

Transport Infrastructure and Poverty Reduction: Experiences of Bangladesh

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Theme of the Manuscript:

I. Distribution of Poverty Impact of Infrastructure

The poverty was identified as the main problem of Bangladesh and all out efforts are being made to reduce the poverty at the accepted millennium goal level. To this effect the Poverty Reduction Strategy Papers (PRSP) are being prepared since 2002 in place of traditional Five-Year Plans. The objective of the PRSP was to reduce the poverty by half by 2015. Major criteria of poverty were identified. It was suggested that poverty issues could be better addressed through following types of project interventions: (i) pro-poor economic growth projects along with infrastructure development; (ii) human development project; (iii) micro-credit base self-employment projects; and (iv) the social safety net (income transfer) programs and (v) participatory governance.

In the past it was thought that paved road construction benefits the rich who can use automobiles, undertake business and industrial activities, needs more mobility than others. But the concept has changed now that it can equally benefit the poor r even more. Although poverty reduction impacts of infrastructure are not direct but derived have far reaching consequences than any other direct intervention. It has been observed in many instances that the impacts of infrastructure development particularly the rural infrastructure have more positive impacts on the lives and livelihoods of the people reducing poverty to a significant ways. This paper will present a case study on poverty impacts of ADB funded Southwest Road Network Development Project (SRNDP), Bangladesh.

II. Community Participation in Decision Making & Maintenance

Community participation in decision making is very important for those infrastructure projects which influence the economic activities of the community in a substantial way. The rural infrastructure projects including community driven projects and programs needs more participation of the community to yield desired results than national importance projects.

1. Country Profile: Bangladesh

The People's Republic of Bangladesh is located in North-Eastern part of South Asia, between 20°.34' and 26°.38' north latitude and between 88°.01' and 92°.41' east latitude. Area is 147,570 square km consisted of flat fertile alluvial land in most cases with a population of 130.0 million (census, 2001) and 135.2 million (projection, 2004). Climate of the country is sub-tropical with annual rainfall varies between 1194mm - 3454 mm. Population is predominantly Muslim (88%), Hindu (10.5%) and Buddhist (0.6%) with literacy rate of 64% (for 15 years and above). The GDP growth at constant price was 5.52% per annum (2004) and per capita GDP was \$421 US (2004). Map and other relevant data are presented in Slide-2.

2. Poverty Situation in Bangladesh: A Brief Chronology

The country is a poor developing nation striving hard to overcome the catastrophic poverty situation and to achieve a minimum standard of living. The poverty standard is determined on the basis of level of income to be able to purchase food and nutrition worth of 1850 kilo calorie and 2122 kilo calorie of energy per capita per day. Poverty levels are defined as extreme poverty income (lower poverty line) where a household can afford up to 1850 kilo calorie nutritional intake per capita per day, whereas in the moderate poverty income (upper poverty line) a household can afford to buy 2122 kilo calorie of intake per capita per day.

Definitions are presented in Slide-3.

The headcount poverty ratio for 1995-96 and 2000 are presented in Tables 1.1 and 1.2 have been worked out by cost of basic needs (CBN), consumption expenditure method show the incidence of poverty by regions. During 1995-6 the incidence of poverty at national level was found to be 34.4% using lower poverty line while it was 51% using upper poverty line. In the year 2000 this has reduced to 33.7% and 49.8% using lower and upper poverty lines respectively. During 1985-86 the poverty rates at national level were 26.86% and 55.65% respectively. The poverty situation was stationary between 1990-91 and 1995-6 at 35% and 51%. Slide Nos-4 and 5.

3. Trends of Poverty Decline:

Table 1.3 represents the trends of head count poverty rate declined during 90s which reveals that poverty has been reducing per year over the decade. From all accounts the decline of poverty was more rapid in 1990s than earlier decades due to more rapid economic growth. The decline was 1 percentage point per year between 1991 and 2000. It was better than Pakistan where poverty was more or less stagnant over the same period but less than India where head count poverty reduced by 1.7 percentage points per year.

Table 1.3 Trends of Poverty Decline (1991-92: 2000)

	Upper Poverty Line			Change in Upper Poverty Line			Lower poverty Line		
	1991-92	1995-96	2000	1991-92 to 1995-96	1995-96 to 2000	During Decade	1991-92	1996-96	2000
National	58.8	51.0	49.8	-7.8	-1.2	-9.0	42.7	34.4	33.7
Urban	44.9	29.4	36.6	-15.5	+7.2	-8.3	23.3	13.7	19.1
Rural	61.2	55.2	53.0	-6.0	-2.2	-8.2	46.0	38.5	37.4

There had been large variations in poverty indices across the geographical areas of the country. Six regions out of total 14 accounted for three quarters of all the poor. The evidences appeared that the Rajshahi Division had the highest incidence of poverty at 61.8% in 1995-6 which reduced to 61% in 2000 using upper poverty line. This was higher than Barisal and Khulna with 47%, Dhaka with 45% and Chittagong with 48%. The national poverty rate using lower poverty line was 33.7% where urban and rural distributions were 19.1% and 37.4% respectively in 2000.

Map in Slide-4 shows the spatial poverty distribution

However, the rate of reduction was insignificant for Rajshahi at 0.16 percentage point much below the national rate.

Distribution of poor by residence shows that almost one-third (32.4%) of the poor people in the country live in Rajshahi region. Some of the districts in the region (districts under greater Rangpur and Pabna) are traditionally vulnerable to annual flooding, river erosion, flash flood coming from Himalayan regions causing seasonal crop failure and damages, etc. Since the districts are solely dependent on agriculture, any natural disaster affecting crop production makes the area poor.

4. Poverty Reduction Program:

Bangladesh has signed a Partnership Agreement on Poverty Reduction (PAPR) with ADB in 2000 to address the poverty issues on all identified fronts with highest priority. This is consistent with the World Bank sponsored Millennium Development Goals (MDG) declared in 2000 for global poverty reduction. Main declared goal of MDG is to achieve income (consumption) poverty reduced by half of 1990s level within 2015. Among other criteria are reduction of infant mortality rate, bringing down child malnutrition and underweight, increase primary school enrollment and reduce gender disparity. The PAPR also has the same goals but specified in medium (up to 2005) and long terms goals (up to 2010). The poverty reduction criteria to be addressed are:

- Reduction of consumption (income) poverty by half of 1990s level within 2015
- Reduction of infant (under five) mortality to 46 per 1000 birth by 2015
- Reduction of Child malnutrition by 25% by 2015
- Increase school enrollment to 100% by 2015
- Reduce gender disparities in school and workplace

All out efforts were made, strategies fixed to fight poverty, improvement in the living standard were set and plans were formulated (PRSP, ADP, etc.) and implemented to achieve both PAPR and MDG goals. Slide No-7.

5. Poverty Reduction after 2000:

As there has been no single agency responsible to monitor the impacts of poverty reduction and documenting them regularly on year to year basis, one has to depend on the information and publication of Bangladesh Bureau of Statistics (BBS) for results. BBS usually publish household income expenditure survey (HIES) every 5 years. Since 2000 no household expenditure survey data was published, the extent of poverty declined currently was not known for sure. But this was estimated by the WB that if expenditure growth increased by 3% then poverty would decline by 0.9%

and if 4% then by 1.2% per year. In one recent estimate it has been found that expenditure growth in recent years (2000-2005) achieved was more than 4% per annum in real sense. Therefore, it can be expected that extents of poverty reduction achieved were in between 6% to 7.5% within last five year (more than 1.2 percentage point).

6. Special Pro-poor Features

The poverty was identified as the main problem of the country and all out efforts are being made to reduce it to the limit of millennium goal. Massive programs are undertaken and implemented by the government on all major fronts: agriculture, industries, export-lead growth, infrastructure improvement, rural development, health and education, human development, social safety net, etc. Activities on focal points are summarized below:

- Reduction of consumption (income) poverty by half within 2015

Economic and per capita income growth is the single most important accepted factor reducing the incidence of poverty. The government has envisaged plans to achieve higher and higher targets of GDP growth every successive year (for example 5.5% in 2004, 6.0% 2005). To emphasize and expedite the higher GDP growth the PRSP is being implemented since 2002.

The government has undertaken massive investment programs on the major economic sectors to the best of its ability including infrastructure and social interventions. (Slide presentation)

- Reduction of infant (under five) mortality to 46 per 1000 birth by 2010

Health services are basic rights and requirements of the citizens of a country. Human resource development program is largely depended on a good healthcare system. The government has set up an expanded and sustained healthcare system in the country. To this effect a three-year (2003-06) Health, Nutrition and Population Sector Program (HNPS) was undertaken at a cost Tk.46000 million of which Tk.14000 million to come from GoB fund and Tk.32000 million as project assistance. The allocation of 2004-05 was Tk.16880 million which was 10.42% higher than previous year.

- Reduction of Child malnutrition by 25% by 2015

Child malnutrition rates were very high in Bangladesh – among the highest in the world. Surveys showed that nearly one-half of the children under 5 or 6 years are moderately suffer underweight or stunted and 10-18% of them are severely underweight or stunted. However, the country has made impressive gains in reducing its child underweight rates during last 15 years. The underweight rate declined from 68% in 1992 to 51% in 2000.

- Increase school enrollment to 100% by 2015

Following the UN Copenhagen declaration of 1995 on Human and Social Development Bangladesh has been allocating highest amount more than 20% of the public expenditure to social sectors. It was 26.14% in 2002-03 and has reached to 32% in 2005-06. Realizing the importance of primary education the govt. has attached highest priority to primary and mass education. It has been made

compulsory by enactment of a law and a created separate division in the Ministry. The govt. is committed to implement program for achieving universal literacy within 2006. To this effect massive program for enhancing number of schools, class rooms, teachers, building facilities both in public and private sector was initiated. Epoch making 'Food for Education' program was launched for providing stipend to poor students. Under this poor families are getting a stipend amounting to Tk.100 and Tk.125 for sending one or more children to schools. This has resulted more than 90% enrollment in primary schools in mid-90s.

- Reduce gender disparities in school and workplace

Stipends for female students since 1993 initially from class VI to X and further extended up to class XII have promoted female education, empowerment of women, ensure participation of women in development pursuits. Gender disparities at school and work places have reduced.

7. Improvements During 2000-2005

The World Bank has recently published (February 2005) an evaluation report called "Attaining the Millennium Development Goals in Bangladesh". This will present some of the encouraging findings of the report below:

The report indicates that the govt. has several in-kind food assistance programs which benefit the poor since 1970s. These include, among others, Food for works (FFW), Test- Relief, Food for education, Gratuitous Relief (GR), Vulnerable Group Dev. (VGD), Vulnerable Group Feeding (VGF), etc. Along with this a widely covered NGO network is working (80% of villages). Recently government has introduced countrywide old age pension scheme, destitute women allowances, freedom fighters pension, etc for selected rural people to contribute reducing rural poverty.

GDP Growth

The WB report predicts that per capita GDP growth of 4% (which is more now) will reduce poverty by 21 percentage point in 2015. Together with other seven policy variables the county will reduce about 33.5 percentage point of incidence of poverty bringing head count poverty well below to MDG at 30%.

Reduction of infant (under five) mortality to 46 per 1000 birth by 2015

According to WB assessment Bangladesh has achieved tremendous success in reducing children mortality rate down to 66 per 1000 live birth in 2004 which was 125 by 1984-85. This rate is lower than India. This has been results of successful family planning program and child immunization coverage over last decades. The target for MDG is reducing it to 46 deaths per 1000 live birth. The report said that the interventions exercised by Bangladesh along with GDP growth at 4% can easily achieve the MDG in this item.

Reduction of Child malnutrition by 34% by 2015

Child malnutrition and underweight is another indication of poverty. The country has also gained impressive gains reducing underweight by 3.6% per year during 1995-2000 which is comparable with Sri Lanka (3.9%) and better than India (1.9%). WB predicted that child underweight could be declined by 12 percentage point from present 51% to 39% between 2005 and 2015 which is slightly above the MDG (34%).

Increase school enrollment to 100% by 2010

The WB study observed that primary school enrollment rate increased to 72% by 1990 and to 96% by 2000. The MDG of 100% enrollment can be possible even before the 2010 deadline. The country has problem of drop-outs and non-completion of primary level.

8. Infrastructure and Poverty Reduction

Two important agencies of the government are responsible to provide national road network (RHD) and rural infrastructure (LGED). Bangladesh has gained tremendous success in road infrastructure improvement. In 1972 the length of paved road network was only 4000 km which is now more than 60,000 km. The total road length maintained by RHD and LGED stands to be 240,208 km including improved earth roads. In addition to this figure there are extended urban and city road networks. Every year huge allocations are made (Tk.40402 million to RHD Sector and Tk.43530 million to LGED Sector in 2003-04) to improve the road network in the country. The contribution of road communication sector is approximately 10% while rural infrastructure 12% of the national GDP.

Infrastructure variables such as extent of accessibility and paved road, electricity coverage, availability of bus transport, etc have significant inverse association with poverty (WB 2005). More and better the infrastructures less and less is the poverty incidence in the area. Such poverty impacts can not be directly attributed to infrastructures but derived through other important causal factors. For example the GDP growth through enhancing agriculture and manufacturing output can not be achieved without necessary infrastructure facilities. An efficient transport and communication system is indispensable for mobility of labour and inputs, mobilization of society to production, distribution, marketing, export, import, tourism and what not. Even the school completion rate is dependent on the extent of paved road in the district, or proximity to a bus station. In the subsequent presentation two case studies will be presented, socioeconomic and poverty impacts of ADB funded Southwest Road Network Development Project (SRNDP) under RHD. Slide No-9.

9. The South-West Road Network Development Project (SRNDP), Bangladesh: A Case Study of Poverty Reduction Impacts

SRNDP is an important road project recently complemented by RHD under the financial support of ADB, OPEC, and NDF. This is necessarily an infrastructure development and economic growth project. The objectives of the project are:

- Open a shorter (165 km) and more cost-effective road corridor linking Dhaka, the capital and industrial city with Mongla (second sea port), Khulna (third industrial city), Jessore (regional business center) and Benapole (1st land port);
- Induce economic growth in relatively neglected South-west region and facilitate greater regional co-operation;
- Address poverty reduction and human development needs by providing access to income and employment opportunities;
- Improve public sector governance through Institutional Reform and private participation; and

- Strengthen Institutional responses in Social and Environmental aspects.

Slide No-12.

10. Project Components and Implementation:

The length of the highway is 163.4 km with 1.2 km bridge and structures. The project was implemented during the period 2000-2005. Total Budget Outlay was Tk.11560 million for civil works and other expenses. Poverty Reduction Impact Monitoring Study was a special study design to monitor the impacts of road construction on the spatial poverty of the project influence area. Although poverty reduction impacts of infrastructure are not direct but derived having far reaching consequences than any single direct intervention. It has been observed in many instances (PRIMS, SRNDP) that the impacts of infrastructure development particularly the road infrastructure have positive impacts on the lives and livelihoods of the people reducing poverty to a significant ways. The process starts with creation of huge job opportunities in the transport sector particularly in NMT and para-transits (40%). Then it contributes to growth of markets, growth centers, etc as rural hubs increasing business and small trade (32%) and then production, sales and other services at local level (28%).

Slide No-14.

11. Poverty Monitoring System, If Any

The monitoring studies were planned and carried out in 5 trances since 1999. Studies are: (i) Poverty Reduction Impact Study (PIRS), Benchmark, 1999; (ii) Project Performance Monitoring and Evaluation (PPME), 2002; (iii) Poverty Reduction Impact Monitoring Study (PRIMS), Round-1, 2003; (iv) PRIMS, Round-2, 2004; and (v) PRIMS, Round-3, 2005. This presentation is based on the results of first four studies. The fifth study is ongoing and results may be available end July, 2005.

In the past not in each and every project implemented had the components of poverty monitoring studies but in some special cases. The Socioeconomic and Poverty Monitoring special studies are now become the integral part of donor funded projects. These are specific studies design to record data and information regarding socioeconomic changes outside the purview of normal and routine performance monitoring of the project. Empirical studies are undertaken starting from the preparation and establishment of benchmark and then continue the study on regular basis collecting data and information as the project works progress. Important components of PRIMS were household interview survey, village survey, growth center market survey, enterprises and business surveys, transport operators survey.

12. Impact Assessment Results

Poverty impact assessments are undertaken for seven sample villages in the zone of influence of SRNDP in Gopalganj and Faridpur districts considered most backward among project districts and compared with the pre-determined indicators fixed at Benchmark. The results are presented in reports based on assessment of each round of survey iteration. Some of the results revealed from monitoring studies are presented in Tables shown in slides.

Slide-15: The poverty reduction impact shows that upper poverty in the project region has reduced by 7 percentage point in 6 years more than national average of 1 percentage point. The remarkable results obtained are rapid reduction of hard core

poverty (lower poverty) by 24 percentage points in 6 year (4 percentage point per year) much faster than national average (1.5 percentage point) implying faster reduction of severity and hunger. This additional improvement after the national average is the contribution of road construction, improvement of connecting roads, additional labour employment and money circulation, opportunities for agriculture extension, introduction of HYV technology, small trade and business, opportunities for rickshaw van driving, etc.

Slide-16: represents the comparative position of poverty (upper) in successive survey years. Five villages out of 7 were severely poor much higher poverty rate than national average.

Slide-17 represents the employment generated by the project during construction and after implementation.

Slide-18 presents how the proportions of households are changing within among income groups. In 1999 approximately 15% of the surveyed households belonged to lowest income group up to tk.4000 per capita which has reduced to 6% in 2004. In the highest, Tk.10000 and above income group the proportion of household was 7.7% in 1999 increased to 14.61% 2004. In this way all lower income group shifted to higher groups.

Slide-19: Cropping intensity of 7 surveyed villages showed a remarkable change from an average of 132% in 1999 to 184% in 2004. This is a joint contribution of agriculture research introducing flood resistant HYV rice, removing water logging from certain areas, quick technology transfer and adaptation for road communication.

Slide-20: represents the change in cropping pattern in the villages. In 1999 only 23% land was used for double crops and the rest 77% for one single crop. The situation has reversed now having 72% double crop, 3% triple crop and only 26% single crop.

Slide-22: The trend of change in occupation is remarkable. Agriculture remains the main occupation of the household around 40% although the trend is declining. But labour class is declining to 9% shifting to rickshaw pulling and other services sector jobs. Small trade and business and artisanship are expanding to become about 15% and government and private services 10% and transport services including NMT 17%.

Slide-23 presents the trend of changes in lease value of rural markets. For decades the small roadside markets remained weekly and bi-weekly haats for surrounding villagers. But as soon as the roads are improved these are suddenly become Growth Center Markets (GCM), a rural hub of business and trading. These generate non-farm activities in the rural areas with a potential to grow to townships.

Slide-24 presents the growth of number of shops and self-employment in sample GCMs.

This shows that both number of permanent shops and employment have increased due to expansion of markets.

Slide-25 represents the growth of transaction values of goods and commodities bought and sold in the selected GCMs.

Slide-26 presents interesting information of Shrimp Culture in Bagerhat district the project influence zone, due to impact of SRNDP it has expanded in terms of acreage, output and value while other two districts remained almost stagnant.

13. Conclusions

Some specific conclusions can be drawn from the above presentation as follows:

- Investment in infrastructure such as SRNDP has significant impacts on social development and poverty reduction along with better accessibility and transport facilities
- Poverty reduction monitoring studies of SRNDP confirms the relation ship
- Creates employment opportunities both in farm and non-farm sectors
- Evidences show that upper poverty is reducing at more than stipulated 1.2 percentage points in SRNDP areas (1.5 percentage point)
- Remarkable results found were reducing rates of hardcore poverty (lower) at a faster speed than upper poverty.
- These reductions are caused by increasing outputs and activities in all economic sectors as well as better implementation of government safety net programs.

Bangladesh has been changing from within itself attributed to increasing GDP growth, per capita income growth, creation of job opportunities in farm and non-farm sectors, growth in manufacturing and exports, trade and commerce due to infrastructure improvement realized so far along with other contributing factors. Investment in infrastructure is highly responsive in Bangladesh. The sustainability of socioeconomic programs and activities towards emancipation from the poverty and backwardness the country needs more and more investment in infrastructure development.