SEMINAR: SUSTAINABLE ACCESS AND LOCAL RESOURCE SOLUTIONS
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TITLE: Understanding the diversity of rural transport needs to address them.

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Transport needs of people are many and different. Improved understanding of the transport sector through studies and development work of government institutions, NGOs and assessments of donor organisations have contributed towards recognising the importance of rural transport development needs to be highlighted. It has also helped identify the key factors that influence transport needs and patterns of rural people. These factors strongly influence people's preferences and use of transport systems that are appropriate to them. There is no doubt that rural infrastructure development with special focus on rural feeder and access roads bring about many economic and social benefits to the rural community. The benefits are more if the road has suitable vehicles for transport services.

Some of the key influencing factors are as follows:

- *Economic* - Occupations of people, affordability, investments to improve infrastructure and facilities.
- *Topography* - terrain, climate, prevalent cultivation.
- *Social aspects* - Cultural norms, social acceptability, gender roles and responsibilities, need to access education and health.

Improved infrastructure, particularly rural roads fulfill these needs of the communities but very little attention is given by respective governments as opposed to the investment made in to develop national highways and other major roads. Connectivity of rural villages to these national highways is often neglected in planning. Communities are not even consulted in highway planning processes to ensure their connectivity to them leaving the needs of the rural communities entirely for the local government institutions. This attitude and the inadequate resources available at local government levels have compelled the rural communities to look at alternative technologies and had shown their willingness to take part in rural road construction and maintenance.

It should be noted that several factors influence the social and economic development of rural communities through road and infrastructure development. **This paper highlights the facts of social and economic benefits of the rural communities as a result of having a good road, which will open the eyes of policy planners on the development of rural roads. The connectivity made by a rural road will definitely increase the "in-migration" to the villagers as an answer to the World Bank prediction that by 2020, the urban poor will increase substantially due to migration of rural people to urban areas.**

Sri Lanka Case Study

Impact Evaluations

A Socio-economic evaluation has been carried out by ITDG South Asia in two villages in Sri Lanka in 2002/03 to access the impacts of a newly constructed rural road that connected the village to a main road covering a distance of 3.5 kilometers. Several indicators have been developed by this study to measure the social and economic benefits gained by the communities with connectivity. The data for this study were carried out before the road construction and a similar data have been collected three years after the completion of the road construction. Therefore, there is a high accuracy in the data collected over a period of 4 years.

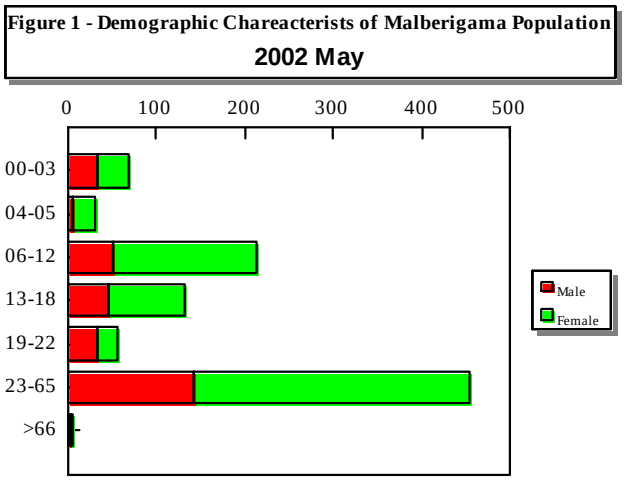
International Food Policy research Institute (IFPRI) has also carried out a research on the contribution of rural roads to economic growth and poverty reduction in China in 2002/03.

This is an economic and social evaluation for the Malberigama village (in the Hambantota District in the Southern Sri Lanka) participatory road project executed and implemented by the Intermediate Technology Development Group (ITDG) South Asia in Sri Lanka with the participation of communities and local leadership in the area. This evaluation is an assessment of financial benefits to the community as well as the economic benefits to the country in order to demonstrate the macro economic impacts with regard to access roads as a tool to poverty reduction in rural areas. The ITDG South Asia Transport Programme project has implemented this road as project as a pilot, with the novel approach of community managed construction using labor based methods. The intention was to address the poverty reduction strategic issues of rural community getting accessibility to markets and services.

Statistics

In 1997, the project was aiming to improve the living standard of 80 families in a population of 502 people in the village. However, after two years of the completion of the road project, there was in-migration of 50 families to the area which has influenced the improvement of the economic base of the village community. It was found in 2002, two years after the completion of the road, that 130 families were residents of the village with the population increasing to 650. The age distribution and male female composition is shown in the Figure-1. Average family size has been decreased from 6.28 to 5.00 with the migrant population, in May 2002. Average plot size of the family land is 200 perches (1.25 Acres) in 2002 with the land allocated to the new migrants.

The majority of the population belongs to the productive age and the elderly group is comparatively very small. Considering the age groups, the potential for the high productivity of the village is eminent.



The road

The construction of the Malberigama access road (1.5 kilometres long) was completed in the year 1999. This road was earth/gravel surfaced using appropriate design techniques, tools and equipment, with the technical knowledge coming from the region. This road was open for traffic in October, 1999. At the time of opening the road for traffic the number of families

in the village was only 125 out of which 80 were living on the state welfare scheme. The access road connects to the Tangalle-Weeraketiya main road. The total cost of the road construction project was SLRs.1,485,401 (USD 19,800) including recurrent cost. The cash flow of the expenditure is shown in Table-1.

Table 1- Expenditure Statement of Malberigama Road Project

Year	Expenditure(Capital/Recurrent) SLRs.
1998	234,675 (USD 3129)
1999	559,618 (USD 7461)
2000	691,108 (USD 9214)
Total	**1,485,401 (USD 19,800)**

Source: ITDG Project Accounts (1USD = SLR 75/=)

Methodology and Objectives of the Evaluation

The economic and social evaluation of the Malberigama road project consists of field socio-economic surveys (before and after project), data collected from the past reports through a literature survey, and all empirical studies undertaken locally with regard to rural transport. The direct financial costs of the road project were the out cash flow including routine and periodic maintenance costs during a period of two years.

The Vehicle Operating Cost (VOC) saving, Generated traffic, Consumer Surplus (CS), and Producer Surplus (PS) have been taken as the benefits of the road project. The current value of the consumer and producer goods were the inputs for the economic evaluation. Time value in transport was taken only on person-time involved in production process and others were treated as zero value. The social evaluation included the added opportunities for employment, education and other services. The benefits of women and children have also been evaluated using field survey data.

The main objectives of the economic evaluation were to;

- Evaluate access to health, markets, and education in terms of economic and social;
- Assess the economic and financial benefits generated due to road;
- Compile the financial cost data of the access road project;
- Compilation of the rent benefits of the village due to new access road;
- In migration to the Malberigama and social impacts;
- Effects of the market competition generated due to access road;
- Assess the generated transport demand due to access road project;
- Evaluate the financial and economic effects of the road project; and
- Analyze the lesson learnt from the road project to be used in the future projects.

User Cost Savings

The VOC savings incurred due to new access road was calculated on the basis of the vehicle operating cost on a longer road link (combined with a footpath) existed before the new road and the new VOC was based on the condition of the newly constructed road link. However, value of time cost savings is not included in the evaluation considering the opportunity cost of villagers has been treated as zero. The opportunity cost of the probability factor of farm access time is 0.4 of the total time taken for the trip. The VOC before and after the road construction, is shown in Table-1 together with the generated traffic. The alternative road before construction of new access road was 6.5 km. This has been reduced to 3 km with new access road construction. It was assumed all traffic that was coming

through the then alternative road is now using the new road link. The average daily traffic of the new access road has taken as a base traffic for alternative road and the new road.

Average daily financial vehicle operating cost, before the road construction was estimated to be SLRs.1336.40 and after the new road in use was SLRs.261.96. Average daily economic vehicle operating cost before the road construction was estimated to be Rs. 1025.49 against post construction of only SLRs.206.04. The details are shown in Table-2.

Generated Benefits :"Threshold "Impacts

The generated benefits of the road project have increased by 70% of threshold effects of the Malberigama village. This percentage has contributed to the regional and national economic growth defined by its own capacity. The road also had an impact on in-migration and more opportunities for employment and education.

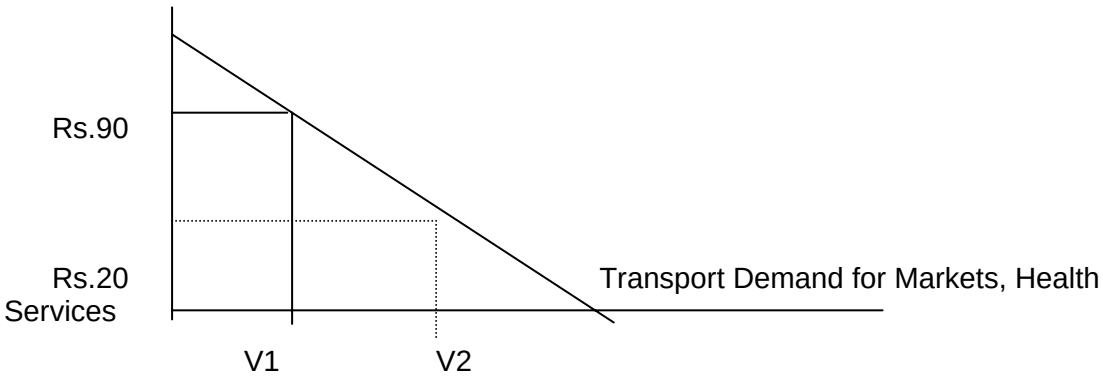
Table 2 – Vehicle Operating Cost and Generated Average Daily Traffic – 2002

(in 2002 SLRs. Per one Km.) (in 2002 1USD = SLR 94/=)

Vehicle Operating Cost	Hand Tractors	Three Wheelers	Land Tractors	Motor Cycles	Cars	Distance / Total
VOC (Financial) with Project	4.33	1.99	3.40	1.60	12.20	3 km
VOC (Financial) without project	12.45	2.40	4.40	2.10	16.20	6.5 km
VOC (Financial) with Project	3.52	1.49	2.77	1.26	8.72	3 km
VOC (Financial) without project	10.13	1.88	3.58	1.65	11.57	6.5 km
Average Daily Traffic (with project)	4	8	5	16	1	34
Average daily traffic without project (alternative road)	4	8	5	16	5	38
Total VOC with project (Financial)	51.96	45.60	51.00	76.80	36.60	261.96
Total VOC without project (alternative Road) (Financial)	323.70	124.80	143.00	218.40	526.50	1336.40
Total VOC with project (Economic)	42.30	35.80	41.54	60.29	26.15	206.04
Total VOC without project (alternative road)(Economic)	263.49	97.97	116.40	171.44	376.18	1025.49

Source: Traffic Survey – May, 2002 and ITDG Consultant's calculation

Travel Cost



Malberigama inhabitants used to spend average of SLRs.90 per each trip to the market and other service centres before the availability of a road. This has resulted in creating a demand for transportation as "V1". It should be noted that after the completion of the road the cost of transport has been reduced to an average of SLRs.20. The reduced cost of Transport has increased the transportation demand to "V2", which accounts for 1.9 times of the previous demand.

Base Line Condition

The base line condition of the Malberigama village was lack of access road and using only a foot path which goes under water during the rainy season and became un-passable. They used bicycles to fulfil their minimum transportation needs and used a longer route for essential transportation. The village had only 12 bicycles and no motor cycles before the project. The average cost of the longer route was amounting to Rs.150/= per one way trip.

Table 3 – Consumer and Producer Prices before the Road Construction

	SLRs.
Consumer Goods	**Price before the road**
Rice	28.00
Flour	24.00
Sugar	40.00
Soap	15.50
Energy	21.50
Other	21.00
Producer Goods	**Price before the road**
Paddy	8.00
Vegetables	5.00
Dairy (Cow/Goat)	6.00
Other	20.00
Time taken to work minutes	**190**

Source: ITDG Base line survey, 1997

It was found that 42% of the families did not have permanent sanitary facilities, before road project. New access road allowed low income families to get access to the Divisional Secretary's office and other places to obtain social welfare and to improve their sanitary conditions. There was no ownership of motorcycles in the village before the road project but now there are four (04) proud owners of motorcycles (2002 figures).

Accessibility for services

The base line condition of access to the nearest town centre, to the school and health centre were totally dependent on bicycles and walking. The travel time by trip is shown in Table-4. The school attendance of the village children was 60% before having a road. This has now increased to 99% with the new road connectivity.

Agricultural Production and Incomes

Agricultural production of the village has increased with the use of the new access road. The ability to use fertilizer, and obtain reasonable prices for their produce at the nearest market centre, has been significantly changed.

Table 4 - Travel Time and Frequency for Services

	Before the Road	After the Road
Hospital and Health services (travel time)	190 minutes	90 minutes
Schools (no of days per week to schools)	2.2 days	4.9 days
Trip to Market/Pola (travel time)	190 minutes	90 minutes
Trip to Market (number of trips)	0.1	1.4

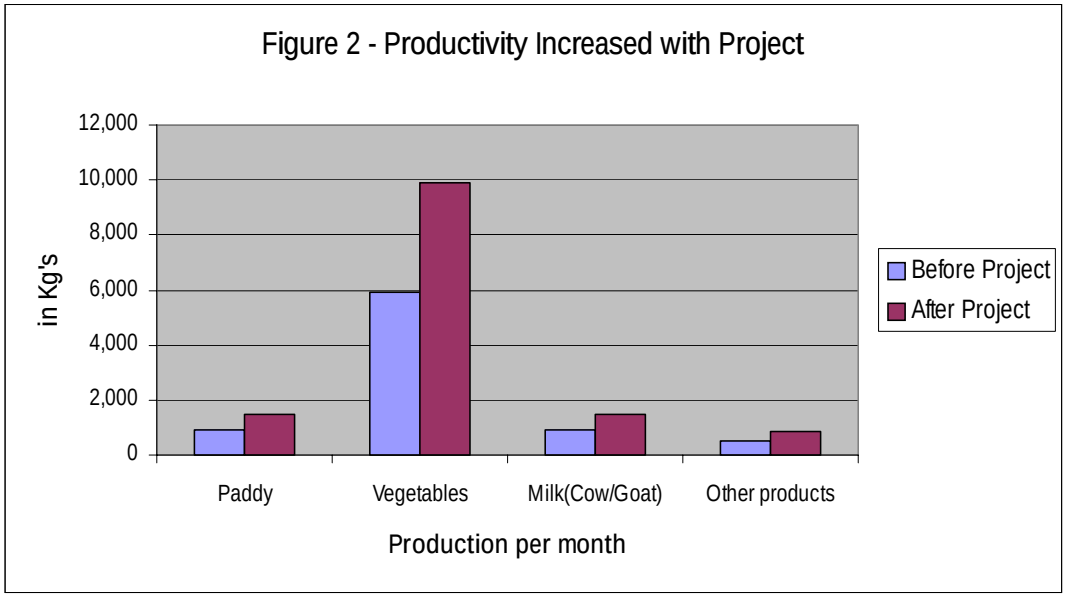
Source: ITDG Socio-Economic Survey, Malberigama, May 2002

The Table 5 shows the base line profile of the production before and after the road project. The Figure 2 below shows the comparison of the production figures reaching the market per annum before and after the project. Results of the increase in production have influenced the average family income to increase by 30%. They were also able to get access to the more information and other awareness programmes in agriculture and health.

Table 5 – Increased Productivity

Monthly Production in Kg's	Before	After
1. Paddy (Rice)	902	1,503
2. Vegetables	5,935	9,892
3. Dairy (Cow/Goat)	882	1,470
4. Other Products	509	848

Source: Socio-ITDG Economic Survey Malberigama, 2002 May



Improved Condition of Social and Cultural level

Ownership of TV and Radio in the community in Malberigama has been increased by four times after the road construction. The electrical power supply has now reached their door step due to the new road way. There is also a significant increase in marriage ceremonies, social events (New Year celebrations etc.) and reading of newspapers. The comparison of before project and after project is shown in Table-6. Most of the farmers in the village (72%) were used to get their fertilizer from the nearest town by bicycles, 17%, purchased their fertilizer from the shop in the adjoining village and about 11% did not use fertilizer at all. Now almost every farmer uses fertilizer and 97% of them now go to the nearest town to get their fertilizer at a cheaper price.

Table – 6 Improved Condition of Social and cultural Level (whole Village)

Improved Social Condition	Before Project	After Project
1.Attendance at Marriage Ceremonies (annual)	28	202
2. Social Events(Annual)	56	321
3. Use of TV	32	70
4. Use of Radio	76	120
5. News Papers(Weekly per house hold)	0.01	03

Source: Socio- ITDG Economic Survey, May, 2002, Malberigama

Findings from China

The International Food Policy Research Institute (IFPRI), Washington DC, USA, has conducted a recent research study on the impacts of Road development, Economic Growth, and Poverty Reduction in China. The study reveals that the Chinese government has launched a massive transport infrastructure development programme (Highways and Expressways) to increase the 147 Km in 1988 to 25,130 Km in 2002, an annual growth of 44 percent. However, the length of lower grade roads such as rural roads grew by only 3 percent per year over the same period. The most significant finding of this study by IFPRI was that the benefit-cost ratio of rural low quality roads for national GDP is four times greater

than the benefit-cost ratios of high quality roads. It shows that investment in low volume roads gains high returns.
(Information source: IFPRI Research Report 138 “Road development, Economic Growth, and Poverty Reduction in China”)

Conclusions

The study and research have given solid evidence that a road can make a difference to the society in gaining economic and social benefits. The rural out migration can be vastly reduced by giving the community the required connectivity. The studies have revealed that in-migration to the villages has increased due to better connectivity and new opportunities. The policy makers should be encouraged to invest more in low-volume rural roads in order to reduce poverty and improve the living standards of rural communities. Hence, the predictions of the World Bank by forecasting a rapid migration to urban areas would increase the urban poverty by 2020 can be made wrong.

It should also be noted that merely a construction of a rural road is not enough. Especially those roads longer than 3 Kilometers should be coupled with a transport service. Better mobility through a better access road would double the benefits and impacts of the communities that are served by the road. These transport modes should be acceptable to the needs of the community. Therefore such transport modes should be the most appropriate to the travel needs of the community. Another evaluation on ITDG South Asia project with a road coupled with a transport service, in Sri Lanka has confirmed this fact by showing almost doubled socio-economic benefits to the communities.

In the fight against rural poverty and to limit the out-migration of rural people to urban areas this evidence should be used to influence governments of the developing countries to ensure that due attention is given to the development of rural transport infrastructure and transport services.

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