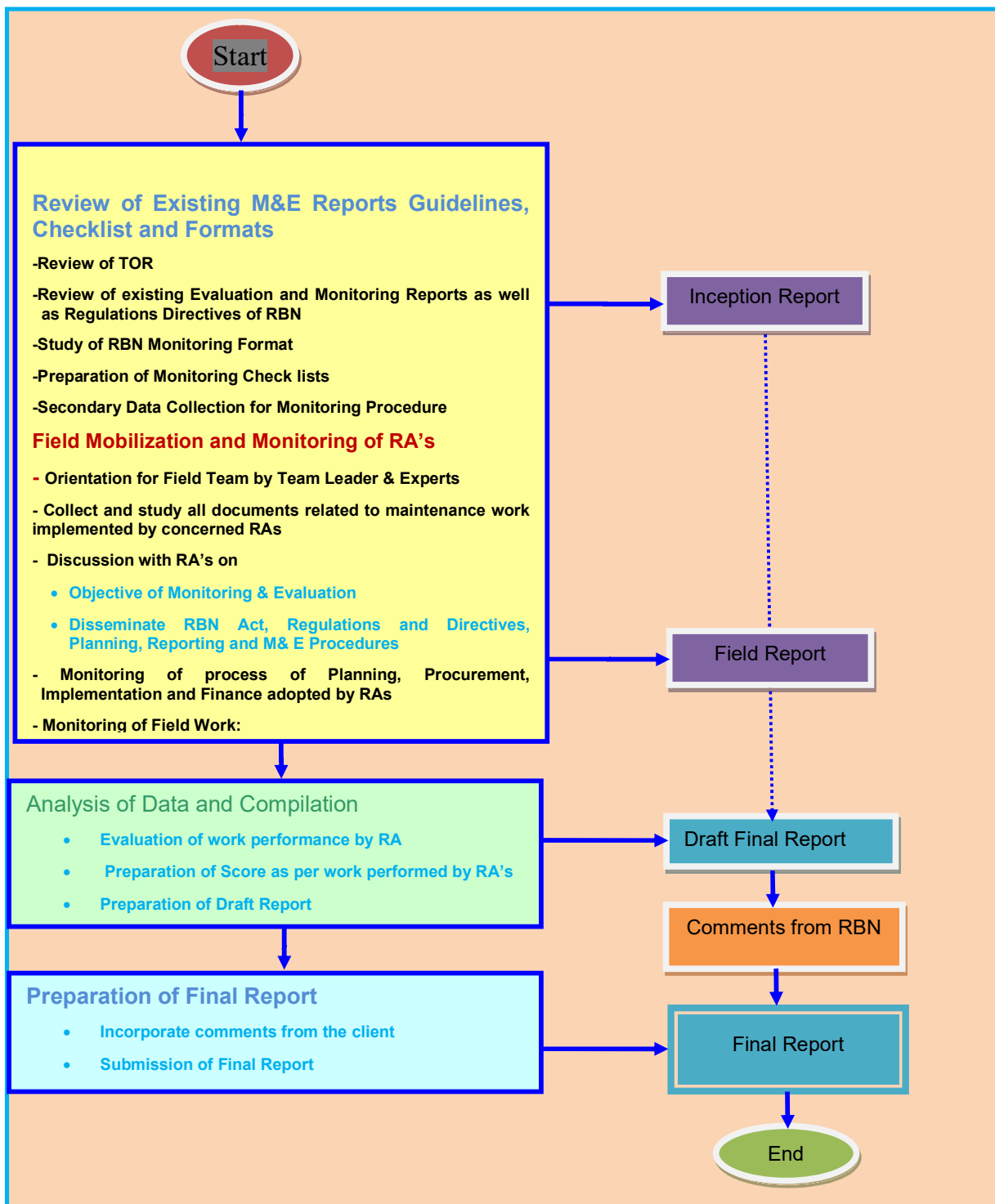
- a) Team Leader
- b) Civil Engineer
- c) Account Officer
- d) Computer Operator
- e) Office Assistant

In the field works, either the team leader or the civil engineer and one account officer have been involved.

2 CHAPTER II: PLANNING FOR M & E

2.1 Plan for Monitoring and Evaluation

Flow chart of various steps that have followed in course of carrying out the monitoring and evaluation of road maintenance works carried out by the Road Agencies (Division Road Offices and Municipalities) is given as follows:



2.2 List of RA for Monitoring and Evaluation

As specified in Terms of Reference, consultant has completed the field visit of all the Road Agencies as given in the Table 2.1 below. Location of the different RAs in Province 3 and 4 for M and E is shown in Figure 2.1 and 2.2 below.

Table 2.1: List of Visited Road Agencies as specified in ToR :

Province No. 3

S.No.	Road Agencies	Numbers	Name of Road agencies
1	Division Road Office	10	Hetauda, Bharatpur, Charikot, Khurkot, Kathmandu-1, Kathmandu-2, Lalitpur, Bhaktapur, Nuwakot, Dhulikhel-Sindhuli-Bardibas Road project.
2	Municipalities (incl. Metro/Sub-Metro)	27	Kalamamai, Ramechhap, Bimeshwor, Melamchi, Dhulikhel, Banepa, Panauti, Panchkhal, Namobuddha, Lalitpur (Metro), Mahalaxmi, Changunaryan, Bhaktapur, MadhyapurThimi, Surya Binayak, Kathmandu (Metro), Kirtipur, Tokha, Budhanilkantha, Bidur, Nilkantha, Hetauda (Sub-Metro), Thaha, Bharatpur (Metro), Kalika, Ratnanagar, Rapti.
Total		37	

Province No. 4

S.No.	Road Agencies	Numbers	Name of Road agencies
1	Division Road Office	3	Damauli, Pokhara, Baglung
2	Municipalities (incl. Metro/Sub-Metro)	15	Gorkha, Palungtar, Beshisahar, Bhanu, Vyas, Suklagandaki, Chapakot, Putalibazar, Bhirkot, Waling, Pokhara-Lekhnath (Metro), Beni, Baglung, Devchuli, Madhyabindu.
Total		18	
Grand Total Of Province 3 and 4		55	

The consultant has scheduled dates for field visits to different RAs as listed in the above table and accordingly informed to RBN beforehand for necessary information to RA and request for support to the monitoring team of the consultant.

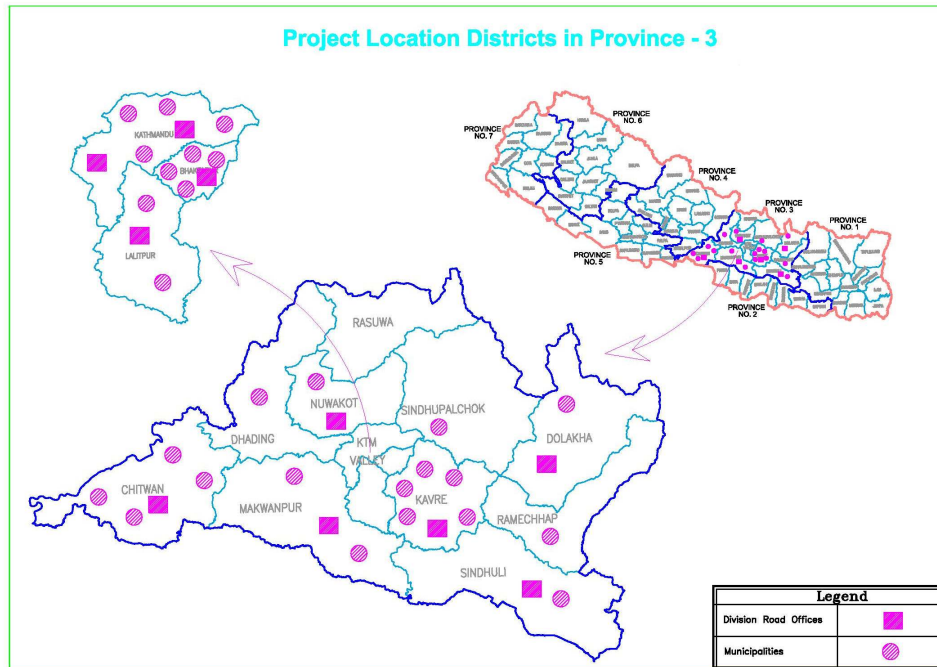


Figure 2.1: Location of Road Agencies (RAs) in Province 3

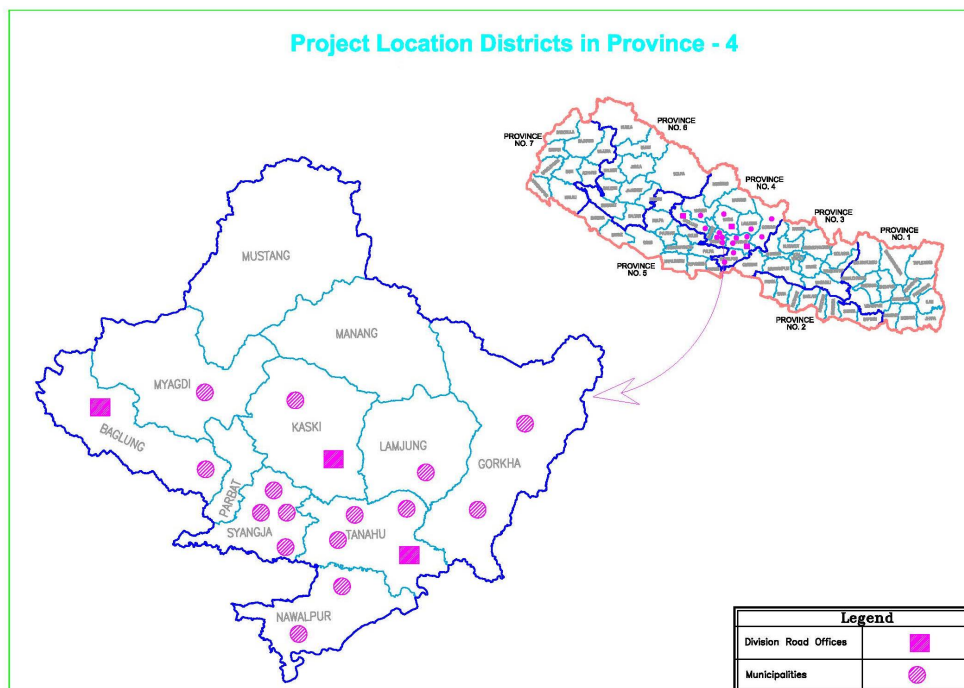


Figure 2.2: Location of Road Agencies (RAs) in Province 4

3 CHAPTER III: METHODOLOGY

3.1 General

Methodology for the proposed services consisted of the review of existing documents related with the monitoring and evaluation process followed by RBN, road agencies and other related agencies (Domestic/International). Study of the monitoring and evaluation reports carried out by RBN in the previous years has also been made and incorporation of the findings as lesson learnt has been tried to address in the present monitoring and evaluation process. The methodology also consisted of consulting with the concerned management for the Monitoring and evaluation work. Methodology basically consisted of the three major parts:

- Desk Study and Literature Review,
- Field Data Collection and Site Inspection; and
- Data Analysis, Interpretation, Evaluation and Report Preparation.

In the final report the information up to the final step i.e. data analysis, interpretation and evaluation has been covered.

3.2 Desk Study and Literature Review

Prior to the actual execution of the assignment, the consultant thoroughly studied the ToR, discussed with the Executive Director and other related staffs of RBN and collected relevant documents and previous M & E reports whichever were available. It has also studied the related government act, rules and regulations, guidelines and the reporting formats to be used for each RA. In course of the study, the consultant has reviewed following documents:

- Roads Board Act 2002,
- Roads Board Regulations 2004 and Roads Board Directives 2005,
- Financial Administrative Rules and Regulations 2003 with amendment, GoN
- Reports on Monitoring and Evaluation conducted by North Star Engineering Consultancy (P) Ltd for RBN. 2017
- Departmental Maintenance Policy documents,
- Norms and Specifications for Roads and Bridges, GoN
- Result Oriented Monitoring and Evaluation Directives 2067; Monitoring and Evaluation Guidelines 2009 of National Planning Commission,
- Rural Road Maintenance Directives 2008, prepared by the DoLIDAR
- MTMP Guidelines, 2012, DoLIDAR
- Road Maintenance Norms, 2062, DoR
- Local Infrastructure Development Policy, 2004, GoN
- Statistics of Strategic Road Network (SSRN), 2015/16, DoR
- Statistics of Local Road Network, (SLRN), 2016, DoLIDAR
- Public Procurement Act (PPA) and Financial Administrative Rules and Regulations 2056 (duly revised) of Ministry of Finance,
- Document on Performance Based Roads Maintenance practices.

Based upon such study, the consultant has prepared Checklist/Questionnaires for field data/information collection so that they were uniformed for all RAs and every aspect of maintenance process was covered; and nothing was overlooked. Completed checklist for each RA was already presented in the Field Report. In this checklist, information collection regarding planning and programming, procurement and management, field implementation, Record keeping/documentation and resource strength have been covered. Two types of checklists; one for 'Data Collection at RA office' and the other for 'Data Collection from Field Observations have been developed and filled in each RA.

3.3 Planning for Field Visit

As per the ToR, it was required to carry out the monitoring and evaluation of 55 RAs consisting of DROs, Municipalities, Sub-Metro and Metro of Provinces 3 and 4. As the RAs were located at different parts of the country in province 3 and 4 of Nepal, field visit was carried out with two teams.

The consultant scheduled its plan for field visits as envisaged in the ToR and accordingly the consultant teams were mobilized. After being well prepared through the desk study in consultation with RBN after submission of Inception Report, field mobilization was done comprising the necessary manpower as listed in the team composition.

Field visit was aimed to collect as much information as possible with the main focus on the procedure and compliance in planning and programming, procurement process and management, execution of works at site, record keeping/documentation and resource strength of RAs. Field data/information collection was basically done three steps which were:

- Meeting and discussion with the RA personnel.
- Information collection through study of documentation at RA office and filling preset checklists as already submitted in the Field Report.
- Site observation of road maintenance work implemented by concern RA under RBN fund.

3.4 Visit to RA Office

In order to verify the compliance with the prevailing act, rules and regulations, directives, work quality, financial discipline and time management, the monitoring team has studied and verified the following documents for fiscal year 2074/75 at each RA office:

- Preparation and updating of road status for planning process.
- Approved annual program under RBN funding and its compatibility with allocated budget, quantity and time.
- Design, drawings, rate analysis, cost estimate, bid document, BoQ and technical specifications for each road project and/or contract package.
- Contract agreement document; contractor's bid prices, bid evaluation, agreement paper, work order.
- Ledger book for payment, advance, bank guarantee; cash book, financial statement, contract register, vouchers etc.
- Invoices, measurement books etc.
- Progress reports, work completion report.
- Laboratory test reports, if any.
- Any claims, variation, litigation, time extension etc.
- Overall observation on documentation and record keeping.

During such study, the preset checklist has also been filled. All the technical aspects have been monitored by the Team Leader/civil engineer while the financial part was taken care of by the Account Officer. Copies of completed checklist with monitoring data of the Municipalities/Sub-Metros/Metros were already presented in the Field Report.

3.5 Work Site Monitoring

Maintenance sites, where the maintenance work had been carried out were visited together with the RA representative. During field monitoring, management for maintenance activities, deployment of adequate and appropriate tools and equipment; skilled / unskilled manpower, location and quality of construction materials, lab establishment with required equipment and provision of lab technicians, quality control mechanism, quality of completed work and its

compliance with the stipulated norms and specifications etc. have been observed and verified with the approved annual program.

Besides, verifying compliance with stipulated norms and specifications and approved annual program, intensive interaction with the supervising staffs, contractor's personnel; and stakeholder and road users has also been made as regards to the quality of work executed, availability of technical staff and frequency of site supervision, serviceability of road and proper use of allocated fund.

Although the procurement process for all RA's was as per the Government rules and regulations, the working environment in terms of resources, capacity, logistics, related stakeholders etc. were found somehow different and they acted on their own way. However, the study team was fully aware of such situation and the monitoring was done accordingly. Copies of completed checklist of work site monitoring data were already presented in the Field Report.

In course of the field monitoring, photographs of meeting with RA personnel and the executed works on the field have been taken. A few of them are presented together with the **Findings of RA** as given in **Appendix III**.

3.6 Limitations of Study

- The consultant has occasionally experienced the unavailability of responsible RA personnel, especially the DRO Chief, Engineers, Executive Officers, Account Officers, immediate Supervising Engineers at the pre-scheduled date of M & E Team's visit to the respective RAs.
- On some of the RAs, the record keeping and filing work was not found systematic. Hence, it took extra time to find and evaluate the works carried out by the RA.
- Present study of monitoring and evaluation is based upon the documents made available by the respective RA personnel and the field inspection of the executed works shown by the supervising technicians.

4 CHAPTER IV: DATA COLLECTION FOR M & E

4.1 General:

All maintenance operations require careful planning and programming, supervision and quality control. Proper monitoring of outputs and the resources required to achieve these outputs provide the basic information needed for assessing the effectiveness of the fund incurred in maintenance works. However, before the implementation activities commence, there is a need for proper planning, programming and regular road condition inspection and defects assessments, which form the basis for all consecutive engineering inputs. Therefore, the data collection for realistic monitoring and evaluation required detailed information regarding the planning, program approval, procurement process and execution of maintenance activities at site for every project. The consultant had, therefore prepared questionnaires/checklists in a logical sequence necessary for achieving an effective maintenance management system and completed for all the RA's as per ToR.

In the present study, various checklists as approved by RBN, have been used. For Information / evidences not covered by the checklists have been noted separately and taken into account in the final evaluation.

The Monitoring and Evaluation faced some difficulty in collecting the financial and planning data as some of the DROs were merged in each other. Due to unavailability, the team could not get financial and planning data in some RAs.

4.2 Planning Process

In order to get information on planning process, various aspects of preparation of road inventory /ARMP and MTMP and its updating, basis for selection of road for inclusion of a particular road in maintenance program, preparation of annual road maintenance plan and the process of its approval etc. have been covered and the relevant data collected.

4.3 Annual Work Program

Annual program as prepared by each RA and its approval process have been checked and the information regarding the format used, appropriateness of annual targets assigned in terms of work volume, cost and time and the approval date have been noted down.

4.4 Procurement of Maintenance Works

In this area, various aspects of pre-procurement activities, such as road condition survey and defects assessments, design, preparation of drawings, cost estimate and bid document have been checked. However in case of road pavement maintenance, design and drawings seemed not always compulsory, but for structural work it is most important. Similarly the basis for cost estimate adopted, norms and nomenclature used for various item of maintenance work at different RA's have also been checked and the information noted down. Various items chosen in the estimate and the weightage given to each of them had also been confirmed as per the RBN Guidelines.

Similarly, the mode of procurement adopted at different RAs, evaluation process followed and its compliance with the prevailing Public Procurement Act, Financial Administrative Rules and Regulations has been verified during the field data collection stage. In order to access the promptness in time management, date of program approval, submission of bid bond/performance bond, contract agreement and issuance of work order to the contractor has also been noted down.

4.5 Physical Monitoring

List of roads undertaken by each DROs, Municipalities / Sub-Metros / Metros under RBN funding and those visited by the M & E Team are given in **Appendix - II**. As already mentioned earlier, all the road projects under each RA could not be visited. Only those sites where the maintenance

work had been completed or still in progress during the time of monitoring were visited together with the RA representative.

During field observation, ongoing procedures for quality control mechanism, cost and time control techniques and tools used were studied and any gap or shortcoming that might need to be improved was also noted. Checklists for data collection have been developed to cover all the details of major items which are most common in all maintenance work such as patch repair/asphalt overlay, base, sub base/regravelling, construction of masonry and gabion wall, concreting and dry stone soling etc. Field inspection was mainly focussed on the quality and workmanship of the executed works. Laboratory tests wherever conducted were also checked and the report collected for reference.

Although the procurement process for all RAs was as per the Government rules and regulations, the working environment in terms of resources, capacity, logistics, related stakeholders etc. were found somehow different and they acted on their own way. However, the study team was fully aware of such situation and the information was noted accordingly.

4.6 Quality of Executed Work

Implementation is the major aspect of the whole process. Quantifiable progress can be seen only after the successful implementation of the work. Proper implementation involves the compliance to the approved program and allocated budget, watchful supervision supported by the laboratory testing in order to achieve required quality work and completion within the targeted time. Besides supervision, record keeping, progress reporting, interim payment to the contractor, account keeping and monitoring were also done side by side.

4.7 Variation and Claims

In order to assess the cost and time over run, the consultant has also verified whether there is any variation in term of quantity, cost and time and whether the contractor has made any claims or not. All such information has been noted in the checklist.

4.8 Account Keeping System

Various information that has been noted under this heading were the disbursement process and account keeping system of RBN fund; matching fund requirement by RAs and its proportion, time taken in disbursement, compliance to the Financial Administrative Rules and Regulations of GoN and the RBN guidelines as well, financial reporting and auditing of RBN fund. Details of responses from different RAs were noted down in the checklist and compiled.

4.9 Record Keeping and documentation

Up to date record keeping and filing system of all the activities of any development implementation is very crucial for future records and information dissemination. Record keeping includes updating of roads status after every maintenance work is completed; time and type of maintenance work carried out, total cost incurred in maintenance of roads, details of regular activity carried out in process of maintenance etc. During the data collection stage, records of all such activities has been verified and incorporated in the evaluation. Similarly the process and formats used by each RA for preparation of work completion and annual progress report and settlement of final payment and appropriateness or compliance while using them were checked during the field data collection. Project document preparation and its recordkeeping system either in hard or soft format and easy access to data/information when required of RAs are also noticed.

4.10 Resource Strength

Information that has been noted under this heading are availability of sufficient technical persons with the RA for maintenance work; material testing laboratory establishment with technician and equipment, availability of trained technical manpower for road maintenance work etc. Details of responses from different RAs were noted down in the checklist and compiled.

4.11 Evidence Collection with Photographs

Relevant photographs of the executed works have been taken during the field monitoring. Photo copy of the important documents required to prepare report have also collected during RA office data collection. Completed checklists for all RAs under M & E are already submitted in the Field Report and the list of all the roads selected for maintenance in F. Y. 2074/75 under RBN funding and those visited by M & E Team is given in **Appendix - II**.

5 CHAPTER V: ANALYSIS AND INTERPRETATION OF DATA

5.1 Methodology for data analysis

Analysis of data is to convert raw data into required information. The main objective in the analysis process was to transform the data collected in the field into meaningful information. Methods of data collection and various aspects of maintenance activity covered during field data collection has already been discussed in the previous chapter. While collecting the information, the monitoring and evaluation team had kept in mind the following parameters of every maintenance activity:

- Effectiveness, which indicates the degree to which the outcome confirms to requirements and assess whether the RA is doing the right things.
- Efficiency, which indicates the degree to which the process produces the required output at minimum resource cost.
- Quality which addresses the degree to which a product or service meets users requirements and expectations.
- Timeliness which measures whether work was done correctly and on time according to requirements.
- Productivity, which adds value from the process.
- Miscellaneous under which safety, social and environmental aspects are to be addressed.

5.2 Analysis of Data

On the basis of the data collected at the field, the consultant has analyzed the data and the performance evaluation has been carried out for each RA. Evaluation is explained in **Chapter VI** and details of findings with evaluation for individual RA given in **Chapter VII** of this report.

5.3 Interpretation

General observations made during the monitoring and evaluation process are summarised as follows:

5.3.1 Planning and Programming

Most of the Road Agencies (DROs, Municipalities/Sub-metros/Metros) have followed the planning process. The Planning and Programming Process of these RAs are as described below:

Division Road Offices

Almost all DROs have followed the procurement rules and regulations of GoN. On Division Road Offices, selection of roads for maintenance is based upon updated road status, severity of damage assess during inventory, importance of road and the traffic volume. All DROs prepare Annual Road Maintenance Plan (ARMP) and get approved it from Regional Director and strictly adhere to ARMP during execution. Periodic maintenance is based on time since last maintenance is done. Generally, there are two types of roads such as gravel and black top under DRO jurisdiction. Higher priority is given to black top strategic roads. RBN is providing sufficient fund for Routine and Recurrent maintenance work, while for periodic and specific maintenance, allocation of budget is normally insufficient.

Municipalities/Sub-metros/Metros

The Municipalities/Sub-metros/Metros have followed Local Agency Procurement/Planning Guideline. The planning process begins from ward meeting and finally approved by Municipal Council. However, some of the LRAs were not found to be followed this process.

However, in most of the Municipalities, the practice of selection of roads for maintenance was based on the importance of the road, traffic volume and local demand. General trend was that roads with highest traffic volume are given first priority. Mostly, municipalities have blacktop roads and gravel roads and few have earthen road too. It was observed that most of the Municipalities have given first priority in blacktop roads and second and third priority to gravel and earthen roads.

5.3.2 Program Approval

All of the RAs have used the standard format for preparations of annual program get approved from the authorized officer. However the date of approval and signing MoU with RBN was observed too late in few RAs. Time lag between preparation and execution of ARMP causes multiplication of severity of damage on roads.

5.3.3 Procurement/Management

Procurement in all the RA's was done as per the PP Act and Financial Administrative Rules and Regulations of GoN. Both DROs and Municipalities follow NCB process of procurement. But, the Municipalities have followed NCB, sealed quotation process of procurement as well as the User's Committee. In some of the DROs, procurement through sealed quotations has also followed basically in works value less than 1 million. Contract agreement in DRO was found timely done, while on some of the municipalities, it was often very late.

All DRO have implemented the projects through contractors following tender/sealed quotation process. But, 15 municipalities have implemented project through User's Committees, 21 through contractors following tender/sealed quotation process and 2 municipalities through both tender and UC.

For the User's committee work, it is difficult to conformity with quality and quantity of work. However, User's committees of some Municipalities like Bhaktapur, Devchuli and Tokha Municipalities have shown good participation and have done more quantity of work than the estimate. It is also observed that User's Committee employed contractor for the projects assigned to be done by User's Committee.

5.3.4 Implementation of Works

Quality assurance from the contractor's side and quality control by the employer's representative is the most crucial aspect in successful implementation of maintenance works. In all RAs, supervision and quality control of the execution work was done by the in-house technicians. Record of work executed work was kept in loose measurement sheets and very few RAs use Measurement Books to keep records.

Quality control was done by random checking during and after completion of the maintenance works. Almost DROs and metro/sub-metro have practice of laboratory testing of material prior to use for its suitability check and executed work and attached in running bills too. Almost municipalities have practiced visual inspection method in maintenance works, where technicians utilized their engineering judgmental skills and past experiences. No laboratory testing has conducted to the road maintenance works by those RAs.

Monitoring team visited the sample road maintenance site and verified the quality and quantity of the executed work compare with specification, drawing and cost estimate or MB as far as possible.

Some of the road projects, which are assigned to Contractor, are not completed as stated in contract documents and time and cost variation is common in DROs. However, the Liquidated Damage (LD) is not practiced to such contract. On the other hand, there is not provision of LD to the User's Committee.

5.3.5 Record Keeping and Documentation

RAs have adopted a single accounting system for all income and expenditure, but not separate bank accounts opened for every source of fund. For a proper financial system, a separate account for RBN fund is required.

Account system of most of the RA's is appropriate. Computer based financial record keeping in most of the RA's was found very encouraging and need to be further improved and applied in all RAs. Financial audit of road maintenance works were carried by the Government Auditor General's Office. Book keeping of the financial transaction was done according to given procedures. Filing system of DROs are good where records up to procurement process is kept in separate file and record of contract administration and financial transaction after contract agreement is kept in account section according to General Voucher. But in municipality separate file for every project including complete documents is observed, which makes easy to extract the required information from single file.

5.3.6 Resource Strength

Technical manpower to implement the maintenance work under various DROs is sufficient and have idea and skill with them on the road maintenance system. Almost DROs, have material testing laboratory with required equipment and lab technicians and some have mechanical equipment too. Just reverse almost all municipalities even in Kathmandu metropolitan city have not established the lab and not any lab technicians. They don't have maintenance related tools and equipment. Availability of sufficient technical manpower is rare in municipalities and trained technical manpower in road maintenance work is not found.

5.3.7 Overall Performance

Finally, the consultant's team has made overall performance of each RA. The main points covered on such assessment were the appropriateness of maintenance type followed, norms and standard used for estimate, quality of executed works and test reports, progress reporting and any other miscellaneous items related to the maintenance work. On the basis of such assessment, overall performance evaluation was made. At this stage, it was also found the working environment in terms of resources, capacity, logistics, related stakeholders etc. were found somehow different in different RAs and they acted on their own way. In general, the majority of RAs have performed satisfactorily.

6 CHAPTER VI: EVALUATION

6.1 Evaluation Method

As per the ToR, consultant has also required to carry out the evaluation of the RAs. On-the-spot observations and inspection of various stages of maintenance activity was made to assess the overall performance of RA. Evaluation is not fully objective, but a relative term. It would have been more realistic and meaningful, if the working environment in terms of resource availability, technical manpower, road standard, topographical location and social perception would have been similar for all RAs. However, the consultant has adequately considered coping up such varying circumstances of each RA.

6.2 Performance Indicators

Main indicators considered for evaluation purposes were;

- ☞ Planning and programming
- ☞ Procurement Process / Management
- ☞ Implementation
- ☞ Record Keeping / Documentation
- ☞ Resource Strength

6.3 Weightage assigned

All the indicators chosen for evaluation do not have equal importance. In the present evaluation field verification of implemented work which is most important aspect of maintenance process has been given the highest weightage and the planning and programming part in the second priority. Weightage assigned to different indicators is given in the following section.

6.4 Scoring System

For evaluation purpose, the consultant has assigned different performance scoring system based upon the data/information collected at field as per the checklists discussed above. The details of scores assigned to each of the questions listed in the checklist are given in **Appendix – I**. The scores assigned to broad activities are as follows:

i. Planning and Programming	15
ii. Procurement / Management	15
iii. Implementation	50
iv. Record Keeping / Documentation	10
v. Resource Strength	10
Total Score	100

6.5 Evaluation

During field data collection, two types of checklists have been developed; one for filling up at RA Office and the other for recording the information from on-the-spot observation of executed works. Score for each of the question has been assigned in the same checklist for data collected at RA Office. In case of field data evaluation, there can be a number of major items in a single road and more than one road in some of RAs. In such cases, evaluation is made considering one major item as complete work and takes an average of all major items for assigning the total score for field evaluation of one road project. In case the RA undertaking more than one road, average score of all the roads is taken as final score for field verification.

6.6 Outcome of Evaluation

For evaluation purpose, the consultant has categorized road agencies in the following performance grading:

- Score < 60 Poor
- Score 60~ 70 Satisfactory
- Score 70~ 80 Good
- Score 80~ 90 Very Good
- Score > 90 Excellent

On the basis of the above mentioned criteria, numbers of RAs are ranked for grading according to their overall performance as follows:

Table 6.1: Grading of Road Agencies

Performance Rating		No. of RAs with grading from "Poor" to "Excellent"				Total RAs
		DROs		Municipalities		
Grading	Score Level	Province-3	Province-4	Province-3	Province-4	
Poor	<60	-	-	-	-	
Satisfactory	60 ~ 70	-	-	1	3	
Good	70 ~ 80	-	-	13	9	
Very Good	80 ~ 90	8	2	10	2	
Excellent	>90	2	1	-	-	
Total		10	3	24	14	51

As the working environment and the resource availability are different for DROs and Municipalities, it would not be wise to evaluate them on equal footing. Therefore, evaluation for the DROs and Municipalities have been done separately and presented in the following charts:

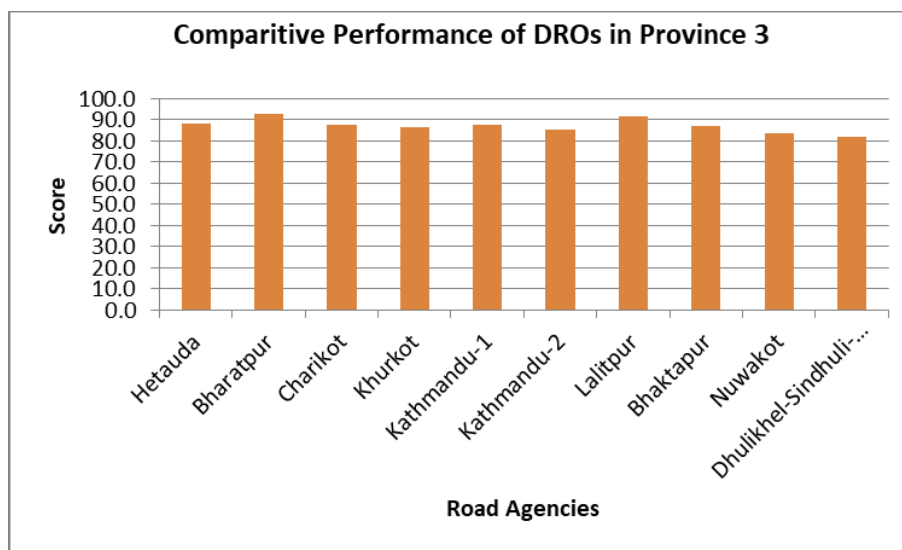


Figure 6.1: Comparative performance of DROs in province 3

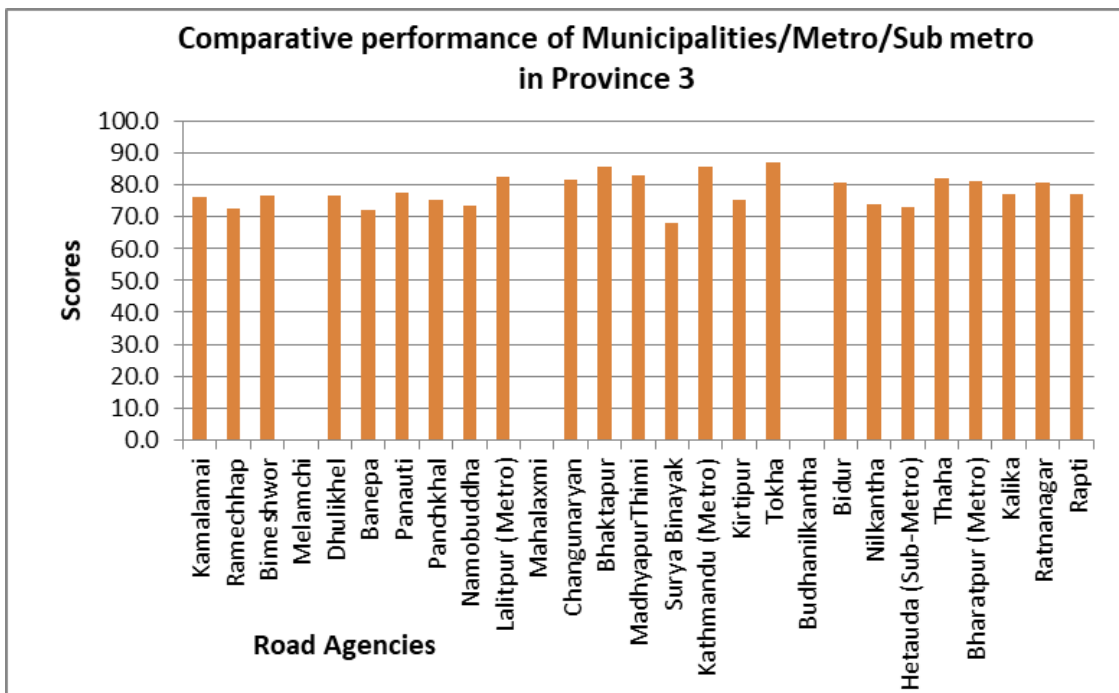


Figure 6.2: Comparative performance of Municipalities/Metros/Sub-metro in province 3

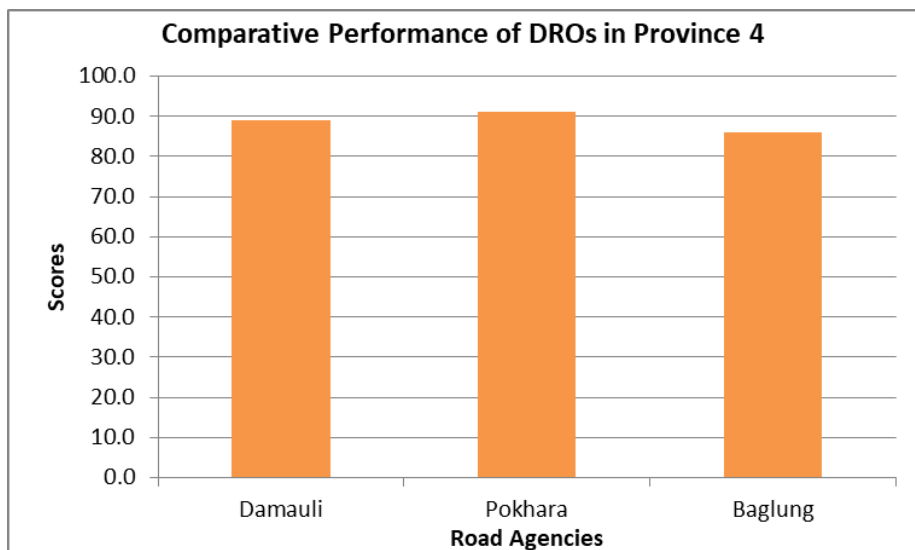


Figure 6.3: Comparative performance of DROs in province 4

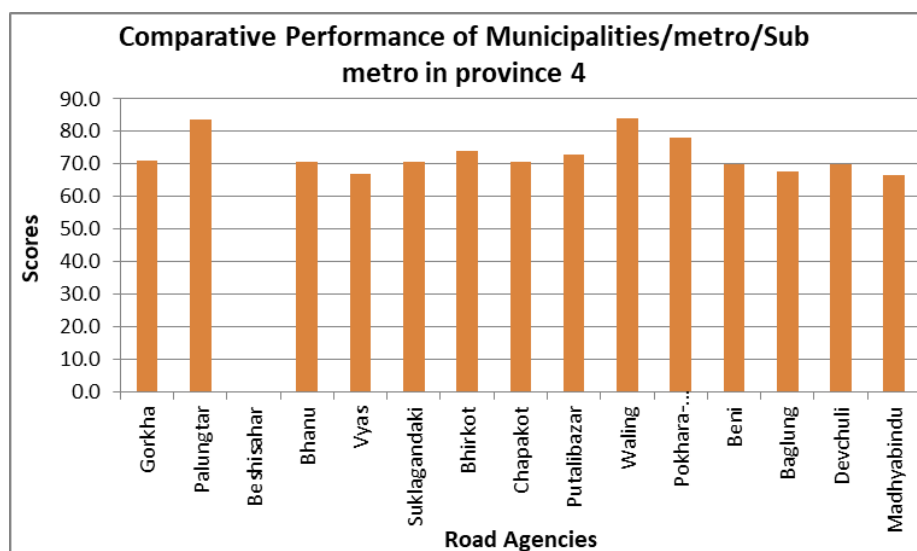


Figure 6.4: Comparative performance of Municipalities/Metros/Sub-metro in province 4

The above figures are self-explanatory to indicate relative performances of various DROs and Municipalities.

Final results of all RAs are also represented in a tabular form below:

Table 6.2: Performance Grading of Road Agencies

Performance Grading

Division Road Offices

Province 3

SN	Name of Division Road Offices	Performance Indicators and Obtained Score (Total Score : 100)					Total Score Obtained	Performance Grading Level
		Planning and programming	Procurement / Management	Implementation	Record Keeping / Documentation	Resource Strength		
		15.0	15.0	50.0	10.0	10.0		
1	Hetauda	15.0	12.0	42.3	9.0	10.0	88.3	Very Good
2	Bharatpur	15.0	12.0	46.8	9.0	10.0	92.8	Excellent
3	Charikot	14.0	13.0	43.0	8.5	9.0	87.5	Very Good
4	Khurkot	14.0	14.0	40.0	8.5	10.0	86.5	Very Good
5	Kathmandu-1	14.0	13.0	42.0	8.5	10.0	87.5	Very Good
6	Kathmandu-2	14.0	13.0	40.0	8.5	10.0	85.5	Very Good
7	Lalitpur	15.0	13.0	44.0	9.5	10.0	91.5	Excellent
8	Bhaktapur	14.0	15.0	38.5	9.5	10.0	87.0	Very Good
9	Nuwakot	13.0	12.0	40.0	8.5	10.0	83.5	Very Good
10	Dhulikhel-Sindhuli-Bardibas	15.0	12.0	36.5	8.5	10.0	82.0	Very Good
	Average	14.3	12.9	41.3	8.8	9.9	87.2	

Performance Grading

Division Road Offices

Province 4

SN	Name of Division Road Offices	Performance Indicators and Obtained Score (Total Score : 100)					Total Score Obtained	Performance Grading Level
		Planning and programming	Procurement / Management	Implementation	Record Keeping / Documentation	Resource Strength		
1	Damauli	14.0	12.0	44.0	9.0	10.0	89.0	Very Good
2	Pokhara	15.0	13.0	44.5	8.5	10.0	91.0	Excellent
3	Baglung	14.0	14.0	39.0	9.0	10.0	86.0	Very Good
	Average	14.3	13.0	42.5	8.8	10.0	88.7	

Performance Grading

Municipalities, Sub-Metros / Metros

Province 3

SN	Name of Municipality / Sub-Metro / Metro	District	Performance Indicators and Obtained Score (Total Score : 100)					Total Score Obtained	Performance Grading Level
			Planning and programming	Procurement / Management	Implementation	Record Keeping / Documentation	Resource Strength		
			15.0	15.0	50.0	10.0	10.0	100.0	
1	Kalamamai	Sindhuli	11.0	15.0	39.5	8.5	2.0	76.0	Good
2	Ramechhap	Ramechhap	9.0	14.0	39.0	8.5	2.0	72.5	Good
3	Bimeshwor	Dolakha	9.0	15.0	41.5	9.0	2.0	76.5	Good
4	Melamchi	Sindhupalchowk						0.0	Poor
5	Dhulikhel	Kavrepalanchowk	13.0	12.0	39.0	8.5	4.0	76.5	Good
6	Banepa	Kavrepalanchowk	12.0	12.0	38.0	8.0	2.0	72.0	Good
7	Panauti	Kavrepalanchowk	12.0	14.0	41.5	8.0	2.0	77.5	Good
8	Panchkhal	Kavrepalanchowk	13.0	13.0	38.5	8.5	2.0	75.0	Good
9	Namobuddha	Kavrepalanchowk	12.0	12.0	39.0	8.5	2.0	73.5	Good
10	Lalitpur (Metro)	Lalitpur	13.0	13.0	46.0	8.5	2.0	82.5	Very Good
11	Mahalaxmi	Lalitpur						0.0	Poor
12	Changunaryan	Bhaktapur	13.0	15.0	42.5	9.0	2.0	81.5	Very Good
13	Bhaktapur	Bhaktapur	13.0	15.0	46.5	9.0	2.0	85.5	Very Good
14	MadhyapurThimi	Bhaktapur	13.0	15.0	42.5	8.5	4.0	83.0	Very Good
15	Surya Binayak	Bhaktapur	8.0	13.0	36.5	8.5	2.0	68.0	Satisfactory
16	Kathmandu (Metro)	Kathmandu	13.0	12.0	46.7	8.0	6.0	85.7	Very Good
17	Kirtipur	Kathmandu	10.0	15.0	38.0	10.0	2.0	75.0	Good
18	Tokha	Kathmandu	13.0	15.0	46.0	9.0	4.0	87.0	Very Good
19	Budhanilkantha	Kathmandu						0.0	Poor
20	Bidur	Nuwakot	13.0	15.0	39.5	9.0	4.0	80.5	Very Good
21	Nilkantha	Dhading	13.0	14.0	35.7	9.0	2.0	73.7	Good
22	Hetauda (Sub-Metro)	Makawanpur	13.0	15.0	32.0	9.0	4.0	73.0	Good
23	Thaha	Makawanpur	13.0	15.0	43.0	9.0	2.0	82.0	Very Good
24	Bharatpur (Metro)	Chitwan	13.0	15.0	40.0	9.0	4.0	81.0	Very Good
25	Kalika	Chitwan	13.0	14.0	39.0	9.0	2.0	77.0	Good
26	Ratnanagar	Chitwan	13.0	13.0	44.0	8.5	2.0	80.5	Very Good
27	Rapti	Chitwan	13.0	15.0	39.0	8.0	2.0	77.0	Good
	Average		12.1	14.0	40.5	8.7	2.7	69.3	

Performance Grading

Municipalities, Sub-Metros / Metros

Province 4

SN	Name of Municipality / Sub-Metro / Metro	District	Performance Indicators and Obtained Score (Total Score : 100)					Total Score Obtained	Performance Grading Level
			Planning and programming	Procurement / Management	Implementation	Record Keeping / Documentation	Resource Strength		
			15.0	15.0	50.0	10.0	10.0		
1	Gorkha	Gorkha	12.0	13.0	33.5	8.5	4.0	71.0	Good
2	Palungtar	Gorkha	13.0	15.0	45.0	8.5	2.0	83.5	Very Good
3	Beshisahar	Lamjung						0.0	Poor
4	Bhanu	Tanahun	13.0	13.0	33.0	9.5	2.0	70.5	Good
5	Vyas	Tanahun	13.0	12.0	30.8	9.0	2.0	66.8	Satisfactory
6	Suklagandaki	Tanahun	12.0	13.0	35.0	8.5	2.0	70.5	Good
7	Bhirkot	Tanahun	12.0	13.0	38.0	9.0	2.0	74.0	Good
8	Chapakot	Syangja	12.0	13.0	34.5	9.0	2.0	70.5	Good
9	Putalibazar	Syangja	13.0	13.0	35.7	9.0	2.0	72.7	Good
10	Waling	Syangja	13.0	15.0	45.0	9.0	2.0	84.0	Very Good
11	Pokhara-Lekhnath (Metro)	Kaski	13.0	13.0	37.0	9.0	6.0	78.0	Good
12	Beni	Myagdi	13.0	13.0	33.0	9.0	2.0	70.0	Good
13	Baglung	Baglung	12.0	13.0	28.5	10.0	4.0	67.5	Satisfactory
14	Devchuli	Nawalparasi	13.0	13.0	33.0	9.0	2.0	70.0	Good
15	Madhyabindu	Nawalparasi	13.0	13.0	29.5	9.0	2.0	66.5	Satisfactory
	Average		12.64	13.21	35.10	9.00	2.57	67.69	

7 CHAPTER VII: FINDINGS FOR EACH ROAD AGENCY

7.1 General

Based upon the analysis, interpretation and evaluation of data collected through discussion, interaction, questionnaires and maintenance site observations at each RA, majority of the findings are listed in the following topics:

7.2 Basic Information

7.2.1 Planning and Programming

Information under this topic has been obtained from the existing Road Inventory, list of roads proposed for maintenance, approved annual program for FY 2074/75. Assessment has been made on the basis of regular updating of road status, appropriateness of roads selected for maintenance, relevancy of quantity, time and cost proposed in the annual program and its approval. However, few RAs are not updating the road status.

7.2.2 Procurement Management

Pre-procurement activities, such as maintenance survey, preparation of design, drawings and cost estimate of maintenance work, preparation of bid document have been checked and relevant information collected for evaluation. Similarly the bidding procedures, mode of procurement selected, compliance of the bidding process with the prevailing act, regulations and guidelines have been monitored and incorporated under this topic.

7.3 Performance Assessment

7.3.1 Physical Verification

Physical verification maintenance sites were made to have a feeling of the actual maintenance works executed in field. Representatives from the Road Agency involved for that particular work was accompanied in such site visits. Due to time constraint as well as the status of the work progress at site, all the maintenance sites in each RA could not be visited. However, adequate information of those sites which could not be visited has also been collected from respective RA personnel.

Quality assurance from the contractor's side and quality control by the employer's representative is the most crucial aspect in successful implementation of maintenance works. In this regards, various questions were devised about the management for quality control mechanism and the responsible person; existence of laboratory and the type of the tests carried out and overall performance assessment. Findings from such monitoring have been included under this heading.

7.3.2 Financial Performance

Under this topic, total budget for FY 2074/75 with RBN, RA and other source share, released amount and expenditure has been included. Project-wise procurement status with total estimate and contract amount has also been summarized.

7.3.3 Evaluation of Output

Summary of the output of evaluation as discussed in the previous chapter has been included as findings under this topic.

7.4 General Remarks

General remarks as observed in course of monitoring of each RA have been briefed under this topic.

7.5 Photographs

Relevant photographs of executed works at site as well as at the RA office have been taken during field visit and included in individual report of each RA. However, it is not possible to include all the photographs taken during the monitoring process.

7.6 Finding from each Road Agency

Overall findings on basic information, overall performance and general remarks with photographic evidences have been summarized for each RA separately and presented in the same order as mentioned in the ToR as given in **Appendix - III**.

7.7 General Findings and Interpretation

Generally, in DROs, planning process is already set up through preparation of detailed ARMP, but in municipalities planning process needs to be further improved and streamlined to suite their requirements. It is also found in some of the municipalities many projects have been undertaken which was difficult to adequately manage proper maintenance works within limited resource available.

In procurement, all the RAs have followed the Public Procurement Act and Regulations of GoN. In many of the municipalities, work procurement through Users Committee has been practiced. Although some of UCs have done good jobs, majority of them have not done a satisfactory work. Public Audit would be a better approach to maintain transparency and quality of maintenance work. Public Audit was found performed by many UCs, while the contractors were not performed it. All the RAs have carried out the maintenance work as per the approved program.

In municipalities, the nature of all work mandated to limited nos of technicians varies greatly and as such a less attention is given to maintenance work. Furthermore, the available resources including material testing laboratory, machines and equipment are almost negligible in municipalities and as such it is difficult to fully comply with the norms and specification specifically in the material quality, lab testing of work, levelling and compaction of pavement surface through rolling etc. Scattered and remoteness of work sites, public pressure for traffic opening were also the reason for low quality work. In some of the RAs, allocated fund was also used for upgrading works. In some of the projects, delay in completion of work observed due to negligence of contractor and UCs, which the RAs management has to monitored frequently so that work could be completed in time.

Most of the DROs have enough manpower for supervision work by themselves, but the frequency of supervision during execution to be increased. However, there was lack of adequate logistics including supervision vehicles. Also, most of the RAs have used software for account keeping which was an encouraging step for RAs. In many of the Municipalities, audit objections have been cleared on time. The budget allocation has to be made on performance basis of Municipalities.

7.8 Best Performing RAs

Best performing RAs are determined by the overall score obtained by the individual RA and ranked they are given in the following tables:

Table 7.1: Top five best performing DROs

S. No.	Name of RA	District	Province	Ranking
1	Bharatpur	Chitwan	3	1
2	Lalitpur	Lalitpur	3	2
3	Pokhara	Kaski	4	3
4	Damauli	Tanahu	4	4
5	Hetauda	Makawanpur	3	5

Table 7.2: Top five best performing Municipalities (including Metros & Sub-Metros)

S. No.	Name of RA	District	Province	Ranking
1	Tokha	Kathmandu	3	1
2	Kathmandu (Metro)	Kathmandu	3	2
3	Bhaktapur	Bhaktapur	3	3
4	Waling	Syangja	4	4
5	Palungtar	Gorkha	4	5

There are 13 DROs and 42 Municipalities (including Metro/Sub-Metro) being evaluated in Province 3 and 4. Out of 13 DROs, the performance grading of 3 RAs found *excellent* by obtaining more than 90 score and ranked on top 5 positions. Other 10 RAs have obtained 80 to 90 score and performance grading is found very well. *None of* the RAs have obtained below 80 score.

Similarly, out of 42 Municipalities (including Metro/Sub-Metro), the performance grading of 12 RAs found *very good* by obtaining score ranges from 80 to 90 and ranked on top 5 position. Other 22 RAs have obtained 70 to 80 score and performance grading is *good*. Four RAs have obtained 60 to 70 score and performance grading is *satisfactory* and none of RAs have obtained below 60 and above 90 score to grade as poor or excellent. Four RAs did not perform the maintenance work in FY 2074/75, hence, the performance evaluation could not be possible.

We have tried to understand the causes of low score obtained by the municipalities, which are graded as good and *satisfactory* in performance level. However, there are not similar causes and score obtained in different indicators are also not similar to RAs categorized to same grade. Some RAs did not prepare or update the status of roads and ARMP. Resource strength in municipalities is very weak than DROs. They don't have sufficient trained technical persons, material test lab facility and equipment and machinery to support road maintenance work. In the part of field work performance, quality of work was the major concern and found weaknesses in item works. For example, no screening of gravel at quarry site, no performance of lab test on grading and CBR, Grader and Roller were not used for well spreading and compaction of gravel and gravelling work was performed manually. Similarly, Bitumen and aggregate lab test was not performed, and area of accomplished patch work was not clearly defined. Lab test of cement, sand, aggregate and stone for stone masonry and PCC work was not conducted. Cube test of mixed concrete and mortar to identify compressive strength was also found neglected and workmanship did not comply with the specification in some cases in poor performed RAs.

In the case of financial monitoring, there were also found common issues like not opening separate bank account for RBN fund, not used separate ledger and maintain for different account and not keep up to date records of bid bond, performance bond and advance payment etc.

8 CHAPTER VIII: CONCLUSION AND RECOMMENDATION

8.1 Conclusion

During the monitoring and evaluation process, team reviewed/compared/checked/verified technical and financial documents mainly annual program and planning, design and drawings, estimate and specifications; contract documents, procurement/management process adopted financial management and record keeping, resource strength at the RA offices. While at the field site, mainly the compliance of executed works with the specifications, standards and norms, quality aspects, lab tests and workmanship of executed maintenance works were monitored. Project-wise detailed findings are presented in chapter 7 above. Few generalized points are noted hereunder:

- Although the main aim of RBN is to allocate the budget for maintenance of road under the RAs to keep it in good pliable condition, some of the RAs were found to use the budget in upgrading activities like; gravelling or blacktop work thoroughly.
- Contractors seem either ignorant or less competent in complying with the norms, specifications and proper workmanship in carrying out the maintenance works. There seems to be some weaknesses on the part of RAs to make the contractors work in accordance with the set standards, norms as well as workmanship. This fact is more alarming in case of new municipalities.
- RAs basically municipalities, seem to be overloaded and as such paying less attention to maintenance works.
- Some RAs lack proper planning for implementation of maintenance work. They don't prepare proper ARMP and sent to RBN.
- Contractor seems given more priority to the completion rather than quality of the work and it seems that there is lack of proper mechanism to control it.
- In general, road maintenance works under majority of RAs are implemented in last 3 months (Baishak to Asadh) of Fiscal Year.
- It was found difficult to comply implementation with maintenance planning for the following reasons:
 - There is always some time lag between the field assessment and the actual implementation in the field and as such the anticipated work volume will deviate due to further surface deterioration.
 - Generally, the contractors found reluctant to start the work immediately after the contract is awarded. By the time they start the work, further damage may occur.
 - It was found practically difficult to maintain the cyclic maintenance as the contract is awarded, the contractor has a tendency to concentrate his work in close location as far as possible and complete the job at one go in a single cycle.
- Comparing to the DROs, the Municipalities are not found equipped with laboratory facilities and lab technician. They are doing the laboratory testing work with outsourcing. Testing of the material and construction work has been done in few municipalities only.
- Almost municipalities including metro and sub-metropolitan city have not sufficient technical human resource with adequate knowledge on road maintenance.

8.2 Recommendation

Some of the recommendations derived from monitoring and evaluation are categorized in two different policies and operational level is given below:

Operational Level

- The DROs and Municipalities/Sub-Metros/Metros with responsibilities of maintenance management should explicitly define a comprehensive set of project selection criteria for implementation under RBN funding. With the limited budget allocated, it is highly recommended to undertake minimum number of roads for specific and periodic maintenance in each RA.
- It is recommended that the frequency of supervision to be increased which will be helpful to improve the quality of maintenance work. Adequate supervising staff to be made available at RAs depending upon basis of works volume.
- It is recommended that RBN has support all municipalities in establishment of the laboratory facilities.
- Roads Board Nepal requested to arrange sufficient trainings, workshops and seminar for different types of personnel involved in the maintenance of road funded by the board. Road maintenance trainings for Engineers, Sub Engineers, Assistant Sub Engineers and Supervisors are necessary.
- ARMP preparation and approval should be mandatory to all RAs.
- Practice of implementing road maintenance work in last moths of FY to be discouraged by RAs and RBN. Quality of work in that time is normally found poor due to the lack of supervision and tendency of finishing the work in any cost.

Policy Level

- For emergency maintenance works during rainy season, separate provision with nominal percentage of previous year's budget needs to be made available for the RAs.
- On demand of some of the RAs (newly formed municipalities), it is recommended to provide sufficient orientation and clear cut guidelines to them as there was some confusion regarding the RBN budget planning and disbursement to RAs.
- The budget allocation to good performing RAs is recommended to increase from present amount on demand base and technical requirements of important roads.
- RBN has to organize orientation/training in RBN Policy and Guidelines, norms and standard and quality of work to the newly formed Municipalities and Rural municipalities.
- It is recommended that there is complete road maintenance information in RBN. It is therefore, suggested to establish Road Maintenance Information System (RMIS) in RBN to keep updated record of maintenance activities of all roads (SRN and LRN).
- Generally, RBN is practicing M & E of maintenance work of last FY, of completed work. Importance and aim of Monitoring and Evaluation process is different. Thus, RBN has requested to distinguish the job and prepare proposal with clearly defined TOR and scope of work before hiring the consultant.