Rural Road Planning and Prioritisation Model (RPPM)

Report of the Project Launch Meeting

Department of Urban and Regional Planning (DURP)
Bangladesh University of Engineering and Technology (BUET)

February 2018 (Revised)
The views in this report are those of the authors and they do not necessarily reflect the views of the Local Government Engineering Department (LGED) or Research for Community Access Partnership (ReCAP).

Cover Photo:
Md. Mashrur Rahman using LGED’s GIS Database

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Key words

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RESEARCH FOR COMMUNITY ACCESS PARTNERSHIP (ReCAP)

Safe and sustainable transport for rural communities

ReCAP is a research programme, funded by UK Aid, with the aim of promoting safe and sustainable transport for rural communities in Africa and Asia. ReCAP comprises the Africa Community Access Partnership (AfCAP) and the Asia Community Access Partnership (AsCAP). These partnerships support knowledge sharing between participating countries in order to enhance the uptake of low cost, proven solutions for rural access that maximise the use of local resources. The ReCAP programme is managed by Cardno Emerging Markets (UK) Ltd.

See www.research4cap.org
Acknowledgements

We are grateful to the Local Government Engineering Department (LGED) for helping us organising the project launch meeting. We are also grateful to the participants of the Planning Commission, Roads and Highways Department, local elected representatives from Tangail and Local Government Engineering Department for their active participation and feedback which helped us making the event successful. We also acknowledge ReCAP for their participation, constant support and assistance.
## Acronyms, Units and Currencies

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AADT</td>
<td>Annual Average Daily Traffic</td>
</tr>
<tr>
<td>AHP</td>
<td>Analytical Hierarchical Process</td>
</tr>
<tr>
<td>BC</td>
<td>Bituminous Carpeting</td>
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<tr>
<td>BUET</td>
<td>Bangladesh University of Engineering and Technology</td>
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<tr>
<td>CBA</td>
<td>Cost Benefit Analysis</td>
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<tr>
<td>CVD</td>
<td>Commercial Vehicles per Day</td>
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<tr>
<td>DURP</td>
<td>Department of Urban and Regional Planning</td>
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<tr>
<td>EIRR</td>
<td>Economic Internal Rate of Return</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information System</td>
</tr>
<tr>
<td>HBB</td>
<td>Herring Bone Bond (Brick paved)</td>
</tr>
<tr>
<td>LGED</td>
<td>Local Government Engineering Department</td>
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<tr>
<td>LGI</td>
<td>Local Government Institutions</td>
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<tr>
<td>MCA</td>
<td>Multi Criteria Analysis</td>
</tr>
<tr>
<td>MP</td>
<td>Member of Parliament</td>
</tr>
<tr>
<td>NMT</td>
<td>Non-motorised Transport</td>
</tr>
<tr>
<td>NPV</td>
<td>Net Present Value</td>
</tr>
<tr>
<td>PAF</td>
<td>Planning Appraisal Framework</td>
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<tr>
<td>ReCAP</td>
<td>Research for Community Access Partnership</td>
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<td>RHD</td>
<td>Roads and Highways Department</td>
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<td>SFYP</td>
<td>Seventh Five Year Plan</td>
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<td>URP</td>
<td>Urban and Regional Planning</td>
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<tr>
<td>TTCS</td>
<td>Travel Time Cost Saving</td>
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<tr>
<td>VOCS</td>
<td>Vehicle Operating Cost Saving</td>
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1 Executive Summary

The Rural Road Planning and Prioritisation Model (RPPM) is a web-based application tool for planning and prioritisation of rural roads maintained by the Local Government Engineering Department (LGED). It runs from the GIS web portal of LGED. RPPM is an output of a project funded by UK aid through Research for Community Access Partnership (ReCAP).

A project launch meeting was organised jointly by LGED and the Department of Urban and Regional Planning (URP) on 28 January 2018 to launch RPPM. The purpose of the launching meeting was to demonstrate the features of RPPM to, and share its outputs for the pilot district Tangail with the participants. The meeting was chaired by Mr. Md. Abul Kalam Azad, Chief Engineer, LGED. Mr. A. N. Shamsuddin Azad Chowdhury, Member, Agriculture, Water Resources, and Rural Institutions (RD&I) Division, Planning Commission was the Chief Guest.

Demonstration on different features of RPPM was made at the meeting by accessing the online GIS portal of LGED. The generated outputs and maps for different types of road development for the pilot district were also displayed. Participants underscored the importance of prioritisation of rural road development projects and congratulated LGED for launching such an important tool for appraisal of rural roads in Bangladesh. Considering the limitations of the traditional cost-benefit analysis (CBA), it was appreciated that RPPM considered both CBA and multi-criteria analysis (MCA) and could show their appraisal results. RPPM is an example that planning ideas and advanced tools together can also be applied in rural areas. The methodology developed for RPPM had the potential to be replicated in other countries and continents. ReCAP was looking forward to customise RPPM tool for use by the African members.

LGED expressed its commitment to roll out RPPM in other districts of Bangladesh including updating of the databases and sought support from the government and development partners. Assurance was made for all possible support from the Planning Commission in implementing RPPM and other development works of LGED.
2 Introduction

The Rural Road Planning and Prioritisation Model (RPPM) is a web-based application tool for planning and prioritisation of rural roads maintained by the Local Government Engineering Department (LGED). It runs from the GIS web portal of LGED.

RPPM is an output of a project funded by UKaid through Research for Community Access Partnership (ReCAP). A meeting was organised jointly by the Department of Urban and Regional Planning (URP) and LGED on 28 January 2018 to launch RPPM.

The purpose of the launching meeting was to demonstrate the features of RPPM to, and share its outputs for the pilot district Tangail with high officials of the Planning Commission, LGED and other Government Departments, experts and other stakeholders. It is expected that LGED will roll out RPPM for planning and prioritisation of rural roads in other districts in the near future. The programme of the meeting is attached as Annex A to this report.

The launching meeting was attended by high officials from the Planning Commission including the Honourable Member, Agriculture, Water Resources and Rural Institutions (RD&I) Division, LGED officials from the headquarters and field offices in Tangail, Roads and Highways Department (RHD) and other Government Departments, representatives of Upazila and Union Parishads in Tangail, representatives of ReCAP, experts and other stakeholders. The list of participants is attached as Annex B to this report.

3 Launching Session of RPPM

The launching session of RPPM was chaired by Mr. Md. Abul Kalam Azad, Chief Engineer, LGED. Mr. A. N. Shamsuddin Azad Chowdhury, Honourable Member, Agriculture, Water Resources, and Rural Institutions (RD&I) Division, Planning Commission graced the event as the Chief Guest. Mr. Iftekhar Ahmed, Additional Chief Engineer (Planning), LGED; Professor Dr. Afsana Haque, Head, DURP, Bangladesh University of Engineering and Technology (BUET) and Mr. Maysam Abedin, Regional Technical Manager, ReCAP addressed the opening session.

Mr. Iftekhar Ahmed welcomed the participants to the meeting. He explained why prioritisation of rural roads was necessary. Many factors had contributed to the growth of rural economy and development of rural areas. Access to facilities and rural centres was one of those important factors. In recognition of this fact, until recently LGED had been focusing on enhancing rural accessibility. Currently, Bangladesh has more than 353,000 km of rural roads. Time has come for a paradigm shift – a shift from rural roads to rural transport. As allocation of resources for rural roads was expected to be more competitive in the future, further development of rural roads should be selective based on priority of development. In this regard, he hoped that the application of RPPM would facilitate decision making capacity in LGED. He informed the audience that BUET had developed the application tool considering the outcome of a series of meetings and workshops, and in consultation with stakeholders including LGED officials, experts and local leaders of the pilot district Tangail.

Professor Afsana Haque in her welcome speech drew attention to the importance of prioritisation of rural roads in the context of Bangladesh. She thanked LGED for their constant support and assistance in implementing the project. She hoped that with its successful application in other districts of Bangladesh, RPPM would assist LGED in more effective and efficient planning and development of rural roads and enhance decision making capacity in LGED. She believed that launching of RPPM was a noteworthy step towards the vision of a digital Bangladesh. Professor Haque thanked ReCAP for their support and assistance for the project. She mentioned that involvement with the project had
been a rewarding learning experience for the BUET team and reiterated the interest and commitment of DURP in providing further support to implement RPPM in other districts, if needed.

Mr. Maysam Abedin, Technical Manager, ReCAP highlighted the limitations of the traditional cost-benefit analysis (CBA) for appraisal of investment projects. CBA can effectively portray the benefits of road construction and development where traffic volume is high. But in rural areas traffic volume in many roads are not high. Yet their development is required as they provide access benefits to many people for many facilities including health, education, mobility etc. Such benefits, however, are difficult to be monetised. Therefore, in such situations appraisal by multi-criteria analysis (MCA) is more appropriate. In this regard, he expressed satisfaction that RPPM had considered both CBA and MCA and could show their appraisal results. He mentioned that RPPM was an example that both the planning concept and technological advancement could be applied together in rural areas. He concluded his speech by thanking BUET for completion of the project.

Dr. Abdul Quium, team leader of the RPPM project, provided a summary of the methodology used to develop RPPM. The methodology had two major components. The first component followed a network approach to rural road planning focussing on access and connectivity; and the second component involved prioritisation of road development based on the outcomes of CBA and MCA. Both components included the provision of local stakeholders’ participation. Government policies and objectives were considered to develop core rural road networks at upazila and union levels. The methodology was generalised to make it applicable in other districts of Bangladesh.

The applicable criteria for each of type of road development were selected from among a list of potential criteria by conducting an Analytic Hierarchy Process (AHP) survey among the stakeholders including experts and LGED officials. The same AHP technique was used to determine the relative importance or weights of the selected criteria. The priority ranking for improvement and further improvement/upgrading of roads was based on EIRR values except for low volume earth roads. MCA scores were used for priority ranking of low traffic volume earth roads and priority for road maintenance.

After that he demonstrated the different features RPPM by accessing the online GIS portal of LGED. He also showed the generated outputs and maps for different types of road development for the pilot district.

4 Discussion by the Participants

The discussion session was moderated by Mr. Md. Abul Kalam Azad, Chief Engineer, LGED. The participants raised a number of issues related to rural road development and RPPM.

Mr. Motiur Rahman, Superintending Engineer, Dhaka Region, LGED praised the concept of prioritisation of roads and development a tool like RPPM. He enquired if the same tool and methodology could be applicable in other areas where geographic and climatic conditions were not the same. As climate change considerations were getting more attention in project development, he recommended if these considerations could be included in RPPM.

Mr. Harun-Orrahid, Senior Assistant Chief, Planning Commission highlighted the regional variation in the country and even within a district. In the backdrop of inability of institutions to follow rules, he underscored the importance and practical application of RPPM.

Mr. Abdur Rahim, Executive Engineer (Maintenance), LGED enquired whether CBA or MCA results were used for prioritisation of road maintenance. He was of the opinion that the term “important road network” could be more appropriate than “core network” as had been used in RPPM. He
requested the project team to consider an option for running RPPM for the entire district at a time rather than running it by upazila.

Dr. Abdullah Al Mamun, Director, Road Research Laboratory, RHD congratulated LGED and BUET for accomplishing such an important work for the country. He enquired if the existing government policies like Planning Appraisal Framework (PAF) for roads currently followed by the Planning Commission and RHD were considered. He particularly pointed out that in the PAF social, economic and other criteria had defined weights. He enquired if any such considerations were given in RPPM. He was of the opinion that if LGED and RHD road projects were not considered on the basis of same criteria for approval, there could be misallocation of resources for road projects. He further, observed that for LGED equity criteria should get a higher weightage.

Mr. Md. Joynal Abedin, Additional Chief Engineer (Maintenance), LGED requested the project team to update the LGED road statistics according to government gazette notification of October 2017. He also requested to clearly state which government policies and guidelines were followed to make the tool so that its application did not face any administrative problem.

Mr. Kazi Shahidul Islam, Chairman, Basail Upazila Parishad, Tangail requested LGED that roads connecting neighbouring upazilas should get priority so that connectivity in the whole locality was improved.

Mr. Md. Sidiqur Rahman, Director General, IMED, Planning Commission observed that roads having gaps due to absence of bridges and culverts were required to special considerations. The completion of those roads could save huge amount of money every year.

5 Response from the BUET Team and LGED

Many of the observations, queries and comments of the participants were addressed to LGED. Mr. Iftekhar Ahmed responded to such queries and observations. Concerning the application of the transport sector appraisal framework, he mentioned that LGED was involved while the framework was being developed. As the framework was not considered suitable for rural road development LGED did not apply it in its road project appraisal. However, the framework was suitable for national highway development. He also pointed it out that LGED and RHD did not get budget allocations from the same funds. So, it was not necessary that both the organisations should consider the same appraisal criteria or their weights.

He assured the participants that the BUET team had closely worked with LGED officials at headquarters and in Tangail. A Working Group was established from among LGED officials to suggests and evaluate the progress of tasks. He however acknowledged that there was always room for improvement and accommodation of new or burning issues. RPPM was the first of its kind in Bangladesh and a humble beginning had been made.

Concerning the other issues raised by the participants, Dr. Quium responded on behalf of the BUET team. He thanked the participants for raising the pertinent questions. The RPPM methodology was generalised for its application in other districts of Bangladesh. Organisation of local workshops was an integral part of the RPPM methodology. These workshops provided opportunities for the local stakeholders to consider any local issues such as SDG goals, vulnerability issues or any other issues related to rural road development.

Dr. Quium thanked Mr. Md. Joynal Abedin for drawing attention to updating of road data. He mentioned that the data on rural roads presented in the final report of the project were according to
the Gazette notification of October 2017. However, the data presented in slides should have been updated accordingly.

The BUET team would explore the possibility of running RPPM for an entire district by selecting all upazilas together. The team would also explore the possibility of some other improvements of RPPM.

6. Closing of the Meeting

Mr. Les Simpson, Team Leader, ReCAP thanked the participants for their active participation and discussion. He congratulated LGED for finishing the first of the three ongoing ReCAP projects in Bangladesh. He also thanked the BUET team for their support. He was optimistic that the methodology developed could be replicated in other countries and continents where ReCAP worked. Finally, he stressed the uptake of the project and learning from RPPM’s implementation.

He emphasised that ReCAP wanted to be the key link between higher level strategic thinking and on the ground practical achievement targeting three issues - provision of rural access, preservation of rural access and effective use of rural access. The ReCAP programme was a strategic intervention to use and share the knowledge gained from Asia and Africa. In this regard, he also mentioned that the first global meeting was held in Uganda in November 2017 where member countries shared their experience and learned from each other.

Despite having resource scarcity ReCAP would look forward to disseminate the knowledge gained for the benefit of all its members. He also informed that one of the larger projects in Africa related to asset management had shown interest in this project. ReCAP was looking forward to customise this tool for use by the African members. He concluded his speech by thanking BUET for all the hard work and getting this project to a successful conclusion. He also thanked LGED for their commitment and advice during the project.

Mr. Khalilur Rahman, Additional Chief Engineer (Implementation), LGED and Chairperson of Working Group for the project recalled the support of concerned LGED officials, BUET team members and ReCAP representatives in implementing the project. He also expressed utmost gratitude to the Chief Guest and the Chairperson for their presence and deliberations. He acknowledged that the discussion in the meeting was useful and LGED and BUET team would take note of the feedback received from the participants.

Mr. Md. Abul Kalam Azad, Chief Engineer, LGED and Chairman of the National Committee on ReCAP in Bangladesh in his speech expressed satisfaction that the first ReCAP project in Bangladesh was almost at the finishing stage with the launching of RPPM. He thanked UKaid and ReCAP for financial support and the BUET team for its technical assistance. He expressed hope that LGED would go further by incorporating RPPM and other new tools and ideas in rural road planning and development. LGED would take initiative to update the road and GIS databases. He also mentioned the updating of traffic volume would also be undertaken.

He requested the Chief Guest and development partners to provide all possible support to undertake these tasks. In this connection he mention that LGED was currently working on 19 regional projects where RPPM might be applied. To apply it in the Haor region RPPM might need some adjustments, however. Finally, he requested all participants of the Training of Trainers (ToT) programme to send written feedbacks to the BUET team so that they could make necessary improvements before finalisation of the tool.
The Honourable Chief Guest, Mr. A. N. Shamsuddin Azad Chowdhury, Member, Agriculture, Water Resources and Rural Institutions (Rd&I) Divisions, Planning Commission congratulated LGED for organising such a wonderful knowledge sharing event. He observed that such meetings should also be organised by all other government departments so that success stories could be shared with each other. Moreover, inputs from all stakeholders concerned can enrich the outcomes of such projects.

He was of the opinion that initial application of such tools may not be that much easy. However, in the future such tools would have to be used as funds for rural roads might shrink because other sectors would require funds for more demanding and rewarding projects and investments. He expressed his satisfaction that RPPM could show both economic and social appraisal outcomes. It would help LGED to prepare better Development Project Proposal (DPP). Finally, he assured of all possible support from the Planning Commission to LGED in implementing RPPM and other development works.
Annex A: Programme of the Project Launch Meeting

Planning and Prioritisation of Rural Roads in Bangladesh

Launching of Rural Road Planning and Prioritisation Model (RPPM) Programme
28 January, 2018, Sunday at LGED Seminar Room (Level-4)

10.00-10.30  Registration
10.30-10.35  Welcome address by
             Md. Iftekhar Ahmed, Additional Chief Engineer (Planning), LGED
10.35-10.50  Address by
             Prof. Dr. Afsana Haque, Head, DURP, BUET
             Mr. Maysam Abedin, Regional Technical Manager, Research for Community
             Access Partnership (ReCAP)
10.50-11.20  Presentation on Rural Road Planning and Prioritisation Model (RPPM)
             By Dr. Abdul Quium, Team Leader, ‘Planning and Prioritisation of Rural
             Roads in Bangladesh’ project
11.20-11.50  Open discussion
11.50-12.10  Address by
             Mr. Les Sampson, Team Leader, ReCAP
             Md. Khalilur Rahman, Additional Chief Engineer (Implementation), LGED
12.10-12.25  Address by Chief Guest
             Mr. A. N. Shamsuddin Azad Chowdhury,
             Honourable Member,
             Agriculture, Water Resources and Rural Institutions Division,
             Planning Commission of Bangladesh
12. 25- 12.35 Address by Chair
       Mr. Md. AbulKalam Azad, Chief Engineer, LGED
12.35        Lunch (at Level 12, LGED-RDEC Bhaban)
Annex B: List of Participants

Planning and Prioritisation of Rural Roads in Bangladesh

Launching of Rural Road Planning and Prioritisation Model (RPPM)

Planning Commission

1. Fakir Muhammad Munawar Hossain, PS to Member, Rd&I Divisions
3. Harun - Or- Rahid, Senior (Sr) Assistant Chief, RD&I

Roads & Highways (RHD)

1. Dr. Abdullah Al Mamun, Director, Road Research Laboratory, RHD
2. Areena Mannan, Executive Engineer, RHD

LGED Headquarters

1. Md. Mohsin, Additional Chief Engineer (Addl. CE) (IWRM)
5. Iftekhar Ahmed, Addl. CE (Planning)
6. Khondoker Ali Noor, SE (Design)
7. A. K. Azad, SE (Education)
8. Md. Matiar Rahman, SE (Dahak Region)
9. Md. Abdul Rashid Khan, SE (Training)
10. Md. Abdul Kuddus Mondol, SE (Maintenance)
11. Md. Mosleh Uddin, SE (Admin)
12. Md. Ahsan Habib, SE (IWRM & P&D)
15. Md. Abdul Wadud, Project Director (PD), IRIDP
17. Md. Jasim Uddin, PD, BAIDP
18. Md. Kamrul Ahsan, PD, BDRIDP
19. Md. Mostafa Kamal, PD, RTIP-II
21. Abdur Rashid Mia, PD, Rajshahi Div-II
22. Hamidul Haque, DPD, CRDP
23. Shafiqur Rahman, DPD, IRIDP-II
24. Rezaul Bari, EE, HQ
25. Md. Abdur Rahim, EE (Maint.), HQ
26. Md. Ebadat Ali, EE (Design), HQ
27. Md. J M Azad Hossain, EE(PEDP-III)
28. Abul Monzur Md Sadeque, EE (Planning), HQ
29. Md. Sohel Rana, Sr AE, GIS
30. Md. Zakir Hossain, Sr AE, MIS
31. Md. Shakhawat Hossain, System Analyst, RTIP-II
Local stakeholders from Tangail

1. Showkat Sikder, Upazila Parishad Chairman, Sakhipur
2. Kazi Shahidul Islam, Upazila Parishad Chairman, Basail
3. Md. Abbas Ali, Upazila Parishad Vice Chairman, Tangail Sadar
4. Sadek Ali, Union Parishad Chairman, Tangail Sadar
5. Torikul Islam Biddut, Union Parishad Chairman, Sakhipur
6. Md. Zakir Hossain, Union Parishad Chairmn, Lateefpur

LGED officers from Tangail

1. Md. Delwar Hossain Mozumder, EE, LGED, Tangail
2. Md. Arifur Rahman Chowdhury, UE, Mirzapur
3. Farukh Hossain, UE, Tangail Sadar
4. Kazi Fahad Quddus, UE, Sakhipur
5. Mir Ali Shakir, UE, Delduar

Department of URP, BUET

1. Prof. Dr. Afsana Haque, Head, Department of URP, BUET
2. Dr. A S M Abdul Quium, Team Leader, BUET
3. Prof. Sarwar jahan, BUET
4. Dr. Md. Musleh Uddin Hasan, BUET
5. Mr. Anindya Kishore Debnath, BUET
6. Mr. Md Mujahidul Islam, BUET
7. Md. Maeenul Islam, BUET
Annex C: Photographs

Photograph 1: The Chief Guest Mr. A. N. M. Shamsuddin Azad Chowdhury delivering his speech

Photograph 2: Mr. Les Samson, Team Leader ReCAP giving his speech
Photograph 3: Honourable guest and speakers at the launch meeting

Photograph 4: Participants in the launch meeting