

1. Executive Summary

ES-1 Introduction

Rural Development has become a matter of growing urgency for considerations of social justice, national integration, economic upliftment and inclusive growth. For rural development the provision of rural network is a key component to enable the rural people to have accessed to schools, health centres & markets. Considering the importance of roads in rural development, Government of Karnataka through Panchayat Raj Engineering Department (PRED) ably implemented 614 road works with a total length of 312.40 kms under National Bank for Agriculture & Rural Development (NABARD) assistance. These roads have been implemented during 2012-13 to 2014-15. PRED has ably planned & developed roads, bridges and foot bridges duly considering the stipulated parameters as specified by NABARD, being the funding agency.

The Government of Karnataka has set the mandate for independent evaluation of the projects completed through Government agencies through Karnataka Evaluation Authority (KEA). The study is aimed at assessing overall socio-economic impact on the lives of rural people by promotion of economic development and provision of access to basic services at household / village level as a result of enhanced connectivity because of NABARD roads implemented by PRED. The evaluation is required to assess change in annual income of villagers, impact on agriculture, health system, animal husbandry, urbanization, change in proportion of students completing primary education, ratio of girls to boys in primary / secondary / higher education, changes in wage rate & employment pattern for male & female workers, the process of selection of works, etc.

The study is also aimed at ascertaining the extent to which the NABARD roads have made positive impact on agriculture and allied sector, industry, employment, education, health, transport, social aspects, poverty alleviation & urbanization, changes in the availability of basic economic & social infrastructure and services, programme effectiveness, efficiency, economy, administrative processes, programme output, outcomes from various stake holders perspective, etc.

ES-2 Methodology

The study was taken up in participating measures & with an overall consultative approach. Key methodical imperatives such as road inspection, household visits, interview method & in depth interactions were leveraged to capture experiences & perceptions of project beneficiaries i.e villagers and other road users, as well as other key stake holders. Under qualitative method, 218 focus group discussions (FGDs) to elicit habitation details of 218 sample villages (1 village / 1 road) were held, 3445 in-depth interviews (IDIs) with the individual households were conducted to acquire insights on key aspects of road, bridge & foot bridge projects implemented in the respective villages.

Six types of structured interview schedules (two each for roads, bridges & foot bridges) were developed separately to elicit opinion from individual households, Village Panchayat officials with regard to habitation details and project details from respective PRED officials. These were pretested prior to use in the actual field situation. For the purpose of qualitative study, a question guide was developed for undertaking FGDs and for the purpose of undertaking IDIs, appropriate check-list was developed. The analysis of quantitative data was carried out using appropriate statistical methods.

Based on the revised completed works by PRED during the three years study period i.e., 2012-13 to 2014-15, the sample size was revised by KEA and accordingly same was considered for evaluation. The total works implemented by PRED during the study period of 3 years is 614 comprising 554 roads, 16 bridges and 44 foot bridges. Of 554 roads a sample of 158 roads are to be covered, whereas all the bridges and foot bridges were covered in the study (100%). Further, it was required to cover a total no.of 3391 beneficiaries are to be covered from 218 works. **However, during survey a total of 3445 beneficiaries covered with an excess of 54 numbers.**

ES-3 Key Evaluation Questions related Findings

- ❖ All the projects have been selected in a transparent manner by following specified guidelines and parameters prescribed by NABARD. PRED has followed codified criteria in selection of all the works before implementation. Further, in selection of works another two important criteria viz., (i) Need based and (ii) Resource based

selection were required to be followed. PRED has selected the works keeping these criteria and most of the works were selected on the need based criteria having roads with 85%, bridges 69% and foot bridges at 100%. The remaining 15% roads and 31% bridges were selected on resource based criteria.

- ❖ PRED did not encounter any problems during land acquisition and there were no such issues as the project was implemented in government lands (not in private lands) as per the guidelines laid down by NABARD. Most of the projects have been implemented within the cost and there is no cost over run in such projects. However, there are some projects affected with time or cost over run. Total length of rural roads as on 2016-17 in the State is 177542 kms. out of which 63374 kms. is asphalted, 23059 kms. is WBM and remaining 91109 kms. is mud road indicating 36% of the roads are motorable and 64% are non-motorable and need to be taken up.
- ❖ The total length of asphalted road in rural areas i.e., 63374 km is motorable which has been completed under three schemes viz., PMGSY, CMGSY & NABARD. The contribution under PMGSY is 18536 km (29%), CMGSY is 41103 km (65%) and under NABARD assistance a length of 3735 km (6%) road is asphalted. This is the total length completed by NABARD since inception. Keeping the same percentage of achievement as target of above three agencies, out of 114168 km untackled road the target under PMGSY works out to 33393 km (29%), CMGSY works out to 74047 km (65%) and the target length of road for NABARD assistance works out to 6729 km (6%).
- ❖ Average cost per km. length of the road during the study period is Rs.22.32 lakhs/km road, Rs.56.07 lakhs per bridge and Rs.5.67 lakhs per Foot Bridge. Comparing to similar scheme like PMGSY, the average cost is lower by 35% for roads and 10% to 15% in case of bridges & foot bridges. PRED has adhered to specified length / width of roads prescribed before implementation. Based on this the designs and estimates are prepared and submitted to the competent authority for approval. However, in certain cases (beyond control) there were few deviations mainly due to the specific reasons such as **(i) Road ending with Bell mouth condition (ii) Change in Sital conditions (iii) Change in Schedule of Rates (iv) Not implementing the roads in**

the designated Year and (v) Change if the road runs in forest or taken over by PWD for upgradation.

- ❖ There were no instances of a road/stretch of a road length done under this scheme being shown to have completed under various other schemes which are implemented by Government/PRI's or vice versa. There are a few cases where sanction of road length less than 1 km. given under the Scheme even though not permissible as per the NABARD guidelines.
- ❖ In respect of roads, the total estimate for 158 no. was Rs.7882.00 lakhs whereas actual expenditure was Rs.6973.00 lakhs and savings was 11.50%. In respect of 16 bridges, the expenditure was Rs.897.08 lakhs against the estimate of Rs. 934.99 lakhs with a saving of 4.50%. In respect of 44 foot bridges, the total estimate was Rs.282.51 lakhs against the expenditure of Rs.249.38 lakhs leaving a saving of 12%. There is prescribed / design system of funding arrangements made for maintenance of NABARD assisted roads. NABARD sanctions and releases the funds for road work with a binding of allocation of funds for road maintenance from the State Government. There is no convergence of MNREGA funds that have been utilized and availing the local labour for implementation of the works.

ES-4 Key Impact related findings

- ❖ The NABARD assisted roads enabled continuity and uninterrupted connectivity which has opened up flow of goods and services to the villages and regular and faster access to facilities outside the villages for the villagers. After the roads & bridges were built many farmers shifted to crops which were considered feasible and more profitable with the new connectivity. In habitations where roads were not implemented, these gains seem to have been lost to a large extent. As opined by respondents, there has been increase in agriculture production in the range of **9% to 10%** after the projects. The same was noticed in other allied activities like livestock and poultry.
- ❖ The study also brought out that post construction scenario wherein there was more generation of employment. More people were travelling outside the habitations for better employment opportunities and there has been increase in production capacity

- of existing enterprises generating more employment activities. Many new income opportunities and small enterprises have flourished simply due to the rural roads. The gains were found very impressive in the habitations where roads were implemented but no such gains observed in habitations where the roads were not implemented.
- ❖ The projects have substantially impacted on health systems. Not only people are travelling outside to access health facilities even more doctors and health workers are visiting these villages more frequently than before. Comparison of data shows that in the habitations connected by roads which are not improved, the travel outside the habitations for visiting health facility was much lower when compared to visits made by villagers in the sample villages. These habitations also show poorer mother and child health indicators than the habitations where roads are implemented and operational. The data also shows that in the sample villages the visits made by villagers is increased by **33% (Roads) & 49% (Bridge)** whereas such result is not seen in controlled habitations. They also impacted in increasing the visits of ANMs and Doctors to villages by **45% to 50%** after the projects. Based on the opinion collected from the doctors, school teachers and villagers it is estimated that the MMR rates reduced draustically by **20%** as on 2016-17 when compared to MMR rates as on 2013-14. Similarly, the IMR rates which were **7%** as on 2013-14 decreased to **4.5%** indicating a reduction of **2.5%** as on 2016-17.
 - ❖ The projects have been able to improve in attendance of school going children especially girl child in the habitations where roads are implemented. The data shows that there is increase in attendance of school going children by **7% to 8% after** the projects. Similarly, there is also increase by **6% to 7%** in the attendance of girl child.
 - ❖ The implementation of projects resulted in improved and easier availability of construction material and other resources for the purpose of building pucca houses. During the survey in sample villages covered through roads & bridges, it was found that there was increase of more **than 10% of** people going for new construction of pucca houses after construction of the road. Similarly, there was increase of about **47%** people constructing toilet facilities after road & bridge projects.

- ❖ The road & bridge projects have been able to generate adequate employment to the local people during construction period and also post construction and there has been increase in the number of days of employment in the range of **around 20% to 25%**. The road & bridge projects have also provided employment opportunities to local people during the construction period and post-construction period which is estimated **around 11 lakh mandays**.
- ❖ Improved all season connectivity in the rural areas resulted in **reduction in travel time, increased usage of motorized vehicles and travel comfort to the place of employment of the villagers**. Almost **15% to 20%** of the households have reported that at least one of their earning members have shifted their place of employment from the habitation to outside the habitation.
- ❖ The projects have been able to establish number of tiny industries, business and service activities which have been started along the road, bridge & foot bridges. In addition to this in some of the villagers who are in the small businesses reported improvement in their business and earnings to the extent of **20% to 25%** more. The projects have been able to promote many small scale industries and provided employment for about **10,000 people**. In addition to above, there is also employment generation due to transport activities because of increase in vehicular movement and resulted in employment for **about 6,000 persons and a total of around 16,000 persons**.
- ❖ The impact of road & bridge construction is established on income and poverty alleviations. The road, bridge & foot bridge projects have impacted to increase income of agriculturists and non-agriculturists of 24% & 27% respectively. The projects have enabled increase in wage rate for both male and female workers whether they are agricultural labours or non-agricultural labours. The average labour charge for agriculture labours has been increased **around 30%**. Similarly, the average labour charge for agriculture labours (female workers) also increased **around 30%**. In respect of non-agriculture labours, for male workers there was increase **around 35%** and for non-agriculture female workers it was **around 30% increase**.

- ❖ There has been improved access and has helped the households with increased number of livestock. **Almost 15% to 20%** of the households in the sample roads & bridges have added more cows/buffaloes, **10% to 12%** households have added more goats / sheep / pigs. Also around **10% to 12% households** have increased number of poultry birds after the construction of the road.
- ❖ There has been substantial reduction in vehicle operating cost and also increase in ownership of vehicles of **around 17% & 26% (two wheelers & four wheelers respectively)**. It is estimated that there is overall savings of about 15% to 20% in fuel depending on the location and type of vehicle. **Total savings due to reduction in vehicle operating cost is estimated at Rs.117.14 crore / annum.**

ES-5 Key Project Reflections

- The study reflects that, roads & bridges make access to markets easier for the farmers, improved information and extension services support also impact the cultivation choices and thereby resulting in positive **changes in cropping patterns and** many farmers have shifted to more cash crops like fruits, vegetables, etc. There has been substantial **reduction in travel time to markets after construction of the roads & bridges.**
- Almost all the households in sample habitations felt that roads have **helped them to access the markets avoiding middlemen and get better prices.** However certain farmers who own vehicles felt that they would have managed to get the same prices even if their roads were not maintained. The study **reflects** in the sample habitations that, there was significant change in ownership of two wheelers and four wheelers. The data also **reflects** how the improved access has helped the households with increased number of livestock in sample villages whereas such increase was not observed in control habitations where such roads not taken up. The study reflects that number of tiny industries, business and service activities have been started along the road, bridge & foot bridges. There have been new economic activities started in this project area and providing employment opportunities to the local people.

- The study reflects that, the sample roads and bridges have enabled and provided allweather connectivity to the nearest health centers, Government hospitals and private nursing homes. The group discussions in the habitations concluded that roads have made very **substantial and critical time savings**. It was seen that majority of the pregnant women during the last one year in the sample and control habitations **have received pre-natal care from ANM/ Government Doctors in the village**. This is due to improved road conditions which enabled more number of visits by ANMs / Doctors to villages. The study also reflects that there has been increased **number of institutional deliveries resulting in substantial reduction in infant mortality and mother mortality rates (IMR & MMR)**.
- The current study **reflects** that the road connectivity and better maintained roads has impacted the enrollment levels of children going outside the habitation to higher secondary schools and above levels. Further, there is increase in enrollment of girl child.
- **Foot Bridges in Hassan, Kodagu & Udupi Districts:** In case of foot bridges constructed in Hassan and Udupi districts the lane width is up to a maximum of 4 to 5 feet only. The foot bridges having four feet width are helpful only to pedestrians to cross over and also some times people pass through using two wheelers. In certain cases, it was observed that pet animals like cows, bufelloes, sheep, goats, etc., are carried through these foot bridges. It is informed that some times there have been some accidents happened due to rushing of the animals, resulting in falling of the animals and breaking of legs or even loss of life. Due to such short comings, the villagers opined that there is need for increasing the width of the foot bridges at least for 12 feet which will enable smooth movement of men & materials and also light weighted four wheelers. In Kodagu district, the foot bridges have minimum lane width of 12 feet, facilitating 4 wheeler movements.

ES-6 Recommendations

(a) Short Term Recommendations

- As currently shelves of projects are not kept ready, it is recommended that PRED may consider to identify such roads on priority through conducting detailed survey at

District Office levels. Based on the merits of the projects received from District Offices same may be prioritized and final list may be kept ready for quick launching in the controlled areas as soon as receipt of budget from the government. This will result in reap the benefits to the target audience in the controlled areas on par with sample villages wherein these projects have been already implemented.

- PRED to concentrate more on providing road links to unconnected habitations to ensure enhanced rural road network and also maintenance of such roads enabling them to be sustained in long run. For this purpose, PRED to assess backlog for maintenance, linkage to initial construction, maintenance management system, contract maintenance etc., for sustenance of rural roads.
- Currently, under NABARD assisted roads there is no provision for road side tree plantations. PRED is required to establish environment specifiers by creating plantations, planting road side trees as noise barriers and vibration absorbers to maintain environment in the rural areas.
- It is suggested that PRED may adopt the specification prescribed for construction of rural roads as being practiced under PMGSY programme to ensure better quality of roads. The tender shall include the conditions of maintenance at least for a initial period of 5 years as prevailing in PMGSY scheme. This will encourage the contractor to ensure quality work during implementation to reduce the maintenance cost to be incurred by them.

(b) Medium Term

- There is need for convergence of MGNREGA funds to be made and utilize local labour for constructing roads under NABARD assistance. Hence, it is recommended that convergence of MGNREGA funds or funds under any other such schemes could be dovetailed with the NABARD works and utilize local labour (under MGNREGA) for implementation of the same.
- The width of the Foot Bridges needs to be increased to at least 12 feet which will enable two way movements of vehicles. This will help in movement of tillers, tractors, light goods carriers in shifting agricultural inputs and agricultural produce from the fields.

- Design of foot bridges with respect to lane width, thickness of the slab, piers, abutments need to be revised for enabling movement of light vehicles for transporting men & material. As per NABARD guidelines implementing agency is supposed to carry out traffic volume study for a particular road before and after implementation. Generally, this study is not carried out after implementation and PRED may consider conducting such studies even after implementation of works. This will certainly help the implementing agency to understand the bottlenecks or any short comings in the project, which could be corrected in the future projects.
- Involvement of local panchayat raj institutions for sustainable road maintenance may be considered which will enable for devotailing for the funds available under MGNREGA.

(c) Recommendations which require change in policy

- PRED may initiate PPP model for implementation of rural roads.
- PRED may consider for funding rural road maintenance by creating dedicated maintenance funds and a separate institution for managing the funds.
- PRED needs to bring out Rural Road Management Act comprising all critical issues required for effective management of rural roads both in construction and maintenance stages applicable across the department of state government.