DISABILITY ISSUES, TRENDS AND RECOMMENDATIONS FOR THE WORLD BANK (FULL TEXT AND ANNEXES)

ROBERT L. METTS, PH.D.

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ABSTRACT

This paper is intended to provide the World Bank with the information and insights necessary for policy formulation and strategic planning in the area of disability. After describing the two major contemporary disability definitions and comparing their suitability for disability policy and planning, the paper presents a descriptive analysis of the evolution and current status of disability policy and practice. Based on this information, a political and economic case is made in favor of investing public and private resources, including World Bank resources, in policies and strategies designed to increase access for people with disabilities to social and economic opportunities. The essential elements of such policies and strategies are then described and incorporated into a strategic framework for possible use by the World Bank in its ongoing effort to develop appropriate and cost-effective approaches to disability.

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EXECUTIVE SUMMARY

Chapter I: Disability Definitions and Statistics

> *"Disability Definitions and Statistics" begins with a comparison of the competing disability definitions, and an endorsement of the framework embodied in the International Classification of Impairments, Disabilities and Handicaps (ICIDH) and International Classification of Impairments, Activities and Participation (ICIDH-2). The global status of disability statistics is then described and analyzed, followed by a presentation of two statistical estimations prepared by the author at the request of the Bank.*

For disability policy, planning and research, the ICIDH and ICIDH-2 are superior to their primary competitor, the Disability Adjusted Life Year (DALY), because, unlike the DALY, they embody a recognition of the fact that disablement is comprised of personal, social and environmental elements. They are, therefore, compatible with the fact that the degree of disablement associated with any given impairment is a complex function of; 1) the impact of the impairment on a person's functional capabilities and; 2) the combined impacts of many other social and environmental factors on the person's ability to gain access to family, community and society.

The United Nations Disability Statistics Data Base (DISTAT) is the most comprehensive collection of existing disability statistics. The data contained therein, however, are scarce, random and inadequate for systematic analyses of disability issues. Published estimates of national, regional and global disabled populations, therefore, are little more than speculation. Employment statistics for people with disabilities are virtually non-existent in developing countries and unreliable in developed countries. Though inadequate, the meager existing statistical evidence suggests that unemployment rates for disabled people tend to be high in high income countries and even higher in low and medium income countries. The author has estimated the global disabled population to be between 235 million and 549 million, and the GDP lost as a result of disability to be between $1.3 trillion and $1.9 trillion.

Chapter II: The Evolution of Disability Policy

> *"The Evolution of Disability Policy" presents a brief overview of the early history and evolution of disability policy and practice, highlighting special education, accessibility standards and employment strategies.*

In early Medicine, disabilities were narrowly defined as impairments or disturbances at the level of the body; medical problems to be either prevented or corrected. Early scientific inquiries into disability tended, therefore, to consist of compartmentalized research into the disabling outcomes of specific medical conditions. This scientific compartmentalization of disability contributed to segregated institutional responses to disability which led to the formation of separate advocacy and self-help organizations for each type of disability. Two enduring trends were thus established which have exerted a powerful influence over the circumstances of disabled people for nearly two centuries; one towards approaching disability from a medical perspective, and the other towards the institutional compartmentalization of people with disabilities according to disability type.

The Eighteenth Century discovery that people with disabilities could learn precipitated the emergence of special schools and custodial care institutions for the visually and hearing impaired. Such institutions did not emerge until much later for people with physical disabilities, and most of them were affiliated with hospitals. This divergence in institutional responses to the different disability communities resulted in differences in the capabilities of those communities which tended to favor the visually and hearing impaired.

Until the emergence of the disability rights movements of the 1960s and 70s, most education of people with disabilities took place in segregated facilities supported by churches and charitable organizations. During this period, government involvement in special education tended to be meager and carried out through ministries and departments of social welfare, not education.

Employment strategies for people with disabilities emerged in the 1920s and 1930s. During this early period, most of Europe tended to favor quota and quota levy systems while the emphasis in the United States, Canada, Sweden, Finland and Denmark tended to be on vocational rehabilitation and training strategies. The Soviet Union employed a unique system of reserved employment schemes and state authorized disabled-run enterprises. Though elements of all three approaches continue to exist in various forms, vocational rehabilitation has enjoyed the most widespread acceptance, and still serves as the centerpiece of many national disability policies. Though clearly an improvement over the custodial care strategies that preceded them, traditional vocational rehabilitation strategies have tended to focus too heavily on adapting disabled people to existing marketplaces, and too little on the need to make the marketplaces themselves more accessible and accommodating. They have also tended to waste resources on expensive, counterproductive and socially isolating segregated institutional systems.

Policies to reduce architectural and design barriers are relatively new and, in their absence, built environments have typically been designed with characteristics that unnecessarily restrict the activities of people with below "normal" functional capabilities. In recognition of the limitations imposed on people with disabilities by unnecessary architectural barriers, accessibility standards appeared in the United States in 1961 and Great Britain in 1965. Statutory requirements emerged later in the 1960s in Sweden and Denmark. The first compliance mechanisms appeared in the United States in 1981 and Britain in 1985.

Chapter III: Disability Policy Today

> *"Disability Policy Today" describes and analyzes the emerging global commitment to equalizing access for people with disabilities to social and economic opportunities.*

The human rights argument for equalizing opportunities for people with disabilities was initially expressed by the United Nations in its 1971 *Declaration on the Rights of Mentally Retarded Persons* and its 1975 *Declaration on the Rights of Disabled Persons.* The philosophy was then fully articulated in the *World Program of Action Concerning Disabled Persons (WPA)*, adopted by the General Assembly in 1982. The *Standard Rules on the Equalization of Opportunities for People with Disabilities (Standard Rules)*, unanimously adopted in 1994, were designed to add a framework for disability policy implementation by Member States. Although not legally binding,

the *Standard Rules* provide basic international legal standards for programs, laws and policy on disability; and constitute the foundation for almost all modern disability policy.

Similar to the evolution of the United Nations disability policy, which culminated in the *WPA* and the *Standard Rules*, the evolution of European Union disability policy began with the introduction of inclusionary principles in individual programs and projects and culminated in the wide ranging *Resolution of the Council and of the Representatives of the Governments of the Member States Meeting within the Council of 1996 on the Equality of Opportunity for People with Disabilities (1996 Resolution)*, which adheres to the principles embodied in the *WPA* and the *Standard Rules* and expresses a commitment to equalizing opportunities for disabled people.

Most nations now have disability policies which express commitments to equalizing opportunities for disabled people. Predictably considering their long histories of dealing with disability issues and considering their relative abundance of resources, the world's high income countries, particularly those in Europe and North America, tend to be characterized by more advanced and better funded institutional approaches to disability than most low and middle income countries. However, though low income countries are still the least likely to have national disability policies, most do; and despite their limited resources and lack of experience with disability issues, many of them have national disability policies that reflect the ICIDH-2 conceptualization of disability and embody an explicit commitment to equalizing opportunities for people with disabilities.

The emerging global commitment to equalizing opportunities for disabled people implies much more than a simple commitment to traditional anti-discrimination principles. It also implies a commitment to removing and preventing social and environmental barriers that have traditionally restricted access for people with disabilities to social and economic opportunities. Fulfillment of this commitment, therefore, requires an expansion of disability policies and strategies to include not only traditional rehabilitation and anti-discrimination measures, but also affirmative strategies to prevent and remove social and environmental barriers.

Chapter IV: Disability Trends and Issues

> *"Disability Trends and Issues" describes the evolution of disability policy and practice since the emergence of the disability movements of the 1960s and 70s, and the global commitment to equalizing opportunities for people with disabilities in the 1980s and 90s.*

Since the emergence of the disability rights movements of the 1960s and 70s, disability strategies in most high income countries have tended to consist of disconnected combinations of modern inclusive approaches, and elements of the rehabilitation, special education and/or custodial care approaches of the past. However, national and international policy commitments to equalizing opportunities for disabled people, and pressure from organizations of disabled people, are causing the emphasis of disability policy to shift in favor of inclusive policies and strategies designed to remove and prevent environmental barriers and increase access for disabled people to mainstream social services, particularly education.

In developing countries, disability service systems have tended to consist of small scale, rehabilitation, education, training and sheltered employment programs and projects imported from

industrialized countries. Due to their high costs, such programs have never reached significant proportions of their target populations. Their impacts have been further diminished by the types of conceptual problems that have long plagued their prototypes in industrialized countries.

Developing countries are, however, beginning to augment and replace these imported programs and projects with approaches better suited to their social and economic environments. Community Based Rehabilitation (CBR) programs tend to form the hubs of such strategies, to which activities are attached that are designed to empower, educate and provide employment opportunities for people with disabilities. CBR strategies are integral to the national disability policies of many low and middle income countries, and CBR is increasingly employed in the peace building process in post conflict circumstances. In developing countries, CBR programs tend to be initiated and heavily supported by development agencies and NGOs. The World Bank currently supports at least one of these efforts, the War Victims Rehabilitation Project in Bosnia-Herzegovinia.

Employment

National employment policies for people with disabilities are beginning to reach beyond the traditional hiring quotas, reserved employment schemes and rehabilitation strategies of the past, to address the root causes of inequalities in the workplace. Private sector involvement is being promoted through partnerships with employers, employees and organizations of disabled people; and compulsion is being replaced with programs that rely on market forces, competition and individual and employer responsibility. Specialized agencies are being replaced with strategies to include disabled people in mainstream labor market programs and activities wherever possible, often as a priority group. Mainstream provision is then augmented with specialized services to meet the needs of disabled people that are disability specific. Efforts are also being made to increase competition in service provision which are, among other things, creating opportunities as service providers for disabled people and disabled peoples' organizations.

There are two general approaches to providing workplace accommodation; the North American approach, developed in the United States and Canada, in which employers are required to accommodate the known limitations of disabled employees, and the European approach in which employers are required to make their entire workplaces accessible.

Financial incentives are increasingly used to facilitate the employment of disabled people. Financial incentives to employers include grants, relief from social security contributions, tax credits and wage subsidies. Financial support to employees may take the form of direct assistance for tools, equipment, educational material, readers and technical and motorized aids. Social security measures are now also being designed to encourage disabled beneficiaries to become employed. Severely disabled people, who traditionally have not been supported to enter into mainstream labor markets, now are; and sheltered work is increasingly being augmented or replaced with "supported employment," which offers employment options in mainstream enterprises to severely disabled persons.

Education

As part of the global commitment to equalizing opportunities for disabled people, many international declarations and proclamations have been made recognizing the rights of people with

disabilities to equal educational opportunities in mainstream educational settings wherever possible. The stated policy in most industrialized countries is to integrate disabled children into mainstream educational systems wherever possible. Inclusive education efforts outside of Europe and North America are few. Since the promulgation of the *WPA* and the *Standard Rules*, many developing and other non-western countries have begun to increase their budgets for special education, but few have seriously embraced inclusive education.

A 1993 World Bank study of special education in Asia concluded that; 1) there are personal, social and economic dividends to educating primary school aged children with special educational needs in mainstream schools; 2) most children with special educational needs can be successfully and less expensively accommodated in integrated schools than in segregated institutional settings and; 3) the vast majority of children with special educational needs can be cost-effectively accommodated in regular primary schools.

Architecture and Design

The provision of equal access to built environments is integral to the fulfillment of the global commitment to equalizing opportunities for disabled people. Architecture and design barriers also generate direct economic costs to society by reducing the economic and social output of people with disabilities (and other special needs users). Economic costs are also incurred caring for disabled people who are unemployed or under-employed due to inaccessible built environments.

The following seven principles of Universal Design provide a framework for cost-effective policies and strategies to increase physical accessibility for people with disabilities; flexibility in use, simple and intuitive use, perceptible information, tolerance of error, low physical effort, and size and space for approach and use.

Proponents of the universal design principles argue that today's inaccessible built environments are the result of inattention to the needs of people with disabilities, not cost considerations, and that they tend to create unnecessary costs for society by artificially creating a class of "special needs users" requiring costly special provisions. Such special provisions tend to exacerbate the social isolation and economic dependency experienced by disabled people and identify them with high costs, government intervention, and annoying, ugly and incongruent additions to structures. In contrast, structures that incorporate universal design principles tend to welcome people with disabilities and other special needs users into the mainstream of society and identify them with design ingenuity, functional beauty and commonality of purpose.

One flagship of Universal Design is the public transportation system in Curitiba, Brazil. Others include the Academical Village Lawn at the University of Virginia, Charlottesville and the headquarters for the Lighthouse for the Blind in New York City. Five South African case studies covering a variety of applications suggest that the cost of providing accessibility can be as low as one half to one percent of the total cost of a project.

Chapter V: Policy Implications for the International Community

"Policy Implications for the International Community" presents a conceptual framework for disability policies and strategies compatible with the global

commitment to equalizing opportunities for disabled people. The appropriate roles for large international organizations in general and the World Bank in particular are presented and discussed.

The global commitment to equalizing opportunities for people with disabilities has two primary purposes:

- to affirm the basic human rights of people with disabilities to equal access to social and economic opportunities and,
- to create environments in which people with disabilities can maximize their capacity for making social and economic contributions.

Nations and international organizations are attempting to develop policies and strategies compatible and commensurate with this commitment within the context of a long history of negative stereotypes about people with disabilities and limited expectations about their capabilities, resulting in a disability environment characterized by self-reinforcing combinations of social and economic discrimination; inaccessible built environments; and expensive, socially isolating, and counterproductive disability policies and institutions. Policy makers attempting to design and implement more inclusionary approaches to disability are doing so in a global setting characterized by meager information, inadequate data and virtually no coordination of activities. The result has been a thin ineffective global patchwork of disjointed and often contradictory disability policies and strategies.

If the commitment to equalizing opportunities for people with disabilities is to be upheld, a more coordinated effort based on a much greater understanding of disability will be required. Coordinated and integrated policies and strategies will have to be put in place to eliminate or mitigate as many of the personal, social and environmental barriers identified in the ICIDH-2 as possible while empowering as many disabled people as possible to maximize their social and economic contributions. This will require that the policies and strategies be designed to facilitate the passage of disabled people through the following three distinct but interrelated stages of physical and social integration;

1) adapting to the disabling condition and maximizing functional capacity;
2) interacting with community and society; and
3) gaining access to the types of social and economic activities that give life meaning and purpose (e.g. contributing to one's family and community, actively participating in society and/or becoming productively employed).

Piecemeal disability interventions are not likely to be cost-effective because their beneficial impacts cannot be fully realized unless their beneficiaries maximize their functional capabilities and pass through as many of the stages of physical and social integration as possible. Ideal disability strategies will be comprehensive and integrated combinations of:

- rehabilitation strategies which maximize the functional capabilities of people with disabilities;

- inclusion and empowerment strategies which facilitate their active participation in their communities, societies and economies; and
- architecture and design strategies that remove and prevent unnecessary barriers in built environments.

Some people will incur disabilities so severe that they will be incapable of successfully passing through all three stages of physical and social integration, even within the context of the types of comprehensive strategies outlined above. Members of this minority sub-group will require specialized support services throughout their lives in order to survive. Others will require various forms of lifetime support (e.g. ongoing personal assistance services) to remain capable of making social and economic contributions. Still others will require specialized support services at various times in their lives to overcome specific obstacles (e.g. specialized training, rehabilitation and modifications to homes and workplaces). To be cost-effective and commensurate with the global commitment to equalizing opportunities for people with disabilities, these services must be;

- designed to facilitate access to the social and economic mainstream;
- provided in mainstream institutional settings wherever possible; and
- provided within the context of the comprehensive inclusion and empowerment strategies outlined above.

The Role of Large International Organizations

Significant progress toward fulfilling the global commitment to equalizing opportunities for disabled people will require the leadership and participation of the world's large international organizations. Unfortunately, their participation to date has been piecemeal, and their leadership has tended to be weak and ineffective. In the absence of significant participation and leadership on the part of the large international organizations, most nations are now hampered by a paucity of data and information on disability, and a lack of coordination of activities and strategies.

To be in a position to educate and inform the international community about appropriate and cost-effective approaches to disability, and to be in a position to provide those wishing to improve their approaches to disability with the information, coordination and access to resources they require, large international organizations will have to demonstrate their own inclusionary resolve by;

- making policy commitments and adopting institutional mandates to include people with disabilities and a concern for their rights and needs in all of their own mainstream activities and programs; and
- committing themselves to developing and supporting comprehensive and integrated national and international strategies to remove and prevent the types of social, architectural and design barriers that unnecessarily limit access for people with disabilities to social and economic opportunities.

This involves a commitment to the following inclusionary principles:

- Adoption and promotion of inclusionary policies and practices.

- Removal and prevention of architectural and design barriers.
- Adoption of affirmative strategies to include people with disabilities in mainstream educational, vocational, political, and recreational activities.
- Support for, and constructive engagement with, organizations of people with disabilities.
- Provision of cost-effective assistive technology.

The Role of the World Bank

Due to the global influence of the World Bank, the approach to disability it chooses will have a great impact on the rate of progress toward fulfilling the global commitment to equalizing opportunities for disabled people. If the Bank chooses to adopt a comprehensive disability strategy in support of the global commitment to people with disabilities, it is in an almost unique position to significantly and cost-effectively foster the social and economic inclusion of disabled people by;

- changing operational practices,
- engaging in inclusionary lending activities and,
- engaging in inclusionary non-lending activities.

Changing Operational Practices

The World Bank has the opportunity to significantly and cost-effectively contribute to the global inclusion and empowerment of people with disabilities simply by setting the proper example. Doing so includes making the following changes in its operational practices:

Adopting a comprehensive Bankwide inclusionary policy: In order to effectively advocate for the inclusion of people with disabilities, the World Bank must demonstrate its own commitment by adopting and implementing an explicit policy to include people with disabilities and a concern for their rights and needs in all aspects of its own operations.

Taking affirmative steps to employ people with disabilities: An effective inclusionary World Bank disability strategy must involve a hiring process that encourages the participation of people with disabilities.

Removing existing architectural barriers at Bank facilities: As the social and economic inclusion and empowerment of people with disabilities largely hinges on physical access, it goes without saying that physically accessible facilities are a necessary component of a successful World Bank disability strategy. Unfortunately, however, at the present time some World Bank facilities are fundamentally inaccessible. Due to the expense of achieving the ultimate goal of full accessibility, the Bank should consider a comprehensive but incremental approach.

Lending Initiatives

Significant opportunities also exist for the World Bank to foster the global inclusion and empowerment of people with disabilities through initiatives in:

Lending for development activities and social programs: By taking affirmative steps to include people with disabilities in all of the development activities it supports, the Bank has the power to directly increase the social and economic contributions of people with disabilities while simultaneously demonstrating the social and economic benefits of inclusion and empowerment to its clients and to the rest of the international community.

Lending for physical infrastructure: To the extent that the World Bank makes loans for the construction of schools, public buildings, transportation systems, streets paths and other public infrastructure, it has the opportunity to facilitate their accessibility at a very low cost simply by promoting barrier free design and providing information to its clients about the most cost-effective methods for its application.

Non-Lending Activities

Perhaps the most significant and cost-effective opportunities for the World Bank to contribute to the social and economic inclusion of people with disabilities are in its non-lending activities where it can capitalize on its role as a leading international development organization to facilitate necessary public awareness and institutional training. Such activities include:

Serving as a standard bearer for cost-effective inclusionary disability policies and strategies: By adopting comprehensive disability policies and strategies the Bank can serve, through its own example, as a standard bearer for the inclusion and empowerment of people with disabilities.

Facilitating the coordination of the disability activities of international organizations: International organizations are presently engaged in various disability activities that tend to be carried out in an unstructured piecemeal fashion with virtually none of the necessary coordination at the international and interagency level. The Bank is in a uniquely powerful position to use its stature in the international community and its own proven techniques and capabilities to cost-effectively facilitate the necessary international cooperation and coordination.

Contributing to the global knowledge base on disability: At present, information and data on disability are scarce, unreliable and scattered among organizations and institutions around the world. The World Bank is in a key position to begin to solve this problem by applying its expertise in data collection and information dissemination to matters related to disability.

Facilitating disability related training and education for the international development assistance community: As the leading international economic development institution, the Bank is in a unique position to assist in the design and implementation of cost-effective strategies for bringing disabled people into the social and economic mainstream, and to discourage the wasteful social and economic segregation of people with disabilities.

Supporting and constructively engaging organizations of people with disabilities: Designing and implementing cost-effective disability strategies worldwide requires an intimate knowledge of the wide range of cultural, institutional and environmental circumstances in which disabled people live. The real repositories of local knowledge on disability in particular countries or regions are the disabled people who live there, and the most efficient way to tap into their local knowledge is to provide them with mechanisms for making their needs known. Significant returns are possible

from Bank investments in partnerships to support, network and constructively engage organizations of people with disabilities.

Promoting research and development in the area of assistive technology: As one of the largest knowledge bases and providers of education and training, the Bank has the opportunity to cost-effectively foster the development of assistive technology through collaboration with United Nations agencies, research centers and other international organizations in support of research on assistive technology and international cooperation on the global dissemination of information about assistive technology.

I. DISABILITY DEFINITIONS AND STATISTICS

Disabilities occur as a result of physical, mental and sensory impairments. The severity of the disability associated with any given impairment for any given person is a complex function of the impact of the impairment on the person's functional capabilities, and the combined impacts of many other social and environmental factors on the person's ability to gain access to his or her family, community and society.

1.1 The Ascendancy of the ICIDH and ICIDH-2

There are presently two competing conceptual frameworks for disability analysis; the "International Classification of Impairments, Activities and Participation" (ICIDH-2) developed by the World Health Organization (WHO), and the "Disability Adjusted Life Year" (DALY) developed by the Harvard School of Public Health on behalf of the WHO and the World Bank. The ICIDH-2 is the superior framework for disability policy and research.

DALYs are standardized estimates of the value of years of life lived with specific disabilities intended to measure "the global burden of disease and the effectiveness of health interventions."[1] They are, however, inadequate for either task due to their conceptual basis in the following two false assumptions:

1) specific disabilities have specific, universal and predictable quality of life consequences and,
2) the quality of life associated with any disability is determined *solely* by the underlying medical diagnosis.

The first false assumption renders the DALY inadequate for measuring the global burden of disease because it leaves the system with no mechanism for evaluating and measuring the roles played by environmental factors in determining the severity of disabilities; the second renders the DALY inadequate for measuring the effectiveness of health interventions because it leads to the erroneous conclusion that such interventions can have no effect; and together they render the DALY dangerously misleading because they inaccurately suggest that the prevention of impairments is the *only* available strategy for reducing the negative consequences of disability.[2]

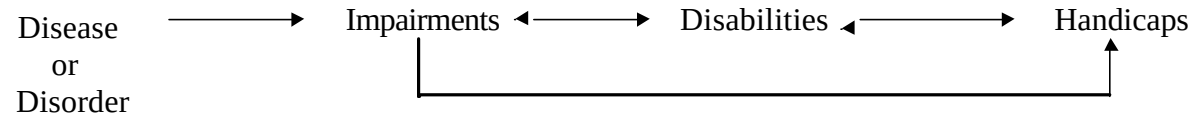
The ICIDH-2 classification system and its predecessor, the International Classification of Impairments, Disabilities and Handicaps (ICIDH), are both far more robust than the DALY framework because, unlike the DALY, they both incorporate social and environmental factors into their conceptualization of disability.

In the original ICIDH, disablement was comprised of three separate but interrelated elements; impairments, disabilities and handicaps. A disability was defined as "a restriction or lack of ability to perform an activity in [a] manner or within [a] range considered normal for a human being."[3] Disabilities were seen to be caused by impairments which were defined as losses or

[1] World Bank, *World Development Report 1993* (Washington, D.C., 1993).
[2] See Annex A, The Disability Adjusted Life Year.
[3] ICIDH definition in United Nations, *Disability Statistics Compendium* (New York, 1990), 1.

abnormalities of psychological, physiological or anatomical structure or function. Impairments and disabilities were both seen to be causally linked to handicaps which were defined as disadvantages that limit or prevent the fulfillment of a role considered to be normal depending on age, sex and social and cultural factors.[4] The relationships between these three elements appear in Figure 1.1:

Figure 1.1: The Disablement Phenomena as Conceptualized in the Original ICIDH



Source: World Health Organization, *ICIDH-2,* 11.

As conceptualized in the ICIDH, an *impairment* (caused by a disease or disorder) may result in a *disability* which, in turn, may lead to a *handicap*, as is the case when polio (a disease) results in paralysis (an impairment) which limits a person's mobility (a disability), which, in turn, limits the person's ability to find employment (a handicap). It is also possible for an impairment which does not result in a disability to still lead to a handicap, as is the case when a facial disfigurement (an impairment) limits a person's ability to socially interact (a handicap), even though it does not result in a functional limitation (a disability).

The ICIDH was a breakthrough for disability policy and research because it was the first system to recognize the influences of personal, social and environmental factors on people with disabilities, and to thus be compatible with the fact that rehabilitation has the power to reduce functional limitations (i.e. disabilities), and social policy has the power to alter environmental contexts (e.g. cultures, institutions and natural and built environments), and thus affect the social and economic opportunities afforded to people with disabilities.

The ICIDH-2, now in field trials, is an attempt on the part of the WHO to improve the ICIDH system by responding to criticisms of the original framework and taking advantage of insights gained during its use. Within the ICIDH-2 framework:

> Disablement is an umbrella term covering three dimensions: (1) body structures and functions; (2) personal activities and; (3) participation in society. These dimensions of health-related experience are termed as "impairments of function and impairments of structure," "activities" (formerly disabilities) and "participation" (formerly handicaps) respectively.[5]

An "impairment" is defined as a loss or abnormality of body structure, or of physiological or psychological function; "activity" is defined as the nature and extent of functioning at the level of the person; and "participation" is defined as the nature and extent of a person's involvement in life situations in relation to impairments, activities, health conditions and contextual factors. In this model, activity restrictions and limitations on participation are recognized to be influenced by

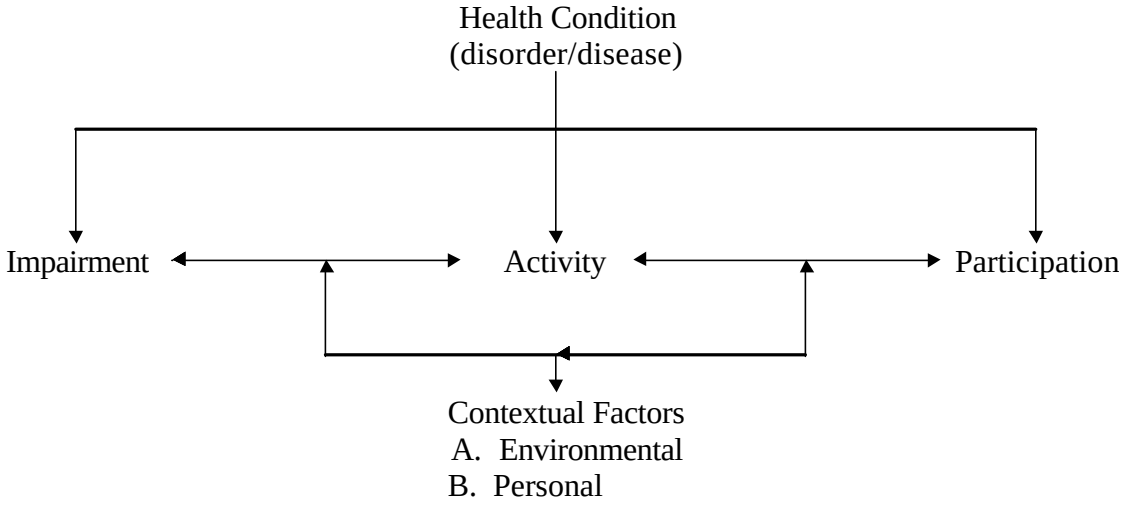
[4] World Health Organization, *International Classification of Impairments, Disabilities and Handicaps* (Geneva, 1980).
[5] World Health Organization, *International Classification of Impairments, Activities and Participation (ICIDH-2)* (Geneva,1997), 5.

environmental factors (e.g. natural and built environments, cultures, institutions and prevailing attitudes about people with disabilities) and personal factors (e.g. gender, age, education, social background and life experience).

The replacement in the ICIDH-2 of the terms disability and handicap with the terms activity and participation came about in response to objections to the use of disability and handicap by some in the disability community. The division of the impairment dimension into two parts, impairment of function and impairment of structure, and the inclusion of environmental and personal contextual factors as elements that may restrict activity and limit participation, allow ICIDH-2 to more fully encompass the significant roles played by personal and environmental factors in determining the extent of disablement associated with any given disabling condition.[6]

Figure 1.2 outlines the expanded range of possible links between health conditions and contextual factors incorporated into the ICIDH-2.

Figure 1.2: Current Understanding of Interactions within ICIDH-2 Dimensions



Source: World Health Organization, *ICIDH-2*, 12.

The ICIDH-2 framework, as depicted in Figure 1.2, recognizes that people may:

- have impairments without having activity limitations (e.g. have a disfigurement in leprosy that may produce no activity limitations),
- have activity limitations without evident impairments (e.g. experience poor performance in daily activities caused by a disease),
- have limited participation without impairments or activity limitations (e.g. experience discrimination due to HIV or past mental illness), or
- experience a degree of influence in a reverse direction (e.g. experience muscle atrophy due to inactivity or a loss of social skills due to institutionalization).[7]

[6] See Annex B, The ICIDH-2 Categories at the Two Digit Level.
[7] World Health Organization, *ICIDH-2*, 13.

1.2 The Current Status of Disability Statistics

Prior to the introduction of the ICIDH in 1980, internationally comparable disability statistics were virtually non-existent due to variations in the definitions of disability. The ICIDH and ICIDH-2 were designed to overcome this problem by providing standardized disability definitions for systematic use in data collection strategies employing the United Nations Framework for Integration of Social, Demographic and Related Statistics.[8] Despite this breakthrough, however, the formulation of disability policy is still significantly hampered by inadequate data and statistics.

The creation of the United Nations Disability Statistics Data Base (DISTAT) in 1988 represents the first comprehensive attempt to identify and compile the world's existing national disability statistics. In their search for disability statistics to include in the DISTAT, the United Nations Statistical Office (UNSO) and its partner in the project, the Research Institute of Gallaudet University, found that only 95 countries or areas had collected statistics on people with disabilities between 1975 and 1988. Though most of these statistics were gathered using the original ICIDH classification system, thus eliminating some of the definitional problems that had previously hampered international comparison of data sets, the existing data were found to be scarce, random and inadequate for analyses of national and regional disabled populations, and comparisons of the circumstances of people with disabilities across social and geographic categories. Though the DISTAT has now grown to contain disability statistics from 177 national studies from 102 countries, the data are presently being formatted by the UNSO for electronic dissemination and are yet to be analyzed at the time of this writing.[9]

1.2.1 Population Size Estimates

Due to the inadequacy of existing disability data, published estimates of national, regional and global disabled populations are little more than speculation and educated guesswork. For example, the WHO and the United Nations have long asserted that people with disabilities comprise approximately 10% of any national population. Recently, however, the author of the WHO estimate has suggested instead that the proportion is more likely to be about 4% of the population in developing countries and 7% in developed countries.[10] The United Nations Development Program (UNDP) has also backed away from the 10% figure, and now estimates the global proportion to be 5.2%. Despite this international trend toward a lowering of previous estimates, some still estimate disabled proportions to be 10% or more. The United States Agency for International Development (USAID) estimates the disabled proportion of the global population

[8] United Nations, *Toward a System of Social and Demographic Statistics*, Statistical papers, Series F., No. 18, Sales No. E.74.XVII.8. People with disabilities are to be identified in national censuses, surveys or registration systems by their impairments or disabilities in the ICIDH system or their impairments or activity limitations in the ICIDH-2 system. For comparative analyses of disability issues across different populations (e.g. women, children, rural poor, etc.), the crosscutting measures of socioeconomic equality, economic opportunity and marginality contained in the United Nations Framework for Integration of Social, Demographic and Related Statistics are then to be used to evaluate the nature and extent of any associated handicaps or participation restrictions.

[9] Joan Vanek and Margaret Mbogoni of the United Nations Statistical Division, telephone conversation with the author, 18 March 1999.

[10] Peter Coleridge, *Disability, Liberation, and Development* (Oxford: Oxfam, 1993), 108.

to be 10% or more, and the Roeher Institute in Toronto Canada, estimates the global proportion to be 13% to 20%.[11]

The author of this study has estimated the disabled populations of 175 countries by applying UNDP estimates of the proportions of people with disabilities in High Human Development (HHD), Medium Human Development (MHD) and Low Human Development (LHD) countries (9.9%, 3.7% and 1.0% respectively) to United Nations population estimates for the corresponding countries. Ranges were estimated using a sensitivity analysis designed to overcome documented downward biases in the UNDP proportion estimates.[12]

Table 1.1: Estimated Ranges of Populations of People with Disabilities

Human Development Category	Low Estimate	High Estimate
High Human Development Countries	124,226,190	124,226,190
Medium Human Development Countries	93,517,500	250,222,500
Low Human Development Countries	17,650,000	174,735,000
TOTAL	235,393,690	549,183,690

Table 1.1 presents a summary of the results.[13] The total global disabled population is estimated to be between 235.39m and 549.18m persons; the total disabled population of the HHD countries is estimated to be 124.23m; the range for the MHD countries is estimated to be between 93.52m and 250.22m; and the range for the LHD countries is estimated to be between 17.65m and 174.74m.

1.2.2 Estimates of GDP Lost Due to Disability

The authors have also estimated the annual value of Gross Domestic Product (GDP) lost as a result of disability globally and in 207 countries by extrapolating the results of research which estimated the GDP lost due to disability in Canada (the Canadian Study) to the rest of the world using UNDP's unemployment rate estimates and GDP estimates for the other 206 nations.[14] A word of caution is in order regarding the reliability of these estimates due to poor and their de facto basis in the following assumptions;

1) the researchers involved in the Canadian Study accurately measured the GDP lost due to disability in Canada.
2) the circumstances in Canada accurately reflect circumstances in the rest of the world.

[11] Health Canada, *The Economic Burden of Illness in Canada, 1993* (Ottawa, 1997) and Marcia Rioux, *Enabling the Well-Being of Persons with Disabilities* (Toronto: Roeher Institute, 1998), 2.
[12] For the methodology employed, see Annex C, National and Global Disabled Population Estimates.
[13] The low and high ends of the HHD estimates are the same due to the way the sensitivity analysis was conducted. See Annex C for a full explanation.
[14] For a more detailed discussion of the results and the methodology employed, see Annex D, Estimates of GDP Lost Due to Disability. The Canadian Study on which this research is based is, Health Canada, *The Economic Burden of Illness in Canada, 1993* (Ottawa, 1997).

Despite the limitations imposed by unreliable data and the above assumptions, the analysis was requested by the Bank to provide a rough estimate of one of the economic costs of disability and an embryonic framework for future research in this area. As the resulting estimates are extremely rough already, it was decided that it would not add to the reliability of the analysis to attempt to refine it by making further assumptions (e.g. about rates of capital utilization). Table 1.2 contains a summary of the results.

Table 1.2: Total Annual Value of GDP Lost Due to Disability

Value of GDP Lost (US Dollars)	High Estimate	Low Estimate
High Income Countries	1,264,232,430,105	891,283,863,224
Medium Income Countries	480,206,038,845	338,545,257,386
Low Income Countries	192,002,986,035	135,362,105,155
TOTAL	$ 1,936,441,454,985	$ 1,365,191,225,765

The global GDP lost annually due to disability is estimated to be between $1.37 trillion and $1.94 trillion. For the world's high income countries, the range is estimated to be between $891.28 billion and $1.26 trillion, for the medium income countries it is estimated to be between $338.55 billion and $480.21 billion, and for the low income countries it is estimated to be between and $135.36 billion and $192.00 billion.

1.2.3 Geographic Distribution

There is little agreement concerning the distribution of people with disabilities between developing and developed countries. UNDP has estimated the proportional rates of disability for the world's HHD, MHD and LHD countries using DISTAT data to be 9.9%, 3.7% and 1.0% respectively, but there are documented downward biases in the UNDP estimates for MHD and LHD countries which make them highly unreliable.[15] However, house to house surveys in India which found that the disabled proportions of selected village populations were less than 1%, and surveys conducted in refugee camps in Jordan and the Occupied Territories which found the disabled proportion of the general population to be around 2%, suggest that developing country disabled populations might be in line with the UNDP estimates. However, far more work remains to be done before such proportions can be accurately estimated.[16]

Data inadequacies also make it impossible to accurately estimate the distribution of people with disabilities between rural and urban areas. When the United Nations estimated the rural/urban disability ratios for 13 countries in the DISTAT data base, they found that 10 of the 13 countries experienced rural/urban disability ratios greater than one, indicating higher proportions of people with disabilities in rural areas.[17] Another United Nations study supports this finding, reporting that rates of blindness, loss of sight in one eye, and deaf mutism are all higher in rural than urban areas. With respect to the Syria, Egypt and India, the study reports:

[15] See Annex C, National and Global Disabled Population Estimates, 63-64.
[16] Coleridge, *Disability, Liberation, and Development*, 104.
[17] United Nations, *Disability Statistics Compendium*, 43.

> The consistency with which rural/urban differences are reported leaves little doubt that impairment problems are more severe in rural areas, although rates in both areas are likely understated due to underenumeration of impairments in general.[18]

Due to the small sample sizes, the results of these studies are far from conclusive, and arguments have been made in favor of an urban disability bias.[19] Some argue that there might be higher incidences of disabilities in cities than in rural areas due to higher rates of traffic and industrial accidents Others argue that disabled people might tend to migrate to the cities from the countryside in response to a greater likelihood of finding sedentary employment, more promising begging opportunities, improved disability services or better medical care. As yet, however, data are insufficient to provide a definitive answer to this basic question.

1.2.4 Disability and Age

Using DISTAT data, United Nations Researchers compared the proportions of the general populations of 19 countries that were over 60 years of age with the proportions of the disabled populations that were over 60 years of age. They found that the age-structures among disabled persons in these 19 countries were more elderly than the age structures of the general populations, which were predominantly either youthful or middle-aged.[20] Though again unreliable as an indicator of the global relationship between disability and age due to the small sample sizes involved, this result is consistent with common sense and with the opinion of most disability experts that disability incidence and prevalence increase with age.

1.2.5 Disability and Employment

Employment statistics for people with disabilities in high income countries are not only unreliable due to bad data, incompatible disability definitions and statistical biases; they are also plagued by huge differences in employment definitions. Employment statistics for people with disabilities are virtually non-existent in developing countries. Nevertheless, the existing evidence suggests that unemployment rates for people with disabilities in high income countries are extremely high, and that unemployment rates for people with disabilities in developing countries are at least as high or higher. In the United States, only 14.3 million of an estimated 48.9 million people with disabilities were reported to be employed in 1991-92.[21] In Austria, where people with disabilities must register, only 69% of those who registered were reported to be employed in 1994.[22] In 1996, it was estimated that no more than 30% of the disabled people in Belgium were employed.[23] Only 48.2% of the disabled people in Canada were reported to be employed in 1991, with 51.8% either unemployed or "not in the labor force."[24] According to the Commission of the

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[18] United Nations, *Development of Statistics of Disabled Persons: Case Studies* (New York, 1986), 67-68.
[19] Coleridge, *Disability, Liberation, and Development*, 106.
[20] United Nations, *Disability Statistics Compendium*, 32.
[21] *Americans with Disabilities: 1991/2*, January 1994.
[22] K. Leichsenring and C Strumpel, *Employment and Living for People with a Disability in the Province of Salzburg*, 1994 in Patricia Thornton and Neil Lunt, *Employment Polices for Disabled People in Eighteen Countries: A Review* (University of York: Social Policy Research Unit, 1997).
[23] E. Samoy, Arme gehandicapten in J. Vranken et al Armoede en sociale uitsluiting: Jaarboek 1996 (Leuven: ACCO, 1996) 251-263 in Thornton and Lunt, *Employment Polices for Disabled People in Eighteen Countries*, 40.
[24] Thornton and Lunt, *Employment Polices for Disabled People in Eighteen Countries*, 53.

European Communities, "people with disabilities are two or three times more likely to be unemployed and to be so for longer periods than the rest of the population."[25]

II. THE EVOLUTION OF DISABILITY POLICY

Society's documented interest in disability dates back to the early study and practice of Medicine, as medical scholars and practitioners developed strategies to prevent and overcome impairments that occur due to sickness and injury. Within this narrow context, a disability was defined as an impairment or disturbance at the level of the body, a medical problem to be either prevented or corrected. Disabled people with disabilities that could not be corrected were viewed by society as pitiable and lacking in social and economic potential. As a class, they tended to be included in early European welfare policies among "the worthy poor" deserving of alms.[26]

[25] European Union, *The Commission Communication on Equality of Opportunity for People with Disabilities: a New European Community Strategy* (Brussels, 1996).
[26] C. Barnes, *Disabled People in Britain and Discrimination* (Calgary: Calgary University Press, 1991), 14. Nora Groce, *The U.S. Role in International Disability Activities: A History and a Look Towards the Future*

Disability was first viewed as a valid concern for scientific inquiry in Eighteenth Century Europe. Most of the initial inquiries consisted of compartmentalized research into the disabling outcomes of specific medical conditions. This early scientific compartmentalization of disability by type contributed to segregated parallel institutional responses to disability which, in turn, led to separate advocacy and self-help organizations for each major category of disability. These early institutional dynamics established two enduring trends that have exerted a powerful influence over the social and material circumstances of people with disabilities for nearly two centuries; one towards approaching disability from a medical perspective, and the other towards the institutional compartmentalization of people with disabilities by type.

2.1 Custodial Care and Special Education

One important discovery that emerged from these early scientific inquiries was that disabled people are capable of learning. This discovery precipitated the emergence of schools and institutions for the blind and the deaf in late Eighteenth Century Europe, and the achievements of the people in these schools improved society's perception of the capabilities of disabled people.

> … with these schools in operation, a gradual change in the perception of disability began to be discernible among the general public. It became apparent that people with disabilities whose lives would traditionally have been quite limited, could do more. This realization was considered to be so new and remarkable that schools for blind and deaf children became regular stopping points on travelers' venues, and some prominent schools for blind and deaf pupils presented weekly public demonstrations of their students' accomplishments.[27]

Institutions and schools for the physically disabled did not emerge until the 1920s and 30s, long after the first schools for the deaf and blind, and most were affiliated with hospitals. This resulted in a divergence in the capabilities of disability communities which favored the deaf and blind.

> From the 1930s on, [schools and institutions for the physically disabled] gradually spread throughout Germany, France, Great Britain, Switzerland and Italy. A hospital-based system, it differed from the deaf and blind communities, where a system of prominent, well-respected educational institutions were centers from which ideas and advocacy [were] disseminated. Early advocacy efforts among blind and deaf groups were frequently run by individuals with disabilities themselves, often utilizing a network of contacts and connections made as students. As such the adult deaf and blind groups often functioned much like alumni organizations, and were often extremely effective. While the growing power of the medical establishment in the latter part of the 19th Century would "medicalize" some issues for blind and deaf individuals, the strong academic and advocacy heritage would provide a balance within the community as a whole.[28]

(World Institute on Disability and Rehabilitation International, 1992), 7. Aldred H. Neufeldt and Alison Albright eds. *Disability and Self-Directed Employment: Business Development Models* (Ontario: Captus University Publications, 1998), 40-41.

[27] Groce, *The U.S. Role in International Disability Activities*, 8.

[28] Ibid., 11.

Much of the education of people with disabilities in Europe and North America tended to take place in segregated custodial care environments supported by churches and other charitable organizations until the disability rights movements of the 1960s and 70s began to successfully advocate for the replacement of such systems with inclusive disability strategies designed to incorporate disabled people into mainstream social and educational programs. During this pre-disability rights period, the education of people with disabilities was viewed quite differently than the education of the general population, as is evidenced by the fact that government involvement in special education, when it did occur, tended to be carried out through ministries and departments of social welfare, not education.

2.2 Early Employment Strategies

The first employment policies for people with disabilities began to emerge in the 1920s and 1930s. In Europe these strategies took the form of quota and quota levy systems; in the United States, Canada, Sweden, Finland and Denmark they took the form of vocational rehabilitation and training strategies, and in the Soviet Union they took the form of reserved employment and state authorized disabled-run enterprises.

2.2.1 Quota and Quota Levy Systems

Quota schemes for disabled veterans first emerged in Austria, Germany, France and Italy during the early 1920s in *response* to nearly simultaneous recommendations by an Inter-Allied Conference and the International Labor Organization (ILO).[29] Two types of schemes emerged; *quota systems* which created legal obligations for employers to hire certain percentages of disabled veterans, and *quota levy systems* which imposed fines or penalties if quotas were not met. In making its recommendation for quotas, the ILO became the first international body to suggest a legal obligation for employers with over a certain number of employees to hire disabled veterans.

Quota and quota levy systems were eventually expanded to include people injured at work, and, by the end of World War II, the UK, the Netherlands, Ireland, Belgium, Greece and Spain had further expanded their quota and quota levy systems to include even wider ranges of people with disabilities. Serious problems began to arise, however, as they were expanded beyond their original target populations, disabled war veterans and people with work injuries. The first problem arose when the addition of other fast growing disabled populations caused the demand for protected employment to increase faster than supply. Levies were also often set too low and weakly enforced, causing many employers to either pay or ignore them instead of employing the requisite number of disabled people. Quota systems have also been found to waste the talents of highly qualified disabled people by directing them into menial positions for which there are unmet quotas regardless of their potential to succeed in other more profitable or significant endeavors.

In recognition of these problems, many quota and quota levy systems have been abandoned, and many others have been augmented with other measures. In the last two decades the UK has abandoned its quota system and the Netherlands has abandoned a planned mandatory quota system after the failure of a preliminary voluntary scheme. Portugal first considered, then decided against, quota systems, Ireland and Belgium restricted their use of quota systems to their public sectors,

[29] Thornton and Lunt, *Employment Polices for Disabled People in Eighteen Countries*, 305.

and Germany and France reformed existing systems. At present, however, quota and quota levy systems still exist in over half of the EU countries, and they are included as components of newly emerging national disability strategies in many countries, including China, India, Japan and the Philippines.

2.2.2 Vocational Training and Rehabilitation Strategies

Vocational training and rehabilitation strategies, originally developed in the United States, Canada, Denmark, Sweden and Finland, have evolved in different ways in each country as dictated by their differing customs, cultures and experiences. Rehabilitation first emerged in the United States with the Soldier's Rehabilitation Act of 1918, through which rehabilitation services were provided to United States war veterans. The landmark Vocational Rehabilitation Act (VR Act) followed in 1928 extending vocational rehabilitation services to employees injured at work. The VR Act established a segregated institutional system for its disabled clients which employed counselors with little formal training but some knowledge of disability to guide them into what were deemed to be "appropriate areas of employment."[30]

By the 1940s, war injuries, improvements in medical technology and a series of polio epidemics had dramatically increased disabled populations in Europe and North America. In the United States, the institutional response was to significantly increase the scale of Vocational Rehabilitation. The explicit goal of Vocational Rehabilitation was to direct as many people with disabilities into gainful employment as possible in order to reduce their dependence on expensive segregated training and custodial care institutions. Strategies based on this philosophy quickly spread to Europe and around the world where they have endured. Rehabilitation systems still serve as the centerpieces of most national disability policies and strategies, particularly in the high income countries of Europe and North America.

It is now generally recognized that rehabilitation systems have mistakenly tended to focus too much on getting people with disabilities into existing marketplaces, and too little on making the marketplaces themselves more accessible and accommodating. Traditional rehabilitation systems have also tended to waste resources on expensive, counterproductive, socially isolating segregated institutional systems. As valid as these criticisms are, however, Rehabilitation must be given credit for demonstrating that the functional limitations resulting from impairments can be reduced or mitigated; an insight that advanced the conceptual framework of disability policy beyond disability prevention and custodial care, to include consideration of the quality of the lives of people with disabilities. By expanding the disability framework in this way, the field of Rehabilitation expanded the range of approaches to disability beyond corrective medicine and custodial care, to include a much wider range of technical and institutional approaches, including physical and psychological rehabilitation, assistive technology and vocational training.

2.2.3 Protected Employment and State Authorized Disabled-Run Enterprises

In the Soviet Union, a protected employment system was established in 1932 based on a three tiered disability classification system and a mandate to set aside 2% of the jobs at state run enterprises for "employable" people with disabilities. Within this system, people with disabilities were evaluated and classified as either "unable to work," "able to work if given lighter work

[30] Groce, *The U.S. Role in International Disability Activities*, 15.

loads or different surroundings," or "able to work at ordinary jobs."[31] The employability of individuals with disabilities, and the types of work for which they were suitable were determined by Medical-Labor Expert Committees.[32] Though little is written on this system, it was still in existence when the Soviet Union began its political and economic transformation in the late 1980s, and variations of the system still exist in Russia today.

In the 1930s the Soviet Government also began to set aside state enterprises to be managed and operated by disabled people. As these enterprises proved viable, more state enterprises were placed under the management and control of disability organizations. By 1955, eighty five percent of the "employable" people with disabilities in the USSR were self-supporting in disabled-run enterprises.[33]

In the late 1950s, Nikita Kruschev determined that disabled-run enterprises were so successful that their disabled managers and employees were no longer at an economic disadvantage, and began to confiscate their enterprises, leading to a decline in self-employment among the disabled in the Soviet Union.[34] However, many disabled-run enterprises survived, and the national umbrella organization of people with physical disabilities in Russia, the All-Russia Society of the Disabled, now controls approximately 15,000 disabled-run businesses employing 45,000 people, 18,000 of which are disabled, under a system of significant tax advantages.[35]

2.3 Accessibility Policy

Policies to reduce architectural and design barriers in built environments are relatively new in Europe and North America, with the first emerging in the 1950s; and they are only just now beginning to emerge in developing countries.

In the absence of policy in this area, the fields of design and architecture have long focused almost exclusively on the needs of people possessing a narrow range of capabilities considered to be "normal." Built environments, therefore, typically contain characteristics that unnecessarily restrict the activities of people with below "normal" functional capabilities. This group of so called special needs users, estimated by the WHO to comprise more than 25% of the world's population, include people with disabilities, people suffering from ill health and people in normal phases of life cycles in which physical capabilities are typically limited (e.g. infancy, childhood, motherhood and old age).[36] Inaccessible built environments are most harmful to people with long term or permanent disabilities, and have traditionally been among the most significant impediments to their social and economic progress.

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[31] E. Dunn, "The Disabled in the USSR Today," in *The Disability Perspective, Variations on a Theme,* eds. D. Pfeiffer, S.C. Hey, and G. Kiger (Salem Oregon: The Society for Disability Studies and Willamette University, 1990), 225-228.

[32] E. Dunne, "The Disabled in Russia," (Berkeley: Highgate Road Social Science Research Station, n.d.).

[33] D. Werner, "Disabled People in Russia," (Moscow: Russian Federation All-Russia Society of the Disabled, 1994), 8-9.

[34] Ibid.

[35] Robert L. Metts, Tracy Echeverria and Nansea Metts, "World Institute on Disability and the All Russia Society of the Disabled Business Plan Training Evaluation," prepared for the World Institute on Disability, 1995.

[36] World Health Organization, *Report on Disability Prevalence* (Geneva, 1993). See Annex E for descriptions of the human ability deficits experienced by "special needs users."

After limited policy activity in the 1950s, the United States promulgated the *American Standard Specification for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped* in 1961, and Great Britain promulgated *Access for the Disabled to Buildings* in 1965.[37] Statutory requirements emerged later in the 1960s in Sweden and Denmark. The Architectural and Transportation Barriers Compliance Boards *Minimum Guidelines and Requirements for Accessible Design*[38] were published in United States in 1981, and Britain's *Part T of the Building Regulations*[39] was published in 1985. Other European and Australasian legislation followed later in the 1980's.

It is generally accepted that the Americans With Disabilities Act (ADA)[40] now contains the most comprehensive statutory requirements for accessibility. The ADA's Title Three: *Public Accommodation*, and its respective Appendix B, *ADA Accessibility Guidelines for Buildings and Facilities* (ADAAG)[41] provide legislation addressing the need for accessibility both in new and existing infrastructures. Sections 4.2 through 4.35, which are taken from the American National Standards Institutes document A117.1-1980, provide the framework for the implementation and enforcement of the legislation.

While a plethora of different types of access legislation exist in Europe, the legislative approaches in Sweden and Denmark are regarded as the most comprehensive. Initiatives in Europe to standardize accessibility standards and legislation have been linked to the *European Manual* and its underlying concept of "integral accessibility."[42] The first draft of the European Manual was published in 1990 in two parts, Part A and Part B. Part A deals with functional principles, and Part B provides technical standards. After various revisions, the *European Concept for Accessibility*[43] was published for consultation in 1995 without any technical standards. In 1996, it was agreed that the document should be revised again with the intention of seeking the endorsement of the European Parliament which could then mandate EU member countries to apply its principles.

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[37] Joint Circular: Ministry of Housing and Local Government 71/65, Ministry of Health 21/65, CP96, *Access for the Disabled to Buildings* (London: HMSO, 1965).

[38] United States Architectural and Transportation Barriers Compliance Board, *Minimum Guidelines and Requirements for Accessible Design, Federal Register 46 FR 4270* (Washington, D.C., 1981).

[39] Department of the Environment and the Welsh Office, *The Building Regulations 1985, Part M Approved Document Access for the Disabled People* (London: HMSO, 1987).

[40] US Department of Justice, *Americans with Disabilities Act*, Public Law 101-336, 1990.

[41] US Department of Justice, *Americans with Disabilities Act, Accessibility Guidelines for Buildings and Facilities (ADAAG) Federal Register 28 CFR 36* (Washington, DC, 1991), Appendix A to Part 36.

[42] Central Co-ordinating Committee for the Promotion of Accessibility, *European Manual for an Accessible Built Environment* (Rijswijk IG-Netherlands, 1990).

[43] Central Co-ordinating Committee for the Promotion of Accessibility, *European Concept for Access* (Rijswijk, 1995).

III. DISABILITY POLICY TODAY

Advances in Medicine in the last half century have worked together with advances in Rehabilitation to increase the life spans and the quality of the lives of people with disabilities, leading to increases in the size and social and economic potential of the world's disabled population. As the concerns of this growing disabled population have expanded beyond mere survival and rehabilitation, the scope of disability policy and practice has expanded to include an ever widening array of technical and social issues associated with increasing the productivity of people with disabilities and improving the quality of their lives. As reflected in the ICIDH and ICIDH-2, this has expanded the framework of disability policy beyond concerns for impairment prevention and the reduction of functional limitations, to include a concern for reducing the limitations imposed on people with disabilities by their social, natural and built environments. These changes are causing the focus of disability policy to shift away from the segregated rehabilitation and custodial-care systems of the past, toward strategies that couple rehabilitation with broader social policies and strategies designed to increase the physical accessibility of the built environment and foster the social and economic acceptance, inclusion and empowerment of people with disabilities.

This evolution has both political and economic roots. On the political side, disabled populations are becoming large enough and sophisticated enough to effectively demand their social and economic inclusion as a matter of basic human rights. On the economic side, the traditional segregated rehabilitation and custodial-care systems have proven to be unnecessarily expensive and counterproductive due to the high cost of the institutions on which they are based, and the perverse tendency of these institutions to prevent people with disabilities from gaining social and

economic access.[44] Policies and strategies to bring people with disabilities into the social and economic mainstream are increasingly seen as superior from an economic perspective because they have the power to increase the economic contributions of people with disabilities, and thus to increase their social and economic contributions while simultaneously reducing expenditures on expensive custodial care.

3.1 United Nations Disability Policy

The evolution of the United Nations approach to disability tends to reflect the above evolution of international thinking on disability, and now embodies some of the most advanced thinking in the field, particularly concerning the need to increase the physical accessibility of built environments, and the need to foster the social and economic acceptance, inclusion and empowerment of people with disabilities.

In the 1950s, in keeping with the conventional wisdom at the time, the United Nations assisted governments to prevent disabilities and to provide traditional rehabilitation services to people with disabilities. United Nations assistance typically took the form of support for advisory missions, workshops for the training of technical personnel, seminars, study groups, scholarships and fellowships for trainers, and the establishing of rehabilitation centers.[45]

In the 1960s and 70s, pressure from national and international disability rights movements led the United Nations to alter its approach to disability to foster "a fuller participation by disabled persons in one integrated society."[46] This philosophy, initially expressed in the 1971 *Declaration on the Rights of Mentally Retarded Persons* and the 1975 *Declaration on the Rights of Disabled Persons,*[47] was fully articulated in 1982 in the *World Program of Action Concerning Disabled Persons (WPA).*

The *WPA's* purpose was [and is],

> to promote effective measures for prevention of disability, rehabilitation and the realization of the goals of 'full participation' of disabled persons, in social life and development, and of 'equality'. This means opportunities equal to those of the whole population and an equal share in the improvement in living conditions resulting from social and economic development. These concepts should apply with the same scope and with the same urgency to all countries, regardless of their level of development. [48]

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[44] S.L. Percy, *Disability, Civil Rights, and Public Policy* (Tuscaloosa: The University of Alabama Press, 1989); R.K. Scotch, *From Good Will to Civil Rights* (Philadelphia: Temple University Press, 1984); J.P. Shapiro, *No Pity: People with Disabilities Forging a New Civil Rights Movement* (New York: Times Books, 1993); and Thornton and Lunt, *Employment Policies for Disabled People in Eighteen Countries*, 298-301.

[45] United Nations Secretariat, "United Nations and Disabled Persons," (New York: Division of Social Policy and Development, n.d.), 2.

[46] Ibid., 2.

[47] United Nations General Assembly Resolution 2856 (XXVI), *On the Declaration on the Rights of Mentally Retarded Persons* (New York, 1971) and United Nations General Assembly Resolution 3447 (XXX), *On the Declaration on the Rights of Disabled Persons* (New York, 1975).

[48] United Nations, *World Program of Action Concerning People with Disabilities* (New York, 1982), 1.

The *WPA* requires member states to:

- plan, organize and finance activities at each level;
- create, through legislation, the necessary legal bases and authority for measures to achieve the objectives;
- ensure opportunities by eliminating barriers to full participation;
- provide rehabilitation services by giving social, nutritional, medical, educational and vocational assistance and technical aids to disabled persons;
- establish or mobilize relevant public and private organizations;
- support the establishment and growth of organizations of disabled persons;
- prepare and disseminate information relevant to the issues of the World Programme of Action.

The General Assembly followed by declaring 1983-92 to be the "Decade of Disabled Persons" in which governments and NGOs were encouraged to implement the *WPA*. In 1992, the Secretary General reviewed and appraised the implementation of the *WPA*, and found that progress in achieving its objectives had been slow.[49] This finding was echoed in a report by the United Nations Special Rapporteur on Human Rights and Disabled Persons.[50] After taking note of both reports, the General Assembly "reaffirmed the validity and value of the *World Program of Action*," stating that it "provided a firm and innovative framework for disability related issues."[51]

There followed the *Long-Term Strategy to Implement the World Programme of Action concerning Disabled Persons to the Year 2000 and Beyond*,[52] a disability related complement to a broader General Assembly resolution to "aim for a society for all by the year 2010." [53] This long term strategy was intended to further the implementation of the *WPA* by establishing concrete targets to be achieved by member states, and by serving as a framework for collaborative action on disability at the national, regional, and international levels.[54]

In 1994, the General Assembly unanimously adopted the document on which almost all modern disability policy is based, *the Standard Rules on the Equalization of Opportunities for Persons with Disabilities* (*Standard Rules*). Although not legally binding, the *Standard Rules* provide "basic international legal standards for programmess, laws and policy on disability."[55]

The *Standard Rules* are based on the fundamental principle of the WPA, that people with disabilities "have a right to equal opportunities for participation in the life of society."[56] This focus on the equalization of opportunities for people with disabilities is important because it

[49] United Nations General Assembly, A/47/415 and Corr.1, para.5 (New York, n.d.).
[50] United Nations, *Human Rights and Disabled Persons*, Human Rights Study Series (United Nations, Sales No. E. 92.XIV.4 and corrigendum, n.d.).
[51] United Nations General Assembly Resolution 47/88.
[52] United Nations General Assembly Resolution 49/153.
[53] United Nations General Assembly Resolution 48/99.
[54] United Nations General Assembly Resolution A/52/351.
[55] United Nations, *The Standard Rules on the Equalization of Opportunities for Persons with Disabilities* (New York, 1994). See Annex F, *The Standard Rules on the Equalization of Opportunities for Persons with Disabilities.*
[56] Dimitris Michailakas, "When Opportunity is the Thing to be Equalized," *Disability and Society*, 12, no.1 (1997): 19.

implies much more than a simple commitment to traditional anti-discrimination principles which guarantee equal treatment under the law. It goes much further, to imply a commitment to removing and preventing any social and environmental obstacles that restrict access for people with disabilities to social and economic opportunities. In adopting the *WPA* and the *Standard Rules*, the Member States agreed in principle to endow their disabled citizens with certain unique social and economic rights (e.g. rights to rehabilitation, special education and access to public and private facilities and programs) over and above the basic rights afforded to the general citizenry (e.g. political rights, property rights and rights of access to judicial mechanisms).

At the regional level, in 1992 the United Nations' Economic and Social Commission for Asia (ESCAP) issued a resolution declaring the period 1993-2002 to be the "Asian and Pacific Decade of Disabled Persons":

> ...with a view to giving fresh impetus to the implementation of the *World Programme of Action* concerning Disabled Persons in the ESCAP region beyond 1992 and strengthening regional cooperation to resolve issues affecting the achievement of the goals of the *World Programme of Action*, especially those concerning the full participation and equality of persons with disabilities.[57]

This resolution, endorsed by the governments of 58% of the world's population, urges ESCAP member and associate member governments to develop measures to:

> ...enhance the equality and full participation of disabled persons, including the following:
>
> (a) Formulation and implementation of national policies and programmes to promote the participation of persons with disabilities in economic and social development;
>
> (b) Establishment and strengthening of national coordinating committees on disability matters, with emphasis on, inter alia, the adequate and effective representation of disabled persons and their organizations, and their roles therein;
>
> (c) Provision of assistance, in collaboration with international development agencies and non-governmental organizations, in enhancing community-based support services for disabled persons and the extension of services to their families;
>
> (d) Promotion of special efforts to foster positive attitudes towards children and adults with disabilities, and the undertaking of measures to improve their access to rehabilitation, education, employment, cultural and sports activities and the physical environment...[58]

[57] United Nations Economic and Social Commission for Asia and the Pacific, *Resolution 48/3 on the Asian and Pacific Decade of Disabled Persons, 1993-2002,* 1992, 2.
[58] Ibid.

It also stipulates that, during the Decade, member and associate member governments are to be assisted by the Executive Secretary to:

> ...[formulate and implement] technical guidelines and legislation to promote access by disabled persons to buildings, public facilities, transport and communication systems, information, education and training, and technical aids...[59]

3.2 European Union Disability Policy

The European Union (EU) has experienced an evolution in disability policy similar to that of the United Nations, with the exception that the EU process started later and, therefore, began with policies and strategies based on more advanced thinking. Similar to the evolution of the United Nations disability policy, which culminated in the *Standard Rules*, EU disability policy has culminated in the *Resolution of the Council and of the Representatives of the Governments of the Member States Meeting within the Council of 1996 on the Equality of Opportunity for People with Disabilities* (*1996 Resolution*), which, like the WPA and the *Standard Rules*, focuses on equalizing opportunities for people with disabilities.[60]

During the 1980s and 90s, the EU promulgated a series of declarations and proclamations on disability consistent with the WPA, including the *24 July 1986 Council Recommendation 86/39/eec on The Employment of Disabled People in the Community*, which is generally recognized as the first important EU document dealing with the issue of the employment of people with disabilities. In it, the Council encourages Member States:

> - to promote fair opportunities for disabled people in the field of employment and vocational training (initial training and employment as well as rehabilitation and resettlement). The principle should apply to access, to retention in employment or vocational training, to protection from unfair dismissal and to opportunities for promotion and in-service training;
>
> - to continue their policies to help disabled people. These policies should provide for the elimination of negative discrimination, for example by avoiding dismissals linked to a disability, and should provide for positive action for disabled people, in particular the making available, in each Member State, of a guide or code of good practice for the employment of disabled people.[61]

The 1988 Helios I Program to promote independent living and social integration of people with disabilities created a platform for Member State cooperation on disability,[62] and the 1993 Helios II Program added mechanisms for information exchange on methods related to social integration, equal opportunities and independent living for people with disabilities.[63] Between Helios I and

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[59] Ibid., 3.

[60] See Annex G, European Union 1996 Resolution.

[61] European Union, *The Commission Communication on Equality of Opportunity for People with Disabilities: a New European Community Strategy* (Brussels, 1996).

[62] European Union, *Council Decision 88/231/EEC Establishing a Second Community Action Programme for Disabled People (Helios)* (Brussels, 1988).

[63] European Union, *Council Decision 93/136/EEC Establishing a Third Community Action Programme to Assist Disabled People (Helios II 1993-96)* (Brussels, 1993).

Helios II, the Council adopted a resolution recognizing the importance of integrating children with disabilities into mainstream educational programs.[64]

During the 1980s and 90s, the EU has also systematically incorporated disability concerns and issues into many of its mainstream programs.

> The Community's structural funds, especially the European Social Fund, were and are playing a significant part in Europe's drive to promote equal opportunities for people with disabilities. The mainstream Community Support Frameworks (CSFS) and the Single Programming Documents (SPDS) 1994-1999 either have measures devoted directly to disability, or provide measures which can be utilized by people with disabilities. The Employment Community Initiative has a specific strand - HORIZON - specially dedicated to the integration in the labour market of people with disabilities. [65]

The strategy presented in the EU's most important and far reaching document on disability, the *1996 Resolution*, and in its forerunner, *The Commission Communication on Equality of Opportunity for People with Disabilities: a New European Community Strategy, 30 July 1996*, adheres to the principles of inclusion and empowerment embodied in the *WPA*, and expresses the EU's commitment to "the principles and values that underline the United Nations *Standard Rules on the Equalization of Opportunities for Persons with Disabilities*."

The *1996 Resolution* calls on Member States to "consider if relevant national policies take into account...the following orientations:"

- empowering people with disabilities for participation in society, including the severely disabled, while paying due attention to the needs and interests of their families and careers;
- mainstreaming the disability perspective into all relevant sectors of policy formulation;
- enabling people with disabilities to participate fully in society by removing barriers;
- nurturing public opinion to be receptive to the abilities of people with disabilities and toward strategies based on equal opportunities.[66]

3.3 National Disability Policies

Most national disability policies subscribe to the inclusionary principles embodied in the *WPA* and the *Standard Rules*. These principles are largely the result of lessons learned in the relatively

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[64] European Union, *Resolution of the Council and the Ministers for Education Meeting with the Council Concerning Integration of Children and Young People with Disabilities into Ordinary Systems of Education* (Brussels, 1990).

[65] European Union, *The Commission Communication on Equality of Opportunity for People with Disabilities: a New European Community Strategy* (Brussels, 1996).

[66] European Union, *Resolution of the Council and of the Representatives of the Governments of the Member States on Equality of Opportunity for People with Disabilities*, Official Journal C 12, 13.01.1997 (Brussels, 1996).

affluent countries of Europe and North America, and are, therefore, typically embodied in their national policies. Disability policies in most Asian, African, Latin American and Middle Eastern countries, including most developing countries, also embody the modern inclusionary and empowering principles, but for different reasons. Since most of these countries did not begin to adopt national disability policies until after the promulgation of the *WPA* and the *Standard Rules*, the principles embodied therein tend to form the conceptual foundations on which their policies are based.

Predictably, considering their long histories of dealing with disability issues and their relative abundance of resources, the world's high income countries, particularly those in Europe and North America, tend to be characterized by more advanced and better funded institutional approaches to disability than most low and middle income countries. Most high income countries, including the United States, Australia, Germany, Great Britain and Denmark, for example, now augment their traditional service and assistance strategies with anti-discrimination legislation and policy commitments to equalizing opportunities for people with disabilities.

Though far from a perfect system, the widely cited flagship for this approach is the United States approach grounded in the anti-discrimination provisions of the ADA, a comprehensive anti-discrimination law which attempts to guarantee social and economic access for people with disabilities by protecting their rights to employment, public services, public transportation, public accommodations and telecommunications. Almost all aspects of American society fall within the purview of the ADA.

Disability policy in Australia is based on a similar commitment to ensuring "that people with a disability have the same rights, choices and opportunities as other Australians, including the right to participate in community activities and, most importantly, the right to a meaningful job."[67] This commitment, expressed in the *Social Justice Strategy of 1993* and codified in the *Disability Discrimination Act of 1993*, outlaws all discrimination on the grounds of disability. The German Constitution has been similarly amended to state that no person may be discriminated against on the grounds of disability.

England's *Disability Discrimination Act of 1995 (DDA)* makes it unlawful to discriminate against disabled persons in connection with employment, the provision of goods and services and the buying or renting of land or property. Under the provisions of the *DDA*, British employers with twenty or more workers must treat disabled individuals as they treat everyone else, and reasonable measures must be taken by employers and providers of goods and services to ensure that they do not discriminate against people with disabilities. The *DDA* also sets minimum accessibility standards for taxis, rail vehicles and new public services.

The principles of solidarity, normalization, and integration are the basis for disability policy in Denmark.[68] The aim of Danish policy is to integrate disabled people into schools, labor markets and community life on equal terms with other people using compensatory measures where necessary.[69] In 1993, the Danish Parliament decided unanimously to recommend that all public and private authorities and businesses comply with the principle of equal treatment of disabled and

[67] Thornton and Lunt, *Employment Polices for Disabled People in Eighteen Countries*, 4.
[68] Ibid., 66.
[69] Ibid.

non-disabled people. At the same time, they created the Equal Opportunities Center for Disabled Persons. The principle of equal treatment for people with disabilities is fundamental to Danish social policy. "The fact that there is no special legislation for disabled people -except where needs cannot be met through mainstream provision- is a matter of some pride in Denmark."[70]

Though low income countries are still the least likely to have national disability policies, most do. Seventy-five percent of the 16 low income countries responding to a 1995-96 United Nations Survey reported having officially recognized disability policies, compared to 94.9% of the 39 medium income countries and 81.7% of the 24 high income countries. [71] Despite their limited resources and relatively short policy histories with respect to disability issues, many of these relative late-comers to disability policy now have national disability policies that reflect the most advanced ICIDH-2 conceptualization of disability and embody a recognition of the need to equalize opportunities for people with disabilities employing the inclusionary principles embodied in the *WPA* and the *Standard Rules*.

For example, the equality of opportunity principle is embodied in the very title of India's *Persons with Disabilities (Equality of Opportunities, Protection of Rights and Full Participation) Act* of 1995, upon which India's disability policy is based. It is also embodied in Hungary's new disability policy which aims to:

> ...define the rights of persons living with disability and the instruments for the exercise of these rights, further to regulate the complex rehabilitation to be provided for persons living with disability, and as a result of all these, *to ensure equality of opportunity, independent living and active participation in the life of society for persons living with disability (emphasis added)*.[72]

The People's Republic of China now has a disability policy which has been similarly formulated;

> ... for the purpose of protecting the lawful rights and interests of, and developing undertakings for, disabled persons, and *ensuring their equal and full participation in social life and their share of the material and cultural wealth of society (emphasis added),*[73]

and the White Paper on which Namibia's new disability policy is based proposes;

> ... a National Disability Policy which is in line with the Governments vision to create a "Society for All" *based on the principles of participation, integration and the equalization of opportunities, defined by the United Nations in their World Programme of Action and Standard Rules Concerning Disabled Persons (emphasis added).*[74]

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[70] Ibid.
[71] Dimitris Michailakis, *Government Action on Disability Policy, A Global Survey* (Sweden: GOTAB, 1997).
[72] Hungarian Act No. XXVI of 1998, *On Provision of the Rights of Persons Living with Disability and their Equality of Opportunity*, Chapter 1, Section 1.
[73] People's Republic of China, *Law of the People's Republic of China on the Protection of Disabled Persons, Chapter 1, General Provisions* (China, 1990).
[74] Republic of Namibia, Ministry of Lands, Resettlement and Rehabilitation, *White Paper on National Policy on Disability* (Namibia, 1997), Executive Summary, iii.

Constitutional provisions form the basis of the national disability policies of an increasing number of countries. Such provisions may include guarantees of rights; including civil, political and economic rights; protection from discrimination; statements of non-discrimination principles and statements of directive principles to guide organs of government. Their scope can range from limited provisions, as are contained in the Constitution of the Portuguese Republic of 1976, to the comprehensive anti-discrimination provisions contained in South Africa's post apartheid constitution.[75] Such provisions may be included in constitutional amendments. Since 1990, Germany, Austria, Finland and Brazil have all passed constitutional amendments guaranteeing various rights to people with disabilities and prohibiting discrimination on the basis of disability. In 1992, the Philippines adopted a Magna-Carta on disability similar to a constitutional amendment, stating in part that:

> Disabled persons are part of Philippine society, thus the State shall give full support to the improvement of the total well-being of disabled persons and their integration into the mainstream of society. Toward this end, the State shall adopt policies ensuring them to compete favourably for available opportunities.[76]

Radical constitutional changes resulting from political transformations also provide opportunities for disability related constitutional provisions, as has been the case in South Africa, Malawi and Uganda.[77] The effects of such provisions vary widely, however. In Uganda, representatives of disability groups involved in the process of drafting the 1995 constitution successfully fought for a constitutional anti-discrimination provision and five reserved seats in Parliament for representatives of people with disabilities. These representatives successfully promoted legislation providing for representation of people with disabilities at every level of local government. This in turn resulted in the election of an estimated 47,000 local representatives with disabilities.[78] In contrast, the constitutional provisions in Malawi appear to have had little effect on the circumstances of people with disabilities due to inadequate underpinning legislation.[79]

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[75] Portugal, Constitution of the Portuguese Republic of 1976, Article 71.
[76] Philippines, "Magna Carta for Disabled Persons" *Official Gazette of the Republic of the Philippines*, 4 May 1992, Vol.88, No. 18, 2537-2556.
[77] In South Africa the provisions are in the Constitution of the Republic of South Africa, 1996, Section 9 (3), and in Malawi they are in the Constitution of Malawi, Article 13, (g).
[78] United Nations Expert Group Meeting on International Norms and Standards Relating to Disability, *Report of Finding* (New York: United Nations Division for Social Policy and Development, 1999).
[79] Ibid.

Despite the emphasis of the *WPA* and *Standard Rules* on the equalization of opportunities for people with disabilities, most national disability policies still tend to stress disability prevention, rehabilitation and individual support for people with disabilities over accessibility measures and anti-discrimination legislation. Of the 58 countries in the 1995-96 United Nations survey that described the emphasis of their disability policies, 77.6% reported that their policies emphasize disability prevention, rehabilitation and individual support over accessibility measures and anti-discrimination legislation. Though a greater proportion of high income respondents than low and middle income respondents reported an emphasis on accessibility measures and anti-discrimination legislation (30% for high income, versus 20% for low income and 17.9% for middle income respondents), an overwhelming 70% of the high income respondents, 82.1% of the middle income respondents and 80% of the low income respondents reported an emphasis on disability prevention, rehabilitation and individual support.

IV. CURRENT DISABILITY TRENDS AND ISSUES

In most industrialized countries, where disability strategies have been evolving for many years, national approaches to disability tend to consist of disconnected combinations of modern inclusive approaches and elements of the rehabilitation, special education and/or custodial care approaches of the past. Though these disjointed systems still tend to reflect their historical roots by focusing too heavily on the rehabilitation and training of people with disabilities in segregated institutional settings, there is a gradual but definite shift toward more integrated strategies to remove and prevent architectural and design barriers and increase access for people with disabilities to mainstream social services, particularly education.

In developing countries, disability service systems have historically tended to consist of small scale, rehabilitation, education, training and sheltered employment programs and projects imported from industrialized countries by churches, NGOs and PVOs.[80] Such programs have never reached significant proportions of their target populations due to their high costs,[81] and their impacts have typically been restricted by the same types of conceptual problems that have long plagued their prototypes in industrialized countries. Over the last forty years, many developing country governments have initiated disability strategies of their own. Unfortunately, these strategies have tended to consist of disjointed and under funded combinations of the types of expensive and inappropriate programs and projects originally established by the churches and charitable organizations. Predictably therefore, the effectiveness of these new government strategies is restricted by the same resource constraints and appropriateness issues that have long plagued their predecessors.[82]

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[80]For an example of such expert advice as it relates to the exportability of western special education strategies, see F.P. Connors, "International Special Education," *Exceptional Children*, 31 (1964): 331-332.

[81] Coleridge, *Disability Liberation and Development*, 67.

[82] Coleridge, *Disability Liberation and Development*, 250. For Brazil, see W.T.C Lin, "The Development of Special Education in Brazil," *Disability Handicap and Society*, 2 (1987): 259-73; for India, see M. Miles, "A Short Circuit of Mental Handicap in India with Some Sparks of Development," (Peshawar, Pakistan: Mental Health Center, Mission Hospital, 1981); and Maya Kalyanpur, "What's Sauce for the Goose Isn't Sauce for the Gander; A Comparative Analysis of Charity Models in the US and India," (Syracuse: Syracuse University, Division of Special Education and Rehabilitation, 1988); for Korea, see N. O'Neill, "All the President's Men," *The Korean Times*,

This tendency for developing countries to rely on inappropriate imported disability technology appears to be abating, however; and many developing countries are beginning to augment and replace their imported programs and projects with approaches better suited to their social and economic environments of poverty, high unemployment and limited resources for social services. Community Based Rehabilitation (CBR) programs tend to form the hubs of such strategies, to which activities designed to empower, educate and provide employment opportunities for people with disabilities are commonly attached.

CBR first emerged in the industrialized countries of Europe and North America in the 1960s and early 1970s, and the concept was formalized into a strategy for developing countries by the WHO in 1976. The objective of CBR is to reduce the costs and increase the effectiveness of disability services by replacing traditional expensive, segregated, medically-based institutional approaches with more cost-effective and responsive community based approaches designed to empower and support disabled persons and their families. CBR has been widely accepted, and is now practiced in many forms in a wide variety of settings in countries from all income categories.

Miles offers the following synthesis;

> There are arguably as many different types of CBR as there are programmes in existence. Most CBR programmes, however, include the following activities: the selection and training of village-based CBR workers; the identification, assessment and referral, where appropriate, of disabled children and adults; the design of aids and appliances by local craftsmen; and the teaching of simple rehabilitative techniques to family members for use with their disabled child[ren]. Awareness raising, public education, counseling, multi-sectoral collaboration, community development and the promotion of integrated education are also key ingredients of CBR programmes. CBR services may be integrated into existing health, education or social welfare structures or they may be vertical programmes run by NGOs. Increasingly CBR services are being developed at village level as part of community development programmes, with relatively little input from rehabilitation professionals. Although a CBR programme may contain some or all of the ingredients discussed above, its flavour will depend upon the cultural context in which it is implemented. Each programme is therefore unique. Differences exist not only between CBR programmes in different cultures, but also between villages in one geographical area.[83]

CBR programs, which tend to be initiated and/or heavily supported by multilateral development agencies (e.g. UNDP, UNESCO, ILO, WHO and the World Bank), bilateral development agencies (e.g. SIDA, DANIDA and NORAD) and NGOs, are now integral to the national disability policies of various low and middle income countries. [84] For example, CBR and "traditional Chinese techniques" are the guiding principles of China's national disability policy, and the national

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February 1989, 7; and for Jamaica, see E.M. Houston, "Mico, UWI Collaborate on Special Education," *Path Jamaica Newsletter* (December 1988): 3.

[83] Susie Miles, "Engaging with the Disability Rights Movement: The Experience of Community-Based Rehabilitation in Southern Africa," *Disability and Society*, 11 (1996): 502-503.

[84] People's Republic of China, *Law of the People's Republic of China on the Protection of Disabled Persons* and Philippines, "Magna Carta for Disabled Persons", 1992.

disability policy in the Philippines expresses a commitment to CBR embodied in a Community-Based Vocational Rehabilitation for Disabled Persons program which, at the time of this writing, has been implemented in 11 of the country's 14 regions.[85] CBR is also employed in the peace building process in countries in conflict or post conflict circumstances (e.g. Eritrea, Cambodia, Mozambique, Croatia and Bosnia-Herzegovinia). The World Bank currently supports at least one of these efforts, the War Victims Rehabilitation Project in Bosnia-Herzegovinia.[86]

4.1 Employment

In keeping with the principles embodied in the WPA and *Standard Rules*, most of today's national employment policies for people with disabilities are reaching beyond traditional hiring quotas, reserved employment schemes and rehabilitation strategies to address the root causes of unequal access to employment and unequal opportunities in the workplace. The policy trend is to promote increased private sector involvement through partnerships with employers, employees and organizations of disabled people. The aim of this approach is to replace compulsion with programs that rely on market forces, competition and individual and employer responsibility. A recent 18 country ILO study on employment policies for people with disabilities concluded that "[e]xclusion from work is increasingly conceived as a matter for economic policy, rather than for welfare policy."[87]

The use of specialized public agencies to provide employment services for disabled persons is being replaced by strategies to include disabled people in mainstream labor market programs and activities, often as a priority group. Countries vary in the ways in which they use specialized and mainstream services, but, in general, separate provision is being replaced by mainstream provision, which is then augmented where necessary with special services for groups that have particular impairments which create unique employment difficulties.[88]

There has been a complementary trend towards privatization and increased competition in service provision. This has opened up the market for disability related service provision which has provided opportunities for disabled people and disabled peoples' organizations to become service providers. Though evaluative studies of its effectiveness are scarce, if properly implemented, this new approach has the power to create new employment opportunities for people with disabilities as service providers, and to simultaneously take advantage of their intimate understanding of disability issues to improve the services offered.

Two general approaches to providing workplace accommodation have emerged; the so called North American and European approaches. The North American approach, developed in the United States and Canada, requires employers to accommodate the known limitations of disabled employees. Such accommodations may include alterations in the physical layout of workspaces, altered equipment use, job restructuring, modification of work schedules and training, and the provision of aids and/or personal assistance. The European approach requires employers to make their entire workplaces accessible. Germany, for example, requires employers to "install and

[85] Danilo Delfin, "The Philippines and Thailand," in Neufeldt and Albright, eds., *Disability and Self-Directed Employment*, 61-63.
[86] International Centre for the Advancement of Community Based Rehabilitation, *War Victims Rehabilitation Project in Bosnia-Herzegovina, 1998 Update* (Ontario: Queen's University, 1998).
[87] Thornton and Lunt, *Employment Polices for Disabled People in Eighteen Countries*, 299.
[88] Ibid., 302.

maintain the workrooms, plant, machines and tools, and arrange the work so that the greatest number of severely disabled people can find permanent employment."[89]

There is an increasing trend to use financial incentives to facilitate the employment of people with disabilities. Financial incentives to employers include grants, relief from social security contributions, tax credits and wage subsidies. While grants are typically provided for the removal of architectural barriers, they are also available in Denmark, the Netherlands and Portugal to cover the costs of personal assistance at the workplace.

Financial support to employees may take the form of direct assistance for tools and equipment; as in Germany, Austria, France and Belgium. The Netherlands adds funds for educational material, Ireland helps visually impaired employees with the costs of readers, and Portugal provides support for technical and motorized aids. Financing and facilities for the adaptation of motor vehicles are now also common provisions in many countries.

Social security measures may also be structured to encourage disabled beneficiaries to become employed. The United States provides extended medical coverage for people with disabilities when they first become employed. Finland builds employment incentives into its rehabilitation benefits, and Germany has developed a scheme whereby people with disabilities entering work lose only a portion of their benefits and are guaranteed against financial loss if employment is not successful.

Severely disabled people, who have traditionally not received any support to enter mainstream labor markets, are now beginning to be considered for such support. The traditional approach to employing the severely disabled has been sheltered work, under the assumption that they are incapable of obtaining employment in the open market. Sheltered work, however, has a history of not providing adequate working conditions, not paying adequate salaries and actually constraining people who could, in fact, be employed in the open market. Therefore, in many countries, most notably Australia, the United States, Canada and the United Kingdom, sheltered work is being augmented or replaced with "supported employment" strategies designed to offer employment options to severely disabled persons in mainstream enterprises. This approach, developed in the United States, provides severely disabled individuals with continuous on the job support in competitive employer paid work.

The Netherlands is making efforts to reduce its commitment to sheltered work; and there is little or no growth in sheltered work in Denmark, Ireland and Italy; which all appear to be considering supported employment and other alternatives. In the United Kingdom, the number of sheltered workshops has declined as a result of government policy, and there is an increase in supported placements. There is no consensus on the shape of future employment strategies for people with severe disabilities, however and sheltered employment is still the primary employment strategy for this population in most EU countries.

4.2 Education

In the last ten years, there have been many international declarations and proclamations recognizing the rights of people with disabilities to equal educational opportunities in mainstream

[89] Ibid., 304.

educational settings wherever possible. The most prominent are the 1989 United Nations *Convention on the Rights of the Child*,[90] the 1990 *World Declaration on Education for All*,[91] the 1994 UNESCO *Salamanca Statement and Framework for Action on Special Needs Education*,[92] Rule Six of the *Standard Rules*[93] and the *Final Declaration of the 1995 United Nations World Summit for Social Development in Copenhagen*.[94]

The inter-agency conference which produced the 1990 *World Declaration on Education for All*, expressed seven principles which now form the conceptual core of an internationally recognized education strategy referred to as Universal Primary Education (UPE):

1) The full acceptance of the inherent right of all children to primary education.
2) The commitment to a child-centered concept of education.
3) The improvement of the quality of primary school learning.
4) The provision of a more responsive primary education.
5) Greater parental and community participation in provision.
6) Increased responsiveness to the diversity of children's needs.
7) Commitment to an intersectoral approach.[95]

Though inclusionary arguments can be made based on any of the above principles, the first, fourth and sixth form the core rationale for integrating people with disabilities into mainstream education programs and strategies.

A comprehensive 1993 World Bank study of special education in Asia resulted in the following six "major messages" concerning the education of children with disabilities:

1) Children with special educational needs include all children with situational disadvantages or physical, mental or emotional impairments, as well as those who experience difficulties in learning any time during their school age.
2) There are personal, social and economic dividends to educating primary aged children with special educational needs wherever possible in mainstream schools.

[90] United Nations, *Convention on the Rights of the Child* (New York, 1989.)
[91] Inter-Agency Commission, World Conference on Education for All, *World Declaration on Education for All* (New York, 1990), 45.
[92] UNESCO, *The Salamanca Statement and Framework for Action on Special Needs Education* (Paris,1994).
[93] United Nations, *The Standard Rules*, 1994.
[94] United Nations, World Summit for Social Development, *The Copenhagen Declaration and Programme of Action*, (New York, 1995).
[95] Inter-Agency Commission, WCEFA (UNDP, UNESCO, UNICEF, World Bank), *Final Report, World Conference on Education for All: Meeting Basic Learning Needs* (New York, 1990), 41.

3) Most children with special educational needs can be successfully and less expensively accommodated in integrated than in fully segregated settings.

4) The vast majority of children with special educational needs can be cost-effectively accommodated in regular primary schools.

5) To achieve inclusive primary education, major changes will be needed in the way in which primary schooling is planned and implemented.

6) Preparation for teaching in inclusive primary schools requires reforms of much current initial and in-service teacher education.[96]

In the 1960s and 70s, school systems in some industrialized countries began to sporadically support integrated educational programs which demonstrated that students with mild to moderate disabilities derived greater educational benefits from inclusion in mainstream educational programs than from segregation in special schools. Supported by this evidence, coalitions of disability organizations and organizations of parents of disabled children which had been lobbying for integrated classrooms since the 1950s stepped up their demands, resulting in an increase in the number of integrated educational programs in the industrialized countries and a trend for governments to transfer responsibility for educating disabled children from their social welfare departments and ministries to their departments and ministries of education.[97] Research conducted in the 1980s to analyze the cost-effectiveness and educational merits of these emerging integration strategies tended to confirm the desirability of the approach.[98] As a result, the policy in most industrialized countries is to integrate disabled children into mainstream educational systems wherever possible.

Most European countries are in the process of adopting inclusive education strategies. Denmark appears to be leading the way with only about one percent of its primary school age children in special schools and classes. However, some countries, including Holland, still educate large numbers of disabled children in segregated institutional settings.[99]

The inclusive education policy in the United States is defined and enforced by the Individuals with Disabilities Education Act of 1990 (IDEA), which requires that people with disabilities be educated in the same schools and the same classrooms as their non-disabled peers wherever possible, and that school systems make every effort to include people with disabilities in

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[96] The study in question is James Lynch, *Primary Education for All, Including Children with Special Needs: Regional Study,* World Bank Working Document (Washington, D.C.: World Bank, July, 1993). The six major messages are summarized in James Lynch, "World Bank - Asia Regional Study for Children with Special Educational Needs," *Getting There, Inclusion International* (November 1997): 2.

[97] Birgit Dyssegaard and Bernadette Robinson, "Implementing Programmes for Special Needs Education: Lessons Learnt from Developing Countries," in *Equity and Excellence in Education for Development*, J. Lynch and C. Modgil, eds. (London: Cassell Educational, 1996), 3.

[98] K.A. Kavale and G.V. Glass, "The Efficacy of Special Education Interventions and Practices: A Compendium of Meta-Analysis Findings," *Focus on Exceptional Children* (1982); N.A. Madden and R.E. Slavin, "Mainstreaming Students with Mild Handicaps: Academic and Social Outcomes," *Review of Educational Research* (1983); R. Weiner, *Impact on Schools* (Capital Publications, 1993); Mary F. Piuma, *Benefits and Costs of Integrating Students with Severe Disabilities Into Regular Public School Programs; A Study Summary of Money Well Spent* (San Francisco: San Francisco State, 1989).

[99] Dyssegaard and Robinson, "Implementing Programmes for Special Needs Education," 3.

mainstream educational settings before considering alternatives. [100] Implementation of the new policy in the United States is well underway, and case law is continually refining the policy's definition and application.

Inclusive education efforts outside of Europe and North America are few. Churches and charitable organizations have been far more involved in educating disabled people in developing countries than have government agencies, and their approach has commonly been to establish segregated schools for people from each disability category. As governments of developing countries have begun to assume responsibility for educating disabled children, they have tended to follow the same segregated format. Whether sponsored by churches, NGOs or governments, however, such programs have only reached negligible proportions of the disabled children who reside in the areas they serve. Most children with disabilities in developing countries are denied formal education altogether, and most of the fortunate few who do receive a formal education are not educated in an inclusive environment.

Since the promulgation of the *WPA* and *Standard Rules*, many developing and other non-western countries have begun to increase their budgets for special education, but few have embarked on serious transitions toward inclusive education. The World Bank's detailed assessment of the circumstances surrounding the education of people with disabilities in 15 Asian countries contains a comprehensive, but somewhat diffuse, examination of the current status of education for disabled people in developing and non-western areas. [101]

4.3 Architecture and Design

The *WPA*, the *Standard Rules*, the *1996 Resolution*, and most national disability policies now contain provisions recognizing disabled peoples' basic human right to equal access to built environments. The economic arguments are also clear. For example, architecture and design barriers are known to reduce the economic and social output of people with disabilities (and other special needs users), thus generating direct costs to society in the form of lost output. The costs of caring for people who become either unemployed or under-employed as a result of such barriers are also recognized. Investments in the removal and prevention of architectural and design barriers are, therefore, increasingly being justified on economic grounds, particularly in areas most critical to social and economic participation (e.g. transportation, housing, education, employment, health care, government, public discourse, cultural development, and recreation).

4.3.1 Universal Design

A movement is now beginning to take shape in the fields of Architecture and Design endorsing a new set of design principles known as Universal Design, which are based on the premise that today's inaccessible built environments are primarily the result of inattention to the needs of special needs users, not realistic cost considerations, and that properly designed built environments have the power to cost-effectively serve a much wider range of users than today's.

Proponents of Universal Design argue that today's built environments are not cost-effective because they artificially create a class of special needs users requiring truly costly special

[100] United States, *Individuals with Disabilites Education Act*, 1990.
[101] Lynch, *Primary Education for All, Including Children with Special Needs*.

provisions. They seek to replace traditional accessibility standards with design principles that increase access for everyone, arguing that it is more cost-effective to address the needs of special needs users in the basic design of projects than to add special provisions to overcome design obstacles that are unnecessary in the first place.

Universal Design proponents recognize that the traditional provision of separate or special accommodation to the needs of disabled people has led to their social isolation and economic dependency, and has identified them with high costs, government intervention, and annoying, ugly and incongruent additions to buildings. They argue that built environments that embody Universal Design principles tend, instead, to welcome people with disabilities into the mainstream of society and identify them with the positive and intelligent images associated with design ingenuity, functional beauty and commonality of purpose.

Seven principles define Universal Design; equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance of error, low physical effort, and size and space for approach and use.[102] These principles are intended to provide policy makers and drafters of design standards and specifications with a platform from which to address accessibility issues in a holistic, integrated, cost-effective and positive way.

One of the flagships of Universal Design is the mass transportation system in Curitiba, Brazil. As part of its goal to provide a public transportation system so good that citizens would find little need for private transportation, the city incorporated universal design into all of its aspects. The result is a cost-effective system of busses which are used by disabled people in the same way as their non-disabled peers.[103]

Universal Design was used to provide access for people with disabilities to the Academical Village Lawn at the University of Virginia in Charlottesville, the centerpiece of the original campus complex, without disrupting the original esthetic intent. The usability of the space for people with disabilities was greatly enhanced while accommodating all other user groups on campus, including those concerned with the preservation of the university's architectural heritage and esthetic values.

The 1990 modernization and expansion of the headquarters for the Lighthouse for the Blind in New York City also successfully incorporated Universal Design elements, including a highly functional system for guiding blind persons within and around the facility which included universal signage and symbology and a variety of features designed to accommodate the needs of people with other disabilities. The Lighthouse headquarters is now regarded as a "Universal Design Laboratory" and as such continues to generate feedback used in the development and further refinement of the Universal Design principles.[104]

An illustration of Universal Design by default is the case of Oxo Good Grips Kitchen Utensils which were designed for persons with limited hand function due to arthritis. The sizes of the handles were increased in a way that created a useful and esthetically attractive product with

[102] See Annex H for details of the Principles of Universal Design.
[103] Edward Steinfeld, "Public Transportation in Curitiba, Brazil, " in *Proceedings of Designing for the 21st Century*: *An International Conference on Universal Design*, (Raleigh, NC: Barefoot Press, 1998).
[104] Center for Universal Design, *Universal Design File* (North Carolina State University, 1998).

broad appeal to consumers with a wide range of functional capabilities. Oxo utensils are now marketed successfully to the general population throughout the United States.

4.3.2 South African Case Studies

The following five South African case studies illustrate that accessibility provision can be cost-effectively accomplished in a variety of settings.

Case 1: An Accessible Large International Conference Center

The International Conference Center (ICC) in Durban, South Africa illustrates the cost-effectiveness of incorporating accessibility into a world class public facility. [105] At an early stage in its construction, it became apparent that the complex did not meet international accessibility standards. After intervention by accessibility advocates, the design consortium responsible for the project was given a directive to change the design to conform with the ADA Guidelines, ISO TR 9527 and the British Fire Evacuation Code BS 5588. This decision to utilize a combination of international codes was based on various perceived shortcomings in the ADA Guidelines. In addition, communication systems, orientation aids and signage were to be made accessible using Universal Design principles. Accessibility was to be incorporated into the design of the complex using Universal Design principles with minimal, if any, special features exclusively designed for people with disabilities.[106]

The total construction cost for the Center, completed in September 1997, was R280,000,000. The estimated total cost of accessibility provision, including the upgrading to international accessibility standards was R 1,670,000. Expressed as a percentage of the total capital cost, the provision of accessibility was 0.59%. Despite the fact that accessibility issues were not addressed until after initial construction had commenced, thus creating a partial retrofit situation, the proportional cost of accessibility provision was extremely low. Had accessibility been integrated into the original design, the cost may well have been lower.

[105] Information for this Case Study was drawn from the ICC Durban Accessibility Audit prepared by the Architects Consortium Stauch Vorster Architects in Association with Hallen Custers Smith and Johnson Murray Architects, Durban, 1997.

[106] See Annex I for the relevant excerpt from the audit.

Case 2: An Accessible Community Center

East of Cape Town, informal settlements are in the process of being transformed from "townships" into formal urban neighborhoods. Community centers are being developed to provide multifunctional space for a range of activities from adult education to sports. One of these, the Ikwezi Community Center in Gugulethu was designed to provide nearly complete environmental accessibility (with the single exception of an inaccessible viewing gallery in the Main Hall). The complex consists of a large multipurpose hall with ancillary accommodation, a smaller sub-dividable hall with adjacent storage space for equipment and furniture, a gymnasium with sports offices, a small open amphitheater, a computer center and an administration center. The complex, completed in 1998, was built with direct community participation by an emerging contractor.

The site is flat, which eliminated the cost of ramping. Accessibility provision included dedicated parking bays, access to all components of the complex (with the one exception mentioned), strong color contrasts around doors and entrances and other way finding support, teletext facilities and the standard unisex accessible toilet. Limited signage was provided in the complex, as the strong color contrasts of the buildings were used to orient building users. By applying Universal Design principles in the design of the majority of the project's spaces and facilities, accessibility related expenses were limited to the following costs for an accessible unisex toilet, teletext facilities and articulated paintwork:

Unisex accessible toilet facility	R 5,500
Integral teletext equipment	R 1,200
Articulated paintwork	R 1,600
TOTAL COSTS	R 8,300

Though paving slabs created a step into one building in the complex, and though the gallery in the Main Hall was not accessible, the Ikwezi Community center was largely accessible and had all the facilities necessary to make it an appropriate facility for the full social integration of people with disabilities into the Gugulethu Community. The final cost of construction was R1,768,700, and the cost of providing accessibility was R 8,300. Thus the proportional cost of incorporating accessibility into the project was only 0.47% of the cost of the project.

Case 3: Retrofitting Accessibility During the Final Stages of School Construction

The Reservoir Hills Secondary School, located in Durban, was retrofitted for accessibility in the final stages of the project. Completed in 1991, the school was designed to accommodate 800 pupils. The format included twenty seven classrooms, an administrative building, twenty specialist classrooms, a library resource center and toilet facilities. Standards were applied based on a combination of Code 0400 and ADA Guidelines. The costs of accessibility provision were as follows:

Two accessible parking bays with cover linked to the covered access-ways.	R 7,600
Raised curb edgings along all accessible walkways which are adjacent to unhardened areas and changes in level.	R 2,500
Kick plates to doors and lever action iron fixtures at required heights.	R14,200
Three unisex accessible toilets with all requisite fittings.	R11,800
Adjustments to fittings and furnishings for accessible work tops, counters and shelving.	R12,600
New signage to facilitate way finding and orientation.	R 5,700
Total Cost	R 53,800

The cost of the retrofit of accessibility into this school during the final phases of the building process (R 53,800) represented only 1.08% of the schools total cost (R 4,955,300).

Case 4: Accessibility Incorporated into the Original Design of a School

The Gamalake Lower Primary School, located on the South Coast of the area now known as the province of KwaZulu Natal, is a standard design format school developed within the framework of the reduced norms and standards introduced by the KwaZulu Government. It consists of twenty four classrooms, an administrative building, one multipurpose classroom and toilet facilities. Accessibility was incorporated into the original design of the school, which was completed in 1997.

The only additional expenditures identified were the costs of an entrance ramp between the parking level and the school, two unisex accessible toilets and larger signage. Under the South African Code 0400 it is possible to reduce the number of toilet fittings by the number of accessible unisex toilet facilities provided in the building. The net cost of an accessible toilet is thus the additional cost of providing the larger separate cubicle, grab rails and other requisite fittings. Since the school had been designed for accessibility from the outset, all access ways, entrances and circulation systems had been ramped and graded appropriately.

The costs of the additional accessibility items were as follows:

Entrance ramp from the parking area	R 23,000
Additional cost for unisex accessible toilets	R 9,800
Enlarging signage to facilitate way finding	R 3,200
TOTAL COST	R 36,000

The cost of incorporating accessibility into this school's original design (R 36,000) was only 0.78% of the school's total cost (R 4,603,700).

Case 5: Provision of Necessary Separate Facilities at a School

The majority of the topography of the, then, Transkei region of South Africa is rugged with very poor road infrastructure. Schools are located on the most level sites in an attempt to reduce the costs of civil earthworks. It is common practice in this region not to provide schools with interlinking hardened or covered access ways. Due to the lack of reticulated water supplies, toilet facilities are provided in the form of "ventilated improved pit toilets" which are located a distance away from the school buildings. To achieve accessibility, an accessible unisex pit toilet is typically located separately in a locality closer to the school buildings than the other toilets, with uncovered hardened access at suitable gradients.

The Mzomhle Junior Secondary School is such a facility located outside of the town of Sterkspruit. Construction was completed in 1996. The school consists of twelve classrooms in bungalow style classroom blocks, with a very small administration block and the toilet facilities described. The provision of a separate accessible pit toilet for a relatively small number of people with disabilities represented a large proportional outlay for accessibility, as one pit toilet usually serves up to twenty classrooms. The costs of the pit toilet and the associated hardened access, are as follows:

Unisex accessible pit toilet	R 4,700
Hardened access to accessible toilet	R 1,900
TOTAL COST	R 6,600

The total cost of the school complex was R 954,600. Therefore, the proportional cost of this separate provision was only 0.69% of the total cost of the project.

V. POLICY IMPLICATIONS FOR THE INTERNATIONAL COMMUNITY

A global commitment to ensuring disabled people equal access to social and economic opportunities is now in place. This commitment is expressed by the United Nations in the *WPA* and the *Standard Rules*; by the EU in its *1996 Resolution*; and by most nations of the world in a variety of ways including constitutional provisions, legislation, and policies. The commitment has two primary purposes:

- to affirm the basic human rights of people with disabilities to equal access to social and economic opportunities and,
- to create environments in which people with disabilities can maximize their capacity for making social and economic contributions.

Nations and international organizations are now attempting to develop policies and strategies compatible and commensurate with this commitment. Unfortunately, this process is taking place within the context of a long history of negative stereotypes about people with disabilities and limited expectations about their capabilities, resulting in a global disability environment characterized by self-reinforcing combinations of social and economic discrimination; inaccessible built environments; and expensive, socially isolating, and counterproductive disability policies and institutions. Policy makers attempting to design and implement more inclusionary approaches to disability are doing so in a global setting characterized by meager information, inadequate data and virtually no coordination of activities. The result has been a thin ineffective global patchwork of disjointed and often contradictory disability policies and strategies.

If the commitment to equalizing opportunities for people with disabilities is to be upheld, a more coordinated effort based on a much greater understanding of disability will be required. Coordinated and integrated policies and strategies will have to be put in place to eliminate or mitigate as many of the personal, social and environmental barriers identified in the ICIDH-2 as possible while empowering as many disabled people as possible to maximize their social and economic contributions. This will require that the policies and strategies be designed to facilitate the passage of disabled people through the following three distinct but interrelated stages of physical and social integration;

1) adapting to the disabling condition and maximizing functional capacity;
2) interacting with community and society; and
3) gaining access to the types of social and economic activities that give life meaning and purpose (e.g. contributing to one's family and community, actively participating in society and/or becoming productively employed).

Policies and assistive strategies related to the first stage must provide physical and mental restoration, physical therapy, assistive technology, prosthetic devices and appliances, personal assistance, information, advocacy and training in all of the activities associated with adapting to the disabling condition and maximizing functional capacity.

Second stage strategies must be designed to provide mobility training and assistive technology, and access to housing, education, transportation, and recreation. Complementary social and institutional measures include the removal and prevention of architectural and design barriers, and

the removal of the types of social barriers that restrict people with disabilities from fully participating in their families, communities, and societies (e.g. negative stereotyping and social and economic discrimination).

Policies and strategies related to the third stage must provide access to education, training and recreation, and support for employment and social participation. Complementary institutional measures include policies and strategies to reduce the forms of discrimination that restrict disabled peoples' access to social and economic opportunities (e.g. education, training and employment).

Piecemeal disability interventions are not likely to be cost-effective because their beneficial impacts cannot be fully realized unless their beneficiaries maximize their functional capabilities and gain access to the full range of social and economic opportunities. This requires comprehensive, multifaceted strategies that address the personal, social and environmental issues identified in the ICIDH-2 in ways that facilitate the passage of as many disabled people as possible through as many of the stages of physical and social integration as possible. Ideally, therefore, disability strategies will consist of comprehensive and integrated combinations of:

- rehabilitation strategies which maximize the functional capabilities of people with disabilities;
- inclusion and empowerment strategies which facilitate their active participation in their communities, societies and economies; and
- architecture and design strategies that remove and prevent unnecessary barriers in built environments.

Some people will incur disabilities so severe that they will be incapable of successfully passing through all three stages of physical and social integration, even within the context of the types of comprehensive strategies outlined above. Members of this minority sub-group will require specialized support services throughout their lives in order to survive. Others will require various forms of lifetime support (e.g. ongoing personal assistance services) to remain capable of making social and economic contributions. Still others will require specialized support services at various times in their lives to overcome specific obstacles (e.g. specialized training, rehabilitation and modifications to homes and workplaces). To be cost-effective and commensurate with the global commitment to equalizing opportunities for people with disabilities, these services must be;

- designed to facilitate access to the social and economic mainstream;
- provided in mainstream institutional settings wherever possible; and
- provided within the context of the comprehensive inclusion and empowerment strategies outlined above.

5.1 The Role of Large International Organizations

Significant progress toward fulfilling the global commitment to equalizing opportunities for disabled people will require the leadership and participation of the world's large international organizations. These entities are best positioned to facilitate the necessary integration and coordination of disability policies, strategies and activities; and best equipped to begin to address

existing data and information problems. Unfortunately, their participation to date has been piecemeal, and their leadership has tended to be weak and ineffective.[107]

In the absence of significant participation and leadership on the part of the large international organizations, most nations are now hampered by a paucity of data and information on disability, and a lack of coordination of activities and strategies. Most policy makers attempting to reform existing disability strategies and policies are still in need of education and training to obtain an accurate understanding of disability. To be in a position to educate and inform the international community about appropriate and cost-effective approaches to disability, and to be in a position to provide those wishing to improve their approaches to disability with the information, coordination and access to resources they require, large international organizations will have to demonstrate their own inclusionary resolve by;

- making policy commitments and adopting institutional mandates to include people with disabilities and a concern for their rights and needs in all of their own mainstream activities and programs; and
- committing themselves to developing and supporting comprehensive and integrated national and international strategies to remove and prevent the types of social, architectural and design barriers that unnecessarily limit access for people with disabilities to social and economic opportunities.

This involves a commitment to the following inclusionary principles:

- Adoption and promotion of inclusionary policies and practices.
- Removal and prevention of architectural and design barriers.
- Adoption of affirmative strategies to include people with disabilities in mainstream educational, vocational, political, and recreational activities.
- Support for, and constructive engagement with, organizations of people with disabilities.
- Provision of cost-effective assistive technology.

Adoption and promotion of inclusionary policies and practices: Inclusionary policies and practices are those that foster the inclusion of people with disabilities and a concern for their rights and needs in all aspects of an institution, community or society. At the institutional level, such commitments are expressed through mandates to recruit and employ people with disabilities, and to design, implement, and evaluate all policies, practices and activities in ways that take into account the needs, rights, and concerns of people with disabilities.

Removal and prevention of architectural and design barriers: People with disabilities face a multitude of unnecessary architectural and design barriers which prevent them from achieving access to such vital aspects of society as public education, public transportation and the physical infrastructure associated with mainstream vocational, political and civic activities. The removal of such barriers and the prevention of new ones are critical elements of any successful inclusionary and empowering disability strategy.

[107]Robert L. and Nansea Metts, "USAID, Disability and Development in Ghana: Analysis and Recommendations," *Journal of Disability Policy Studies*, 9, No. 1 (1998).

Affirmative strategies to include people with disabilities in mainstream educational, vocational, political and recreational activities: People with disabilities tend to be subjected to social and economic discrimination. The negative consequences of such discrimination are particularly severe in poor countries where resources are scarcest. Discrimination against people with disabilities results in their being denied equal access to social and economic opportunities and benefits. It also creates a self re-enforcing climate of low expectations and negative stereotypes concerning people with disabilities that further limit their potential. These handicaps can only be overcome through public education and affirmative actions aimed at empowering people with disabilities and ensuring them a place in mainstream society.

Support for, and constructive engagement with, organizations of people with disabilities: People with disabilities and their families are the most qualified and best equipped to support, inform and advocate for themselves and other people with disabilities. They are also the most qualified, best informed and most motivated to speak on their own behalf concerning the proper design and implementation of strategies to facilitate the social and economic access they need to increase their social and economic contributions. Therefore, support for, and constructive engagement with, organizations of people with disabilities are among the most cost-effective investments available to nations and international organizations wishing to increase the social and economic participation of people with disabilities.

Provision of cost-effective assistive technology: Because disabilities involve functional limitations, it is often difficult or impossible for disabled people to interact with their communities and societies without special assistance and/or assistive technology. Often, providing access for people with disabilities to a mainstream technological innovation is more cost-effective than creating a specialized technology. For example, e-mail has revolutionized the communicative abilities of the hearing impaired at a fraction of the cost of the highly specialized communication equipment developed specifically for their use; and personal computers, the Internet and e-mail have increased the social access of people with impaired verbal capabilities in a similarly cost-effective way. Whether they be specially designed to meet the needs of people with disabilities (e.g. Braille writers, prosthetic devices, wheelchairs and hearing aids) or innovative adaptations of mainstream technological innovations (e.g. personal computers, e-mail and the Internet), assistive technologies are vital to the process of providing social and environmental access to many people with disabilities.

5.2 The Role of the World Bank

Despite its roots in issues related to financial and physical capital, the World Bank now officially recognizes the importance of investments in human capital.[108] In 1991, the Bank took the position that investments in human resources are among the most important to the development process. It urged developing countries to invest in social programs, particularly in education and health.[109] Since James Wolfensohn became the President of the World Bank in 1995, poverty reduction has steadily moved up on the Bank's agenda. Now the social and economic inclusion of the world's

[108] World Bank, *World Development Report, 1990: Poverty* (Washington, D.C., 1990).
[109] World Bank, *World Development Report, 1991* (New York: Oxford University Press, 1991).

most marginalized populations is counted among the Bank's highest priorities.[110] This emphasis will be reflected in the Bank's World Development Report for the year 2,000, which will likely;

> propose an attack on poverty on three fronts: (i) ensuring **empowerment** of the poor by increasing their voice and participation in decision making, and managing the growth of inequalities, (ii) providing **security** against shocks at the individual and national levels, and for those left behind by rapid change, and (iii) creating **opportunity** for the poor by putting in place the conditions for sustainable economic expansion, to provide the material basis for poverty reduction.[111]

World Bank policy and practice appear to diverge, however, with respect to the world's roughly half billion people with disabilities who, despite their undisputed status as one of the world's poorest and most marginalized populations, currently receive very little of the Bank's attention or support. The Bank's few identifiable disability activities are random, piecemeal and small scale; consisting primarily of support for pension reforms in Eastern Europe and Central Asia; a small number of disability related social services projects in the Balkans, Africa and Cambodia; community based de-institutionalization projects in Eastern Europe and Central Asia; and disability related community projects in Africa.[112]

The World Bank is now in the process of evaluating and exploring alternative approaches to disability. A thematic group on disability has been formed for this purpose. Due to the global influence of the World Bank as a leading international development organization, the approach to disability it ultimately chooses will have a great impact on progress toward fulfilling the global commitment to equalizing opportunities for disabled people. If the Bank chooses to assign a low priority to disability issues, and to continue to engage in piecemeal approaches, the fulfillment of the commitment will be a long time in coming. If, instead, the Bank chooses to engage in activities in support of the global commitment, it is in an almost unique position to significantly and cost-effectively foster the social and economic inclusion of disabled people by;

- changing operational practices,
- engaging in inclusionary lending activities and,
- engaging in inclusionary non-lending activities.

5.2.1 Changing Operational Practices

The World Bank has the opportunity to significantly and cost-effectively contribute to the global inclusion and empowerment of people with disabilities simply by setting the proper example. Doing so includes making the following changes in its operational practices:

- Adopting a comprehensive Bankwide inclusionary policy.
- Taking affirmative steps to employ people with disabilities.
- Removing existing architectural and design barriers at Bank facilities.

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[110] James D. Wolfensohn, *The Challenge of Inclusion, Address to the Board of Governors, Hong Kong*, (World Bank, 1997).

[111] Judith Edstrom, "Addressing Social Development: The World Bank Perspective," statement delivered to the United Nations Commission for Social Development (New York, February 6, 1999).

[112] World Bank Social Protection Team, "The World Bank and Disability," (Washington, D.C., 1998).

Adopting a comprehensive Bankwide inclusionary policy: In order to effectively advocate for the inclusion of people with disabilities in the activities of its clients, counterparts and constituents, the World Bank must demonstrate its own commitment to such inclusion by adopting and implementing an explicit policy to include people with disabilities and a concern for their rights and needs in all aspects of its own operations. Such an inclusionary policy is necessary as the institutional foundation on which to build comprehensive disability strategies at the Bank itself, and as the philosophical base from which to advocate for the inclusion and empowerment of people with disabilities worldwide.

Taking affirmative steps to employ people with disabilities: An effective inclusionary World Bank disability strategy must involve a hiring process that encourages the participation of people with disabilities. Such a process must affirmatively search for and recruit qualified people with disabilities *in all fields*, and include mechanisms for providing cost-effective reasonable accommodations to employees with disabilities (e.g. modified office spaces, work related assistive technologies, etc.).

Removing existing architectural barriers at Bank facilities: As the social and economic inclusion and empowerment of people with disabilities largely hinges on physical access, it goes without saying that physically accessible facilities are a necessary component of a successful World Bank disability strategy. Unfortunately, however, at the present time some World Bank facilities are fundamentally inaccessible.

Due to the expense of achieving the ultimate goal of full accessibility, the Bank should consider a comprehensive but incremental approach. For example, there are certain relatively inexpensive steps that can be taken immediately to create access for people with disabilities to the ground floors of currently inaccessible World Bank facilities. These small, cost-effective improvements will immediately facilitate at least some degree of access for people with disabilities, and in so doing will create immediate opportunities for disabled people to participate in Bank activities as employees, sub-contractors, consultants and recipients of World Bank benefits and services. Making the ground floors accessible will also reinforce the Bank's inclusionary message among non-disabled Bank personnel, and serve as a visible symbol to anyone walking into the facilities that the World Bank is seriously committed to bringing people with disabilities into the social and economic mainstream.

5.2.2 Lending Initiatives

Significant opportunities also exist for the World Bank to foster the global inclusion and empowerment of people with disabilities through initiatives in:

- its lending for development activities and social programs, and
- its lending for physical infrastructure.

Opportunities in lending for development activities and social programs: By taking affirmative steps to include people with disabilities in all of the development activities it supports, the Bank has the power to directly increase the social and economic contributions of people with disabilities by increasing their access to their communities and societies while simultaneously

demonstrating the social and economic benefits of inclusion and empowerment to its clients and to the rest of the international community.

However, due to the fact that modern disability policy is still in its infancy, research and information about cost-effective inclusionary techniques and strategies are presently scattered and scarce. Therefore, many of the Bank's clients will find it difficult to design and implement inclusionary strategies without assistance from the Bank. Consequently, the Bank must do more than simply request that clients make an effort to include people with disabilities in its sponsored activities. It must also assist them by developing and providing in house expertise on disability capable of providing disability related technical assistance. Acquisition of the required expertise on disability will require rigorous evaluation of the Bank's own disability activities, consultation with disabled and non-disabled stakeholders, and systematic efforts to collect and analyze disability related data, information, insights and ideas generated by nations, NGOs and other international organizations.

Opportunities in lending for physical infrastructure: Architectural and design barriers constitute one of the primary social and economic limitations faced by people with disabilities. Recent experience has demonstrated the cost-effectiveness of incorporating accessible design features into built environments, particularly when they are being newly constructed. To the extent that the World Bank makes loans for the construction of schools, public buildings, transportation systems, streets paths and other public infrastructure, it has the opportunity to facilitate their accessibility at a very low cost simply by promoting barrier free design and providing information to its clients about the most cost-effective methods for its application. The Bank's Post-Conflict Reconstruction Unit operates in environments characterized by many such opportunities in the reconstruction of war torn infrastructures. The systematic application of cost-effective barrier free design to all new Bank financed construction is a critical and cost-effective element of a successful World Bank disability strategy, which simply requires a commitment to accessible design and an in-house expertise on accessibility and Universal Design.

5.2.3 Non-Lending Activities

Perhaps the most significant and cost-effective opportunities for the World Bank to contribute to the social and economic inclusion of people with disabilities are in its non-lending activities where it can capitalize on its role as a leading international development organization to facilitate necessary public awareness and institutional training. Such activities include:

- Serving as a standard bearer for cost-effective inclusionary disability policies and strategies.
- Facilitating the coordination of the disability activities of international organizations.
- Contributing to the global knowledge base on disability.
- Facilitating disability related training and education for the international development assistance community.
- Supporting and constructively engaging organizations of people with disabilities.
- Promoting research and development in the area of assistive technology.

Serving as a standard bearer for cost-effective inclusionary disability policies and strategies: By adopting its own comprehensive disability policies and strategies the Bank will begin to serve, through its own example, as a standard bearer for the inclusion and empowerment of people with disabilities. Numerous opportunities will then exist for the Bank to educate and inform the international community about disability through its publications, presentations by Bank staff and Bank sponsorship and provision of disability trainings and seminars.

Facilitating the coordination of the disability activities of international organizations: International organizations are presently engaged in various disability activities that tend to be carried out in an unstructured piecemeal fashion with virtually none of the necessary coordination at the international and interagency level. The World Bank presently sponsors many activities to facilitate interagency coordination in a variety of areas. It also participates in many such activities sponsored by governments, NGOs and other international organizations. This puts the World Bank in a uniquely powerful position to use proven techniques to cost-effectively facilitate the necessary international cooperation and coordination of disability activities.

Contributing to the global knowledge base on disability: The World Bank is a leader in gathering and disseminating information on topics related to economic and social development. At present, information and data on disability are scarce, unreliable and scattered among organizations and institutions around the world, making it extremely difficult to conduct the research necessary to fully understand the status of people with disabilities, develop cost-effective disability policies and strategies, or evaluate the cost-effectiveness of competing approaches. The World Bank is in a key position to begin to solve this problem by applying its general expertise in the areas of data collection and information dissemination to matters related to disability.

Facilitating disability related training and education for the international development assistance community: The World Bank, as perhaps the leading international economic development institution, is defined by its paramount interest in the efficient application of resources. It is, therefore, in a unique position to discourage, on economic grounds, the wasteful social and economic segregation of people with disabilities, and to assist its clients, counterparts and constituents to develop and implement cost-effective strategies for bringing people with disabilities into the social and economic mainstream. The Bank's existing mechanisms for educating and training the international community are ideal for accomplishing such tasks.

Supporting and constructively engaging organizations of people with disabilities: Designing and implementing cost-effective disability strategies worldwide requires an intimate knowledge of the wide range of cultural, institutional and environmental circumstances in which disabled people live. This precludes *universal* disability strategies and suggests that people with expertise in one set of circumstances are not necessarily capable of designing disability strategies appropriate to others.

The real repositories of local knowledge on disability in particular countries or regions are the disabled people who live there, and the most efficient way to tap into their local knowledge is to provide them with mechanisms for making their needs known. There are also lessons being learned in various locations that are likely to be of value to disabled people in other locations. Therefore, multiple benefits are derived from networking organizations of people with disabilities. Communications technologies (e.g. the Internet, email, faxes and phones) are now capable of efficiently linking disability organizations and connecting them to the Bank and other large

international organizations. Economies of scale in the manufacture and distribution of such technologies have lowered their costs to the point where partnerships to provide them to disability organizations on a global scale are now feasible. Significant returns are possible from Bank investments in such partnerships to support, network and constructively engage organizations of people with disabilities.

Promoting research and development in the area of assistive technology: As one of the largest knowledge bases and providers of education and training, the World Bank has the opportunity to cost-effectively foster the development of assistive technology through collaboration with United Nations agencies, research centers and other international organizations in support of research on assistive technology and international cooperation on the global dissemination of information about assistive technology.

ANNEX A

THE DISABILITY ADJUSTED LIFE YEAR

The Disability Adjusted Life Year (DALY) was first introduced by the World Bank in 1993 as one component of a methodology designed by researchers at the Harvard School of Public Health to measure the "Global Burden of Disease."[113] The DALY, which is a standardized measure of the years of life lost due to premature death, and years of life lived with a disability of specified severity and duration, was intended by its authors to be "a unit used for measuring both the global burden of disease and the effectiveness of health interventions."[114]

In constructing the disability portion of the DALYs, years of life lived with specific disabilities were assigned values in the following way. An internationally representative group of health professionals (participants) first evaluated all of the diseases contained in the International Classification of Diseases (ICD) and developed a list of the diseases known to cause disability. From this list, twenty two "indicator disabling conditions" were selected. Each indicator disabling condition was then evaluated by the participants and assigned a severity weight between O, representing a state of perfect health, and 1, representing a state equivalent to death. The indicator disabling conditions were then grouped into seven disability classes according to their assigned weights. These results, which were "closely matched" in nine additional exercises using the same protocol with different participants, are presented in Table A.1.

[113] World Bank, *World Development Report 1993* (Washington, D.C., 1993).
[114] Ibid.

Table A.1
Disability Classes and Severity Weightings for the 22 Indicator Conditions

Disability Class	Severity Weight	Indicator Condition
1	0.00-0.02	Vitiligo on face, weight for height less than 2 standard deviations
2	0.02-0.12	Watery diarrhea, severe sore throat, severe anemia
3	0.12-0.24	Radius fracture in stiff cast, infertility, erectile dysfunction, rheumatoid arthritis, angina
4	0.24-0.36	Below-the-knee amputation, deafness
5	0.36-0.50	Rectovaginal fistula, mild mental retardation, Down syndrome
6	0.50-0.70	Unipolar major depression, blindness, paraplegia
7	0.70-1.00	Active psychosis, dementia, severe migraine, quadriplegia

Source: Murray and Lopez, ed., *Summary, The Global Burden of Disease,* 11.

According to the authors of the DALYs, the disability severity weights presented in Table 1.1 were established in the following way,

> In essence, the weight is set by the number of people with a given condition whose claim on a fixed healthcare budget is equal, in the judgment of the participant, to that of 1,000 healthy people. For example, if the participant judges that 1,000 entirely healthy people would have an equal claim on the resources as 8,000 people with some severe disability, the weight assigned to that particular disability is equal to 1 minus 1,000 divided by 8,000, or 0.875. If 1,000 entirely healthy people were judged to have an equal claim on the resources as 2,000 people with a particular, less severe, disability, the weight assigned would be equal to 1 minus 1,000 divided by 2,000, or 0.5.[115]

After weighting the twenty two indicator conditions, the participants assigned weights and classes to the remaining disabling conditions. The disability portion of the DALYs were then obtained by multiplying the severity weights for each condition (adjusted for age of onset, and discounted over time) by their expected durations, which were estimated based on scattered data from community based epidemiological research, knowledge of routine information from health facilities and expert judgment.[116]

Due to this conceptualization and formulation, the DALYs suffer from at least two serious shortcomings:

1) they are based on an inadequate definition of disability, and
2) their methodology for estimating the relative severity of disabilities is flawed.

Inadequate definition of disability: Unlike the ICIDH-2, which is based on a definition of disablement that recognizes the effects on people with disabilities of complex interactions between

[115] Christopher J. L. Murray and Alan D. Lopez, ed., *Summary, The Global Burden of Disease* (Cambridge: Harvard University Press, 1996), 11.
[116] World Bank, *World Development Report 1993* (Washington, D.C., 1993).

impairments, functional abilities and contextual factors, the DALY model of disability is based on the simplistic and inaccurate assumption that disabilities are nothing more or less than the physical outcomes of medical diagnoses. Contextual factors do not play a part in the DALY model. Each specific disabling condition is assumed to always result in a disability of a given severity. Within the DALY model, therefore, there is no mechanism for evaluating the relative merits and benefits of competing disability policies, strategies and interventions because these and all other contextual factors are assumed to be incapable of changing the immutably diminished circumstances of disabled people that are assumed to result solely from their specific disabling conditions.

The methodology for estimating the relative severity of disabilities is flawed: The DALY methodology is based on the assumption that certain health professionals are qualified to assess the levels of severity of disability associated with all medical diagnoses. While many if not most health professionals, particularly those who participated in the DALY research, may be assumed to have had training in disability, and to have had much higher levels of contact with people with disabilities than the general population, most are not disabled themselves, and none can possibly have had the intimate experience with all types of disabilities required to accurately assess the severity associated with all disabling conditions in all possible contexts. It is, therefore, incorrect to assume that the participants in the DALY research truly understood all of the implications of all of the disabling conditions they examined. The assumption that a given group of primarily, if not exclusively, able bodied healthcare professionals can accurately evaluate the quality of the lives of people with all types of disabilities based solely on their specific medical diagnoses is analogous to assuming that a given group of primarily, if not exclusively, male experts on female biology can accurately evaluate the potential quality of the lives of individual females based solely on their specific female physical characteristics.

Also, due to the significant impact of contextual factors on the severity of any disability, the variation around the mean of any single severity level estimate for any particular disabling condition must be so huge as to rob the estimate of its meaning. For example, paraplegia, which is considered in the DALY system to result in a 50% to 70% decrease in one's quality of life (see Table 1.1), may actually produce an even larger decrease in the quality of life of a member of a nomadic tribe where physical prowess and the ability to ambulate are highly valued. However, paraplegia may produce a much smaller decrease than the DALYs predict in the quality of the life of a Full Professor with an endowed chair at a prestigious university. It is, in fact, quite possible for a severe disability to improve one's quality of life, as is evidenced by the experience of United States Assistant Secretary of Education Judy Heumann, who has indicated on numerous occasions that her paraplegia has actually increased her quality of life. The significant impacts of personal and environmental contexts on the qualities of the lives of people with given disabling conditions are an obvious reality ignored in the DALYs. As a result of this omission, the DALY severity weightings are at least dangerously imprecise and arguably meaningless.

Due to the inappropriateness of attempting to assign single severity weights to disabling conditions without reference to contextual factors, and due to the fact that no single individual, even one of the health professionals chosen to develop the DALYs' severity weightings, could possibly have sufficient knowledge of all disabling conditions to assign such weights even if the assigning of such weights was in fact possible, the DALYs are incapable of accomplishing their intended task of "measuring the global burden of disease." Due to their conceptual basis in an inadequate definition of disability, the DALYs are also incapable of accomplishing their intended task of "measuring the effectiveness of health [or any other disability related] interventions."

ANNEX B

ICIDH-2 BETA DRAFT
TWO LEVEL CLASSIFICATION

BODY FUNCTIONS

CHAPTER 1
MENTAL FUNCTIONS

GLOBAL MENTAL FUNCTIONS (b110-b139)

b110 Consciousness functions

b115 Orientation functions

b120 Intellectual functions

b125 Temperament and personality functions

b130 Energy and drive functions

b135 Sleep functions

b139 Other specified and unspecified general mental functions

SPECIFIC MENTAL FUNCTIONS (b140-b189)

b140 Attention functions

b145 Memory functions

b150 Psychomotor functions

b155 Emotional functions

b160 Perceptual functions

b165 Thought functions

b170 Higher level cognitive functions

b175 Specific mental functions of language

b180 Calculation functions

b185 Mental function of sequencing complex movements

b189 Other specified and unspecified 'specific mental functions'

b198 Other specific mental functions

b199 Unspecified mental functions

CHAPTER 2 SENSORY FUNCTIONS

SEEING AND RELATED FUNCTIONS (b210-b139)

b210 Seeing functions

b215 Functions of structures adjoining the eye

b220 Sensations associated with eye and adjoining structures

b229 Other specified and unspecified seeing and related functions

HEARING AND VESTIBULAR FUNCTIONS (b230-b249)

b230 Hearing functions

b235 Vestibular function

b240 Sensations associated with hearing and vestibular function

b249 Other specified and unspecified hearing and vestibular functions

ADDITIONAL SENSORY FUNCTIONS (b250-b279)

b250 Taste function

b255 Smell function

b260 Proprioceptive function

b265 Touch function

b270 Sensory functions related to temperature and other stimuli

b275 Sensation of pain

b279 Other specified and unspecified additional sensory functions

b298 Other specified sensory functions

b299 Unspecified sensory functions

CHAPTER 3 VOICE AND SPEECH FUNCTIONS

b310 Voice functions

b320 Articulation functions

b330 Fluency and rhythm of speech functions

b340 Alternative vocalization functions

b398 Other specified voice and speech functions

b399 Unspecified voice and speech functions

CHAPTER 4 FUNCTIONS OF THE CARDIOVASCULAR, HAEMATOLOGICAL, IMMUNOLOGICAL AND RESPIRATORY SYSTEMS

FUNCTIONS OF THE CARDIOVASCULAR SYSTEM (b410-b429)

b410 Heart functions

b415 Blood vessel functions

b420 Blood pressure functions

b429 Other specified and unspecified functions of the cardiovascular system

FUNCTIONS OF THE HAEMATOLOGICAL AND IMMUNOLOGICAL SYSTEMS (b430-b439)

b430 Haematological system functions

b435 Immunological system functions

b439 Other specified and unspecified functions of the haematological and immunological systems

FUNCTIONS OF THE RESPIRATORY SYSTEM (b440-b449)

b440 Respiration functions

b445 Respiratory muscles functions

b449 Other specified and unspecified functions of the respiratory system

ADDITIONAL FUNCTIONS AND SENSATIONS OF THE CARDIOVASCULAR AND RESPIRATORY SYSTEMS (b450-b469)

b450 Additional respiratory functions

b455 Exercise tolerance functions

b460 Sensations associated with cardiovascular and respiratory functions

b469 Other specified and unspecified additional functions and sensations of the cardiovascular and respiratory systems

b498 Other specified functions of the cardiovascular, haematological, immunological and respiratory systems

b499 Unspecified functions of the cardiovascular, haematological, immunological cardiovascular and respiratory systems

CHAPTER 5 FUNCTIONS OF THE DIGESTIVE, METABOLIC, ENDOCRINE SYSTEMS

FUNCTIONS RELATED TO THE DIGESTION SYSTEM (b510-b569)

b510 Ingestion functions

b515 Digestive functions

b520 Assimilation functions

b525 Defecation functions

b530 Weight maintenance functions

b535 Sensations associated with the digestive system

b539 Other specified and unspecified functions related to the digestive system

FUNCTIONS RELATED TO METABOLISM AND THE ENDOCRINE SYSTEM (b570-b559)

b540 General metabolic functions

b545 Water, mineral and electrolyte balance functions

b550 Thermoregulatory functions

b555 Endocrine glands functions

b559 Other specified and unspecified functions related to metabolism and the endocrine system

b598 Other specified functions of the digestive, metabolic and endocrine systems

b599 Unspecified functions of the digestive, metabolic and endocrine systems

CHAPTER 6 GENITOURINARY AND REPRODUCTIVE FUNCTIONS

URINARY FUNCTIONS (b610-b639)

b610 Urinary excretory functions

b620 Urination functions

b630 Sensations associated with urinary functions

b639 Other specified and unspecified urinary functions

GENITAL AND REPRODUCTIVE FUNCTIONS (b640-b679)

b640 Sexual functions

b650 Menstruation functions

b660 Procreation functions

b670 Sensations associated with genital and reproductive functions

b679 Other specified and unspecified genital and reproductive functions

b698 Other specified genitourinary and reproductive functions

b699 Unspecified genitourinary and reproductive functions

CHAPTER 7 NEUROMUSCULOSKELETAL AND MOVEMENT RELATED FUNCTIONS

FUNCTIONS OF THE JOINTS AND BONES (b710-b729)

b710 Mobility of joints functions

b715 Stability of joints functions

b720 Mobility of bones functions

b729 Other specified and unspecified functions of the joints and bones

MUSCLE FUNCTIONS (b730-b749)

b730 Muscle power functions

b735 Muscle tone functions

b740 Muscle endurance functions

b749 Other specified and unspecified muscle functions

MOVEMENT FUNCTIONS (b750-b779)

b750 Motor reflex functions

b755 Involuntary movement reactions functions

b760 Control of voluntary movements functions

b765 Involuntary movements functions

b770 Gait pattern functions

b779 Other specified and unspecified movement functions

b780 Sensations related to muscles and movement functions

b798 Other specified neuromusculoskeletal and movement related functions

b799 Unspecified neuromusculoskeletal and movement related functions

CHAPTER 8 FUNCTIONS OF THE SKIN AND RELATED STRUCTURES

FUNCTIONS OF THE SKIN (b810-b849)

b810 Protective functions of the skin

b820 Repair functions of the skin

b830 Other functions of the skin

b840 Sensation related to the skin

b849 Other specified and unspecified functions of the skin

FUNCTIONS OF THE HAIR AND NAILS (b850-b869)

b850 Functions of hair

b860 Functions of nails

b869 Other specified and unspecified functions of the hair and nails

b898 Other specified functions of the skin and related structures

b899 Unspecified functions of the skin and related structures

BODY STRUCTURE

CHAPTER 1 STRUCTURE OF THE NERVOUS SYSTEM

S110 Structure of brain

S120 Spinal cord and related structures

S130 Structure of meninges

S140 Structure of sympathetic nervous system

S150 Structure of parasympathetic nervous system

S198 Other specified structure of the nervous system

S199 Unspecified structure of the nervous system

CHAPTER 2 THE EYE, EAR AND RELATED STRUCTURES

S210 Structure of eye socket

S220 Structure of the eyeball

S230 Structures around the eye

S240 Structure of the external ear

S250 Structure of the middle ear

S260 Structure of the inner ear

S298 Other specified eye, ear and related structures

S299 Unspecified eye, ear and related structures

CHAPTER 3 STRUCTURES INVOLVED IN VOICE AND SPEECH

S310 Structure of the nose

S320 Structure of the mouth

S330 Structure of the pharynx

S340 Structure of larynx

S398 Other specified structures involved in voice and speech

S399 Unspecified structures involved in voice and speech

CHAPTER 4 STRUCTURE OF THE CARDIOVASCULAR, IMMUNOLOGICAL AND RESPIRATORY SYSTEMS

S410 Structure of cardiovascular system

S420 Structure of immune system

S430 Structure of respiratory system

S498 Other specified structures of the cardiovascular, immunological and respiratory systems

S499 Unspecified structures of the cardiovascular, immunological and respiratory systems

CHAPTER 5 STRUCTURES RELATED TO THE DIGESTIVE, METABOLISM AND ENDOCRINE SYSTEMS

S510 Structure of salivary glands

S520 Structure of esophagus

S530 Structure of stomach

S540 Structure of intestine

S550 Structure of pancreas

S560 Structure of liver

S570 Structure of gall bladder and ducts

S580 Structure of endocrinological glands

S598 Other specified structures related to the digestive, metabolism and endocrine systems

S599 Unspecified structures related to the digestive, metabolism and endocrine systems

CHAPTER 6 STRUCTURE RELATED TO GENITOURINARY SYSTEM

S610 Structure of urinary system

S620 Structure of pelvic floor

S630 Structure of reproductive system

S698 Other specified structures related to genitourinary system

S699 Unspecified structures related to genitourinary system

CHAPTER 7 STRUCTURE RELATED TO MOVEMENT

S710 Structure of head and neck region

S720 Structure of shoulder region

S730 Structure of upper extremity

S740 Structure of pelvic region

S750 Structure of lower extremity

S760 Structure of trunk

S770 Additional musculoskeletal structure related to movement

S798 Other specified structures related to movement

S799 Unspecified structures related to movement

CHAPTER 8
SKIN AND RELATED STRUCTURES

S810 Structure of areas of skin

S820 Structure of skin glands

S830 Structure of nails

S840 Structure of hair

S898 Other specified skin and related structures

S899 Unspecified skin and related structures

ACTIVITIES

CHAPTER 1 ACTIVITIES OF LEARNING AND APPLYING KNOWLEDGE

LEARNING ACTIVITIES (a110-a139)

a110 Purposeful sensory activities

a115 Basic learning activities

a120 Activities of learning to read

a125 Activities of learning to write

a130 Activities of learning to calculate

a135 Activities of acquiring skills

a139 Other specified and unspecified learning activities

ACTIVITIES OF APPLYING KNOWLEDGE (a140-a159)

a140 Thinking activities

a145 Problem solving activities

a150 Decision making activities

a159 Other specified and unspecified activities of applying knowledge

a198 Other specified activities of learning and applying knowledge

a199 Unspecified activities of learning and applying knowledge

CHAPTER 2 COMMUNICATION ACTIVITIES

ACTIVITIES OF UNDERSTANDING MESSAGES (a210-a229)

a210 Activities of understanding spoken messages

a215 Activities of understanding messages in formal sign language

a220 Activities of understanding non-verbal messages

a225 Activities of understanding written messages (reading)

a229 Other specified and unspecified activities of understanding messages

ACTIVITIES OF PRODUCING MESSAGES (a230-a249)

a230 Activities of producing spoken messages (speaking)

a235 Activities of producing messages in formal signlanguage

a240 Activities of producing non-verbal messages

a245 Activities of producing written messages (writing)

a249 Other specified and unspecified activities of producing messages

CONVERSATION ACTIVITIES AND USE OF COMMUNICATION DEVICES AND TECHNIQUES (a250-a259)

a250 Conversation activities

a255 Activities of using communication devices and techniques

a259 Other specified and unspecified conversation activities and use of communication devices and techniques

a298 Other specified communication activities

a299 Unspecified communication activities

CHAPTER 3 MOVEMENT ACTIVITIES

ACTIVITIES OF MAINTAINING AND CHANGING BODY POSITION (a310-a339)

a310 Activities of maintaining a body position

a320 Activities of changing body position

a330 Activities of transferring oneself

a339 Other specified and unspecified activities of maintaining and changing body position

ACTIVITIES OF CARRYING, MOVING AND MANIPULATING OBJECTS (a340-a379)

a340 Lifting and carrying activities

a350 Activities of moving objects with lower extremities

a360 Activities of fine hand use

a370 Activities of hand and arm use

a379 Other specified and unspecified activities of carrying, moving and manipulating objects

a398 Other specified movement activities

a399 Unspecified movement activities

CHAPTER 4 ACTIVITIES OF MOVING AROUND

WALKING AND RELATED ACTIVITIES (a410-a439)

a410 Walking activities

a420 Other moving around activities

a430 Activities of moving around using equipment

a439 Other specified and unspecified walking and related activities

ACTIVITIES OF MOVING AROUND USING TRANSPORTATION (a440-a459)

a440 Activities of using transportation as a passenger

a450 Activities of using transportation as a driver

a459 Other specified and unspecified activities of moving around using transportation

a498 Other specified activities of moving around

a499 Unspecified activities of moving around

CHAPTER 5 SELF CARE ACTIVITIES

a510 Activities of washing and drying oneself

a520 Activities of caring for body parts

a530 Activities related to toileting

a540 Activities related to menstruation

a550 Dressing activities

a560 Activities of eating

a570 Activities of drinking

a580 Activities of looking after one's health

a598 Other specified self care activities

a599 Unspecified self care activities

CHAPTER 6 DOMESTIC ACTIVITIES

ACTIVITIES OF ACQUIRING NECESSITIES (a610-a629)

a610 Activities of acquiring a place to live

a620 Activities of acquiring daily necessities

a629 Other specified and unspecified activities of acquiring necessities

HOUSEHOLD ACTIVITIES (a630-a649)

a630 Activities for preparation of meals

a640 Housework activities

a649 Other specified and unspecified household activities

ACTIVITIES OF CARING FOR POSSESSIONS AND ASSISTING OTHERS (a650-a669)

a650 Activities of caring for possessions

a660 Activities of assisting others

a669 Other specified and unspecified activities of caring for possessions and assisting others

a698 Other specified domestic activities

a699 Unspecified domestic activities

CHAPTER 7 INTERPERSONAL ACTIVITIES

GENERAL INTERPERSONAL ACTIVITIES (a710-a729)

a710 Basic interpersonal activities

a720 Complex interpersonal activities

a729 Other specified and unspecified general interpersonal activities

PARTICULAR INTERPERSONAL ACTIVITIES (a730-a769)

a730 Activities of initiating interaction

a740 Activities of maintaining interaction

a750 Activities of terminating interactions

a760 Activities of engaging in physical intimacy

a769 Other specified and unspecified particular interpersonal activities

a798 Other specified interpersonal activities

a799 Unspecified interpersonal activities

CHAPTER 8 PERFORMING TASKS AND MAJOR LIFE ACTIVITIES

GENERAL TASK AND PERFORMANCE DEMAND ACTIVITIES (a810-a839)

a810 Activities of performing a task

a815 Activities of performing multiple tasks

a820 Activities of organising daily routine

a825 Activities of sustaining task performance

a830 Activities of handling stress and other psychological demands

a839 Other specified and unspecified general tasks and demands

ACTIVITIES OF PERFORMING IN MAJOR LIFE SITUATIONS (a840-a879)

a840 Activities of performing in work

a845 Activities of performing in school

a850 Activities of using money and finance

a855 Activities for performance in recreation

a860 Activities of religious or spiritual pursuits

a865 Activities of responding to unusual situations

a879 Other specified and unspecified activities of performing in major life situations

a898 Other specified activities of performing tasks and major life activities

a899 Unspecified activities of performing tasks and major life activities

PARTICIPATION

CHAPTER 1 PARTICIPATION IN PERSONAL MAINTENANCE

p110 Participation in personal care

p120 Participation in nutrition

p130 Participation in necessities for oneself

p140 Participation in health

p198 Other specified participation in personal maintenance

p199 Unspecified participation in personal maintenance

CHAPTER 2 PARTICIPATION IN MOBILITY

p210 Participation in mobility within the home

p220 Participation in mobility within buildings other than home

p230 Participation in mobility outside the home and other buildings

p240 Participation in mobility with transportation

p298 Other specified participation in mobility

p299 Unspecified participation in mobility

CHAPTER 3 PARTICIPATION IN EXCHANGE OF INFORMATION

p310 Participation in spoken exchange of information

p320 Participation in written exchange of information

p330 Participation in exchange of information using formal sign language

p340 Participation in non-verbal exchange of information

p350 Participation in exchange of information by means of communication devices and technologies

p398 Other specified participation in exchange of information

p399 Unspecified participation in exchange in information

CHAPTER 4 PARTICIPATION IN SOCIAL RELATIONSHIPS

p410 Participation in family relationships

p420 Participation in intimate relationships

p430 Participation in informal social relationships

p440 Participation in formal relationships

p498 Other specified participation in social relationships

p499 Unspecified participation in social relationships

CHAPTER 5 PARTICIPATION IN HOME LIFE AND ASSISTANCE TO OTHERS

p510 Participation in housing for self and others

p520 Participation in management of the home and possessions

p530 Participation in caring for others

p540 Participation in nutrition for others

p550 Participation in health maintenance for others

p560 Participation in mobility and transportation for others

p598 Other specified participation in home life and assistance to others

p599 Unspecified participation in home life and assistance to others

CHAPTER 6 PARTICIPATION IN EDUCATION

p610 Participation in education in informal settings

p620 Participation in education prior to primary school

p630 Participation in education in school

p640 Participation in vocational training

p650 Participation in higher education

p698 Other specified participation in education

p699 Unspecified participation in education

CHAPTER 7 PARTICIPATION IN WORK AND EMPLOYMENT

p710 Participation in work preparation

p720 Participation in self-employment

p730 Participation in remunerative employment

p740 Participation in non-remunerative work

p798 Other specified participation in work and employment

p799 Unspecified participation in work and employment

CHAPTER 8 PARTICIPATION IN ECONOMIC LIFE

p810 Participation in basic economic transactions

p820 Participation in complex economic transactions

p830 Participation in economic self-sufficiency

p898 Other specified participation in economic life

p899 Unspecified participation in economic life

CHAPTER 9 PARTICIPATION IN COMMUNITY, SOCIAL AND CIVIC LIFE

p910 Participation in community

p920 Participation in recreation and leisure

p930 Participation in religion and spirituality

p940 Participation in human rights

p950 Participation in citizenship

p998 Other specified participation in community, social and civic life

p999 Unspecified participation in community, social and civic life

ENVIRONMENTAL FACTORS

CHAPTER 1 PRODUCTS AND TECHNOLOGY

e110 Products or substances for personal consumption

e115 Products for personal use in daily living

e120 Assets

e125 Products of architecture, building and construction

e130 Products of land development

e135 Products for communication

e140 Products for personal mobility and transportation

e145 Products for education

e150 Products for commerce, industry and employment

e155 Products for recreation and sport

e160 Products for culture and religion

e198 Other specified products and technology

e199 Unspecified products and technology

CHAPTER 2 NATURAL ENVIRONMENT AND HUMAN MADE CHANGES TO ENVIRONMENT

e210 Physical geography

e215 Population

e220 Flora and fauna

e225 Climate

e230 Natural events

e235 Human-caused natural events

e240 Light

e245 Time-Related Changes

e250 Sound

e255 Vibration

e260 Air Quality

e298 Other specified elements of the natural environment

e299 Unspecified elements of the natural environment

CHAPTER 3
SUPPORT AND RELATIONSHIPS

e310 Immediate family

e315 Extended family

e320 Friends

e325 Acquaintances, peers, colleagues, neighbours and community members

e330 People in positions of authority

e335 People in subordinate positions

e340 Personal care providers and personal assistants

e345 Strangers

e350 Domesticated Animals

e398 Other specified types of support and relationship

e399 Unspecified types of support and relationships

CHAPTER 4 ATTITUDES, VALUES AND BELIEFS

e410 Individual attitudes

e420 Individual values

e430 Individual beliefs

e440 Societal attitudes

e450 Societal values

e460 Societal beliefs

e470 Social norms, conventions and ideologies

e498 Other specified attitudes, values and beliefs

e499 Unspecified attitudes, values and beliefs

CHAPTER 5
SERVICES

e510 Services for the production of consumer goods

e515 Architecture, building and construction services

e520 Open space planning services

e525 Housing services

e530 Utilities services

e535 Communication services

e540 Transportation services

e545 Civil protection services

e550 Legal services

e555 Associations and organizational services

e560 Media services

e565 Economic services

e570 Social security services

e575 Health services

e580 Education and training services

e585 Labour and employment services

e598 Other specified services

e599 Unspecified services

CHAPTER 6
SYSTEMS AND POLICIES

e610 Architecture, building and construction systems and policies

e615 Open spaces planning systems and policies

e620 Housing systems and policies

e625 Utilities systems and policies

e630 Communication systems and policies

e635 Transportation systems and policies

e640 Civil protection systems and policies

e645 Legal systems and policies

e650 Associations and organizational systems and policies

e655 Media systems and policies

e660 Economic systems and policies

e665 Social security systems and policies

ANNEX C

NATIONAL AND GLOBAL DISABLED POPULATION ESTIMATES

Using disability data collected by the United Nations Statistical Office (UNSO) and general population data collected by the United Nations Development Program (UNDP), the author has estimated the total global disabled population and the disabled populations of the 175 countries which have been classified in the UNDP Human Development Index.

Methodology

The disabled populations of countries have been estimated by multiplying United Nations population estimates for each country by estimated disability proportions derived by UNDP from the *United Nations Disability Statistics Data Base* (DISTAT). DISTAT is a microcomputer database prepared in 1988 by UNSO.

Countries are annually categorized by UNDP as either High Human Development (HHD), Medium Human Development (MHD) or Low Human Development (LHD) using a Human Development Index (HDI) which measures a country's average achievements in three dimensions of human development: longevity, knowledge, and standard of living. Using DISTAT data, UNDP has estimated the following proportional rates of disability for HHD, MHD and LHD countries:[117]

HHD: 9.9%.
MHD: 3.7%
LHD: 1.0%.

It is possible to estimate the disabled population of a country simply by multiplying its total population by the proportional disability rate assigned to its HDI category by UNDP. Research conducted by the UNSO, however, strongly suggests that the resulting estimates of the disabled populations of the MHD and LHD countries are likely to understate their actual disabled populations because of a systematic downward bias in the UNDP disability proportion estimates caused by differences in disability data collection procedures in HHD, MHD and LHD countries.

The DISTAT is the UNSO's first attempt to bring together existing national disability data from around the world. There has been no international coordination of the techniques employed in the collection of the DISTAT data. The data base contains disability statistics from 55 countries, collected through national household surveys, population censuses, and population or civil registration systems. UNSO research indicates that differences in the types of survey screens employed to identify people with disabilities in the survey instruments used by the different countries have caused significant downward biases in the disability proportion estimates for MHD and LHD countries. To the extent that such biases exist, they will produce downward biases in disability population estimates for MHD and LHD countries based upon the UNDP proportions.

The problem arises because there have been two types of screens used by the participating countries to identify people with disabilities, impairment screens and disability screens.

[117] United Nations Development Program, *Human Development Report 1997* (New York, 1997), 176-77, 207.

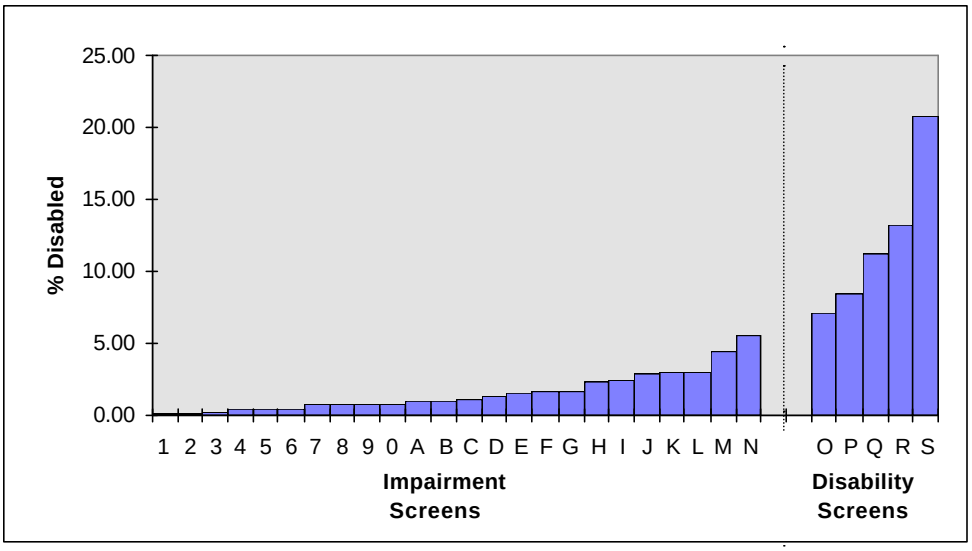
Impairment screens ask respondents to identify losses or abnormalities of body structure or of physiological or psychological function. Disability screens ask respondents to identify their activity limitations. The types of screens chosen have the following effect on the reported rates of disability:

> [Disability screens] for identifying disabled persons in surveys lead to higher rates of disability than do [impairment screens]. This is because a single question assessing functional limitations, or disability, typically embraces behaviours associated with a broad range of impairment conditions. "Difficulty climbing stairs", for example, may be due to musculo-skeletal, visceral, disfigurement or other impairments. Impairment screening questions, in contrast, are more directly related to specific conditions. For example, "profound visual impairment of both eyes", or blindness, as well as "profound hearing loss in both ears", or deafness, are all highly specified descriptions of relatively unique impairment conditions. It appears to be easier for individuals to initially discuss whether they have difficulty climbing stairs, or hearing conversations across a dining table, than it is to describe specific impairment conditions. In addition, disability questions seem to throw out a wider net which captures more reports of mild and moderate disablement. In order to cover the same ground that one or two disability questions can cover during a survey interview, a number of more detailed impairment questions must be utilized.[118]

The effects of the screens employed can be seen in Figure C.1 which compares the disability rate estimates of countries that employed survey instruments using impairment screens with those that employed survey instruments using disability screens. The disability rate estimates for countries that employed impairment screens (which ranged from 0.16% to 5.49%) were unambiguously lower than those for countries that employed disability screens (which ranged from 7.10% to 20.88%). The High Human Development countries of Europe and North America tend to employ disability screens, while the Low and Medium Human Development Countries of Africa, Asia and South America tend to employ impairment screens.[119] Therefore, at least some of the large and otherwise unexplained differences in the UNDP disability proportion estimates for the HHD, MHD and LHD countries may be attributed to systematic differences in the types of screens used to collect disability data.

[118] United Nations, *Disability Statistics Compendium* (New York, 1990), 28.
[119] Ibid., 30.

Figure C.1: Percentage Disabled by Country or Area,
Year of Data Collection and Type of Screen



	Country	Year		Country	Year		Country	Year
1	Peru	1981	A	Fiji	1982	K	Nepal	1980
2	Ethiopia	1981	B	Bahrain	1981	L	Mali	1976
3	Eygpt	1976	C	Indonesia	1980	M	Philippines	1980
4	Sri Lanka	1981	D	Turkey	1975	N	Ethiopia	1979-1981
5	Kuwait	1980	E	Egypt	1979-1981	O	Poland	1978
6	Pakistan	1981	F	St. Helena	1976	P	United States	1980
7	Thailand	1981	G	Comoros	1980	Q	Canada	1983
8	Tunisia	1975	H	Japan	1980	R	Australia	1981
9	Hong Kong	1981	I	Swaziland	1983	S	Austria	1976
0	Tunisia	1984	J	Neth. Antilles	1981			

Source: United Nations, *Disability Statistics Compendium,* 29

To address this problem the author has conducted a sensitivity analysis in which the estimated ranges for the disabled populations of the MHD and LHD countries were calculated. To calculate the low end of the ranges, the estimated HHD proportion (9.9%) was applied to the population data for the HHD countries, the estimated MHD proportion (3.7%) to the population data for the MHD countries and the estimated LHD proportion (1.0%) to the population data for LHD countries. To calculate the high end of the ranges the UNDP estimated proportion for HHD countries (9.9%) was applied to the population data for countries in all three Human Development categories. This was done under the assumption that the relatively high HHD proportion may have actually prevailed in MHD and LHD countries as well, but were probably underestimated by UNDP due to the aforementioned widespread use of impairment screens in MHD and LHD countries.

Results

Table C.1 presents a summary of the results. The total global disabled population is estimated to be between 235.39m and 549.18m persons; the total disabled population of the HHD countries is estimated to be 124.23m; the range for the MHD countries is estimated to be between 93.52m and

250.22m (from 39.7% to 45.6% of the total); and the range for the LHD countries is estimated to be between 17.65m and 174.74m (between 7.5% and 31.8% of the total).

Table C.1: Estimated Range of Global Population of People with Disabilities

Human Development Category	Low Estimate	High Estimate
High Human Development Countries	124,226,190	124,226,190
Medium Human Development Countries	93,517,500	250,222,500
Low Human Development Countries	17,650,000	174,735,000
TOTAL	235,393,690	549,183,690

Table C.2 contains estimates of the disabled populations for each of the HHD countries, Table C.3 contains high and low estimates of the disabled populations of each of the MHD countries, and Table C.4 contains high and low estimates of the disabled populations of each of the LHD countries.

Table C.2: Disabled Population Estimates
for High Human Development Countries

Country	Total Population*	Disabled Population
Antigua and Barbuda	100,000	9,900
Argentina	34,300,000	3,395,700
Australia	18,000,000	1,782,000
Austria	8,000,000	792,000
Bahamas	300,000	29,700
Bahrain	500,000	49,500
Barbados	300,000	29,700
Belarus	10,000,000	990,000
Belgium	10,000,000	990,000
Belize	200,000	19,800
Brunei Darussalam	300,000	29,700
Canada	29,000,000	2,871,000
Chile	14,000,000	1,386,000
Colombia	35,200,000	3,484,800
Costa Rica	3,300,000	326,700
Cyprus	700,000	69,300
Czech Republic	10,000,000	990,000
Denmark	5,000,000	495,000
Dominica	100,000	9,900
Fiji	800,000	79,200
Finland	5,000,000	495,000
France	58,000,000	5,742,000
Germany	81,000,000	8,019,000
Greece	10,000,000	990,000
Grenada	100,000	9,900
Hong Kong	6,000,000	594,000
Hungary	10,000,000	990,000
Iceland	270,000	26,730
Ireland	4,000,000	396,000
Israel	5,000,000	495,000
Italy	57,000,000	5,643,000
Japan	125,000,000	12,375,000
Korea, Republic of	44,500,000	4,405,500
Kuwait	1,800,000	178,200
Libyan Arab Jamahiriya	5,200,000	514,800
Luxembourg	420,000	41,580
Malaysia	19,700,000	1,950,300
Malta	378,000	37,422
Mauritius	1,100,000	108,900
Mexico	89,600,000	8,870,400
Netherlands	15,000,000	1,485,000
New Zealand	4,000,000	396,000
Norway	4,000,000	396,000
Panama	2,600,000	257,400

Continued

Table C.2: Continued

Country	Total Population*	Disabled Population
Poland	39,000,000	3,861,000
Portugal	10,000,000	990,000
Qatar	500,000	49,500
Saint Kitts and Nevis	42,000	4,158
Saint Lucia	100,000	9,900
Saint Vincent	100,000	9,900
Seychelles	100,000	9,900
Singapore	3,300,000	326,700
Slovakia	5,000,000	495,000
Slovenia	2,000,000	198,000
Spain	40,000,000	3,960,000
Sweden	9,000,000	891,000
Switzerland	7,000,000	693,000
Thailand	57,800,000	5,722,200
Trinidad and Tobago	1,300,000	128,700
United Arab Emirates	2,200,000	217,800
United Kingdom	58,000,000	5,742,000
Uruguay	3,200,000	316,800
United States	265,000,000	26,235,000
Venezuela	21,400,000	2,118,600
Totals	1,254,810,000	124,226,190

* United Nations Development Program, Human Development Report 1997 (New York, 1997), 194,

Table C.3: Disabled Population Estimates for Medium Human Development Countries

Country	Total Population *	Disabled Population (Low Estimate)	Disabled Population (High Estimate)
Albania	3,000,000	111,000	297,000
Algeria	27,400,000	1,013,800	2,712,600
Armenia	4,000,000	148,000	396,000
Azerbaijan	8,000,000	296,000	792,000
Bolivia	7,200,000	266,400	712,800
Botswana	1,400,000	51,800	138,600
Brazil	156,900,000	5,805,300	15,533,100
Bulgaria	8,000,000	296,000	792,000
Cape Verde	400,000	14,800	39,600
China	1,208,300,000	44,707,100	119,621,700
Congo	2,500,000	92,500	247,500
Croatia	4,000,000	148,000	396,000
Cuba	10,900,000	403,300	1,079,100
Dominican Republic	7,700,000	284,900	762,300
Ecuador	11,200,000	414,400	1,108,800
Egypt	60,900,000	2,253,300	6,029,100
El Salvador	5,500,000	203,500	544,500
Estonia	1,000,000	37,000	99,000
Gabon	1,000,000	37,000	99,000
Georgia	6,000,000	222,000	594,000
Guatemala	10,300,000	381,100	1,019,700
Guyana	800,000	29,600	79,200
Honduras	5,500,000	203,500	544,500
Indonesia	194,500,000	7,196,500	19,255,500
Iran, Islamic Rep. of	66,700,000	2,467,900	6,603,300
Iraq	19,600,000	725,200	1,940,400
Jamaica	2,400,000	88,800	237,600
Jordan	5,100,000	188,700	504,900
Kazakstan	17,000,000	629,000	1,683,000
Korea, Dem. People's Rep.	21,700,000	802,900	2,148,300
Kyrgyzstan	5,000,000	185,000	495,000
Latvia	3,000,000	111,000	297,000
Lebanon	2,900,000	107,300	287,100
Lithuania	3,000,000	111,000	297,000
Macedonia, FYR	1,000,000	37,000	99,000
Maldives	200,000	7,400	19,800
Moldova, Rep of	4,000,000	148,000	396,000
Mongolia	2,400,000	88,800	237,600
Morocco	26,000,000	962,000	2,574,000
Namibia	1,500,000	55,500	148,500
Nicaragua	4,000,000	148,000	396,000
Oman	2,100,000	77,700	207,900
Papua New Guinea	4,200,000	155,400	415,800
Paraguay	4,700,000	173,900	465,300
Peru	23,100,000	854,700	2,286,900

Continued

Table C.3: Continued

Country	Total Population *	Disabled Population (Low Estimate)	Disabled Population (High Estimate)
Philippines	66,400,000	2,456,800	6,573,600
Romania	18,000,000	666,000	1,782,000
Russian Federation	149,000,000	5,513,000	14,751,000
Samoa (Western)	200,000	7,400	19,800
Sao Tome and Principe	100,000	3,700	9,900
Saudi Arabia	17,800,000	658,600	1,762,200
Solomon Islands	400,000	14,800	39,600
South Africa	40,600,000	1,502,200	4,019,400
Sri Lanka	17,800,000	658,600	1,762,200
Suriname	400,000	14,800	39,600
Swaziland	800,000	29,600	79,200
Syrian Arab Republic	13,800,000	510,600	1,366,200
Tajikistan	6,000,000	222,000	594,000
Tunisia	8,800,000	325,600	871,200
Turkey	59,900,000	2,216,300	5,930,100
Turkmentistan	4,000,000	148,000	396,000
Ukraine	52,000,000	1,924,000	5,148,000
Uzbekistan	22,000,000	814,000	2,178,000
Vanuatu	200,000	7,400	19,800
Viet Nam	72,400,000	2,678,800	7,167,600
Zimbabwe	10,900,000	403,300	1,079,100
Totals	2,527,500,000	93,517,500	250,222,500

* United Nations Development Program, Human Development Report 1997 (New York, 1997), 194,

Table C.4: Disabled Population Estimates for Low Human Development Countries

Country	Total Population *	Disabled Population (Low Estimate)	Disabled Population (High Estimate)
Angola	10,500,000	105,000	1,039,500
Bangladesh	116,500,000	1,165,000	11,533,500
Benin	5,300,000	53,000	524,700
Bhutan	1,700,000	17,000	168,300
Burkina Faso	10,200,000	102,000	1,009,800
Burundi	5,900,000	59,000	584,100
Cambodia	9,800,000	98,000	970,200
Cameroon	12,800,000	128,000	1,267,200
Central African Republic	3,200,000	32,000	316,800
Chad	6,200,000	62,000	613,800
Comoros	600,000	6,000	59,400
Cote d'Ivoire	13,300,000	133,000	1,316,700
Djibouti	600,000	6,000	59,400
Equatorial Guinea	400,000	4,000	39,600
Eritrea	3,100,000	31,000	306,900
Ethiopia	54,600,000	546,000	5,405,400
Gambia	1,100,000	11,000	108,900
Ghana	16,900,000	169,000	1,673,100
Guinea	7,100,000	71,000	702,900
Guinea- Bissau	1,000,000	10,000	99,000
Haiti	7,000,000	70,000	693,000
India	913,500,000	9,135,000	90,436,500
Kenya	26,500,000	265,000	2,623,500
Lao People's Dem. Rep.	4,700,000	47,000	465,300
Lesotho	2,000,000	20,000	198,000
Madagascar	14,400,000	144,000	1,425,600
Malawi	9,600,000	96,000	950,400
Mali	10,500,000	105,000	1,039,500
Mauritania	2,200,000	22,000	217,800
Mozambique	16,600,000	166,000	1,643,400
Myanmar	44,300,000	443,000	4,385,700
Nepal	20,900,000	209,000	2,069,100
Niger	8,800,000	88,000	871,200
Nigeria	108,500,000	1,085,000	10,741,500
Pakistan	132,700,000	1,327,000	13,137,300
Rwanda	5,300,000	53,000	524,700
Senegal	8,100,000	81,000	801,900
Sierra Leone	4,100,000	41,000	405,900
Sudan	26,100,000	261,000	2,583,900
Tanzania	29,200,000	292,000	2,890,800
Togo	4,000,000	40,000	396,000
Uganda	19,100,000	191,000	1,890,900
Yemen	14,300,000	143,000	1,415,700
Zaire	43,900,000	439,000	4,346,100
Zambia	7,900,000	79,000	782,100
Totals	1,765,000,000	17,650,000	174,735,000

* United Nations Development Program, Human Development Report 1997 (New York, 1997), 194,

ANNEX D

ESTIMATES OF GDP LOST DUE TO DISABILITY

At the request of the Bank, the author has extrapolated the results of research conducted by the Roeher Institute in Toronto Canada in order to provide extremely rough estimates of the annual value of Gross Domestic Product (GDP) lost as a result of disability in each of the world's countries and in the world as a whole. While these estimates are admittedly soft, they provide a rough estimate of one measure of the cost of disability, and they provide a possible conceptual framework for future research.

Methodology

The technique used to estimate the annual value of GDP lost due to disability is a variation of a technique developed by the Roeher Institute in Toronto Canada to extrapolate the results obtained in a study of the economic costs of disability in Canada (the Canadian Study) to the economic circumstances of the United States and Latin America.[120]

The Canadian Study estimated the GDP lost in Canada in 1993 as a result of long term and short term disability. The value of productivity lost due to long term disability was estimated for two populations, "household disabled" and "institutionalized disabled," using National Population Health Survey data and the methodology presented below. The results for both populations were then summed to arrive at an estimate of the total Canadian GDP lost due to long term disability.

> The National Population Health Survey (NPHS) household component provides the number of people who reported a long-term disability by diagnostic category, age group and sex. These figures are adjusted for severity and annual average length of long-term disability, applying distributions from the Quebec Health and Social Survey. Weights are assigned to account for lost productivity at different levels of long term disability.
>
> The NPHS institutional component provides the number of people living in Canadian long-term health care facilities by age and sex. These figures, multiplied by the distribution of long-term disability in institutions according to diagnostic category, age group and sex and the annual average length of stay in institutions, provide estimates of the number of people in long-term health care facilities by diagnostic category, age group and sex. Weights are applied to account for productivity loss at different levels of long-term disability.
>
> The adjusted figures for long-term disability by diagnostic category, age group and sex for the household and institutionalized populations are summed. These figures, multiplied by the 1993 annual average value of labour force work, adjusted for wage supplements and unpaid work, are used to estimate the total value of

[120] Health Canada, *The Economic Burden of Illness in Canada, 1993* (Ottawa, 1997) and Marcia Rioux, *Enabling the Well-Being of Persons with Disabilities* (Toronto: Roeher Institute, 1998), 9-11.

> productivity lost to long-term disability by diagnostic category, age group and sex.[121]

Assigning a weight of 0.9 (very severe) to the institutionalized disabled population and a weight of 0.1 (minor limitations) to the household disabled population, the study estimated the GDP lost due to long term disability in 1993 to be $38.3 billion, of which $35.2 billion was attributable to the household population and $3.1 billion was attributable to the institutionalized population. A sensitivity analysis assigning ranges of severity weights from 0.8 to 1.0 for the institutionalized population and from 0.0 to 0.2 for the household population resulted in an estimated range of lost GDP from $31.8 billion to $44.7 billion.

The amount of productivity lost due to short term disability was estimated using National Population Health Survey data and the following methodology:

> The National Population Health Survey provides the average number of days of short-term disability by age and sex for two levels of severity: "days in bed" or "days of reduced major activity." Weights are assigned to these levels to account for the loss of productivity at different severity levels of short-term disability: 0.9 for "days in bed" and 0.5 for "days of reduced major activity". A sensitivity analysis of productivity losses using weights of 0.8 and 1.0 for "days in bed' has also been conducted.
>
> The adjusted values are applied to the general population to estimate total annual days of productivity lost due to short-term disability by age and sex. Annual days of productivity lost due to short-term disability by diagnostic category, age group and sex are generated by applying these values to the distribution of days lost due to short-term disability by diagnostic category, age group and sex obtained from the Quebec Health and Social Survey.
>
> The number of annual days of productivity lost according to diagnostic category, age group and sex is then multiplied by an average value per day of labour force work, adjusted for wage supplements and unpaid work, to estimate the value of productivity lost to short-term disability by diagnostic category, age and sex. Labour force earnings and the value of unpaid work are available by age and sex.[122]

Using the above weightings for "days in bed" and "days of reduced major activity," the study estimated the total 1993 Canadian GDP lost due to short term disability to be $17.5 billion. A sensitivity analysis assigning a range of severity weights for "days in bed" from 0.8 to 1.0 resulted in estimated GDP losses due to short term disability from $16.8 billion to $18.3 billion.

The sum of the Canadian Study's estimates of GDP losses due to long term and short term disability in 1993 was $55.8 billion, or 7.7% of Canada's 1993 GDP ($729.92 billion). The estimated range of Canadian GDP lost in 1993 as a result of disability that resulted from the Canadian Study's sensitivity analysis was from $48.6 billion to $63.0 billion, or from 6.70% to 8.69% of GDP.

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[121] Health Canada, *The Economic Burden of Illness in Canada, 1993* (Ottawa, 1997).
[122] Ibid.

The author has extrapolated the results of the Canadian Study to 207 countries using the following extrapolation technique developed by the Roeher Institute. Assuming that the GDP lost due to disability is a positive function of the incidence of exclusion of people with disabilities from the labor force because those who are excluded do not contribute, and a negative function of the general unemployment rate because a lower unemployment rate infers a higher probability of labor market activity, the Roeher Institute first calculated Canada's proportion of annual GDP lost due to disability (%GDP lost $_{can}$) as a proportion of its unemployment rate (UR). Canada's 1993 unemployment rate was 9.5% , resulting in a %GDP lost / UR ratio for 1993 of:

$$\%\text{GDP lost}_{can} / \text{UR}_{can} = 7.7 / 9.5 = 0.81$$

The Canadian %GDP lost / UR ratio was then applied to the 1993 unemployment rate in the United States to estimate the proportion of GDP lost due to disability in the United States (% GDP lost $_{us}$). Thus, for the United States, with a 1993 unemployment rate of 5.4%, the % GDP lost was estimated to be:

$$\%\ \text{GDP lost}_{us} = (5.4)(0.81) = 4.4\%$$

The dollar value of GDP lost due to disability in the U.S. (GDP lost $_{US}$) was then calculated using the formula:

$$\text{GDP lost}_{US} = (\%\ \text{GDP lost}_{us})\ (\text{GDP}_{us}).$$

The 1993 U.S. GDP was $6,648 billion resulting in an estimated annual GDP loss due to disability in the United States (GDP lost $_{us}$), of:

$$\text{GDP lost}_{us} = (0.044)(\$6648\ \text{billion}) = \$292.5\ \text{billion}$$

The annual value of GDP lost as a result of disability for the world's high income, medium income and low income countries has been estimated using the above approach with the exception that the ranges of annual GDP lost for each country have been estimated by applying each country's unemployment rate data to the ranges of GNP lost $_{can}$ that were generated by the sensitivity analyses conducted in the Canadian Study.[123] In estimating the high end of the range, therefore, the high estimate of %GDP lost $_{can}$ (8.690%) from the sensitivity analysis of the Canadian Study was employed, and in estimating the low end of the range, the low %GDP lost $_{can}$ (6.70%) that resulted from the sensitivity analysis of the Canadian Study was employed.

Results

Table D.1 contains a summary of the results. The range of global GDP lost annually due to disability is estimated to be between $1.37 trillion and $1.94 trillion. For the world's high income countries, the range is estimated to be between $891.28 billion and $1.26 trillion, for the

[123] The 1994 UNDP classifications, which classify High Income Countries as those with a GNP per capita of above $8,955, Medium Income Countries as those with a GNP per capita of between $726 and $8,955, and Low Income Countries as those with a GNP per capita of $725 and below, were used.

medium income countries it is estimated to be between $338.55 billion and $480.21 billion, and for the low income countries it is estimated to be between and $135.36 billion and $192.00 billion.

Table D.1: Total Annual Value of GDP Lost Due to Disability

Value of GDP Lost (US Dollars)	High Estimate	Low Estimate
High Income Countries	1,264,232,430,105	891,283,863,224
Medium Income Countries	480,206,038,845	338,545,257,386
Low Income Countries	192,002,986,035	135,362,105,155
TOTAL	$ 1,936,441,454,985	$ 1,365,191,225,765

The author has also estimated the annual global GDP lost due to disability *per disabled person*. They have estimated the high end of the range by dividing the high estimate of annual GDP lost due to disability by the low estimate of the global disabled population, and they have estimated the low end of the range by dividing the low estimate of annual GDP lost due to disability by the high estimate of the global disabled population. The resulting range of annual global GDP lost due to disability per disabled person is between $2,486 - $8,226. The estimated range is $7,175 - $10,177 for high income countries, $1,353 - $5,135 for medium income countries and $775 - $10,878 for low income countries.

Table D.2 contains estimates of the ranges of annual values of GDP lost due to disability in each of the world's High Income Countries, Table D.3 contains estimates of the ranges of annual values of GDP lost due to disability in each of the world's Medium Income Countries, and Table D.4 contains estimates of the ranges of annual values of GDP lost due to disability in each of the world's Low Income Countries.

Table D.2: Annual Value of GDP Lost Due to Disability for High Income Countries

COUNTRY	GDP ($US)	UR%	Year	%GDP Lost High	%GDP Lost Low	$GDP Lost High	$GDP Lost Low
Andorra	1,200,000,000 ‡	0.0 ‡	96	0.00	0.00	-	-
Aruba	1,400,000,000 ‡	0.5 ‡	94	0.46	0.32	6,405,000	4,515,525
Australia	332,000,000,000 †	8.5 †	96	7.78	5.48	25,821,300,000	18,204,016,500
Austria	197,000,000,000 †	6.2 ‡	96	5.67	4.00	11,175,810,000	7,878,946,050
Bahamas	4,800,000,000 ‡	15.0 ‡	95	13.73	9.68	658,800,000	464,454,000
Belgium	228,000,000,000 †	9.5 †	96	8.69	6.13	19,818,900,000	13,972,324,500
Bermuda	1,800,000,000 ‡	0.0 ‡	95	0.00	0.00	-	-
Brunei Darussalam	4,600,000,000 ‡	4.8 ‡	94	4.39	3.10	202,032,000	142,432,560
Canada	543,000,000,000 †	9.5 †	96	8.69	6.13	47,200,275,000	33,276,193,875
Cayman Islands	860,000,000 ‡	7.0 ‡	92	6.41	4.52	55,083,000	38,833,515
Cyprus	9,336,000,000 ‡	5.9 ‡	95	5.40	3.81	504,003,960	355,322,792
Denmark	146,000,000,000 †	8.2 ‡	96	7.50	5.29	10,954,380,000	7,722,837,900
Faeroe Islands	800,000,000 ‡	11.0 ‡	96	10.07	7.10	80,520,000	56,766,600
Finland	98,000,000,000 †	17.1 †	96	15.65	11.03	15,333,570,000	10,810,166,850
France	1,330,000,000,000 †	11.6 †	96	10.61	7.48	141,166,200,000	99,522,171,000
French Polynesia	1,760,000,000 ‡	15.0 ‡	92	13.73	9.68	241,560,000	170,299,800
Germany	2,046,000,000,000 †	8.2 †	96	7.50	5.29	153,511,380,000	108,225,522,900
Greenland	892,000,000 ‡	10.5 ‡	95	9.61	6.77	85,698,900	60,417,725
Hong Kong	131,900,000,000 †	3.1 ‡	96	2.84	2.00	3,741,343,500	2,637,647,168
Iceland	5,300,000,000 ‡	5.0 ‡	96	4.58	3.23	242,475,000	170,944,875
Ireland	52,000,000,000 †	12.9 †	96	11.80	8.32	6,137,820,000	4,327,163,100
Israel	78,000,000,000 †	6.5 ‡	96	5.95	4.19	4,639,050,000	3,270,530,250
Italy	1,025,000,000,000 †	12.2 †	96	11.16	7.87	114,420,750,000	80,666,628,750
Japan	4,591,000,000,000 †	3.1 †	96	2.84	2.00	130,223,715,000	91,807,719,075
Kuwait	24,300,000,000 †	1.8 ‡	96	1.65	1.16	400,221,000	282,155,805
Liechtenstein	713,000,000 ‡	1.1 ‡	96	1.01	0.71	7,176,345	5,059,323
Luxembourg	10,000,000,000 ‡	3.0 ‡	95	2.75	1.94	274,500,000	193,522,500
Macau	6,800,000,000 ‡	2.0 ‡	92	1.83	1.29	124,440,000	87,730,200
Monaco	800,000,000 ‡	3.1 ‡	94	2.84	2.00	22,692,000	15,997,860
Netherlands	330,000,000,000 †	6.5 †	96	5.95	4.19	19,626,750,000	13,836,858,750
Netherlands Antilles	2,040,000,000 ‡	13.4 ‡	93	12.26	8.64	250,124,400	176,337,702
New Zealand	51,000,000,000 †	6.3 †	96	5.76	4.06	2,939,895,000	2,072,625,975
Norway	110,000,000,000 †	4.9 †	96	4.48	3.16	4,931,850,000	3,476,954,250
Portugal	87,000,000,000 †	7.1 †	96	6.50	4.58	5,651,955,000	3,984,628,275
Qatar	11,700,000,000 ‡	7.3 *	---	6.68	4.71	781,501,500	550,958,558
Singapore	68,900,000,000 †	2.7 ‡	96	2.47	1.74	1,702,174,500	1,200,033,023
Spain	483,000,000,000 †	22.7 †	96	20.77	14.64	100,321,515,000	70,726,668,075
Sweden	196,000,000,000 †	9.2 †	96	8.42	5.93	16,499,280,000	11,631,992,400
Switzerland	260,000,000,000 †	5.3 ‡	96	4.85	3.42	12,608,700,000	8,889,133,500
United Arab Emirates	35,400,000,000 †	7.3 *	---	6.68	4.71	2,364,543,000	1,667,002,815
United Kingdom	1,017,000,000,000 †	8.7 †	96	7.96	5.61	80,958,285,000	57,075,590,925
United States	6,648,000,000,000 †	5.4 †	96	4.94	3.48	328,477,680,000	231,576,764,400
Virgin Islands (U.S)	1,200,000,000 ‡	6.2 ‡	94	5.67	4.00	68,076,000	47,993,580
Totals:	**$20,174,501,000,000**					**$1,264,232,430,105**	**$891,283,863,224**

Notes:

† United Nations Development Program, *Human Development Report, 1997* (New York, 1997), pp. 200, 201, 210, and 222.

‡ Central Intelligence Agency, *The World Factbook 1997* (Washington, D.C., 1997).

. Data unavailable, number based on calculated averages of available data.

Table D.3: Annual Value of GDP Lost Due to Disability for Medium Income Countries

COUNTRY	GDP($US)		UR%		Year	%GDP Lost High	%GDP Lost Low	$GDP Lost High	$GDP Lost Low
Algeria	41,900,000,000.00	†	28.0	‡	96	25.62	18.06	10,734,780,000	7,568,019,900
American Samoa	128,000,000.00	‡	12.0	‡	91	10.98	7.74	14,054,400	9,908,352
Angola	8,300,000,000.00	‡	50.0	‡	94	45.75	32.25	3,797,250,000	2,677,061,250
Antigua & Barbuda	446,000,000.00	‡	10.0	‡	95	9.15	6.45	40,809,000	28,770,345
Argentina	281,900,000,000.00	†	17.3	‡	96	15.83	11.16	44,623,360,500	31,459,469,153
Bahrain	7,700,000,000.00	‡	15.0	‡	96	13.73	9.68	1,056,825,000	745,061,625
Barbados	2,650,000,000.00	‡	16.2	‡	96	14.82	10.45	392,809,500	276,930,698
Belarus	20,000,000,000.00	†	2.7	†	96	2.47	1.74	494,100,000	348,340,500
Belize	649,000,000,000.00	‡	15.0	‡	96	13.73	9.68	89,075,250,000	62,798,051,250
Bolivia	5,500,000,000.00	†	18.8	‡	95	17.20	12.13	946,110,000	667,007,550
Botswana	4,000,000,000.00	†	21.0	‡	95	19.22	13.55	768,600,000	541,863,000
Brazil	554,600,000,000.00	†	5.2	‡	96	4.76	3.35	26,387,868,000	18,603,446,940
Bulgaria	10,000,000,000.00	†	11.1	†	96	10.16	7.16	1,015,650,000	716,033,250
Cape Verde	472,000,000.00	‡	13.7	*	---	12.54	8.84	59,167,560	41,713,130
Chile	52,000,000,000.00	†	6.5	‡	96	5.95	4.19	3,092,700,000	2,180,353,500
Colombia	67,300,000,000.00	†	11.5	‡	96	10.52	7.42	7,081,642,500	4,992,557,963
Costa Rica	8,300,000,000.00	†	5.5	‡	96	5.03	3.55	417,697,500	294,476,738
Croatia	14,000,000,000.00	†	17.6	†	96	16.10	11.35	2,254,560,000	1,589,464,800
Cuba	16,200,000,000.00	‡	13.7	*	---	12.54	8.84	2,030,751,000	1,431,679,455
Czech republic	36,000,000,000.00	†	2.9	†	96	2.65	1.87	955,260,000	673,458,300
Djibouti	500,000,000.00	‡	50.0	‡	96	45.75	32.25	228,750,000	161,268,750
Dominica	208,000,000.00	‡	15.0	‡	92	13.73	9.68	28,548,000	20,126,340
Dominican Republic	10,400,000,000.00	†	30.0	‡	96	27.45	19.35	2,854,800,000	2,012,634,000
Ecuador	16,600,000,000.00	†	8.5	‡	96	7.78	5.48	1,291,065,000	910,200,825
El Salvador	8,100,000,000.00	†	7.6	‡	96	6.95	4.90	563,274,000	397,108,170
Estonia	5,000,000,000.00	†	4.9	†	96	4.48	3.16	224,175,000	158,043,375
Fiji	5,100,000,000.00	‡	6.0	‡	97	5.49	3.87	279,990,000	197,392,950
French Guyana	800,000,000.00	‡	24.1	‡	93	22.05	15.55	176,412,000	124,370,460
Gabon	3,900,000,000.00	†	14.0	‡	93	12.81	9.03	499,590,000	352,210,950
Greece	78,000,000,000.00	†	10.0	‡	96	9.15	6.45	7,137,000,000	5,031,585,000
Grenada	300,000,000.00	‡	20.0	‡	96	18.30	12.90	54,900,000	38,704,500
Guadeloupe	3,700,000,000.00	‡	31.3	‡	95	28.64	20.19	1,059,661,500	747,061,358
Guam	3,000,000,000.00	‡	2.0	‡	92	1.83	1.29	54,900,000	38,704,500
Guatemala	12,900,000,000.00	†	4.9	‡	94	4.48	3.16	578,371,500	407,751,908
Hungary	41,000,000,000.00	†	10.4	†	96	9.52	6.71	3,901,560,000	2,750,599,800
Indonesia	174,600,000,000.00	†	3.0	‡	94	2.75	1.94	4,792,770,000	3,378,902,850
Iran	63,700,000,000.00	†	30.0	‡	95	27.45	19.35	17,485,650,000	12,327,383,250
Iraq	42,000,000,000.00	‡	13.7	*	---	12.54	8.84	5,264,910,000	3,711,761,550
Isle of Man	780,000,000.00	‡	1.0	‡	92	0.92	0.65	7,137,000	5,031,585
Jamaica	4,200,000,000.00	†	15.4	‡	94	14.09	9.93	591,822,000	417,234,510
Jordan	6,100,000,000.00	†	16.0	‡	94	14.64	10.32	893,040,000	629,593,200
Kazakstan	18,000,000,000.00	†	2.1	†	96	1.92	1.35	345,870,000	243,838,350
Kiribati	620,000,000.00	‡	2.0	‡	92	1.83	1.29	11,346,000	7,998,930
Korea, Democratic	647,200,000,000.00	‡	1.9	‡	96	1.74	1.23	11,251,572,000	7,932,358,260
Korea, Republic	376,500,000,000.00	†	13.7	*	---	12.54	8.84	47,196,157,500	33,273,291,038
Latvia	6,000,000,000.00	†	6.6	†	96	6.04	4.26	362,340,000	255,449,700
Lebanon	13,000,000,000.00	‡	20.0	‡	96	18.30	12.90	2,379,000,000	1,677,195,000
Libyan Arab Jamahiriya	34,500,000,000.00	‡	13.7	*	---	12.54	8.84	4,324,747,500	3,048,946,988
Lithuania	5,000,000,000.00	†	7.3	†	96	6.68	4.71	333,975,000	235,452,375
Macedonia, FYR	2,000,000,000.00	†	37.2	†	96	34.04	24.00	680,760,000	479,935,800
Malaysia	70,600,000,000.00	†	2.6	‡	96	2.38	1.68	1,679,574,000	1,184,099,670
Maldives	423,000,000.00	‡	0.0	‡	96	0.00	0.00	-	-
Malta	4,700,000,000.00	‡	3.7	‡	96	3.39	2.39	159,118,500	112,178,543
Marshall Islands	94,000,000.00	‡	16.0	‡	91	14.64	10.32	13,761,600	9,701,928
Martinique	3,950,000,000.00	‡	23.5	‡	93	21.50	15.16	849,348,750	598,790,869
Mauritius	3,400,000,000.00	†	2.4	‡	91	2.20	1.55	74,664,000	52,638,120
Mayotte	540,000,000.00	‡	13.7	*	---	12.54	8.84	67,691,700	47,722,649

Continued

Table D.3: Continued

COUNTRY	GDP($US)		UR%		Year	%GDP Lost High	%GDP Lost Low	$GDP Lost High	$GDP Lost Low
Mexico	377,100,000,000.00	†	10.0	‡	96	9.15	6.45	34,504,650,000	24,325,778,250
Micronesia, Fed. States	205,000,000.00	‡	27.0	‡	89	24.71	17.42	50,645,250	35,704,901
Moldova, Rep of	4,000,000,000.00	†	1.4	†	96	1.28	0.90	51,240,000	36,124,200
Morocco	30,800,000,000.00	†	20.0	‡	95	18.30	12.90	5,636,400,000	3,973,662,000
Namibia	2,900,000,000.00	†	21.8	‡	93	19.95	14.06	578,463,000	407,816,415
New Caledonia	1,500,000,000.00	‡	15.0	‡	94	13.73	9.68	205,875,000	145,141,875
N. Mariana Islands	524,000,000.00	†	15.0	‡	96	13.73	9.68	71,919,000	50,702,895
Oman	11,600,000,000.00	‡	13.7	*	---	12.54	8.84	1,454,118,000	1,025,153,190
Panama	7,000,000,000.00	†	14.0	‡	96	12.81	9.03	896,700,000	632,173,500
Papua New Guinea	5,400,000,000.00	†	13.7	*	---	12.54	8.84	676,917,000	477,226,485
Paraguay	7,800,000,000.00	†	5.3	‡	95	4.85	3.42	378,261,000	266,674,005
Peru	50,100,000,000.00	†	8.2	‡	96	7.50	5.29	3,759,003,000	2,650,097,115
Phillipines	64,200,000,000.00	†	8.6	‡	96	7.87	5.55	5,051,898,000	3,561,588,090
Poland	93,000,000,000.00	†	14.9	†	96	13.63	9.61	12,679,155,000	8,938,804,275
Puerto Rico	31,600,000,000.00	‡	14.0	‡	95	12.81	9.03	4,047,960,000	2,853,811,800
Reunion	2,900,000,000.00	‡	35.0	‡	94	32.03	22.58	928,725,000	654,751,125
Romania	30,000,000,000.00	†	8.9	†	96	8.14	5.74	2,443,050,000	1,722,350,250
Russian Federation	377,000,000,000.00	†	3.2	†	96	2.93	2.06	11,038,560,000	7,782,184,800
Saint Kitts and Nevis	235,000,000.00	‡	4.3	‡	95	3.93	2.77	9,246,075	6,518,483
Saint Lucia	695,000,000.00	‡	25.0	‡	95	22.88	16.13	158,981,250	112,081,781
Saint Vincent	259,000,000.00	‡	40.0	‡	94	36.60	25.80	94,794,000	66,829,770
Samoa (Western)	415,000,000.00	‡	13.7	*	---	12.54	8.84	52,022,325	36,675,739
Saudi Arabia	117,200,000,000.00	†	6.9	‡	92	6.31	4.45	7,399,422,000	5,216,592,510
Seychelles	450,000,000.00	‡	13.7	*	---	12.54	8.84	56,409,750	39,768,874
Slovakia	12,000,000,000.00	†	13.1	†	96	11.99	8.45	1,438,380,000	1,014,057,900
Slovenia	14,000,000,000.00	†	14.5	†	96	13.27	9.35	1,857,450,000	1,309,502,250
Solomon Islands	1,200,000,000.00	‡	13.7	*	---	12.54	8.84	150,426,000	106,050,330
South Africa	121,900,000,000.00	†	34.0	‡	96	31.11	21.93	37,923,090,000	26,735,778,450
Suriname	1,400,000,000.00	‡	13.7	*	---	12.54	8.84	175,497,000	123,725,385
Swaziland	3,800,000,000.00	‡	15.0	‡	92	13.73	9.68	521,550,000	367,692,750
Syrian Arab Republic	98,300,000,000.00	‡	9.0	‡	94	8.24	5.81	8,095,005,000	5,706,978,525
Thailand	143,200,000,000.00	†	2.6	‡	96	2.38	1.68	3,406,728,000	2,401,743,240
Tonga	228,000,000.00	‡	13.7	*	---	12.54	8.84	28,580,940	20,149,563
Trinidad and Tobago	4,800,000,000.00	†	16.1	‡	91	14.73	10.39	707,112,000	498,513,960
Tunisia	15,800,000,000.00	†	16.0	‡	95	14.64	10.32	2,313,120,000	1,630,749,600
Turkey	131,000,000,000.00	†	6.3	‡	96	5.76	4.06	7,551,495,000	5,323,803,975
Turkmentistan	5,000,000,000.00	†	13.7	*	---	12.54	8.84	626,775,000	441,876,375
Ukraine	91,000,000,000.00	†	0.6	†	96	0.55	0.39	499,590,000	352,210,950
Uruguay	15,500,000,000.00	†	12.0	‡	96	10.98	7.74	1,701,900,000	1,199,839,500
Uzbekistan	22,000,000,000.00	†	0.3	†	96	0.27	0.19	60,390,000	42,574,950
Vanuatu	219,000,000.00	‡	13.7	*	---	12.54	8.84	27,452,745	19,354,185
Venezuela	58,300,000,000.00	†	13.0	‡	96	11.90	8.39	6,934,785,000	4,889,023,425
West Bank and Gaza	2,800,000,000.00	‡	40.0	‡	96	36.60	25.80	1,024,800,000	722,484,000
Totals:	**$5,407,141,000,000**							**$480,206,038,845**	**$338,545,257,386**

Notes:

† United Nations Development Program, *Human Development Report, 1997* (New York, 1997), pp. 200, 201, 210, and 222.

‡ Central Intelligence Agency, *The World Factbook 1997* (Washington, D.C., 1997).

. Data unavailable, number based on calculated averages of available data.

Table D.4: Annual Value of GDP Lost Due to Disability for Low Income Countries

COUNTRY	GDP($US)	UR%	Year	%GDP Lost High	%GDP Lost Low	$GDP Lost High	$GDP Lost Low
Afghanistan	18,100,000,000 ‡	8.0 ‡	95	7.32	5.16	1,324,920,000	934,068,600
Albania	2,000,000,000 †	13.0 †	97	11.90	8.39	237,900,000	167,719,500
Armenia	3,000,000,000 †	8.1 †	97	7.41	5.23	222,345,000	156,753,225
Azerbaijan	4,000,000,000 †	1.1 †	97	1.04	0.74	41,724,000	29,415,420
Bangladesh	26,200,000,000 †	20.7 *	---	18.94	13.35	4,962,411,000	3,498,499,755
Benin	1,500,000,000 †	20.7 *	---	18.94	13.35	284,107,500	200,295,788
Bhutan	1,300,000,000 ‡	20.7 *	---	18.94	13.35	246,226,500	173,589,683
Bosnia & Herzegovina	1,900,000,000 ‡	50.0 ‡	96	45.75	32.25	869,250,000	612,821,250
Bukina Faso	1,900,000,000 †	20.7 *	---	18.94	13.35	359,869,500	253,707,998
Burundi	1,000,000,000 †	20.7 *	---	18.94	13.35	189,405,000	133,530,525
Cambodia	7,700,000,000 ‡	20.7 *	---	18.94	13.35	1,458,418,500	1,028,185,043
Cameroon	7,500,000,000 †	20.7 *	---	18.94	13.35	1,420,537,500	1,001,478,938
Central African Republic	900,000,000 †	20.7 *	---	18.94	13.35	170,464,500	120,177,473
Chad	900,000,000 †	20.7 *	---	18.94	13.35	170,464,500	120,177,473
China	522,200,000,000 †	10.0 ‡	96	9.15	6.45	47,781,300,000	33,685,816,500
Comoros	370,000,000 ‡	20.7 *	---	18.94	13.35	70,079,850	49,406,294
Congo	1,600,000,000 †	20.7 *	---	18.94	13.35	303,048,000	213,648,840
Cote D'Ivoire	6,700,000,000 †	20.7 *	---	18.94	13.35	1,269,013,500	894,654,518
Egypt	42,900,000,000 †	9.4 ‡	96	8.60	6.06	3,689,829,000	2,601,329,445
Equitorial Gunea	328,000,000 ‡	20.7 *	---	18.94	13.35	62,124,840	43,798,012
Eritrea	4,900,000,000 ‡	20.7 *	---	18.94	13.35	928,084,500	654,299,573
Ethiopia	4,700,000,000 †	20.7 *	---	18.94	13.35	890,203,500	627,593,468
Gambia	400,000,000 †	20.7 *	---	18.94	13.35	75,762,000	53,412,210
Georgia	2,000,000,000 †	3.4 †	---	3.11	2.19	62,220,000	43,865,100
Ghana	5,400,000,000 †	10.0 ‡	93	9.15	6.45	494,100,000	348,340,500
Guinea	3,400,000,000 †	20.7 *	---	18.94	13.35	643,977,000	454,003,785
Guinea- Bissau	200,000,000 †	20.7 *	---	18.94	13.35	37,881,000	26,706,105
Guyana	1,800,000,000 ‡	12.0 ‡	92	10.98	7.74	197,640,000	139,336,200
Haiti	1,600,000,000 †	60.0 ‡	96	54.90	38.70	878,400,000	619,272,000
Honduras	3,300,000,000 †	15.0 ‡	93	13.73	9.68	452,925,000	319,312,125
India	273,600,000,000 †	20.7 *	---	18.94	13.35	51,821,208,000	36,533,951,640
Kenya	6,900,000,000 †	35.0 ‡	94	32.03	22.58	2,209,725,000	1,557,856,125
Kyrgyzstan	3,000,000,000 †	3.0 †	---	2.75	1.94	82,350,000	58,056,750
Lao, Peoples Rep	1,500,000,000 †	5.6 ‡	94	5.12	3.61	76,860,000	54,186,300
Lesotho	900,000,000 †	50.0 ‡	96	45.75	32.25	411,750,000	290,283,750
Liberia	2,500,000,000 ‡	20.7 *	---	18.94	13.35	473,512,500	333,826,313
Madagascar	1,900,000,000 †	20.7 *	---	18.94	13.35	359,869,500	253,707,998
Malawi	1,300,000,000 †	20.7 *	---	18.94	13.35	246,226,500	173,589,683
Mali	1,900,000,000 †	20.7 *	---	18.94	13.35	359,869,500	253,707,998
Mauritania	1,000,000,000 †	20.0 ‡	91	18.30	12.90	183,000,000	129,015,000
Mongolia	700,000,000 †	6.0 ‡	95	5.49	3.87	38,430,000	27,093,150
Mozambique	1,500,000,000 †	50.0 ‡	89	45.75	32.25	686,250,000	483,806,250
Myanmar	51,500,000,000 ‡	20.7 *	---	18.94	13.35	9,754,357,500	6,876,822,038
Nepal	4,000,000,000 †	20.7 *	---	18.94	13.35	757,620,000	534,122,100
Nicaragua	1,800,000,000 †	16.0 ‡	96	14.64	10.32	263,520,000	185,781,600
Niger	1,500,000,000 †	20.7 *	---	18.94	13.35	284,107,500	200,295,788
Nigeria	35,200,000,000 †	28.0 ‡	92	25.62	18.06	9,018,240,000	6,357,859,200
Pakistan	52,000,000,000 †	20.7 *	---	18.94	13.35	9,849,060,000	6,943,587,300
Rwanda	600,000,000 †	20.7 *	---	18.94	13.35	113,643,000	80,118,315
Sao Tome and Principe	149,000,000 ‡	20.7 *	---	18.94	13.35	28,221,345	19,896,048
Senegal	3,900,000,000 †	20.7 *	---	18.94	13.35	738,679,500	520,769,048
Sierra Leone	800,000,000 †	20.7 *	---	18.94	13.35	151,524,000	106,824,420
Somalia	3,600,000,000 ‡	20.7 *	---	18.94	13.35	681,858,000	480,709,890
Sri Lanka	11,700,000,000 †	13.1 ‡	94	11.99	8.45	1,402,420,500	988,706,453
Sudan	26,600,000,000 ‡	30.0 ‡	92	27.45	19.35	7,301,700,000	5,147,698,500

Continued

Table D.4: Continued

COUNTRY	GDP($US)	UR%	Year	%GDP Lost High	%GDP Lost Low	$GDP Lost High	$GDP Lost Low
Tajikistan	2,000,000,000 †	1.8 †	---	1.65	1.16	32,940,000	23,222,700
Tanzania	18,900,000,000 †	20.7 *	---	18.94	13.35	3,579,754,500	2,523,726,923
Togo	1,000,000,000 †	20.7 *	---	18.94	13.35	189,405,000	133,530,525
Uganda	4,000,000,000 †	20.7 *	---	18.94	13.35	757,620,000	534,122,100
Viet Nam	15,600,000,000 †	25.0 ‡	95	22.88	16.13	3,568,500,000	2,515,792,500
Yemen	39,100,000,000 ‡	30.0 ‡	95	27.45	19.35	10,732,950,000	7,566,729,750
Zaire	16,500,000,000 ‡	20.7 *	---	18.94	13.35	3,125,182,500	2,203,253,663
Zambia	3,500,000,000 †	22.0 ‡	91	20.13	14.19	704,550,000	496,707,750
Zimbabwe	5,400,000,000 †	45.0 ‡	94	41.18	29.03	2,223,450,000	1,567,532,250
Totals:	**$1,275,747,000,000**					**$192,002,986,035**	**$135,362,105,155**

Notes:

† United Nations Development Program, *Human Development Report, 1997* (New York, 1997), pp. 200, 201, 210, and 222.

‡ Central Intelligence Agency, *The World Factbook 1997* (Washington, D.C., 1997).

. Data unavailable, number based on calculated averages of available data.

ANNEX E

HUMAN ABILITY DEFICITS

People become special needs users when they experience either permanent or transitory limitations referred to as "human ability deficits," which fall into one or more of the following categories; mobility, vision, communication (including hearing and speech), and comprehension.

Mobility Deficits

Mobility deficits include the locomotive gaits experienced by elderly persons, disabled persons and pregnant mothers; the inability of children to negotiate steep and long staircases; and other mobility limitations experienced by the elderly, the disabled and the chronically ill. They can occur either singularly or in combinations. These deficits tend to result from medical or physiological conditions which include, arthritis, cerebral palsy, strokes, poliomyelitis, missing extremities, multiple sclerosis, muscular dystrophy, spina bifida, spinal cord injury and a range of mental disabilities which generate secondary mobility deficits.

Uneven surfaces, strong gradients or cross falls, steps and staircases present the primary barriers to independent mobility for persons with mobility deficits. These barriers are present in both interior and exterior environments in a range of configurations which are not necessarily obvious or apparent to users without this special need. Various assistive technologies including walking sticks, special shoes, leg braces, prostheses, crutches, walking frames, wheelchairs and scooters have been developed to mitigate mobility deficits. Each of these devices have specific costs and limitations. The mobility capabilities of people with disabilities are dependent on the relationship between their personal functional capabilities as enhanced by their assistive devices and the rigors imposed by their natural and built environments. The functional capabilities of people with disabilities are often heavily influenced by their ability to afford or otherwise gain access to assistive devices. This is particularly true in developing countries.

Visual Deficits

There are two broad categories of visual deficits which can negatively impact the orientation and mobility of individuals, thus restricting their ability to gain access to their environments. People with visual deficits may or may not have residual vision. Those with residual vision are typically referred to as visually impaired and those without are typically referred to as blind. A person who has residual vision may also be referred to as partially sighted or having low vision.

People with visual impairments rely to some extent on their residual vision to access their environments. They also make use of visual aids; including eyeglasses, contact lenses, telescopes, monocular and binocular magnifiers and closed-circuit television systems. Generally, blind persons cannot rely on residual vision for their orientation and mobility although some may have light and dark perception. They typically rely instead on the efficient use of their senses of hearing, touch, smell, and kinesthesia (multiple sensory interpretation which allows a blind person to recognize doorways by feeling the moving air, or to recognize the nearness of objects by the way air moves around them and sound bounces off them).

The primary barriers to independent mobility for persons with visual deficits are uneven surfaces, changing gradients, changes in level, steps and staircases, projecting and overhanging obstacles, insufficient orientation aids and unduly complex environments. Blind and visually impaired persons typically make use of lightweight folding or telescopic detection canes, or of detection systems which make use of sound or infra red or laser technology. Guide dogs and sighted human guides may also be used.

Communication Deficits

The primary communication deficits are hearing deficits and difficulties accessing written information. Hearing deficits, which range from mild to profound, restrict the ability of the hearing impaired to communicate with other persons and to interact with audio information systems. People with certain other impairments (e.g. the blind and people with severe learning disabilities) may either have limited or no access to written signage, information systems and warnings. Inadequate conceptualization and implementation of information and communication systems are the primary causes of these unnecessary accessibility restrictions.

Deafness impacts most significantly in the area of interactive communication. Sign language is still the most widely favored means of communication within the deaf community. Speech reading and speech training tend to be seen as less acceptable by the deaf, with combinations of technological support and signing seen as acceptable compromises. The effectiveness of methods for providing access for people with communication deficits to information traditionally available in written formats depends in part on whether the information is to be broadcast or site specific. While it is relatively easy to increase the accessibility of written information that is to be broadcast, it is more difficult to increase accessibility to site specific information such as signage and orientation aids. The use of Braille signage and numbering is usually linked to Braille mapping as well as tactile Braille routing. The ability of people with visual impairments to use these systems is dependent on the severity of their impairments, the extent of their mobility training, and their mental mapping ability.

Comprehension Deficits

Comprehension deficits result from mental disabilities, learning disabilities, inadequate education and age. These deficits limit one's ability to comprehend and react to the environment. People with comprehension deficits experience barriers to orientation and independent mobility, and often respond in non-standard ways to unfamiliar and unexpected situations. These individuals tend to require more time and find it more difficult than most to comprehend complex environments. They can be supported by consistent and well recognized formats, information systems and signage. Comprehension deficits are often experienced in combination with other deficits; including, mobility-based disabilities, speech impairments, deficient language development, visual deficits, seizures and emotional disorders.

ANNEX F

THE STANDARD RULES ON THE EQUALIZATION OF OPPORTUNITIES FOR PERSONS WITH DISABILITIES

1. Awareness-raising: States should take action to raise awareness in society about persons with disabilities, their rights, their needs, their potential and their contribution.
2. Medical care: States should ensure the provision of effective medical care to persons with disabilities.
3. Rehabilitation: States should ensure the provision of rehabilitation services to persons with disabilities in order for them to reach and sustain their optimum level of independence and functioning.
4. Support services: States should ensure the development and supply of support services, including assistive devices for persons with disabilities, to assist them to increase their level of independence in their daily living and to exercise their rights.
5. Accessibility: States should recognize the overall importance of accessibility in the process of the equalization of opportunities in all spheres of society. For persons with disabilities on any kind, States should (a) introduce programmes of action to make the physical environment accessible; and (b) undertake measures to provide access to information and communication.
6. Education: States should recognize the principle of equal primary, secondary and tertiary educational opportunities for children, youth and adults with disabilities, in integrated settings They should ensure that the education of persons with disabilities is an integral part of the educational system.
7. Employment: States should recognize the principle that persons with disabilities must be empowered to exercise their human rights, particularly in the field of employment. In both rural and urban areas they must have equal opportunities for productive and gainful employment in the labour market.
8. Income maintenance and social security: States are responsible for the provision of social security and income maintenance for persons with disabilities.
9. Family life and personal integrity: States should promote the full participation of persons with disabilities in family life. They should promote their right to personal integrity and ensure that laws do not discriminate against persons with disabilities with respect to sexual relationships, marriage and parenthood.
10. Culture: States should ensure that persons with disabilities are integrated into and can participate in cultural activities on an equal basis.
11. Recreation and sports: States will take measures to ensure that persons with disabilities have equal opportunities for recreation and sports.
12. Religion: States will encourage measures for equal participation by persons with disabilities in the religious life of their communities.

13. Information and research: States assume the ultimate responsibility for the collection and dissemination of information on the living conditions of persons with disabilities and promote comprehensive research on all aspects, including obstacles that affect the lives of persons with disabilities.

14. Policy making and planning: States will ensure that disability aspects are included in all relevant policy making and national planning.

15. Legislation: States have a responsibility to create the legal bases for measures to achieve the objectives of full participation and equality for persons with disabilities.

16. Economic policies: States have the financial responsibility for national programmes and measures to create equal opportunities for persons with disabilities.

17. Coordination of work: States are responsible for the establishment and the strengthening of national coordinating committees, or similar bodies, to serve as a national focal point on disability matters.

18. Organizations of persons with disabilities: States should recognize the right of the organizations of persons with disabilities to represent persons with disabilities at national, regional and local levels.

19. Personnel training: States are responsible for ensuring the adequate training of personnel, at all levels, involved in the planning and provision of programmes and services concerning persons with disabilities.

20. National monitoring and evaluation of disability programmes in the implementation of the Rules: States are responsible for the continuous monitoring and evaluation of the implementation of national programmes and services concerning the equalization of opportunities for persons with disabilities.

21. Technical and economic cooperation: States, both industrialized and developing, have the responsibility to cooperate in and take measures for the improvement of the living conditions of persons with disabilities in developing countries.

22. International cooperation: States will participate actively in international cooperation concerning policies for the equalization of opportunities for persons with disabilities.

ANNEX G

EUROPEAN UNION 1996 RESOLUTION [124]

RESOLUTION OF THE COUNCIL AND OF THE REPRESENTATIVES OF THE GOVERNMENTS OF THE MEMBER STATES MEETING WITHIN THE COUNCIL OF 20 DECEMBER 1996 ON EQUALITY OF OPPORTUNITY FOR PEOPLE WITH DISABILITIES

THE COUNCIL OF THE EUROPEAN UNION AND THE REPRESENTATIVES OF THE GOVERNMENTS OF THE MEMBER STATES MEETING WITHIN THE COUNCIL,

1) Whereas the Commission has issued a Communication entitled "Equality of Opportunity for People with Disabilities – A New European Community Disability Strategy";

2) Whereas people with disabilities constitute a significant proportion of the population of the Community and, as a group, they face a wide range of obstacles which prevent them from achieving equal opportunities, independence and full economic and social integration;

3) Whereas respect for human rights is a fundamental value of the Member States which is underlined in Article F.2 of the Treaty on European Union;

4) Whereas the principle of equality of opportunity for all, including people with disabilities, represents a core value shared by all Member States; whereas this implies the elimination of negative discrimination against people with disabilities and improving their quality of life; and whereas access to mainstream education and training, where appropriate, can play an important role in successful integration in economic and social life;

5) Whereas the Community Charter of the fundamental social rights of workers, adopted at the European Council in Strasbourg on 9 December 1989 by the Heads of State or Government of 11 Member States, proclaims inter alia, in point 26: "26. All disabled persons, whatever the origin and nature of their disability, must be entitled to additional concrete measures aimed at improving their social and professional integration.

These measures must concern, in particular, according to the capacities of the beneficiaries, vocational training, ergonomics, accessibility, mobility, means of transport and housing;";

6) Whereas in its Recommendation of 24 July 1986 on the employment of disabled people in the Community[125] the Council recommended Member States to take all appropriate measures to promote fair opportunities for disabled people in the field

[124] European Union, *Resolution of the Council and of the Representatives of the Governments of the Member States on Equality of Opportunity for People with Disabilities*, Official Journal C 12, 13.01.1997 (Brussels, 20 December 1996).

[125] OJ No L 225, 12.8.1986, p. 43.

of employment and vocational training including initial training and employment as well as rehabilitation and resettlement;

7) Whereas the free movement of persons must be ensured in accordance with the existing Community legislation for the benefit of all the citizens of the European Union, including those with disabilities and those who are responsible for people with disabilities;

8) Whereas the overall purpose of the United Nations Standard Rules on the Equalization of Opportunities for Persons with Disabilities, adopted by the General Assembly on 20 December 1993[126] is to ensure that all people with disabilities may exercise the same rights and obligations as others;

9) Whereas these Rules call for action at all levels both within States as well as through international cooperation to promote the principle of equality of opportunity for people with disabilities;

10) Whereas in its White Paper "European Social Policy – A Way Forward for the Union", adopted on 27 July 1994, the Commission indicated that it intended to prepare an appropriate instrument endorsing the principles of the United Nations Standard Rules on the Equalization of Opportunities for Persons with Disabilities;

11) Whereas, whilst responsibility in this field lies with the Member States, the European Community can make a contribution in fostering cooperation between Member States and in encouraging the exchange and development of best practice in the Community and within the policies and activities of the Community institutions and organs themselves;

12) Whereas the aims set out in this Resolution on the equalization of opportunities for people with disabilities and the ending of negative discrimination are without prejudice to the right of each Member State to lay down its own rules and provisions for achieving the said aims, in accordance with the principle of subsidiarity and to the full extent that the resources of society permit:

I. REAFFIRM THEIR COMMITMENT TO:

1) the principles and values that underline the United Nations Standard Rules on the Equalization of Opportunities for Persons with Disabilities;

2) the ideas underlying the Council of Europe's Resolution of 9 April 1992 on a coherent policy for the rehabilitation of people with disabilities;

3) the principle of equality of opportunity in the development of comprehensive policies in the field of disability, and

4) the principle of avoiding or eliminating any form of negative discrimination on the sole grounds of disability.

II. CALL ON MEMBER STATES:

[126] United Nations General Assembly Resolution 48/46 of 20 December 1993.

1) to consider if relevant national policies take into account, in particular, the following orientations:

- empowering people with disabilities for participation in society, including the severely disabled, while paying due attention to the needs and interests of their families and careers;
- mainstreaming the disability perspective into all relevant sectors of policy formulation;
- enabling people with disabilities to participate fully in society by removing barriers;
- nurturing public opinion to be receptive to the abilities of people with disabilities and toward strategies based on equal opportunities.

2) to promote the involvement of representatives of people with disabilities in the implementation and follow-up of relevant policies and actions in their favour.

III. INVITE THE COMMISSION:

1) to take account, where appropriate, and within the provisions of the Treaty of the principles set out in this Resolution in any relevant proposal it submits on Community legislation, programmes or initiatives;

2) to promote – in collaboration with the Member States and with non governmental organizations of and for people with disabilities – the exchange of useful information and experience especially concerning innovative policies and good practice;

3) to submit periodic reports to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions on the basis of information supplied by the Member States, describing the progress made and the obstacles encountered in implementing this Resolution;

4) to take account of the results of the evaluation of the HELIOS II programme when considering whether it would be appropriate to bring forward proposals for follow up.

IV. INVITE OTHER COMMUNITY INSTITUTIONS AND ORGANS:

to contribute to the realization of the aforementioned principles in the framework of their own policies and activities.

ANNEX H

PRINCIPLES OF UNIVERSAL DESIGN

PRINCIPLE ONE: Equitable Use

The design is useful and marketable to people with diverse abilities.

Guidelines

1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.
1b. Avoid segregating or stigmatizing any users.
1c. Make provisions for privacy, security, and safety equally available to all users.
1d. Make the design appealing to all users.

PRINCIPLE TWO: Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

2a. Provide choice in methods of use.
2b. Accommodate right or left-handed access and use.
2c. Facilitate the user's accuracy and precision.
2d. Provide adaptability to the user's pace.

PRINCIPLE THREE: Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines

3a. Eliminate unnecessary complexity.
3b. Be consistent with user expectations and intuition.
3c. Accommodate a wide range of literacy and language skills.
3d. Arrange information consistent with its importance.
3e. Provide effective prompting and feedback during and after task completion.

PRINCIPLE FOUR: Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines

4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
4.b Maximize "legibility" of essential information.
4.c Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).

4d. Provide compatibility with a variety of techniques of devices used by people with sensory limitations.

PRINCIPLE FIVE: Tolerance of Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines

5a. Arrange elements to minimize hazards and errors: the most used elements should be the most accessible and hazardous elements eliminated, isolated, or shielded.
5b. Provide warnings of hazards and errors.
5c. Provide fail safe features.
5d. Discourage unconscious action in tasks that require vigilance.

PRINCIPLE SIX: Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

Guidelines

6a. Allow user to maintain a neutral body position.
6b. Use reasonable operating forces.
6c. Minimize repetitive actions.
6d. Minimize sustained physical effort.

PRINCIPLE SEVEN: Size and Space for Approach and Use

Appropriate size and space are provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Guidelines

7a. Provide a clear line of sight to important elements for any seated or standing user.
7b. Make reaches to all components comfortable for any seated or standing user.
7c. Accommodate variations in hand and grip size.
7d. Provide adequate space for the use of assistive devices or personal assistance.

ANNEX I

EXCERPTS FROM THE AUDIT OF THE CONSTRUCTION DOCUMENTATION FOR THE INTERNATIONAL CONFERENCE CENTER, DURBAN, SOUTH AFRICA

1. ALTERATIONS/ADDITIONAL WORK REQUIRED

Set out below is the work that needs to be undertaken in order for the building to comply with the composite access standards.

In certain instances the building does not comply and cannot, practically, be made to comply - these items are highlighted **, no cost has been attributed to these items.

SITE ITEMS

1.1	(3.1.1 E) Adjust thresholds at all external doors from bevel edge to stone paving with a maximum change in level of 19mm.	R	9,555,00
1.2	(3.1.1F) Amend ramp at north east corner of the site to include landings at the top of each rise of 760mm and fix handrails on both sides of ramp.	R	43,500,00
1.3	(3.1.1G) Amend exits to central and north courtyard by removing steps and replacing with ramp access.	R	8,400,00
1.4	(3.1.5) Amend basement parking layout to accommodate 12 no. accessible parking bays including necessary signage.	**R	Nil
	Abortive work	R	4,200,00
	The vertical clearance required at accessible passenger loading zones in the basement cannot be achieved.		
	COST OF WORKS TO THE EXTERIOR OF THE BUILDING	R	65,655,00

BUILDING ITEMS

1.5	(3.2.1D) Provide barrier rails under all escalators and stairs in basement and ground floor foyer/concourse.	R	32,400,00
1.6	(3.2.1E) Bevel edge of all hard surfaces likely to be exposed when carpets are lifted - halls 1,2 and 3.	R	2,925,00
1.7	(3.2.1F) Provide handrails to foyer, upper concourse and coffee shop ramps.	R	43,800,00
1.8	(3.2.1G) Modify curb ramps in basement parking area. In terms of slope, flared sides and detectable warnings on walking surfaces.	R	3,360,00
	Provide raised and Braille characters on hoistway entrance to observation lift.	R	4,500,00
1.9	(3.2.1H) Re-plan toilets in foyers and concourse, basement,		

	ground and first floor inc. amending door widths	R 67,000,00
	Abortive work	R 8,000,00
1.10	(3.2.1J) Provide designated areas of rescue assistance on first floor. Include 2 way communication and identifying signage.	R 5,600,00
1.11	(3.2.5) Voice annunciation to lifts (2 no.)	R 20,000,00
1.12	(3.2.13) Provide visual alarm system throughout public areas.	R 63,600,00
1.13	(3.2.14) Provide detectable warnings on walking surfaces in basement parking areas and at ground floor foyer drop off point	R 68,640,00
1.14	(3.2.16) Provide conduit for accessible telephones on basement, ground and first floor.	R 5,000,00
1.15	(3.2.17) Amend check in desks, coffee bar counter and bar counters to accommodate knee space.	R 50,000,00
1.16	(3.2.18) Provide 19 wheelchair locations in Plenary Hall including 19 no. aisle seats with fold up arm rests.	R 4,750,00
	Provide adjustable ramp access to stage platform.	R 6,300,00
1.17	(3.2.19) ATM's (by service suppliers)	R nil
1.18	(3.2.20) Amend toilet/shower accommodation in dressing and fitting rooms.	R 10,000,00
	COSTS OF WORKS TO INTERIOR OF BUILDING	R 395,875,00
ADDITIONAL ITEMS		
1.19	Visual registration system for use by the deaf	R 26,000,00
1.20	Braille signage system	R 291,000,00
1.21	Braille printer	R 3,500,00
	COST OF ADDITIONAL WORK	R 320 500,00
1.22	Pre-Contract escalation (2 months)	R 13,200,00
1.23	Contingencies	R 77,500,00
1.24	Contract escalation	R 68,000,00
1.25	Professional fees	R 162,000,00
	Escalation, contingencies and professional fees	R 320,700,00
	TOTAL COST	**R1 102 730,00**

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