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**DSDS 2006**



**Delhi Sustainable Development Summit  
2006**



**Linking across MDGs  
Towards innovative partnership and governance**

**Background paper**

Adrian Anthony Lopes  
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World Sustainable Development Forum  
**DSDS 2006**

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# **Towards sustainable development addressing the interlinkages**

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TERI, New Delhi

**Background paper**





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# Towards sustainable development addressing the interlinkages

## Introduction

The paradigm of sustainable development reflects a consensual shift from a singular focus on economic growth to a concept of socio-economic development that is ‘modified to take into account its ultimate dependence on the natural environment’ (Pezzey 1989). Resulting from several decades of developmental efforts and thought, the concept has evolved to explicitly encompass three overwhelming concerns for human welfare – economic, social, and environmental – as well as the inter-dependencies and interlinkages between them.

DSDS 2006 (Delhi Sustainable Development Summit 2006) is the sixth in the series of annual international summits organized by TERI with the objective of bringing together the finest minds and leading thinkers of the world to focus attention on the challenges of sustainable development. Taking this forward, TERI proposes to constitute the WSDF (World Sustainable Development Forum) this year. The WSDF has been envisaged as a conduit that will translate the output of the DSDS and similar events into effective interventions to alleviate poverty, promote environmental sustainability, and create conditions for a sustainable future.

The summit this year provides a podium to deliberate on more immediate development concerns that have ramifications for both socio-economic well-being and the environmental sustainability. Figure 1 highlights the primary themes, which DSDS 2006 seeks to dwell upon, along with their associated environment–economy linkages, as well as their representation in the MDGs (Millennium Development Goals).

This paper is indicative of the key development issues identified for deliberation during DSDS 2006. Accordingly, it is divided into the following sections: eradicating poverty and hunger; agriculture for sustainable development; environmental sustainability, water, sanitation, and health; energy—the missing MDG; climate change; development challenges and the way ahead.

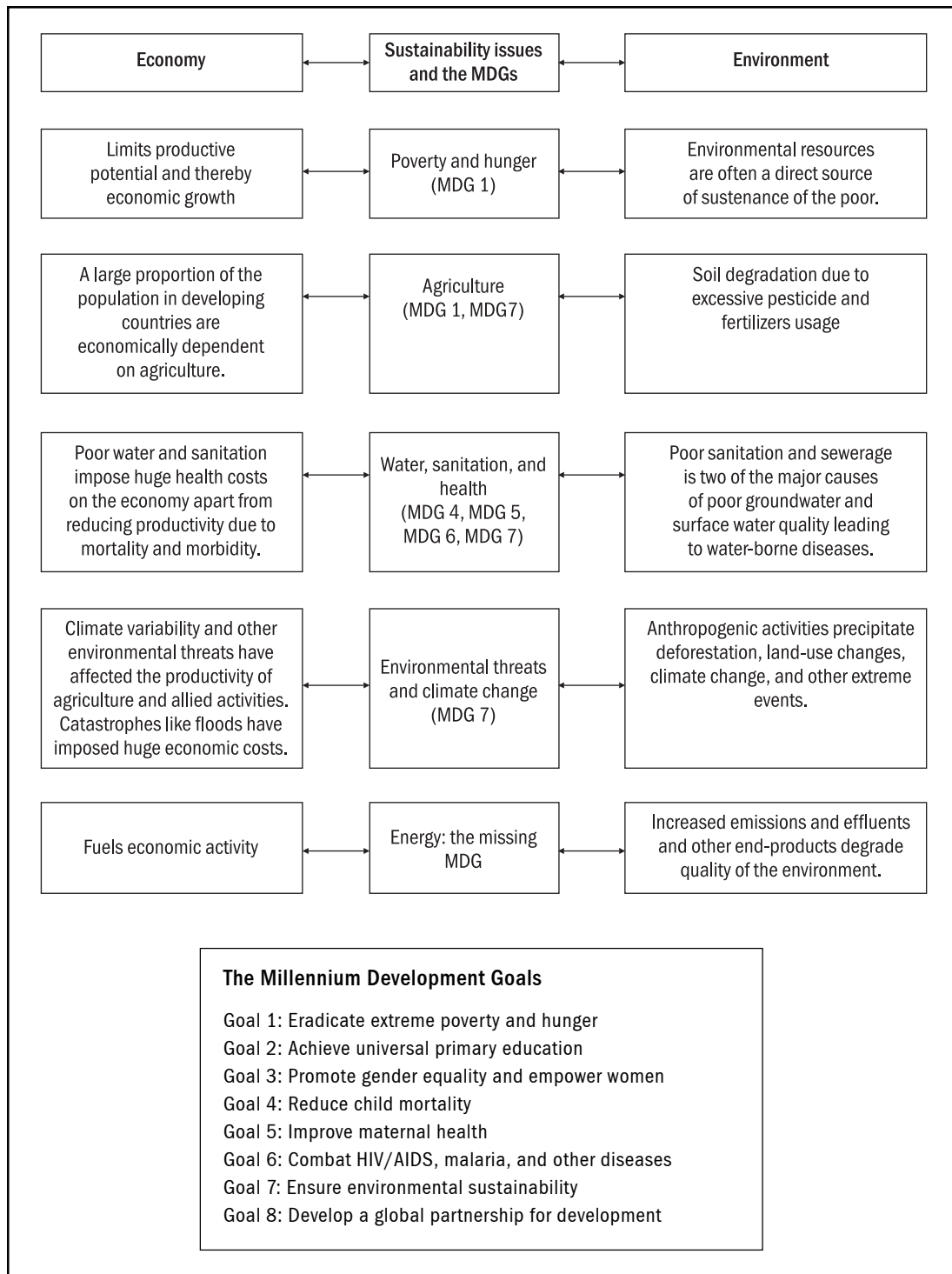


Figure 1 MDGs and sustainability: interlinkages between the economy and the environment

## Eradicating poverty and hunger

The primary target as articulated in the MDGs refers to the eradication of poverty and hunger.<sup>1</sup> Poverty, no longer equated solely with inadequate income, ‘... may be defined as a human condition characterized by sustained or chronic deprivation of the resources, capabilities, choices, security, and power necessary for the enjoyment of an adequate standard of living and other civil, cultural, economic, political, and social rights’.<sup>2</sup> Hunger, manifested by malnourishment, means consuming too little food to maintain normal levels of activity. Although hunger is an effect of extreme poverty, it also perpetuates the latter through diseases, by limiting the productive capacity of affected people and by restricting children’s potential to grow and learn.

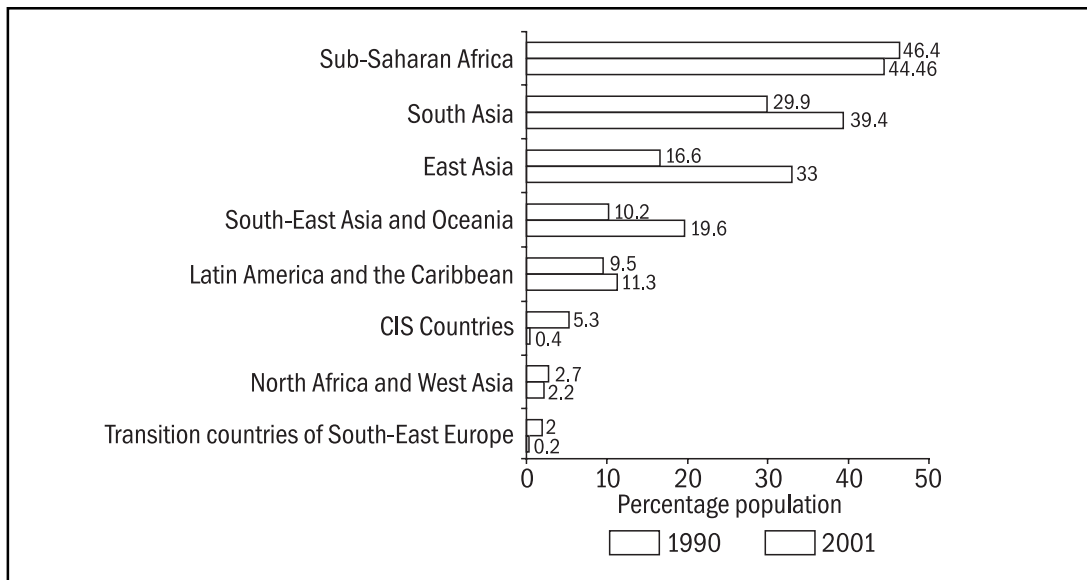
Poverty and hunger also have direct social ramifications in the context of separately stated MDG concerns with respect to gender imbalances, survival and health of children and mothers, education, and the spread of debilitating diseases, all of which exact a heavy toll in the form of human suffering and are manifested in lost opportunities for development, both within and across generations. Poverty contributes largely to the incidence of all of the above, and also worsens them—for example, the spread of HIV/AIDS in Africa has reversed decades of improvements in life expectancy and left millions of children orphaned. It is eloquent that health expenditures form 5.5% of the GDP in low-income countries, 6.0% of the GDP in middle-income countries, and 11.1% of the GDP in high-income countries. Economic well-being and nourishment help form an enabling environment for the attainment of health and education, and encourage a more emancipated environment for women. In an increasingly knowledge-dependent and interwoven world, these are important gateways to greater opportunities for productive employment and social progress.

Recognizing the importance of eradication of poverty and hunger, the MDGs have specified targets that seek to: 1) halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day; 2) halve, between 1990 and 2015, the proportion of people who suffer from hunger. However, global progress on these objectives remains uneven, as depicted in Figures 2 and 3. Although the regions of East Asia, South-East Asia and Oceania, and South Asia have shown progress, there has been an increase in the incidence of poverty in sub-Saharan Africa, North Africa, and West Asia. In the context of hunger, the proportion of the population in developing countries who suffer from hunger fell in East Asia, South-East Asia, South Asia, Latin America, and the Caribbean between 1990 and 2000. In West Asia, the rate of hunger increased along with the incidence of poverty.

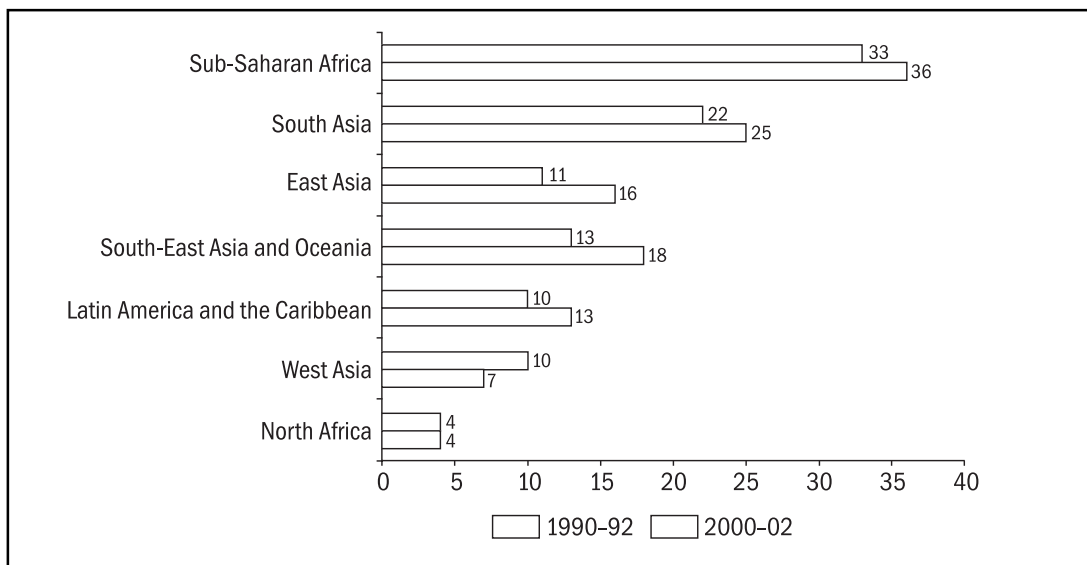
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<sup>1</sup>Details available at, <http://www.un.org/millenniumgoals/>, last accessed on 20 January 2006

<sup>2</sup>Details available at, [http://portal.unesco.org/shs/en/ev.php-URL\\_ID=3905&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/shs/en/ev.php-URL_ID=3905&URL_DO=DO_TOPIC&URL_SECTION=201.html), last accessed 20 January 2006



**Figure 2** Proportion of people living on less than one dollar a day  
 Source UN (2005)



**Figure 3** Proportion of people living with insufficient food 1990-2002  
 Source UN (2005)

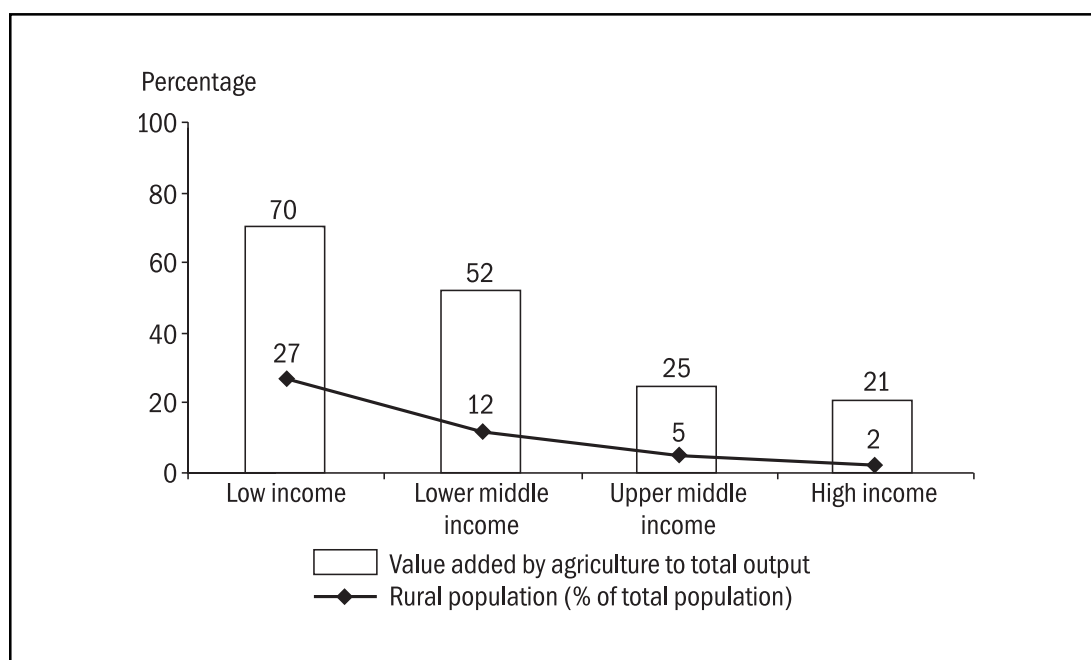
Given the pervasive negative impacts associated with impoverishment and malnourishment, there is an urgent need to focus on sectors and issues that have a potentially cascading effect on the overall development agenda of nations. This primarily calls for a twin-track approach (FAO, IFAD, and WFP 2002) that combines targeted programmes to provide the needy with direct and



immediate access to food as well as other basic goods and services, along with investments in productive activities that enhance economic growth and employment opportunities. In this context, approximately 70% of the total population in low-income countries live in rural areas (World Bank 2005) and, therefore, the importance of agricultural and rural development should be recognized as a key component of pro-poor economic and hunger programmes.

## Agriculture for sustainable development

The strong linkages between eradication of poverty and hunger and the importance of the agrarian sector for sustainable development are manifested in the fact that a large number of the world's poor live in rural areas (World Bank 2005). However, the agriculture sector contributed a disproportionately small percentage (approximately 24%) to the national economic output of low-income countries in 2003 (World Bank 2005). As Figure 4 demonstrates, the percentages of both the rural population in the total population and the agricultural value added in the GDP decrease as countries climb the income bracket. In this context, a structural jump of this kind would be time-consuming and replete with adjustment problems for less-developed nations, and therefore the necessity of focusing on the agrarian sector in the interim period.



**Figure 4** Rural population and value added by agriculture across countries

Source World Bank 2005

Additionally, rural development is inextricably linked with sustainable agricultural practices, a viewpoint inculcated in the Agenda 21 proposition of SARD (Sustainable Agriculture and Rural Development). Agenda 21 maintains that ‘the major objective of SARD is to increase food production in a sustainable way and enhance food security ... thus ensuring stable supplies of nutritionally adequate food, access to those supplies by vulnerable groups, and production for markets; employment and income generation to alleviate poverty; and natural resource management and environmental protection’.<sup>3</sup>

Aligned with the concept of food security as a three-dimensional concept related to availability, stability of supply, and access to food,<sup>4</sup> the FAO (Food and Agricultural Organization) has developed a food security index. Between 1991 and 1993 there were 30 African countries with a ‘low’ food security index rating and no sub-Saharan African country had a ‘high’ food security rating. Globally, food production grew faster than populations<sup>5</sup> due to a combination of better farming methods, dissemination of new technology, and more intensive use of inputs such as high-yielding varieties of seeds, fertilizers, and pesticides. However, per capita food availability has not increased in many low-income countries, especially in sub-Saharan Africa, where 32% of the population was undernourished in 2000–02 (World Bank 2005).

Agricultural incomes in less-developed countries are also impacted by the existence of market-distorting subsidies, further affecting the livelihood opportunities and quality of life of small-holder farmers. For example, the EU (European Union) agricultural subsidies, by encouraging over-production and export dumping, are driving down world prices of key commodities such as sugar: a World Bank study estimates that the EU sugar regime has caused world market prices to fall by 17%<sup>6</sup>. In this context, the external or internal perpetuation of low incomes in the agricultural sector may have long-term consequences (especially in poor nations) in terms of unsustainable farming practices and, ultimately, the erosion of the natural resource base of agriculture.

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<sup>3</sup> Details available at, <http://www.un.org/esa/sustdev/documents/agenda21/index.htm>, last accessed on 20 January 2006

<sup>4</sup> The AHFSI (Aggregate Household Food Security Index) calculates the ‘food gap’ between the undernourished and average national requirements, the instability of the annual food supply, and the proportion of undernourished in the total population. The index ranges from 0 to 100, with 100 representing complete, risk-free, food security and zero, total famine.

<sup>5</sup> Agenda 21; details available at, <http://www.un.org/esa/sustdev/documents/agenda21/index.htm>, last accessed on 20 January 2006

<sup>6</sup> Details available at, [http://www.oxfam.org.uk/what\\_we\\_do/issues/trade/downloads/bp31\\_dumping.pdf](http://www.oxfam.org.uk/what_we_do/issues/trade/downloads/bp31_dumping.pdf), last accessed on 20 January 2006

There may also be several environmental ramifications associated with agricultural activities, impacting their long-term sustainability. Since agriculture is primarily based on the ecological foundations provided by soil, atmospheric conditions and water resources, it is essential that crop production be undertaken in a sustainable manner. This involves having in place sound management policies for extracting groundwater, curbing pesticide run-off, mitigating soil-salinization, diversifying crops, and preventing unsustainable forest clearance for the expansion of the cropping area.

## Environmental sustainability

Anthropogenic activities that lead to deforestation, air and water pollution, damage to coastal and marine ecosystems, and land degradation are perceived as major environmental threats faced by the world. In this context, environmental sustainability refers to meeting current human needs without compromising on the capacity of the environment to provide for the needs of future generations.

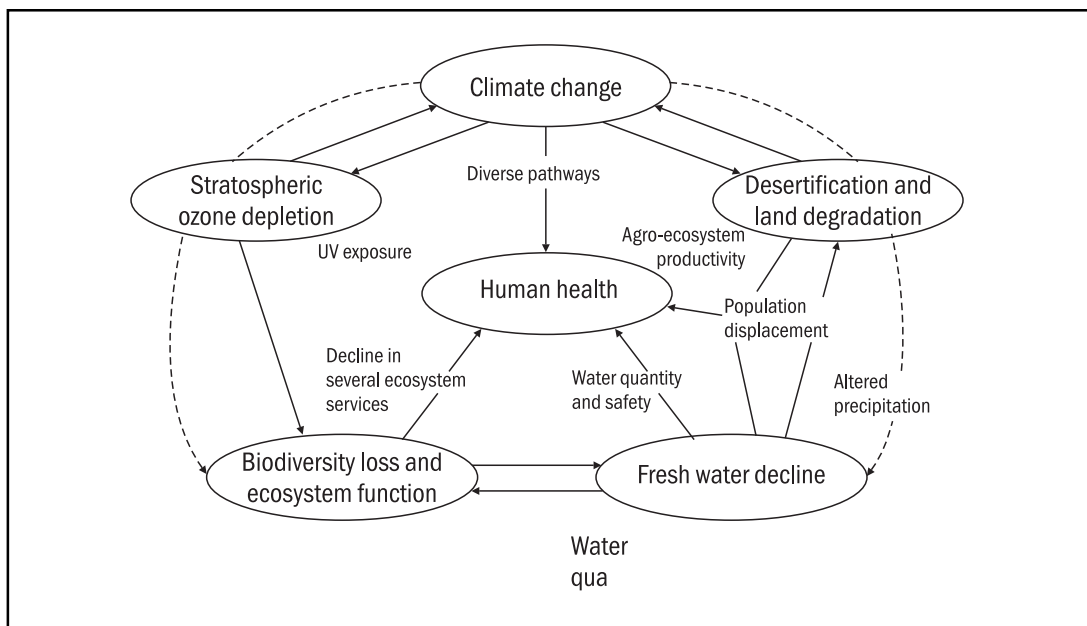
The importance of environmental sustainability in poverty reduction is apparent in the fact that large numbers of the world's poor derive their livelihoods directly from the natural environment. For instance, more than two billion people use traditional fuel sources such as firewood and dung-cakes for cooking and heating, which are associated with significant health problems (UNDP 2005a). Lack of basic infrastructure such as provision of electricity, fuel, and drinking water adds to the dependence on the environment.

Environmental quality also indirectly impacts human productivity, morbidity, and mortality; for example, diseases like diarrhoea, jaundice, malaria, and respiratory ailments have precursors in environmental conditions.

In a global context, an expanding economy puts enormous pressure on global and local ecosystems. Figure 5, for example, demonstrates the impacts of ecosystem changes due to socio-economic activities on human health.

The world's population, production, and consumption levels continue to grow rapidly, but ecosystems have their own limits. For instance, the hydrological cycle produced the same amount of fresh water in 1950 as it is projected to produce in the year 2050 (Brown, Flavin, and French 2000). The world's grain yield per hectare rose at more than two per cent a year between 1950 and 1990. But, from 1990s onwards, this rate of increase has fallen to one per cent. As the world's population continues to rise, the per capita supply of natural resources, such as oceanic fisheries, forests, and rangelands decreases, is threatening the quality of life.

Recognizing the importance of the environment for sustainable development, there have been efforts at building sustainability indicators that incorporate environmental considerations. One such initiative is the ESI (Environmental Sustainability Index), which is the outcome of a model developed at Yale



**Figure 5** Ecosystem impacts on human well-being

Source <http://www.who.int/globalchange/en/>, last accessed on 20 January 2006

University and sponsored by the World Economic Forum.<sup>7</sup> The ESI facilitates comparison across countries on the basis of five fundamental components of sustainability—environmental systems, environmental stresses, human vulnerability to environmental stresses, societal capacity to respond to environmental challenges, and global stewardship. For this, the use of 76 data sets are used, which culminate in 21 indicators of environmental sustainability. The index ranges in value from 1 to 100. A higher ESI score suggests better environmental health and coping capacity to avoid major environmental problems in the future.

Table 1 shows select countries that rank high, medium, and low on the ESI.

**Table 1** Select countries and their ESI ranks

Country	ESI score	ESI rank
Finland	75.1	1
Norway	73.4	2
India	45.2	101
China	38.6	133
Taiwan	32.7	145
North Korea	29.2	146

Source [http://sedac.ciesin.columbia.edu/es/esi/ESI2005\\_Main\\_Report.pdf](http://sedac.ciesin.columbia.edu/es/esi/ESI2005_Main_Report.pdf)  
last accessed on 20 January 2006

<sup>7</sup>[http://sedac.ciesin.columbia.edu/es/esi/ESI2005\\_Main\\_Report.pdf](http://sedac.ciesin.columbia.edu/es/esi/ESI2005_Main_Report.pdf), last accessed on 20 January 2006

The ESI has been criticized on methodological grounds as well as for inadequate coverage in terms of data.<sup>8</sup> However, its strength lies in the fact that it serves as an indicative source of information for comparison across countries, and suggests that the chances of major environmental problems being avoided are higher in countries that have a higher score on the index.

## Water, sanitation, and health

About 1.1 billion people lacked access to safe drinking water, and 2.4 billion people lacked access to sanitation in 2002 (UN 2005). Increasing recognition on how safe drinking water and sanitation directly impact health (Box 1) and improve living conditions, education outcomes, and poverty reduction has intensified the advocacy for improved access to these amenities. Therefore, water resource management is an essential component of socio-economic development, and can impact the incidence of poverty and hunger, help ensure environmental sustainability, improve health, and reduce gender inequalities (UNDP 2005b). For instance, illnesses caused by unsafe drinking water and inadequate

### Box 1 Health hazards of poor water supply and sanitation

- Approximately, four billion cases of diarrhoea cause 2.2 million deaths each year, mostly among children under the age of five. This is equivalent to one child dying every 15 seconds. These deaths represent approximately 15% of all child deaths under the age of five in developing countries. Water, sanitation, and hygiene interventions reduce diarrhoeal disease occurrence by between one-quarter and one-third on average.
- Intestinal worms infect about 10% of the population of the developing world. These can be controlled through better sanitation, hygiene, and water supply. Intestinal parasitic infections can lead to malnutrition, anaemia, and retarded growth, depending upon the severity of the infection.
- It is estimated that six million people are blind from trachoma, and the population at risk from this disease is approximately 500 million.
- Two hundred million people in the world are infected with schistosomiasis, of which 20 million suffer severe consequences. The disease is still found in 74 countries of the world.
- Arsenic in drinking water is a major public health threat. According to data from about 25 000 tests on wells in Bangladesh, 20% have high levels of arsenic (above 0.05 mg/litre).

Source [http://www.who.int/docstore/water\\_sanitation\\_health](http://www.who.int/docstore/water_sanitation_health), last accessed on 20 January 2006

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<sup>8</sup> Criticisms of the Index include observations about the variables being antique in nature as they ignore recent developments in areas such as forest management. For example, modern joint forest management systems, which help reconcile the interests of local people and nature are not taken into consideration in the construction of the ESI. Details available at, <http://sedac.ciesin.columbia.edu/es/esi/>, last accessed on 20 January 2006.

sanitation generate health costs that can claim a large share of poor households' income while improved access to water supply and sanitation services has the potential to enhance possibilities for education or other livelihood activities by reducing time spent for accessing these amenities.

The link between water, sanitation, and health has been clearly established. According to Dr Lee Jong-wook, Director-General,<sup>9</sup> WHO (World Health Organization), 'Water and sanitation is one of the primary drivers of public health. We often refer to it as 'Health 101', which means that once we can secure access to clean water and to adequate sanitation facilities for all people, irrespective of the difference in their living conditions, a huge battle against all kinds of diseases will be won.' The traditional perspectives regarding water-associated diseases, with their main focus on drinking water supply and sanitation, has evolved into a more comprehensive concept of water, sanitation and health. This broad concept considers all health aspects of water resources development and management, including drinking water supply, sanitation, irrigation, energy generation, flood control, and navigation. It tries to account for both the health determinants related to various water uses, as well as intervention options for water supply and water management to protect and promote health.

The Dialogue on Water for Food and the Environment was established in 2001 by the WHO with the objective of improving water resources management for food security and environmental sustainability, with a special focus on the reduction of poverty and hunger, and the improvement of human health.<sup>10</sup> By including water supply, sanitation, and hygiene in the MDGs, the world community has acknowledged their vital importance for sustainable development.

## Energy: the missing MDG

Energy is a basic requirement for economic growth and social development, and is essential for all life-sustaining activities. It is used as an input in production processes and facilitates transportation of goods to markets, thus abetting economic development. Energy in the form of electricity and cooking gas contributes to basic human needs of lighting, warmth, and nutrition. Having access to modern energy sources takes away the drudgery associated with traditional fuels such as firewood and dung cakes. Traditional fuels have adverse impacts on health through indoor air pollution. The WHO associates 2.7% of

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<sup>9</sup> Details available at, [http://www.who.int/water\\_sanitation\\_health/publications/facts2004/en/index.html](http://www.who.int/water_sanitation_health/publications/facts2004/en/index.html), last accessed on 20 January 2006

<sup>10</sup> Details available at, [http://www.who.int/water\\_sanitation\\_health/resources/WSH04.02.pdf](http://www.who.int/water_sanitation_health/resources/WSH04.02.pdf), last accessed on 20 January 2006

the world's global disease burden with indoor air pollution.<sup>11</sup> Yet, approximately 1.6 billion people have no electricity in their homes and approximately two billion people use traditional fuel sources for cooking and heating (UNDP 2005a). Modern energy services and efficient technologies can also protect the environment by curbing deforestation and emissions. A recent study by the UNDP looks at the impact that energy services have on overall development by analysing some energy-related interventions in three countries (Box 2).

### Box 2 Energy and development: a study of three countries

The following findings derive from studies on energy-related interventions in Brazil, Mali, and the Philippines.

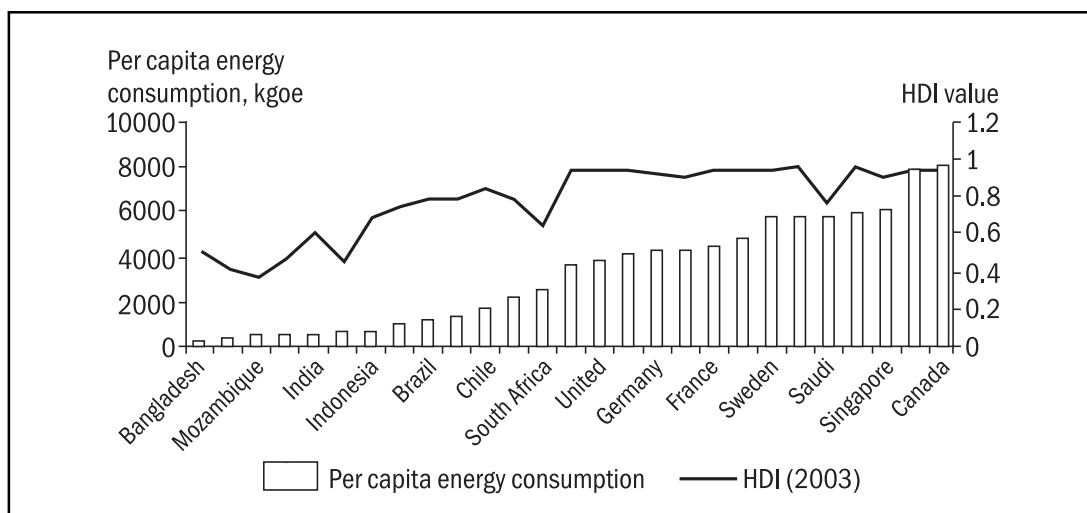
- Motive power is beneficial to the poor and frees up time for other productive activities. In Mali, it is seen that girding and milling has enabled women to increase their income from agricultural activities by an average of 0.32 dollar/day (PPP 1993). Motive power, if scaled up, could benefit 1 to 1.5 million women in Mali living on less than 1 dollar/day.
- Improvement in energy infrastructure such as electricity can lead to further industrialization and help reduce poverty. In the Brazilian state of Ceará, a threefold increase in the number of households with electricity coincided with the largest improvement in the human development index ranking of all states.
- In Mali, energy services helped improve girl-to-boy ratios in primary schools. In the Philippines, chances of being a literate individual are higher in households that have electricity.
- In the Philippines, the chances of doctor-assisted birth are higher for women from households with electricity. In Mali, time- and labour-saving energy services enable expectant females to avail of prenatal health care.

Source UNDP (2005a)

In the above context, the importance of modern energy sources as a basis of development has not been adequately acknowledged by the MDGs; this is an important omission.

The importance of modern energy sources as a basis of sustainability has not been adequately acknowledged by the MDGs as a development necessity. As illustrated by Figure 6, there appears to be a correlation between the extent of energy used per capita and the levels of development, as indicated by the HDI (human development index) of nations (UNDP 2005c). Therefore, it is essential to frame policy such that efficient energy usage mechanisms, especially delivery mechanisms, are in place in less-developed nations.

<sup>11</sup> Details available at, <http://www.who.int/indoorair/en/>, last accessed on 20 January 2006



**Figure 6** Per capita energy consumption and HDI (human development index)  
 Source UNDP (2005c); World Bank (2005)

Additionally, data accessed from the *Human Development Report 2005* demonstrate that nations under both low-income (World Bank 2005) as well as low-development categories (UNDP 2005c) appear to use a disproportionately large amount of traditional fuels, defined as the estimated consumption of fuelwood, charcoal, bagasse, and animal and vegetable waste, as compared to nations on higher income and development levels. Table 2 shows the extent of traditional fuel usage by country groups, as a percentage of total energy requirements.

**Table 2** Traditional fuel consumption as a percentage of total energy requirements

Country group	Traditional fuel consumption (% of total energy requirements)	Country group	Traditional fuel consumption (% of total energy requirements)
High human development	4.5	High income	2.9
Medium human development	17.0	Middle income	9.2
Low human development	71.1	Low income	42.2

Source [http://hdr.undp.org/reports/global/2005/pdf/HDR05\\_HDI.pdf](http://hdr.undp.org/reports/global/2005/pdf/HDR05_HDI.pdf), last accessed on 20 January 2006

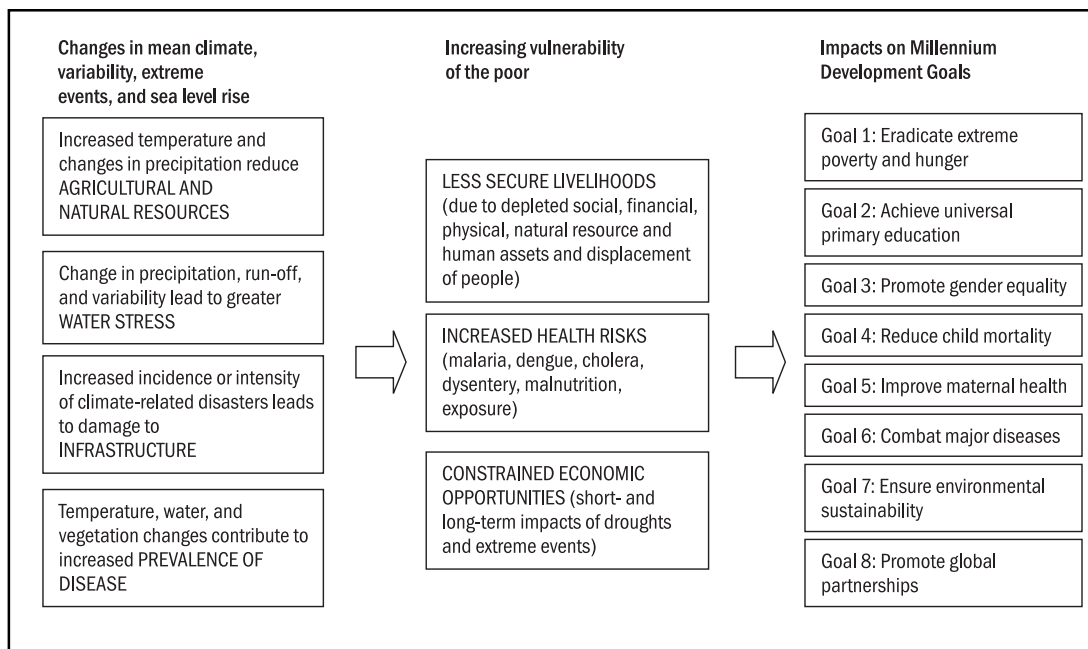


Energy for sustainable development can be attained by universalizing access to cost-effective mixes of energy resources. This implies that renewable energy technologies must be given a greater share in the energy mix. Such technologies facilitate lower net environmental impacts. However, ensuring access to such technologies may prove difficult given that no major technological and/or market breakthroughs have been achieved by renewable energy that can result in its affordability. Ensuring access should be done in a viable manner that is socially acceptable and environmentally sound. Moreover, activities in the energy sector may cause severe impacts on the environment right from the mining stage, through the processing stage, to the final use of fuels in power generation and transportation. Thus, energy efficiency has to be enhanced and greater reliance placed on advanced energy technologies, including fossil fuel technologies.

A 'business-as-usual' approach has been seen as inadequate when it comes to providing energy services. The UNDP and the GTZ are supporting an initiative that aims to scale up energy services in East Africa to achieve the MDGs in health, education, agriculture, and environmental sustainability (UNDP and GTZ 2005). Their strategy focuses on a rapid implementation of high-impact, low-cost, scalable energy interventions designed to reduce poverty in four countries—Kenya, Rwanda, Tanzania, and Uganda. The UNDP has proposed to form a core group of partners to bring about a regional up-scaling strategy focused on a pragmatic approach to guide and design the implementation processes for these countries. Regional efforts are needed to aid national efforts that could leverage finance, exploit economies of scale, provide technical support, and facilitate information sharing. An estimated 1.4 billion dollars would be needed to improve energy services for 50% of the region's population (East African countries) leading up to 2015. Projects such as these could make energy services accessible and affordable for all.

## Climate change

Human-induced climate change has resulted in large-scale perturbations in the earth's atmosphere (IPCC WG I, TAR 2001). These changes, however, are not expected to be uniform across the world but are likely to vary from region to region. Countries with limited economic resources, low levels of technology, poor infrastructure, unstable or weak institutions, and inequitable empowerment and access to resources are predicted to have lower capacities to adapt to climate change (IPCC WG II 2001). The impact of climate change, therefore, is likely to fall disproportionately on developing countries and the poor living within, exacerbating inequities in health status and access to adequate food, clean water, and other resources.



**Figure 7** Linkages between the Millennium Development Goals and climate change

Source AfDB, ADB, DFID, *et al* (2002)

With the extensive human dependence on climate-sensitive sources like agriculture, forestry, and fisheries, climate change poses a serious threat to the realization of sustainable development goals in developing countries. A multi-agency consultation draft published in 2002 highlights how climate change adversely impacts sectors like agriculture, water resources, and health, challenging the efforts to achieve the MDGs by increasing the vulnerability of the poor (Figure 7).

The IPCC (Intergovernmental Panel on Climate Change) reports show that climate change is likely to have significant developmental consequences. It, therefore, recommends a wide variety of technical options, usually by sector (e.g. energy, buildings, transportation, waste) or policy instruments (taxes, permits) that might be useful in meeting the climate change challenge to sustainable development.

There is also an increasing recognition by several governments of the need for policies to combat greenhouse gas emissions. The overall aims of such a policy framework are to achieve production that is less carbon-intensive and to increase the use of alternative sources of energy, while boosting energy efficiency. There is a need to examine current capacities by developing countries to adopt such alternative development paths, which will require socio-political and technological changes. Therefore, actions to mitigate and adapt to the consequences of a changing climate should take into account technological advancements and their crucial interlinkages with development pathways.

## Challenges and the way ahead

Given the large canvas of issues covered by the paradigm of sustainable development, and the interlinkages and interdependencies between the economy and the environment in general, operationalizing the concept requires the active and cohesive involvement of both political and economic actors in a society. This would enable communities to harness traditional knowledge systems in an organized and participatory manner, as well as provide encouragement to co-opt scientific and technological developments while working towards solutions to enhance human welfare. Therefore, DSDS 2006 recognizes the importance of governance, stakeholder participation, adequate financial support as well as developments in science and technology for carrying the agenda of meeting basic human needs and making the right to development a reality for all. We consider each of these aspects in turn below.

### *Governance*

Sustainability concerns have to be weaved into the overall strategy of every sector and cannot be the responsibility of any one government department or ministry. While lack of financial resources may be an important cause for the persistence of environmental and other problems, the more important factors relate to poor governance (Lopes, Datt, and Nischal 2005). Governance comprises a host of issues relating to institutions, delivery mechanisms, and the supporting structure of legislations, rules and procedures. However, one aspect that tends to be overlooked is that of inter-sectoral coordination at the central level in formulating and implementing policies and programmes. An excessive segregation of the executive into ministries and departments has resulted in narrow sectoral approaches to policy-making. Governments need to keep in mind all possible interlinkages while formulating policy.

We cite an example from India to demonstrate the importance of the above. The Government of India has implemented water schemes under the Ministry of Rural Development. These have not been able to provide the intended benefits in the absence of adequate electricity infrastructure, which is under the purview of the Ministry of Power and the Ministry of Non-conventional Energy Sources. In addition, the duplication of delivery structures and procedural hurdles invariably curtail the flow of assistance to the targeted beneficiaries.

One of the key reasons for inadequate policy responses to sustainability issues is the lack of research-based information to guide policy formulation or the lack of information with the public to exert pressure on policy-makers. It is necessary that research gaps be identified and plugged systematically. Cross-sectoral linkages in policies often suffer because of a lack of research-based evidence on these linkages. For instance, well-designed epidemiological studies

based on reliable parameters for exposure to pollutants and health outcomes are needed to objectively correlate environmental conditions and disease outcomes. Simultaneously data and information related to various development parameters, including the functioning of the government, should be collated and made public.

Another issue is that of decentralized governance. Devolution of power to local bodies and effective decentralization in decision-making is an important aspect that needs to be addressed. For real decentralization to emerge, local bodies need to raise financial resources and enhance their technical capacities. Civil society and NGOs (non-governmental organizations) also have come to play an increasingly important role in catalysing local-level efforts. However, they are constrained in their ability to produce reform at a larger scale, for which they are dependent on the support they receive from the bureaucracy at various levels. The challenge here is to bring civil society, NGOs, and government together to form a cohesive partnership for change.

Other issues to be kept in mind to ensure adequate governance for sustainable development includes efficient expenditure management and the effective targeting of incentives so that resources earmarked for particular schemes reach the intended beneficiaries. Essentially, there is an urgent need for a comprehensive results-oriented public expenditure management system that will enable nations to improve governance and policies in a manner that enhances the quality of life of citizens across the world.

### Involving diverse stakeholders: partnering for change

With sustainable development concerns and initiatives increasingly involving intergovernmental institutions, civil society organizations, citizens' movements, transnational corporations, academia, and the mass media, stakeholders comprise all individuals, groups, or organizations that are affected by and/or have an interest in a particular issue. The importance of involving diverse stakeholders in the development process assumed a new dimension at the WSSD (World Summit on Sustainable Development), 2002 with the emergence of Type 2 initiatives, which refer to non-negotiated and voluntary partnerships to help achieve specified development targets.<sup>12</sup> This concept explicitly acknowledges that fact that the accomplishment of basic development goals requires a multitude of perspectives, which can be best achieved through an integration of efforts and ideas among the concerned actors, particularly the primary stakeholders.

It is important to include a representative range of stakeholders across the primary target group of the development programme, government, industry,

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<sup>12</sup> Type 1 initiatives, on the other hand, referred to development initiatives, which were negotiated by the UN member states.

NGOs, international organizations, academic researchers, and the media. This can considerably enhance the legitimacy of a multi-stakeholder process,<sup>13</sup> although it must be ensured that all parties undertake to share the risks, resources, and competencies inherent in such a proposition in a responsible manner. However, it must be acknowledged that different actors in a reform process have different strengths (Table 3). They differ in their abilities to catalyse change, effect direct action, mobilize political support, and garner material and human resources (Krishnan and Narain 2003).

**Table 3** Strengths of different actors in partnerships

Primary beneficiaries	<ul style="list-style-type: none"> <li>▪ Providing inputs to the development agenda based on ground realities</li> <li>▪ Ensuring a continuous check on implementation pitfalls</li> <li>▪ Ensuring the maintenance of the programme's output through their long-term interests</li> </ul>
Governments	<ul style="list-style-type: none"> <li>▪ Supporting civil society actions</li> <li>▪ Promoting networks among research institutes, NGOs, and civil society groups</li> <li>▪ Providing enabling policy and regulatory frameworks</li> <li>▪ Providing funds for relevant initiatives</li> </ul>
Non-governmental organizations	<ul style="list-style-type: none"> <li>▪ Advocating for policy reform</li> <li>▪ Mobilizing local action</li> <li>▪ Implementing programmes and policies</li> <li>▪ Introducing new technologies/systems</li> <li>▪ Providing feedback to the government</li> </ul>
International organizations	<ul style="list-style-type: none"> <li>▪ Promoting networking and consensus-building among governments and institutes</li> <li>▪ Setting guidelines for targets and monitoring</li> <li>▪ Funding research and action</li> </ul>
Industry	<ul style="list-style-type: none"> <li>▪ Committing resources for research and action</li> <li>▪ Undertaking corporate responsibility for the environment</li> <li>▪ Undertaking direct action in spread of civic amenities</li> </ul>
Research institutes	<ul style="list-style-type: none"> <li>▪ Carrying out process documentation research</li> <li>▪ Providing feedback to government and policy-makers</li> <li>▪ Consolidating and disseminating research and databases</li> </ul>
Media	<ul style="list-style-type: none"> <li>▪ Disseminating information about development needs</li> <li>▪ Influencing opinions</li> <li>▪ Monitoring implementation pathways</li> </ul>

Source Krishnan and Narain (2003)

<sup>13</sup> <http://www.un-ngls.org/partnership-carmen-malena.doc> (accessed on 20 January 2006)

An increasingly important and emerging form of partnership refers to those that witness collaboration between public bodies, such as local authorities or the central government, and private companies. These, termed as PPPs (public-private partnerships), have been envisaged as initiatives that can tap into the management skills and financial acumen of the business community in order to secure improvements in essential development concerns. To cite a successful example, the REEEP (Renewable Energy and Energy Efficiency Partnership) was initiated at the WSSD in August 2002 by the Government of the UK. REEEP works with all stakeholders to translate commitments for sustainable energy into concrete actions on the ground and has expanded its operations into Central and Eastern Europe, Turkey, East Asia, Latin America and the Caribbean, North America, Russia and the FSU, South-Asia, and South East Asia and the Pacific.<sup>14</sup>

In an international context, partnerships for change also imply that wealthy countries work with developing countries to create an environment in which rapid sustainable development is possible. As indicated by the World Bank (World Bank 2005), this would primarily include efforts to address the special needs of developing countries, make available the benefits of new technologies (especially information and communication technologies) and deal comprehensively with developing countries' debt burdens to make debt management sustainable in the long run. Formally included in the MDGs as 'developing partnerships', international participatory mechanisms basically derive from the fact that national development challenges differ across geographical locations and economic groups.

In essence, stakeholder partnerships vary enormously in terms of their purpose, scope, complexity, level of engagement (local to global), and the size and diversity of partners. Different types of partnerships are motivated by diverse factors, have varying governance requirements, and face distinct operational challenges. Successful engagements between stakeholders must be founded on a complementarity of roles and are often important sources of influence, either direct or indirect, over policy decisions. In many cases, they can even impact the level of attention and resources attributed to specific issues and development strategies.

### *Financing for development*

Policy changes and institutional set-ups are prerequisites for ensuring the efficient and effective use of financial resources towards achieving development goals. Financial assistance is increasingly being recognized as just one of the many inputs required for development, although it remains a crucial input. The central concern in development targets such as the MDGs is the cost of

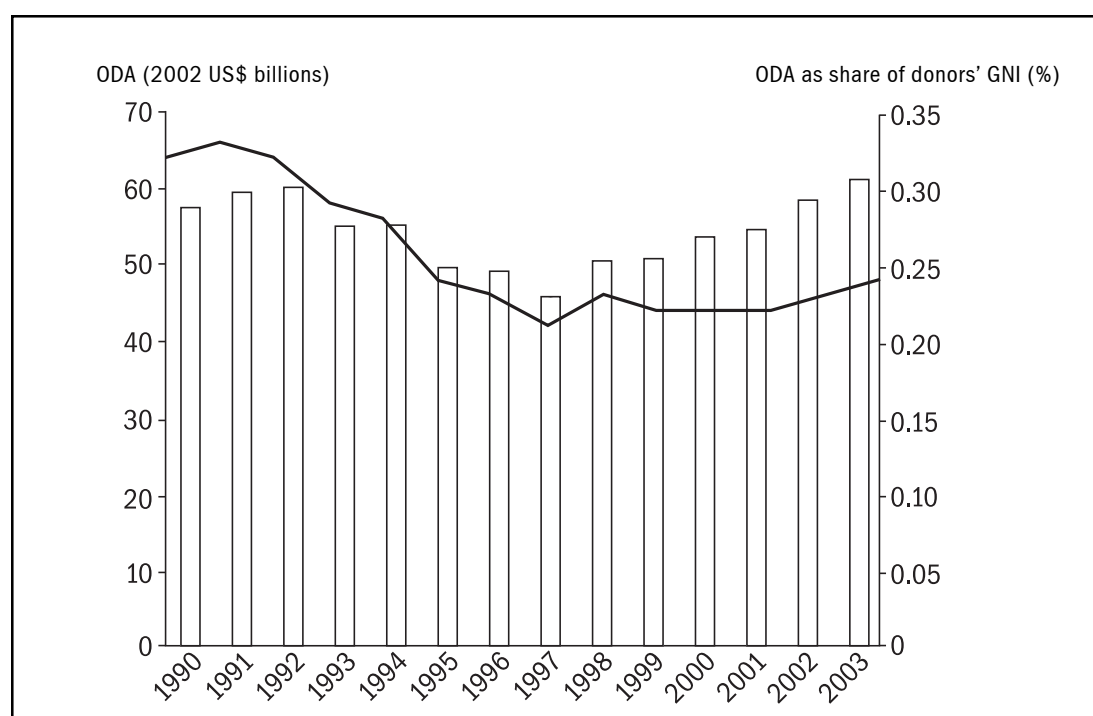
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<sup>14</sup> Details available at <http://www.rec.org/reep/about.html>, last accessed on 20 January 2006.

achieving them. Since there is no ‘one-size fits all’ solution to meet the goals, concerns of financial cost can be comprehensively resolved only through detailed needs assessments at the country level. For instance, the World Bank estimates the costs of achieving the MDGs by two modalities: reducing income poverty and estimating the costs of attaining the health, education, and environmental goals.

To finance the meeting of such targets, there is a need for a major increase in domestic resource mobilization by increasing government expenditures on the goals by up to four percentage points of GDP through 2015.<sup>15</sup> These added resources would need to be raised through a broad-based revenue source such as a value-added tax, as well as by rechannelling current low-priority spending into higher priority MDG investments. This increase in domestic resources, even though very large as a percentage of domestic income, may not be enough to achieve the goals in poor countries. For that, increased ODA (official development assistance) is needed.

ODA levels decreased through much of the 1990s, while ODA as a proportion of donors’ GNI (gross national income) fell even faster. Many donors pledged to provide at least 0.7% of GNI, but the average remains below 0.25%. There is, therefore, a need for an effective framework to ensure that rich countries meet their promised assistance. Figure 8 shows the ODA graph of nations from 1990 to 2003.



**Figure 8** Official development assistance is rising, but still too little

Source OECD Development Assistance Committee

<sup>15</sup> Details available at [http://www.unmillenniumproject.org/reports/costs\\_benefits2.htm](http://www.unmillenniumproject.org/reports/costs_benefits2.htm), last accessed on 20 January 2006.

The challenge to the international community is to develop new and innovative mechanisms for funding development programmes. There is now a wide array of proposals for financing development imperatives. Some of them include global taxes, such as currency transaction taxes, environmental taxes, and taxation of arms exports. Another broad group of funding proposals involves the private sector, public–private alliances, corporate entities, and civil society. Creating opportunities for developing countries to sell their products in wealthier markets could also be an important complement to aid. There is a need for careful perusal of these proposals on an international level and effect measures to ensure the flow of such funds to aid the achievement of several universal goals. Development is not only a matter of ‘means’ (such as finances), it is also a question of the most effective ‘ways’. To register effective progress in the developing countries, both must be pursued and wealthy countries must work in tandem with developing countries to create an environment in which rapid, sustainable development is possible.

### *Science and technology for development*

Since science and technology are essential elements to address basic developmental needs such as drinking water, sanitation, nutrition and health, it is necessary that countries have technology visions with clear priorities that reflect their changing socio-economic milieu. Tackling poverty through the application of science and technology is key to achieving the MDGs.<sup>16</sup> Developing countries must invest in science education by supporting universities and research institutions. Research undertaken by such institutions needs to be relevant to development. In addition to building upon indigenous scientific and technological capabilities, it is also important to facilitate technology transfer and technical cooperation between the developed and developing countries.

Apart from knowledge creation, the international community must address institutional gaps that exist between knowledge-generating institutions and international policy-making bodies. At the UN headquarters in New York in September 2005, heads of state and governments deliberated on the issue of science and technology for sustainable development. There was consensus that science and technology, including information and communication technologies, are essential to the achievement of the MDGs.<sup>17</sup> But developing countries spend lower proportions of their GDP on R&D compared to the developed countries. For instance, between 1997 and 2002, Uganda spent 0.8% and Brazil 1% of GDP on R&D, as against 3.1% and 4.3% by Japan and Sweden, respectively.<sup>18</sup> Hence the need for strengthening existing mechanisms, and

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<sup>16</sup> Details available at [http://www.unctadxi.org/templates/Event\\_\\_\\_\\_38.aspx](http://www.unctadxi.org/templates/Event____38.aspx), last accessed on 20 January 2006

<sup>17</sup> Details available at <http://stdev.unctad.org/docs/para60.doc>, last accessed on 20 January 2006

<sup>18</sup> Details available at [http://hdr.undp.org/reports/global/2005/pdf/HDR05\\_HDI.pdf](http://hdr.undp.org/reports/global/2005/pdf/HDR05_HDI.pdf), last accessed on 20 January 2006



supporting finance for the promotion of R&D activities, is widely felt in developing nations.

International partnerships as well as partnerships between the public and private sectors need to be enhanced to assist developing countries in addressing concerns in the areas of health, agriculture, natural resource management, energy, and the impact of climate change. Developed countries should also collaborate in capacity building and the dissemination of scientific and technical knowledge to help lower-income countries benefit from existing advancements in knowledge in the course of their development pathways.

Efforts need to be directed towards developing renewable sources of energy, such as solar, wind, and geothermal power. Further research would be needed to improve upon agricultural productivity, and sustain the natural environment at the same time.

However, funding for the promotion of R&D is inadequate if it is not complemented by an appropriate evaluation mechanism of public research organizations and the efficiency of public support to R&D activities. In this context, the challenge before governments is to identify policies and set up institutions that can harness the benefits of technological advances, which include supporting infrastructure and delivery mechanisms.

## Conclusion

Sustainable development provides an ideal framework for considering all aspects of development in an integrated, holistic, and complementary way. This can be made possible through result-oriented policy action plans that acknowledge the inherent interdependencies and interlinkages among the economy, society, and the environment. In this context, by laying out tangible targets for sustainable human development, as in the MDGs, the development community has begun to make explicit the most obvious costs of inaction in terms of lives and lost opportunities; these could indeed have deeper ramifications for nationhood and global concerns. As the UN Secretary General recognizes, 'only by reducing poverty and improving environmental management over the coming decades can a rise in the number of conflicts and state failures be averted.'

At DSDS 2006, TERI reaffirms its commitment to the objectives of sustainable development and stands by the declaration made at the Millennium Summit of making the right to development a reality for all, thus freeing the entire human race from 'want'. For this, active cooperation and involvement of diverse stakeholders as well as the entire global community, effective governance, and the mobilization of financial resources for meeting immediate development needs are of utmost importance. Today, the world needs to follow through on its commitments and scale up implementation before development goals become unreachable.

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