

# Economics of Disability in Bangladesh

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The data used in this publication comes from the Economic Empowerment of the Poorest Programme ([www.shiree.org](http://www.shiree.org)), an initiative established by the Department for International Development (DFID) and the Government of Bangladesh (GoB) to help 1 million people lift themselves out of extreme poverty. The views expressed here are entirely those of the author(s).

# Economics of Disability in Bangladesh

Zulfiqar Ali<sup>1</sup>

*Abstract: This paper attempts to estimate the economic costs of disability in Bangladesh. Disability tends to reduce economic output by reducing or eliminating the economic contribution of the members with disabilities, their family members, relatives and close friends. The amount by which economic output is reduced in this way constitutes the net economic cost of disability. Four cost components have been taken into consideration in the analyses, which includes: costs due to lack of access to employment; costs due to children with disabilities losing out on school; costs due to adults helping people with disabilities; and costs due to children helping a family member with disabilities. The cumulative cost of the four components is approximately US \$1.18 billion per annum which is about 1.74 percent of Bangladesh's GDP.*

## I. Introduction

Despite the substantial progress in reducing income poverty over the last two decades, poverty and vulnerability still affects a large segment of the Bangladeshi population. According to the most recent Household Income and Expenditure Survey (HIES) data (2010), 31.5 percent of the population lives below the poverty line income. That means, over 47 million people live in poverty, of which over 26 million live in extreme poverty. Although the government has established several programs to address the needs of the poor and vulnerable, persons/people with disabilities (PWD) require further attention.

People with disabilities have suffered from a lack of access to adequate education services, health services, and safety nets. This lack of access has led to exclusion from social and economic activities, and in some cases, led to family members of people with disabilities also having to give up schooling or paid employment to stay at home and provide assistance to the persons with disabilities. Global evidence suggests that these factors translate into forgone GDP of about 5-7 percent<sup>2</sup>. Gertler and Gruber (2002) estimate, using Indonesian data, that individuals/families with illnesses which severely limit their physical function are able to smooth less than 30 percent of the income loss from such illnesses.

This paper assesses the economic costs of disability in Bangladesh. It does so by assuming that all interventions aimed at helping disabled people translate to an increase in lifetime earning opportunities. However, there are other benefits such as increased socialization that simply cannot be quantified.

## II. Disability Situation in Bangladesh

### II.1 Incidence of Disability

As in most developing countries, internationally comparable estimates of disability prevalence are rare in Bangladesh. This lack of globally comparable statistics is partly

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<sup>2</sup> World Bank: Disability and Development Website, Issues Brief on Disability.

explained by variations in definition of disability, methodologies of data collection, and quality of study design (Mont, 2007). Even within Bangladesh, vastly divergent estimates of disability rates are observed. In 1998, the Bangladesh Bureau of Statistics (BBS) estimated that 1.6 percent of the country’s population suffer from disability. This is widely believed to be a grossly underestimated figure. Action Aid Bangladesh estimated that 8.8 percent of people (in 1996) require disability related services. In 2005, the National Forum of Organizations Working with Disability (NFOWD) and Handicap International (HI) estimated that 5.6 percent of the population suffered from a disability (NFOWD and HI 2005). Most recently, Household Income and Expenditure Survey 2010 estimated persons with disability at 9.07 percent.

For the present analyses, unless otherwise specified, the disability data are drawn from NFOWD and HI (2005). The data sampled 12,000 people in about 2,400 households between October-November, 2004. The urban and rural split in households sampled was 25 and 75 percent respectively. Although the sample size for the survey is somewhat small by international standards, it remains the largest survey, both in terms of the number of sampled persons and geographic coverage on disability in Bangladesh to date.

About 8 million people with disabilities in Bangladesh suffer from a range of disability types and severity (see Table 1). Almost 2.6 million (32 percent) of the population is visually impaired, and around 5 percent of them are blind in both eyes. Physical disability impacts 28 percent of the population. Hearing impairment affects 19 percent, speech impairment affects 4 percent and multiple impairments affect 11 percent of the population. Mental disabilities, one of the most difficult to estimate, are thought to affect more than half a million people (7 percent).

**Table 1: Disability Disaggregated by Type**

	<b>Percent</b>	<b>Total</b>
Visually Impaired (severe)	13.28%	1,062,400
Visually Impaired (moderate)	18.72%	1,497,600
Physically Impaired (severe)	16.52%	1,321,600
Physically Impaired (moderate)	11.48%	918,400
Hearing Impaired (severe)	1.50%	120,000
Hearing Impaired (moderate)	17.50%	1,400,000
Speech Impaired (severe)	1.29%	103,200
Speech Impaired (moderate)	1.71%	136,800
Mentally Impaired (severe)	3.08%	246,400
Mentally Impaired (moderate)	3.92%	313,600
Multiple Impairment	11.00%	880,000
<b>Total</b>	<b>100.00%</b>	<b>8,000,000</b>

Source: NFOWD and HI (2005)

Disability is primarily a rural phenomenon in Bangladesh. Six percent of people living in rural areas suffer from disability in comparison to four percent of those living in urban areas. There are regional variations as well. Some types of disability are more prevalent in certain regions (e.g., Khulna has a higher proportion of physical disability but lower rate of vision disability compared to other regions). Disability prevalence is higher among males than

females. In addition, prevalence of disability is much higher among the poor than the non-poor (14 percent against 3.4 percent).

There are various reasons for disability which include: genetics, birth complications, maternal malnutrition, child malnutrition, incidences of particular diseases, lack of awareness, lack of early detection, lack of access to proper treatment, and poverty. NFOWD and HI (2005) shows that about one third of the persons with disability were not able to seek treatment because of poverty. High incidence of disability is also correlated with illiteracy and unemployment. The same study also reports that about 60 percent of the persons with disability can work without help from others while about 25 percent cannot move without assistance. It is also reported that an insignificant proportion of persons with disability (3 percent) received assistance from a government or non-government organization.

## **II.2 Areas of Deprivations of the Persons with Disabilities (PWDs)**

### *Lack of Access to Education*

Access to education of children with disabilities is very limited in Bangladesh. This is because of improper physical infrastructure, lack of proper training amongst the teachers, lack of appropriate teaching-learning materials and lack of assistive devices for both mobility and communications. There are few specialized schools and most are located in urban regions of the country. NFOWD (2002) shows that there are about 1.6 million school aged children who suffer from disability, and only about 20,000 of these children have access to school education. The report also reflects a high proportion of dropouts among children with disability. However, it is important to note that the majority of those who complete secondary level are also able to proceed and complete their tertiary level of education.

### *Rehabilitation Infrastructure and Medical Services*

The present rehabilitation structure remains weak, especially at the community level. Almost all institution-based programs are located in urban areas. This means that the current rehabilitation infrastructures are not equipped to cater to the needs of the majority of the persons with disability living in the country. Inadequate skilled medical personnel and medical rehabilitation services by government health programs also obstructs persons with disabilities from acquiring proper medical rehabilitation services.

### *Lack of Employment*

Although most of the people with disability have some forms of special skills or knowledge, the available employment opportunities for them are limited. National policies regarding disability issues contain policies to promote employment of the persons with disabilities. The Government of Bangladesh reserves 10 percent quota for orphans and persons with disabilities for all government jobs, which in practice is not fully followed though. Of the persons with disabilities who are employed, only 5 percent are employed in government agencies, 17 percent in non-government organizations, and the rest are in self-employed activities (NFOWD 2002). Only 22 percent had been able to find access to credit services (micro credit or from other sources). In addition, in most cases, employees with disabilities do not get equal rights and privileges as their colleagues without any disability. Physical accessibility to the workplaces and also the indoor facilities are important for effective inclusion of persons with disabilities into employment and ensuring equal rights.

### *Restricted Mobility*

Because of inaccessible constructions of various establishments, the mobility of persons with disability is limited. This is an important contributor to the exclusion of disabled persons into mainstream development activities. The issue of accessibility for persons with disability in buildings and public transport is still not recognized. In the Information and Communication Technology (ICT) sector, while the country is making rapid progress, options for the visually impaired persons are far behind. Consequently, persons with disability remain largely invisible in mainstream economic activities and are losing on the opportunities to develop professionally and demonstrate their abilities.

### *Disability and Poverty*

Poverty is both a cause and consequences of disability. Poverty and disability reinforce one another and contribute to increased vulnerability and exclusion. Incidence of poverty is much higher among households that have members with disability compared to other households. These families cannot afford to have proper treatment and/or assistive devices for the member/s with disabilities. Furthermore, since the persons with disability have a very limited access to education and employment, they cannot help the household in improving its economic circumstances, rather, contribute to additional hardships.

## **III. Economic Costs of Disability: A Conceptual Discussion**

Disability tends to reduce economic output by reducing the economic contribution. The amount by which economic output is reduced in this way constitutes the net economic cost of disability.

Although it is very important to have an estimate of costs (direct or indirect) associated with disability, it is very difficult to account for, particularly in developing countries where information on disability can be scarce. There are, however, certain ways through which attempts can be made to quantify these costs. Costs associated with disability are of various kinds: some are directly related to disability and some are indirectly related. Furthermore, some of the costs are borne directly by the persons with disabilities and their families and some by the society at large.

### **III.1 Direct Costs of Disability**

Direct costs fall into two categories: (i) the amount of disability benefits paid through various assistance programs and/or the costs of institutionalization of disability care, and (ii) the additional costs that the persons with disabilities/their families must incur on top the benefits received under point (i) above to achieve an equivalent standard of living as the persons without disability benefit.

A study of 17 OECD countries in 1999 estimated that disability benefits on average equate to 2.73 percent of these country's GDP, which was equivalent to approximately 11 percent of the total public social spending. The matched figure for Korea, Mexico and Turkey were 0.29, 0.29 and 1.46 percentages of GDP respectively. In developing countries that do not provide much disability benefits, these costs may not be significant. In the developed countries, the trend, however, is now to move towards community-based care, though the cost implication of this de-institutionalization process is not uniform. In some countries it

reduces the direct costs (e.g., in the United States, it reduces the cost between 5 to 27 percent) while in other countries, it increases the cost (e.g., in the United Kingdom, it increases the cost by about 22 percent). The difference is due to differences in wage structure, and variations of disabilities and local financial structures. The common factor, however, is the improvement in outcomes related to disability when their care was based in the community (Stancliffe and Lakin, 2005).

Person with disabilities living in the community incur additional costs to sustain a respectable standard of living. They often require additional health services, assistive devices and costly transportation methods. There are several ways in which to account for these costs: asking directly the persons with disability; pricing out the medicines, devices and services that the persons with disability require; comparing expenditure patterns of persons with and without disability; and using econometric techniques how the presence of 'disability' affects a person's ability achieving respectable standards of living based on a set of indicators (e.g., the ownership of various durable goods, etc.). Based on the last method, it is estimated in the UK that these costs range from 11 to 69 percent of total income (Zaidi, A. and T. Burchardt).

### **III.2 Indirect Costs of Disability**

Indirect costs are even more difficult to estimate. The primary challenge here is to identify the cost items that merit inclusion, and then, to quantify these costs. A prime candidate for these costs is the lost productivity of labor of the persons with disabilities. The loss in productivity can result from lack of employment or from underemployment. Also, persons with disabilities often require assistance from other family members if the state or the society does not provide it adequately. As mentioned previously, about 25 percent of those who suffer from disability in Bangladesh do require support from others for mobility and work. Therefore, lost productivity of other family members who sometimes care for the persons with disability should also be taken into consideration in cost estimation. In addition, there are other forms of indirect costs associated with certain types of disabilities. For instance, in a study of costs of mental illness in the United States, nearly 22 percent of the estimated costs came from things such as crime, motor accidents and fire destruction (Rice, Kelman and Miller).

Costs of diminished work can be estimated by multiplying the number of lost work days by average value of work per day. It is, however, very difficult to have an assessment if data is not readily available. To have an accurate estimate of these costs, data on disabilities by diagnostic categories, age and sex, as well as number of days in bed or with reduced major activity is required. Using this method, estimates done for Canada in 1998 showed that the costs associated with lost productivity accounts for about 5.8 to 7.5 percent of country's GDP. Adding in the direct costs of benefit provisions and other potential indirect costs, it also found that the overall estimate of financial impact of disability on Canada could be up to 10 percent of the country's GDP.

To get an idea of the magnitude of disability induced reductions in global output and income, Metts (2004) estimated GDP lose due to disability in high, medium and low income countries, and globally, by extrapolating the results of a study of GDP loss as a result of disability in Canada as mentioned above. The author has extrapolated the results to 191 countries using the ratio of % GDP lost over unemployment rate in Canada in 2002. The resulting conversion factor (0.88) was then used to obtain the % GDP lost in other countries and then the value of GDP lost in those countries. Using both high and low end figures of

Canadian estimates, the author also calculated two estimates (high and low) of GDP lost in the selected countries. According to Metts conservative estimates of the costs of disability from lost labor, it is 4.1 percent of GDP for Japan, 9.3 percent for Brazil, and 6.9 percent for India. The author also estimated GDP lost per person with disability in those countries by dividing the lost GDP by the number of persons with disability in the country.

Now, the question here remains: how do we judge these direct and indirect costs? Metts (2004) argues that it is inappropriate when estimating the economic costs of disability to add the costs of disability activities. This is because disability activities are economic activities, which generate economic output and income just like other economic activities. The direct costs of disability (i.e. the costs of disability interventions) may, therefore, be considered as investment on disability which enables the persons with disabilities to be engaged in economic activities. On the other hand, if the country can effectively bring the persons with disabilities back into economic activities through implementing various disability protection interventions, then the country can gain economically by reducing the loss in GDP due to disability substantially.

#### **IV. Economic Costs of Disability in Bangladesh: Empirical Estimation**

##### **IV.1 Economic Costs of Disability**

Under prevailing conditions, some people with disabilities have limited access to the labor market and are excluded from schooling. When people with disabilities are excluded from the labor market, there is an obvious impact on economic outputs. However, when disabilities are severe and require support, family members and/or other helpers may be needed to assist the disabled person. These costs are difficult to estimate, especially in a developing country setting where such data is scarce. In this section, we outline the estimation strategy to calculate the economic cost of excluding persons with disabilities and simulate the impact<sup>3</sup>. We find that the loss in income due to disability in Bangladesh is about US \$1.18 billion per annum, which is approximately 1.74 percent of GDP (Table 2).

This loss is cumulative of four cost categories. First, because some people with disabilities are not employed, it costs Bangladesh US \$891 million per annum. This impact on the GDP alone accounts for 76 percent of the total cost of disability on Bangladesh economy. Second, some children with disability forego schooling because of their disabilities. This costs the economy about US \$26 million per annum because of the lower stream of lifetime earnings due to lower national educational attainment. Third, some people with disabilities need help from others to function. This help can come from adults and from children in the family. The cost of adult helpers is then US \$234 million per annum from foregone income among adult helpers (often women). Finally, since some children forego schooling as because they are helpers of persons with disability, it costs Bangladesh US \$28 million per annum because of the lower stream of lifetime earnings due to their lower educational attainment.

##### *Costs due to Lack of Access to Employment*

The lack of access to employment for people with disabilities costs US \$891 million per annum in Bangladesh. The sequence of computations to arrive at this estimate is described below.

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<sup>3</sup>Assumptions made in the paper in estimating the costs are given in Annex-1.



Of the 8 million persons with disabilities in Bangladesh, NFOWD and HI (2005) found that around 55.8 percent are between 16 and 60 years old, which is considered the productive age group (Table 3). We assume that the age distribution remains the same for each category of impairment. We further assume that 10 percent of the severely impaired are in the labor force, half of those with moderate impairment are in the labor force, and that none of those with multiple impairments are in the labor force. The 2003 Labor Force Survey estimated that labor force participation is 57 percent for men and women together. Therefore, 769,000 people with disabilities are in the labor force, which is 17 percent of the total population with disabilities. Assuming that the unemployment rate among the people with disabilities is the same as the unemployment rate for the population as a whole, namely 4.3 percent, then 736,000 people with disabilities are employed. Conversely, 1.9 million people who otherwise would have been employed are not employed due to their disability.

These unemployed people fail to benefit from an income by working 252 days of a year, which amounts to 751 million days of work. Here, it is assumed that both the groups of people - with and without disability - work the same number of days each year. It is also assumed that the number of hours worked by the people with and without disability is the same. This is consistent with the findings by the World Bank (2006) which found using a survey of 30 villages in Uttar Pradesh and Tamil Nadu that the number of hours per day and days per month were very similar between person with and without disability. If we assume that the wage rate in Bangladesh is the weighted average of daily wage rate of skilled and unskilled workers, then the average wage rate is US \$1.86 per person per day<sup>4</sup>. Therefore, if 1.9 million people lose out on 252 days of work a year, then the impact on Bangladesh is a sizable US \$891 million (1,900,000 x 252 x 1.86) a year.

#### *Cost due to Children with Disabilities Losing out on School*

Some children are out of school because of their disability and that causes Bangladesh to lose out on approximately US \$26.2 million per annum.

NFOWD and HI (2005) found that almost 15 percent of all people with disabilities were between 6 and 15 years old (Table 4). Assuming that 15 percent of each of the impaired persons is also between 6 and 15 years old, 1.17 million people with disabilities are between 6 and 15. Then, it is assumed that 70 percent of those with a severe impairment are not in school, while 30 percent of those with moderate impairments are not in school<sup>5</sup>. Together, approximately 40 percent of children with disability are out of school, which is similar to the ratio of children with disability out of school to the total children with disability using data from the PEDP-II Baseline Survey 2005. As a result, more than 463,000 people are out of school due to disabilities.

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<sup>4</sup> The wage rates for skilled and unskilled labor are 145.70 and 123.53 Take/day respectively. We assume that those in the government sector (5 percent) and the NGO sector (17 percent) are skilled, while the remaining 78 percent are unskilled. The wage data are obtained from the Statistical Yearbook of Bangladesh 2006. Those wages have been inflated assuming a 6 percent interest rate.

<sup>5</sup> According to the PEDP-II Baseline Survey 2005, the net enrollment rate in primary school is about 85 percent.

**Table 2: Estimated Costs due to Disability**

	<b>Number</b>	<b>US \$</b>
<b>Adults with Disability</b>		
PWD not in labor market (LM)	1,900,966	
Loss of work days of PWDs	479,043,348	
Weighted average daily wage rate (US \$)		1.86
Income lost by PWDs not in LM		891,476,636
<b>Children with Disability</b>		
Children with disabilities not in school	463,434	
Total years of schooling lost by the children with disabilities	2,952,077	
Incremental loss of income due to non attendance of schools of the children with disabilities		26,152,062
<b>Adult Helpers</b>		
PWDs need help from others (25% of PWDs)	2,000,000	
Number of adult family helpers	1,000,000	
Number of adult helpers need to forgo work	500,000	
Loss of work days of adult family helpers	126,000,000	
Income lost by the adult family helpers		234,479,941
<b>Child Helpers</b>		
Number of child family helpers	1,000,000	
Number of child helpers need to forgo schooling	500,000	
Years of schooling among 16-60 years old	6.37	
Total years of schooling lost by the child helpers	3,185,000	
Incremental loss of income due to non attendance of schools of the child helpers		28,215,496
<b>Summary</b>		
Total income loss due to disability per annum		1,180,324,135
GDP in 2007-08 (US \$, estimated)		67,700,000,000
Income loss as % of GDP		1.74%
Income loss per PWD (US \$)		148

**Table 3: Estimated Unemployed Population by Impairment**

<b>Types of Disabilities</b>	<b>Percent</b>	<b>Population</b>	<b>Population 16 to 60</b>	<b>Population not employed</b>
Vision Impaired (severe)	13.30%	1,062,400	592,819	291,039
Vision Impaired (moderate)	18.70%	1,497,600	835,661	227,922
Physically Impaired (severe)	16.50%	1,321,600	737,453	362,046
Physically Impaired (moderate)	11.50%	918,400	512,467	139,773
Hearing Impaired (severe)	1.50%	120,000	66,960	32,873
Hearing Impaired (moderate)	17.50%	1,400,000	781,200	213,068
Speech Impaired (severe)	1.30%	103,200	57,586	28,271
Speech Impaired (moderate)	1.70%	136,800	76,334	20,820
Mentally Impaired (severe)	3.10%	246,400	137,491	67,500
Mentally Impaired (moderate)	3.90%	313,600	174,989	47,727
Multiple Impairment	11.00%	880,000	491,040	469,925
<b>Total</b>	<b>100.00%</b>	<b>8,000,000</b>	<b>4,464,000</b>	<b>1,900,966</b>

Source: Authors' calculations using NFOWD and HI (2005)

**Table 4: Estimated Population not in School because of Disability**

<b>Types of Disabilities</b>	<b>Percent</b>	<b>Population</b>	<b>Population 6 to 15</b>	<b>Population not in school</b>
Vision Impaired (severe)	13.30%	1,062,400	155,110	76,004
Vision Impaired (moderate)	18.70%	1,497,600	218,650	45,916
Physically Impaired (severe)	16.50%	1,321,600	192,954	94,547
Physically Impaired (moderate)	11.50%	918,400	134,086	28,158
Hearing Impaired (severe)	1.50%	120,000	17,520	8,585
Hearing Impaired (moderate)	17.50%	1,400,000	204,400	42,924
Speech Impaired (severe)	1.30%	103,200	15,067	7,383
Speech Impaired (moderate)	1.70%	136,800	19,973	4,194
Mentally Impaired (severe)	3.10%	246,400	35,974	17,627
Mentally Impaired (moderate)	3.90%	313,600	45,786	9,615
Multiple Impairment	11.00%	880,000	128,480	128,480
<b>Total</b>	<b>100.00%</b>	<b>8,000,000</b>	<b>1,168,000</b>	<b>463,434</b>

Source: Authors' calculations using NFOWD and HI (2005)

To calculate the income lost due to being out of school, the coefficients of the wage regression estimated in the Bangladesh Poverty Assessment (World Bank, 2002) has been used. According to the regression, the incremental loss of wages due to each grade of school not completed amounts to US \$0.11 per person per day (Table 5)<sup>6</sup>.

<sup>6</sup> Although the coefficients of the regression are estimated for men and women separately, our data does not allow for a gender disaggregation and hence, we take the average of the coefficients as our estimate for the total impact of grade of schooling completed on wages.

**Table 5: Determinants of Wages for Men and Women in Bangladesh**

	<b>Women</b>	<b>Men</b>
Age	0.032 (0.012)	0.040 (0.004)
Age square	-0.0004 (0.00004)	-0.0004 (0.0001)
Grades completed	0.070 (0.006)	0.049 (0.002)

*Note:* Other variables included among the determinants are marital status, urban areas, daily wage, public sector, divisions.

Source: Al-Samarrai (2006).

Assuming that these 463,000 children with disabilities would have attained the average number of years of schooling (6.37 years), 3 million years of schooling are lost in total<sup>7</sup>. Then, assuming an inflation rate of 6 percent, which is the average rate experienced since 1998-99, the present value of the loss of income due to not receiving the average school attainment of 6.37 years is US \$26.2 million per annum in Bangladesh.

#### *Costs due to Adults Helping People with Disabilities*

Some disabilities are so severe that the person needs assistance. The cost of adult helpers to Bangladesh is US \$234 million per annum.

NFOWD and HI (2005) found that a quarter of the people with disabilities “cannot function without support.” Of these 2 million Bangladeshis, we assume that half of them need full time assistance. We further assume that all assistance comes from within the family, with 500,000 adult helpers and 500,000 child helpers. The 500,000 adult helpers forgo 252 working days each. As a result, 126 million days of work are lost by helpers and if those workers could have commanded the average daily wage rate of US \$1.86, then Bangladesh loses US \$234 million each year.

#### *Cost due to Children Helping a Family Member with Disabilities*

Some children are forced out of school to assist family members with severe disabilities and that causes Bangladesh to lose out on US \$28 million each year.

It is assumed that 500,000 children help a family member cope with their disability on a full time basis. In other words, these children cannot attend school due to their responsibilities of assisting family members who suffer from disability. As a result, 3.2 million years of schooling are lost. Given the reduction in wages, and hence, lifetime incomes to these child helpers, the total cost to the Bangladeshi economy is US \$28.2 million per annum.

## **IV.2 Summary of the Costs**

The four cost components described above collectively cost the Bangladesh economy about US \$1.18 billion per annum. Given that the estimated GDP in Bangladesh in 2007-08 was US \$67.7 billion, the economic impact of disability on Bangladesh was 1.74 percent of GDP. If

<sup>7</sup> We estimated the school attainment using the HIES 2005 for all 16 to 60 year olds.

households that have members with disabilities were able to increase their incomes by US \$148 per annum (US \$1.18 billion among 8 million disabled people), that would correspond to almost a third of the poverty line, noting that the poverty line for households that have members with disabilities is different to the poverty line of households without any disability.

### *Comparability to Other Estimates*

The above estimate of the loss in income due to disability is broadly comparable to Metts (2004) estimate. In this study, Metts estimated GDP lose due to disability in high, medium and low income countries, and globally. According to Metts, conservative estimates of the costs of disability from lost labor, is 4.1 percent of GDP for Japan, 9.3 percent for Brazil, and 6.9 percent for India. The author also estimated GDP lose per person with disability in those countries by dividing the lost GDP by the number of persons with disability of the country. Table 6 below presents the cost estimates of disability in Bangladesh due to lost productivity as estimated by Metts (2004):

**Table 6: Economic Cost of Disability in Bangladesh**

	<b>High Estimate</b>	<b>Low Estimate</b>
Total Population	143,800,000	143,800,000
Disabled Population	14,236,200	5,320,600
GDP (US\$)	47,600,000,000	47,600,000,000
Unemployment Rate (%)	3	3
% GDP Lost	2.97	2.28
\$ GDP Lost	1,413,720,000	1,085,280,000
\$ GDP Lost per Disabled Person	265	76

Source: Metts (2004).

## **V. Conclusion**

This paper reveals that the cost of disability in Bangladesh is considerable. It is estimated that US \$1.18 billion, or 1.74 percent of GDP, is lost per annum because of: (i) persons with disabilities being left out of the labor force; (ii) children with disabilities being left out of school; (iii) adult family members assisting people with severe disability and as a result are left out of the labor force; and (iv) child helpers foregoing school to help out family members with disability. Therefore, the cost of disability in Bangladesh is US \$148 per annum per person with disability. If these people with disabilities live in households with 5 family members, that loss in income corresponds to almost a third of the poverty line, noting that the poverty line for households with people with disabilities is different to the poverty line of households without any person with disability.

Based on the above, it can be argued that even on a strict cost-benefit basis, disability services can well be provided as long as the total cost (both administrative and assistive devices) are below US \$148 per annum per person with disability. Of course, the allocation of any budget targeted at disability issues across the types and severity of disability has implications on the total number of potential beneficiaries of the services. For example, to provide eye glasses to visually impaired people will cost less than US \$25, including

administrative, optical diagnosis, and the eye glasses themselves<sup>8</sup>. On the other hand, providing a basic hearing aid to a moderately hearing impaired person will cost around US \$75<sup>9</sup>. Providing disability services to the persons with disabilities is, therefore, very much an economic issue.

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<sup>8</sup> This is a guesstimate based on eye glasses costing about US \$15 per pair.

<sup>9</sup> There is a wide range of hearing aids depending on the severity of the impairment. The costs vary between about US \$50 and 400.

### **Annex-1: Assumptions**

- Same age-specific disability rates across all disability types.
- 70% of severely and 30% of moderately disabled children (aged 6-15) are not in school (for all disability types).
- Aged between 15-59 years is considered as productive age group for the disabled.
- 100% of severely disabled and 50% of moderately disabled are not in labor force.
- Unemployment rate is considered here at 4.3% (SYB 2005, P. 61).
- 252 days of work a year (i.e., 21 days a month) is considered as full employment.
- 25% of the disabled people cannot work without help from others.
- 50% of the helpers are adult and another 50% are child.
- 50% of the helpers need to forgo work or schooling.
- Wage rate for 2007-08 is calculated at US \$ 1.86 as follows: first, the wage rates of both skilled and unskilled industrial workers for 2005-06 have been inflated by the average annual rates of inflation (6%) to obtain the wage rate for 2007-08; then, the average wage has been calculated with 22% weight for skilled wage and 78% for unskilled wage as 22% of the employed disabled are employed in the formal sector (5% in government job and 17% in the NGOs).
- School attainment rate is calculated at 6.36 (based on HIES 2005). Incremental wage from each year of school completion is .0613 (obtained from wage determination model).

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