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Goals for Development

History, Prospects, and Costs

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Abstract

The Millennium Development Goals set quantitative targets for poverty reduction and improvements in health, education, gender equality, the environment, and other aspects of human welfare. At existing rates of progress many countries will fall short of these goals. However, if developing countries take steps to improve their policies and increased financial resources are made available, significant additional progress toward the goals is possible.

Devarajan, Miller, and Swanson provide a preliminary estimate of the additional financial resources which would be required if countries would work vigorously toward meeting the Millennium Development Goals. Two estimates of the resource gap are developed, one by estimating the additional resources necessary to increase economic growth so as to reduce income poverty, the other by estimating the cost of meeting specific goals in

health, education, and the environment. Both estimates yield a figure in the range of \$40–\$70 billion in additional assistance per year, which is in line with estimates from other international development agencies and which would roughly represent a doubling of official aid flows over 2000 levels. While the authors believe this is a reasonable first approximation of the costs associated with achieving the Millennium Development Goals, it should be interpreted with caution for several reasons, including the lack of empirical data in many countries to estimate the relationship between expenditures on health or education and related outcomes, or the relationship between investment and growth, the sensitivity of the results to changes in the policy environment (both at the macroeconomic and sector level, and with respect to international trade), and opportunities for increased—and more efficient—domestic resource mobilization.

This paper—a product of the Office of the Vice President, Human Development Network, and the Development Data Group—is part of a larger effort in the Bank to accelerate progress toward the Millennium Development Goals. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Susan Brickland, room G8-015, telephone 202-473-0944, fax 202-522-3235, email address sbrickland@worldbank.org. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at sdevarajan@worldbank.org, mmiller5@worldbank.org, or eswanson@worldbank.org. April 2002. (38 pages)

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Goals for Development: History, Prospects and Costs¹

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I. Introduction

The Millennium Development Goals (MDGs) have enjoyed unusually widespread support and acceptance, from both developing and developed countries and from international development agencies, since their introduction in September 2000 at the United Nations Millennium Summit. The appeal of the Goals is understandable, since they provide a view of a much improved world by 2015, where extreme poverty is cut in half, all children are in primary school and infant, child and maternal mortality are greatly reduced. (See Table 1) The Millennium Development Goals, however, have the opportunity to be much more than an idealistic statement of what the world would like to achieve. There are, in fact, several hard-nosed reasons for the importance attached to the Goals by development practitioners, including:

- the results orientation encouraged by the MDGs, which shifts the focus from inputs and sector-specific work to cross-sectoral approaches and development outcomes;
- the increased emphasis on quantitative analysis, from gathering of basic statistical data to monitoring and evaluation of policy and program effectiveness;
- the consensus they represent regarding a core agenda for development; and
- their potential role in strengthening donor coordination.

Table 1: Millennium Development Goals (1990-2015)

1. Eradicate extreme poverty and hunger
 - Halve the proportion of people with less than one dollar a day
 - Halve the proportion of people who suffer from hunger
2. Achieve universal primary education
 - Ensure that boys and girls alike complete primary schooling
3. Promote gender equality and empower women
 - Eliminate gender disparity at all levels of education
4. Reduce child mortality
 - Reduce by two thirds the under-five mortality rate
5. Improve maternal health
 - Reduce by three quarters the maternal mortality ratio
6. Combat HIV/AIDS, malaria and other diseases
 - Halt and reverse the spread of HIV/AIDS
 - Halt and reverse the spread of malaria & tuberculosis
7. Ensure environmental sustainability
 - Integrate sustainable development into country policies and reverse loss of environmental resources
 - Halve the proportion of people without access to potable water
 - Significantly improve the lives of at least 100 million slum dwellers
8. Develop a global partnership for development
 - Increase official development assistance, especially for countries applying their resources to poverty reduction
 - Expand market access
 - Encourage debt sustainability

In many contexts, setting goals and monitoring performance against agreed targets has proved to be a successful strategy for mobilizing resources and improving results. But for goals to be useful, they must be well defined and measurable; they must be agreed by those who set the strategies and appropriate the resources to pursue them; and they must be attainable under some plausible scenario. Findings from research and experience in development suggest that the policy environment is at least as important a component of success as financial assistance for countries trying to accelerate progress toward the Goals. Empirical studies on the health sector, for example, show there is only a weak relationship between public expenditures on health and health outcomes (Filmer, Hammer and Pritchett 2000). Improvements in service delivery, which reduce waste and increase the effectiveness of interventions, can greatly impact the likelihood that the Goals are met. The overall policy and institutional framework in a country is also a key determinant of the impact that additional foreign aid may have. Thus, if additional financial assistance were to be made available, it should be allocated to

those countries that have, or are developing, policy and institutional environments in which foreign aid will be effective.

The research findings discussed above imply that we should be extremely careful in interpreting the resource estimates of the cost of attaining the MDGs. The estimates should not be taken as an amount of money which, if available, would guarantee that the MDGs will be reached. Money is not the only input, or even the most important input. If the aid goes to countries with poor policies and institutions, it is likely to be wasted. The question we are asking, therefore, is the following: If the necessary changes in policies and institutions are forthcoming, what additional financial resources will be needed to achieve the 2015 goals?

Two approaches are followed. In the first, the additional financing needed to raise growth rates by enough to meet the target for poverty reduction is estimated to be \$54 to \$62 billion each year. This estimate is based on the notion that the aid will be focused on those countries where it can make a difference, namely, countries with the appropriate policies and institutions for broad-based growth. In the second, we estimate the costs of improved schooling, health and environmental outcomes associated with reaching the goals in these aspects of development. These are estimated to be between \$35 and \$75 billion a year. To be sure, achieving improvements in schooling, health and the environment all depend on a host of factors, including most significantly, the demand for these services. Simply increasing the supply of education or health care through greater public spending may not improve outcomes. Rather than representing the additional aid “required” to reach the goals, these costs are best interpreted as the additional costs that are likely to be incurred when the education, health and environmental goals are being met.

More precise cost estimates are not possible without additional information on the circumstances in each country. Progress in achieving the development goals – and the cost of increasing the rate of progress -- will depend on the level of development, the absence of war or civil conflict, the quality of policies, the effectiveness of governments in providing public services, and the viability of adequate external financial and technical assistance. These must be assessed on a country-by-country basis, with particular attention given to the obstacles to and opportunities for progress toward each target identified by the development goals.

The rest of the paper is organized as follows. Section II presents a brief history of the Millennium Development Goals. Section III reviews progress to date on the most prominent MDG targets for which well established outcome indicators exist. Section IV discusses the importance of the policy environment for achieving progress on the goals. In Section V, the additional resource requirements are estimated, using the two approaches described briefly above (increasing income and increasing expenditures). The final Section concludes the paper.

II. The History of the Millennium Development Goals

In 1995, development ministers from the member countries of the OECD Development Assistance Committee (DAC) committed themselves to a year-long process of reviewing past experiences and planning policies into the next century. The resulting report, *Shaping the 21st Century: The Contribution of Development Co-operation*, published in May 1996, presented their vision for development progress into the next century. Emphasizing a partnership approach,

they formulated a broad strategic framework aimed at realizing seven goals drawn from the resolutions of international conferences and summit meetings. Subsequently, a series of expert group meetings jointly sponsored by the OECD, United Nations, and the World Bank, and including representatives of developing countries, NGOs, and United Nations funds and programs, helped to establish quantified targets for each goal and identified a set of 21 indicators for measuring progress. Collaborative efforts at monitoring and reporting on progress toward the goals culminated in the publication of *A Better World for All: Progress toward the International Development Goals* in June, 2000.

The General Assembly of the United Nations incorporated most of the international development goals in the Millennium Declaration in September 2000, while setting new targets for reducing the proportion of people suffering from hunger, increasing access to improved water sources, improving the lives of slum dwellers, and reversing the spread of HIV/AIDS, malaria, tuberculosis, and other major diseases. The “Millennium Development Goals” (MDGs) comprise 7 social and environmental goals linked to 11 quantified targets and a new goal for “Partnership in Development” with 7 associated targets concerned primarily with improving opportunities for developing countries in the global economy (United Nations 2001). Other goals and resolutions of UN summits and conferences, though not included in the Millennium Declaration, also remain in effect. (See Appendix 1.)

As this paper is mainly concerned with the resource requirements for developing countries in reaching the social and environmental goals of the MDGs, it focuses on the targets and indicators associated with the first seven goals. Nevertheless, the targets of the “Partnership” goal may have a strong bearing on whether developing countries are able to attain the social and environmental goals and on the cost of doing so.

III. Progress on the Millennium Development Goals in the 1990s²

Progress toward the Goals was uneven in the decade of the 1990s, with some countries and regions exceeding the targets established in the MDGs, while others continued to lag behind. Of particular concern is the weak performance of Sub-Saharan Africa, and to a lesser extent, of South Asia, where the majority of the world’s very poorest citizens live. In 1999, there were 490 million people living in extreme poverty in South Asia, 300 million in Sub-Saharan Africa and 260 million in East Asia. This section discusses progress at the regional level toward the Millennium Development Goals.

Goal 1 – Income Poverty and Hunger

The first of the Millennium Development Goals is to halve the proportion of people living in extreme poverty (living on less than \$1.08 per day) by the year 2015. As a *single* indicator, income poverty provides a good measure of overall well-being, since income is correlated with other social indicators such as education attainment and health status. Broad-based economic growth contributes to poverty reduction but the rate at which growth translates into reductions in

² The data presented in this section are taken from different sources, identified at the bottom of each table. The most recent year for which reliable data was available was used, with these dates varying from 1998 to 2001. Most of these data are available in the *World Development Indicators* (World Bank 2002) and the World Development Indicators CD ROM.

the number of poor depends on many factors including historic levels of income distribution, institutional constraints and policy choices.³ As can be seen by reviewing Table 2, there was no simple relationship between the rate of growth and the rate of poverty reduction in the 1990s.

Between 1990 and 1999, the fastest growing region of the world was East Asia and the Pacific, where GDP per capita increased by two-thirds, increasing more than 6% annually. East Asia also experienced the greatest decline in poverty, from 27.6% to 14.2% - a nearly 50% decline. South Asia also posted strong growth in the 1990s, with GDP per capita rising by 3.6% per year on average (34% during the decade) and yet, the percentage of the population in extreme poverty fell more slowly, by 2% per year. In Eastern Europe, poverty increased sharply in the 1990s, growing by 9% per year, even though the average annual fall in GDP was lower, at 2.5%. Sub-Saharan Africa, with the highest proportion of people in extreme poverty, failed to grow in the 1990s and made virtually no inroads to move people out of poverty.

Table 2: Reductions in Poverty by Region 1990—99

	(1) Population in extreme poverty 1990 (%)	(2) Population in extreme poverty 1999 (%)	(3) Population in extreme poverty 1999 (millions)	(4) Average annual rate of change in poverty 1990-99 (%)	(5) Average annual rate of change needed to achieve goal (%) (1999-2015)	(6) Average annual change in GDP per capita 1990-99
All developing countries	29.0	22.7	1,151	-2.7	-2.8	1.9
East Asia and Pacific	27.6	14.2	260	-7.4	-0.2	6.1
Europe and Central Asia	1.6	3.6	17	9.0	-9.4	-2.5
Latin American and Caribbean	16.8	15.1	77	-1.2	-3.7	1.8
Middle East and North Africa	2.4	2.3	7	-0.5	-4.1	0.8
South Asia	44.0	36.9	490	-2.0	-3.2	3.6
Sub-Saharan Africa	47.7	46.7	300	-0.2	-4.2	-0.2

Source: World Bank

As a comparison of columns 4 and 5 in Table 2 indicates, East Asia and the Pacific is the only region on a path to meet the income poverty target of reducing by half the number of people in extreme poverty by 2015 – a goal they have actually come close to meeting in one decade. The prospects for poverty being halved in the other regions are much less favourable. In the Middle East and North Africa and Sub-Saharan Africa, the rate of poverty reduction would have to increase many times over to meet the goal, going from an average annual reduction of 0.5% or less in the 1990s to more than 4% annually until 2015. In Latin America the rate would have to triple, from 1.2% to 3.7% annually. Eastern Europe and Central Asia would need to see a dramatic turnaround, from rapidly increasing poverty to a rapid decline – a rate of progress greater than that posted by East Asia in the 1990s. In South Asia the challenge is great due to the large numbers of very poor; despite progress in the 1990s, a 50% increase in the rate of poverty reduction is needed between 1999 and 2015 to meet the goal.

The first Millennium Development Goal pairs reductions in hunger with the income poverty target. Reducing hunger is a challenge of a similar magnitude to reducing poverty; the Food and

³ See *World Development Report 2000/2001, Attacking Poverty*, Chapter 3, “Growth, Inequality and Poverty”.

Agriculture Organization (FAO) of the United Nations estimates that 780 million people were undernourished between 1997 and 1999.

Several regions have made considerable progress on this goal in the 1990s, including Latin America and South Asia, still, only East Asia and the Pacific is on track to meet this goal by 2015 at current rates. In Eastern Europe and Central Asia and the Middle East and North Africa, the proportion of the population which was undernourished increased in the 1990s, posing a significant challenge if the goal is to be met. It is also useful to note that while progress on hunger is correlated with income growth and poverty reduction, this relationship is complex. For example, the rate of decline in under-nourishment in East Asia was only half the rate of decline in income poverty.

Table 3: Poverty and hunger 1990—99

	(1) Undernourished population 1990-92 (%)	(2) Undernourished population 1996-98 (%)	(3) Average annual rate of change 1990-98 (%)	(4) Average annual rate of change necessary to achieve goal (%) (1998-2015)
All developing countries	21	18	-2.2	-3.0
East Asia and Pacific	21	17	-3.0	-2.7
Europe and Central Asia	..	6
Latin American and Caribbean	13	11	-2.4	-2.9
Middle East and North Africa	8	10	3.2	-5.1
South Asia	27	23	-2.3	-3.0
Sub-Saharan Africa	35	34	-0.4	-3.7

Source: FAO

Goal 2 – Universal Primary Education

The Millennium Development Goals call for reaching universal enrolment of children in primary school by 2015, so that every child may be able to complete a full course of primary education. Progress toward this target is commonly measured by the net enrollment rate, which measures the ratio of enrolled children of official school age to the number of children of the same age in the population. Unfortunately data on net enrollment rates are available for fewer than a half of all developing countries, and even where data are available they are often late or incomplete. The enrollment rates shown in Table 4 are based on regional estimates produced by UNESCO using a special data set constructed for the 2000 Education for All conference in Dakar. UNICEF is currently developing new estimates for the U.N. Special Session on Children, to take place in May 2002.

Table 4: Primary net enrollment rates

	(1) Net primary enrollment rate 1990 (%)	(2) Net primary enrollment rate 1998 (%)	(3) Average annual rate of change rate 1990-98 (%)	(4) Average annual rate of change necessary to achieve goal (%) (1998-2015)
All developing countries	81	84	0.5	1.0
East Asia and Pacific	96	97	0.1	0.2
Europe and Central Asia	85	93	1.1	0.4
Latin American and Caribbean	84	94	1.4	0.4
Middle East and North Africa	82	86	0.6	0.9
South Asia	66	73	1.3	1.9
Sub-Saharan Africa	54	60	1.3	3.0

Source: UNESCO

Progress toward universal primary enrollment was achieved in every region during the 1990s, with some of the fastest growth rates in enrollment in South Asia and Sub-Saharan Africa where the numbers of children out of school are the greatest. Though Sub-Saharan Africa lags farthest behind, progress in some African countries has been rapid. For example, Malawi and Uganda achieved large increases in enrollments in a very short period of time by removing impediments such as school fees. And Ethiopia, where enrollments remain very low, increased its enrollment rate by 18% a year between 1992 and 1996. Despite these gains, progress will need to be accelerated in Sub-Saharan Africa and most other regions in order to achieve the MDG education target by 2015.

Even in countries where progress toward universal primary enrollment is proceeding apace, there is concern with education quality; policy makers are questioning the value of getting more children into school if they aren't learning once they are there. Measuring progress in education attainment by school enrollment rates tells us little about learning outcomes or education quality. This is because figures on school enrollments, whether calculated on a net or gross basis, are not closely correlated with the rate of primary school completion. There is a growing body of evidence that completion of five to six years of schooling is necessary for mastery of basic competencies, so children who enroll in school and then leave before completing the primary course of study may not attain functional literacy or basic numerical skills (Mingat and Bruns 2002). Therefore, while monitoring progress on primary enrollments is important, the key indicator to monitor for measuring MDG progress is the primary completion rate, for which data is just recently being assembled.

Goal 3 – Gender Equality

The Millennium Development Goals call for gender equality and the empowerment of women, with a target for equal enrollments of boys and girls in primary and secondary education, preferably by 2005, and in all stages of education by 2015.⁴ As can be seen in Table 5, girls'

⁴ This expands the coverage of the International Development Goals, which called for equal enrollments in only primary and secondary stages but also set a closer target of 2005. While progress on this goal was made in the 1990s, it was clearly not adequate to meet the 2005 goal in most regions. The Millennium Gender Equality Goal

enrollments are lowest in the regions with the lowest net enrollments -- Sub-Saharan Africa and South Asia. An average six-year-old girl in South Asia can expect to spend six years in school -- three years less than a boy of the same age - and girls based in rural areas are far more likely to drop out of school. (See Miller 2000) Nevertheless, there has been remarkable progress over the past decade in many countries where girls' enrollments have risen faster than boys. Gender differences at the primary level have been eliminated or greatly reduced in many countries such as Algeria, Angola, China, Bangladesh, Egypt, India, and The Gambia. In some countries girls' secondary school enrollments exceed those of boys.

Table 5: Ratio of girls to boys in primary and secondary school

	(1) Ratio of girls to boys 1990 (%)	(2) Ratio of girls to boys 1998 (%)	(3) Average annual rate of change 1990-98 (%)	(4) Average annual rate of change necessary to achieve goal (%) (1998-2015)
All developing countries	82	86	0.6	2.2
East Asia and Pacific	84	89	0.8	1.6
Europe and Central Asia	90	88	-0.4	1.9
Latin American and Caribbean	98	99	0.1	0.2
Middle East and North Africa	79	84	0.8	2.5
South Asia	68	78	1.7	3.6
Sub-Saharan Africa	79	80	0.2	3.2

Source: World Bank

Improving girls' enrollments involves overcoming the social and economic obstacles that stop parents from sending their daughters to school. For many poor families the economic value of girls' work at home exceeds the returns to schooling. Enrollment rates for girls from wealthy families tend to be higher, but there is little evidence of a correlation between girls' enrollment rates (relative to boys'), average income, and the distribution of income across countries. (Hanmer and Naschold 2000)

Goals 4 and 5 - Infant, Child and Maternal Mortality

The Millennium Development Goals call for reducing under-5 child mortality rates by two-thirds and maternal mortality ratios by three-quarters of their 1990 levels by 2015. These are widely perceived to be ambitious targets, but progress in reducing infant and child deaths in many countries demonstrates that they are feasible.

extends the date for equality to 2015 and increases the challenge by including tertiary education as well. Thus, while the MDGs do not set aside the earlier date of 2005 -- indicating that more immediate progress is preferable - they do recognize that additional time will be needed to meet this goal in many countries.

Table 6: Under-5 mortality rates

	(1) Deaths per 1000 live births 1990	(2) Deaths per 1000 live births 2000	(3) Average annual rate of change 1990-2000 (%)	(4) Average annual rate of change necessary to achieve goal (%) (2000-2015)
All developing countries	88	84	-0.5	-7.0
East Asia and Pacific	55	45	-2.0	-6.0
Europe and Central Asia	34	25	-3.1	-5.3
Latin American and Caribbean	49	37	-2.8	-5.5
Middle East and North Africa	72	54	-2.9	-5.4
South Asia	121	96	-2.3	-5.8
Sub-Saharan Africa	155	162	0.4	-7.6

Source: WHO / UNICEF

In the 1990s, all regions except Sub-Saharan Africa reduced under-5 mortality rates, as seen in Table 6. However, no region is on track at this time to meet the 2015 goal. Annual reductions in child mortality of between 5.3% and 7.6% will be required to meet this goal. Fortunately, much is known about the causes of infant and child mortality, including the importance of clean water and the benefits of oral rehydration therapy for diarrhea, the role of vaccinations, especially against measles, the value of insecticide treated nets and prophylactics for malaria prevention & treatment, the importance of pre-natal and post-natal interventions in reducing mother to child HIV transmission and education of mothers in basic infant and young child care.

Unfortunately, progress in under-5 mortality has been slowest among the poorest countries where the problem is most acute. Between 1990 and 2000, 31 low and middle-income economies reduced their under-five mortality rates fast enough to achieve the goal of a two-thirds reduction by 2015. Of these, 9 were upper middle income, 16 lower middle income, but only 6 were low income. Of the 15 that suffered increasing mortality rates, 10 were low income. Still the regional and income-group averages disguise much variation. Two of the countries making the fastest progress over the decade were Tajikistan and Azerbaijan, both low income countries, while Botswana, an upper middle income country that has been badly affected by the spread of HIV/AIDS, saw under-five mortality rates rise from 62 to 100 per 1,000 live births in just 10 years.

Maternal mortality is much more difficult to measure accurately. Deaths as a result of pregnancy or child birth are relatively rare and may not be captured in general purpose surveys or those with small sample sizes. Furthermore, maternal deaths may be underreported in countries that lack good administrative statistics or where many births take place outside of the formal health system. What makes maternal mortality such a compelling problem is that it strikes exclusively young women undergoing what should be a normal process and because the difference in outcomes is so different between those who live in rich countries – where the average maternal mortality ratio is around 21 deaths per 100,000 live births – and those who live in poor countries where the ratio may be as high as 1,000 deaths per 100,000 live births. (AbouZhar 2000)

	(1) Maternal mortality per 100,000 live births 1995	(2) Births attended by skilled health personnel 1990	(3) Births attended by skilled health personnel 1999	(4) Average annual rate of change 1990-99 (%)	(5) Average annual rate of change needed to reach 90% attendance (1999-2015)
All developing countries	430				
East Asia and Pacific	140	50 a	61 a	2.2	2.4
Europe and Central Asia	60				
Latin American and Caribbean	190	72	77	0.7	1.0
Middle East and North Africa	240	50	61	2.2	2.4
South Asia	430				
Sub-Saharan Africa	1,120	49	46	-0.7	4.2

a. Includes all Asia except India and China.

Source: WHO / UNICEF

Because of the lack of comparable time-series data, it is difficult to assess progress toward this goal. The last global estimates of maternal mortality for 1995 concluded that about 500,000 women died during pregnancy and childbirth, most of them in developing countries. Data on the proportion of birth attended by skilled health personnel are indicative and are presented in Table 7 above. In Latin America, where the proportion of births attended by skilled health care workers is high, maternal mortality is relatively low, while very high maternal mortality occurs in Africa, where skilled attendants are not readily available. Significant progress in reducing maternal mortality will, however, require more than increasing the number of skilled birth attendants: deaths in childbirth often involve complications such as hemorrhage that require fully equipped medical facilities. The maternal mortality ratio is thus an indication of the capacity of the health care system to meet the needs of the entire population.

Goal 6 - HIV/AIDS, malaria, and other diseases

The Millennium Development Goals also target HIV/AIDS, malaria, tuberculosis and other major epidemic diseases, which pose significant threats to economic and social progress in developing countries. Unfortunately, the data on these illnesses, including AIDS, is often incomplete or collected on an irregular basis. In many countries only one reliable estimate has been made for the HIV/AIDS infection rate, so it is impossible to accurately determine rates of change. The targets for epidemic diseases are still under discussion and have not yet been fully quantified.

In 2000, 34.7 million adults and 1.4 million children were living with HIV/AIDS, and over 95 percent of them are in developing countries (see Table 8 below). The most devastated region is Sub-Saharan Africa (70 percent of cases) followed by South and South-East Asia (16 percent). For the first time, however, HIV incidence has fallen slightly in Sub-Saharan Africa in 2000, partly because successful prevention programs have reduced infection rates, particularly in Uganda, and also because the epidemic has already affected many people in the sexually active population. In Eastern Europe and Central Asia, the number of adults and children living with

HIV/AIDS in 2000 increased 700,000 or 67 percent from just a year ago. Most of the newly infected are men, and the majority of them are injecting drug users.

Table 8: HIV/AIDS (figures for 2001)

Region	Adults and children living with HIV/AIDS	Adults and children newly infected with HIV	Adult prevalence rate
Sub-Saharan Africa	28,100,000	3,400,000	8.4%
Middle East & North Africa	440,000	80,000	0.2%
South and Southeast Asia	6,100,000	800,000	0.6%
East Asia & Pacific	1,000,000	270,000	0.1%
Latin America & Caribbean	1,820,000	190,000	0.6%
Eastern Europe & Central Asia	1,000,000	250,000	0.5%
High income	1,515,000	75,500	0.5%
World	41,490,000	5,141,000	1.2%

Source: UNAIDS

Goal 7 - Environmental sustainability

The proposed Millennium Development Goals specify three targets intended to capture the spirit of the Millennium Declaration. The first is very broad and unquantified. It calls for the integration of principles of sustainable development. The second adopts a version of the World Water Forum goal of providing access to a sustainable water source by 2025 to all people. Although the reference dates are not yet agreed, the intention is to reduce by half the proportion of those who lack access to safe drinking water. The third environmental target focuses on urban slum dwellers. At this point, it too lacks a well specified target, but has associated with it indicators of the proportion of people with access to improved sanitation services and the proportion of the population with secure land tenure. Additional work remains to be done to validate the proposed indicators and specify operational targets for the environmental goal.

Access to water

Between 1990 and 2000, about 900 million people gained access to an improved water source. However, this increase in the number of people served was just sufficient to keep pace with population growth. An improved water source refers to any form of water collection or piping used to make water regularly available. While the goal calls for access to "safe drinking water" there is no practical measure of whether water supplies are safe. Even so, connecting households to a reliable source of water that is reasonably protected from contamination would be an important step in improving their lives. In 2000, 1.2 billion people are still without access to an improved water source, 40 percent of whom live in East Asia and the Pacific and 25 percent in Sub-Saharan Africa. Access was far better in urban than in rural areas.

	(1) Without access to improved water source 1990	(2) Without access to improved water source 2000	(3) Average annual rate of change 1990-2000 (%)	(4) Average annual rate of change necessary to achieve goal (%) (2000-2015)
All developing countries	27	21	-2.5	-2.9
East Asia and Pacific	30	25	-1.8	-3.4
Europe and Central Asia	..	10
Latin American and Caribbean	19	15	-2.4	-3.0
Middle East and North Africa	16	11	-3.7	-2.1
South Asia	20	13	-4.3	-1.7
Sub-Saharan Africa	51	45	-1.3	-3.8

Source: WHO

As can be seen in Table 9, several regions have made good progress on improving access to an improved water source, including South Asia and the Middle East and North Africa, which are on track to meet the Millennium Development Goal in advance of 2015. Unfortunately, progress in East Asia and the Pacific and in Sub-Saharan Africa is not on a path to meet the MDG, and will have to be doubled and tripled, respectively, to meet this target.

Access to sanitation

In the proposed Millennium Development Goals access to an improved sanitation system has been coupled with the slum dwellers target. Sanitation remains vitally important for rural residents as well. In fact, sanitation plays a fundamental role in improving health outcomes. Lack of clean water and basic sanitation are critical causes of the prevalence of disease transmission by feces in developing countries. An improved sanitation system implies disposal facilities that can effectively prevent human, animal, and insect contact with excreta. The use of sanitation systems does not, however, assure that effluents are treated to remove harmful substances before they are released into the environment.

In 2000, 70 percent of the people who do not have access to sanitation live in East Asia and the Pacific and South Asia. These regions made great progress in serving more people with sanitation over 10 years, but could not catch up with population growth. Data in Table 10 indicate that the rate of progress would have to more than double in East Asia and quintuple in South Asia to meet this goal. It is also worth noting that there are enormous variations in the definition of improved sanitation among countries. For example, in many African countries the population “without access” to improved sanitation means people with no access to any sanitary facility. In Latin America and the Caribbean, however, it is more likely that those “without access” have a sanitary facility, but the facility is considered unsatisfactory. As Table 10 shows, Latin America and the Middle East are the regions which made the most progress on this indicator in the 1990s. All regions except Sub-Saharan Africa have a lower rate of access to sanitation compared to access to an improved water source.

Table 10: Access to improved sanitation services

	(1) Without access to sanitation 1990	(2) Without access to sanitation 2000	(3) Average annual rate of change 1990-2000 (%)	(4) Average annual rate of change necessary to achieve goal (%) (2000-2015)
All developing countries	56	48	-1.5	-3.6
East Asia and Pacific	62	53	-1.6	-3.6
Europe and Central Asia
Latin American and Caribbean	28	22	-2.4	-3.0
Middle East and North Africa	22	17	-2.6	-2.9
South Asia	69	64	-0.8	-4.1
Sub-Saharan Africa	45	45	0.0	-4.6

Source: WHO

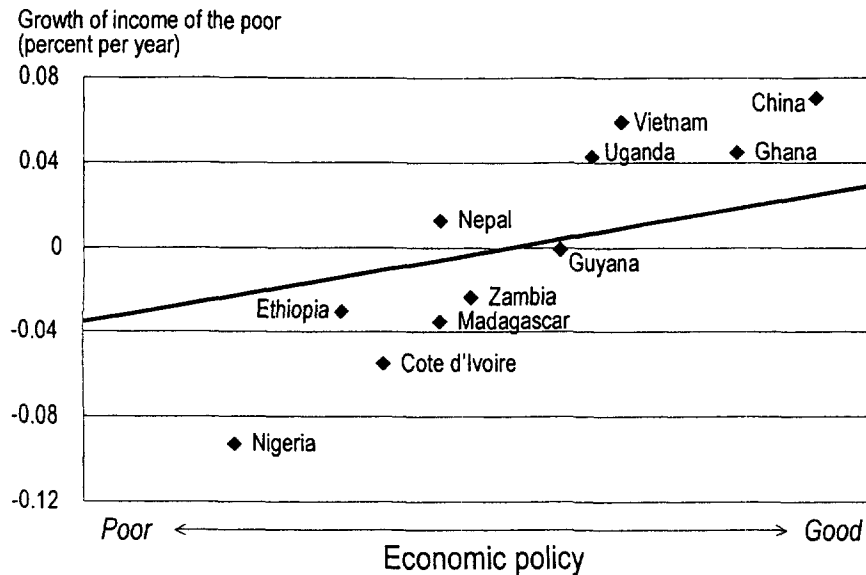
IV. Development progress and the policy environment

Why have some countries done better than others in working toward the development goals and what implications does this have for how best to use development assistance to reach the goals? Recent empirical studies have shown that the *policies* countries follow are important determinants both of economic growth⁵ and of whether the poor share in the benefits of this growth⁶. Graph 1 below, from Collier and Dollar (2001), shows that countries with better economic policy saw faster increases in the growth of income of the poor in the 1990s. These countries also saw greater progress in the human development goals, such as primary education and reductions in infant mortality. Uganda is an example of a poor country that has made significant improvements in the policy framework, including macroeconomic and structural policies, public sector management and social inclusion, and which has registered substantial progress in most of the international goals (see Box 1).

⁵ Studies linking good policies with growth include Burnside and Dollar (2000), Hansen and Tarp (2000) and Collier and Dollar (2000).

⁶ Collier and Dollar (2001) link the quality of economic policy with the growth of incomes of the poorest quintile in 80 countries and find a positive correlation.

Fig. 1 Growth of Income of the Poor and Economic Policy in the 1990s



Source: Collier and Dollar (2001)

Collier and Dollar also find that aid effectiveness and the quality of policies are positively correlated. In a country with good policies, aid has double the impact on investment—an additional 1 percent of GDP in aid results in 0.9 percent additional gross investment—as it does in a country following bad policies. The implication is that countries with many poor citizens and good policies should receive more aid than they do today.⁷ Collier and Dollar (2001) show that if poverty and the quality of policies are taken into account when distributing aid, the effectiveness of aid could be increased nearly two-fold. Were more aid is spent in good policy countries, where its marginal impact is greater, they estimate that 19 million people a year could be lifted out of poverty, instead of the current 10 million people. Furthermore, if the development community supports poor-policy countries in their efforts to improve their policies, the payoffs to poverty reduction and progress in the other development goals will be much greater.

Box 1: Making Progress Toward the Goals: Uganda

In the 1990s, Uganda made substantial progress towards the international development goals. Between 1992 and 1999, the share of Ugandans living in poverty fell from 56 percent to 35 percent. Net primary school enrollments increased from 62.3 percent in 1992 to 83.8 percent in 1997. The ratio of girls to boys rose from 79.8 percent in 1990 to 97 percent in 1997, and continues to rise at 1 percent a year. Although morbidity increased from 1992 to 1997 (due mainly to HIV/AIDS and malaria), since then the health status of all Ugandans appears to be improving. Under-5 mortality has declined (from 165 to 162), There has also been an improvement in child malnutrition, resulting in gains in stunting.

⁷ Collier and Dollar (2001) also state that aid has a limited impact on poverty reduction in middle-income countries because a relatively small share of the population in these nations is in poverty, which suggests that aid to these countries would not be the most efficient allocation in terms of poverty reduction per dollar spent.

How did Uganda manage to make such progress? Three factors worked together.

Macroeconomic stability: Starting in 1987 the government introduced macroeconomic reforms aimed at restoring and maintaining macroeconomic stability. GDP growth has averaged close to 7 percent since 1987; inflation has averaged 5 percent since 1992; domestic government revenue doubled from 6 percent of GDP in 1986 to close to 12 percent currently. Government has been able to increase its expenditure from 8.6 percent of GDP in 1986 to 20.6 percent in 1999.

Shifting public resources towards poverty reduction: The Medium-Term Expenditure Framework (MTEF), introduced by the government in 1992, has contained aggregate spending within the resource envelope and delivered the desired composition of spending. In 1994, Government expenditures on education amounted to 20 percent of total public spending, roughly equal to expenditures on both public administration and security. By 1999, the share spent on education had risen to 26 percent, compared with 22 percent for public administration and 16 percent for security.

Improving service delivery: In 1995, school survey results had shown that only 20 percent of the public non-salary education spending reached schools. Rather than shying away from this bad news, the government instituted several measures to improve transparency: Regular publication in the main newspapers and broadcast by radio of monthly transfers of public funds to districts; all district headquarters and government primary schools were required to maintain public notice boards and post monthly transfers of funds; districts were required to pay all conditional grants for primary education directly on individual accounts. The result has been dramatic. A tracking survey in 1999 showed that schools now receive more than 90% of the non-wage spending.

As the example of Uganda makes clear, the policy environment in a country can affect not only the rate of economic growth, but also the effectiveness of public service delivery and, hence, educational and health outcomes. The effect is compounded because economic growth typically increases the demand for education and health care, which further increases the effectiveness of service delivery. The challenge in making progress toward the development goals is to provide development assistance where it will do the most good: to countries that have demonstrated their ability to use assistance effectively and to those countries that need help in changing policies to increase their opportunities for growth and human development.

V. Estimating the Cost of Meeting the Development Goals

In light of the unprecedented consensus on the development goals, but the highly uneven performance across countries, a natural question to ask is: What additional effort will it take to achieve the goals by 2015? Although this effort will depend mostly on actions by the countries themselves—improvements in public policy, allocation of public expenditures, and effective service delivery--the international community can and should play an important role. How much can additional financial assistance improve the chances of reaching the development goals? And how much is required?

Any attempt to determine the aggregate costs of achieving the development goals is a highly speculative exercise. Not only do countries vary enormously in their ability to use aid effectively, but the relationship between foreign aid (or other public resources) and outcomes is a highly uncertain one. Recognizing the possible errors associated with such an exercise, we approach the problem from two different perspectives.

We first calculate the additional aid required to meet the income poverty goal by estimating the additional growth required to raise average incomes by enough to reach the goal, and then estimating the additional aid required to attain that growth. This procedure yields an estimate of an additional \$54 to \$62 billion in foreign aid per year to reach the income poverty goal. Growth also has a powerful effect on progress toward the other goals, especially those associated with health (infant mortality, maternal mortality, communicable diseases) and education (primary enrollment, gender equality). The mechanism by which growth affects these other goals is two-fold: income growth increases demand for health and education services; and it increases public revenues which can be spent on the supply of these services. In addition, some of the additional foreign aid will be spent directly on the social sectors, increasing access and supply of these services too. Hence, by calculating the additional aid required (via the growth channel) to achieve the income poverty goal, we are approximating the aid required to reach the social and environmental goals.

Alternatively, we can attempt to calculate the additional public resources that would be used in meeting the social and environmental goals. As noted earlier, these calculations face enormous uncertainties, not least because the link between public spending and health and education outcomes is tenuous at best. In addition, there is a difference between the average cost of providing the services to those already in the system, such as children enrolled in school, and the incremental cost of bringing those outside the system—such as the children not in school—into it. Most of our calculations are based on the average cost method and may either over or underestimate the incremental costs in particular countries. With these qualifications, as a rough approximation, we can estimate the additional costs of meeting the education goals (between \$10 and \$15 billion); and the additional costs of meeting the health goals (between \$25-30 billion). The figure for meeting the health goal is quite close to estimates reached by other studies, including recent work by the Commission on Macroeconomics and Health (albeit using different assumptions and methods). Adding these numbers together, and adjusting for the other goals (environment and water) by another \$10 billion yields a total lower-bound figure of \$45 billion, which is somewhat less than the resources required to meet the income poverty goal. Despite the huge uncertainty surrounding these estimates, the fact they seem to arrive at the same order of magnitude gives us confidence that the overall estimate of \$54 to \$62 billion in additional aid is not unrealistic.

Income, poverty reduction, and development assistance

In this section we estimate the amount of official development assistance (ODA)⁸ needed to raise the economic growth rate of countries by enough to achieve the poverty reduction goal. Implicitly we assume that the additional amount of ODA needed to achieve the poverty goal will finance, inter alia, the effort to achieve the social and environmental goals, although it is not possible to provide a complete, country-by-country reconciliation of ODA receipts and expenditures. Thus it is possible in some countries that the ODA needed to achieve the projected level of growth for poverty reduction would be insufficient to finance the needed additional expenditures in

⁸ The Development Assistance Committee of OECD recognizes two forms of aid: official development assistance (ODA) and official aid. The latter comprises flows that meet the concessionality requirements of ODA but are directed to certain transition economies or to other countries and territories in part II of DAC's list of aid recipients. In this analysis we include official aid as part of ODA, but exclude those countries considered by the Bank to be high income.

education or health. Or the reverse could be true. Given the large range of the estimates and the critical importance of achieving efficient use of these resources, greater precision in matching supply to demand does not seem warranted.

Although there is much that we do not know about the connection between aid, public expenditures, and poverty reduction, the empirical studies by Collier and Dollar provide evidence that poor countries with good policies benefit from aid. Collier and Dollar (2001) ask whether a given level of aid could be allocated more efficiently to produce a greater reduction in poverty levels. They estimate an equation for the efficiency of aid which takes into account the policy environment and the extent of poverty. In their “poverty-efficient” allocation of 1998 ODA, 68 percent of all assistance would go to countries with good policies and high poverty, while 28 percent would go to countries with poor policies and high poverty. The result is that a total of \$43.6 billion in ODA would go to 43 countries that had actual ODA receipts of only \$17.6 billion in 1998, an increase of 150 percent. Although there is no guarantee that this amount of aid would allow the recipient countries to achieve the specific goal of reducing poverty rates to one-half of their 1990 level, the numbers help to illustrate the increased flows of ODA to selected countries that would be warranted by the objective of efficient poverty reduction.

In the estimates below, we also attempt to incorporate some estimate of the role played by the prevailing policy environment and to look at the consequences of policy improvements. As Collier and Dollar point out, providing assistance with no consideration of the policy environment leads to an inefficient allocation of resources. In other words, the cost of meeting the development goals is not fixed, but will depend on growth, policies and the efficiency of aid allocation.

In 1999, low- and middle-income countries received approximately \$57 billion in net official development assistance and official aid (ODA) from members of the OECD Development Assistance Committee and from concessional loans and grants from multilateral institutions. This is less than the \$63 billion in net ODA provided by DAC members in the same year, the difference being in part official aid to high income countries (\$1.8 billion) and contributions to non-governmental organizations and in part the difference between contributions to multilateral institutions and the net amounts provided by those institutions in a particular year. Of the \$57 billion, approximately \$43 billion can be accounted for through direct transfers to developing countries. The balance went to regional initiatives and unallocated costs. In the discussion below, we assume that unallocated and regional aid was distributed proportionately across all recipient countries.

To estimate the additional ODA needed to reduce poverty rates to half of the 1990 levels, we begin with a simple, “two-gap” growth model in which growth depends upon the level of investment and the efficiency with which investment is turned into output^{9,10}. Investment funds come from domestic savings, official aid, and other non-aid flows. For a given rate of growth of

⁹ The workhorse development model of the 1960s and 1970s, the two-gap model has been criticized as being inappropriate for projections (Easterly [1999]) and for analyzing policies (Devarajan et al. [1997]) and poverty (Devarajan et al. [2000]). Nevertheless, the simple model used here is a transparent and flexible framework for examining, for a large number of countries, the aid requirements of achieving the poverty goal.

¹⁰ See Appendix 2.

per capita GDP, the rate of poverty reduction depends upon the shape of the income distribution and the level of average income relative to the poverty line. Working backward from the existing poverty level and distribution of income, the average rate of growth required to reach the poverty goal in 2015 determines the amount of additional investment needed. For the poorest countries, this need is assumed to be met by official development assistance.

To capture the basic elements of an efficient allocation of aid, we divide developing countries into two groups. The first comprises 86 countries for which aid is unlikely to affect their ability to reach the goal. This includes countries that are already “on track” on the basis of their current resources. It also includes countries that may not be on track, but for which increasing aid will have little effect on their growth rates.¹¹ This group has a total population of 4 billion people, an average income of almost \$1400, and received over \$40 billion a year in net ODA flows in 1999. We assume that aid flows to these countries, reflecting existing commitments and political agendas, will continue at present levels. The second group comprises 65 countries, most of them low-income, which may not reach the goal, absent an increase in aid resources. In 1999 they had a total population of 1 billion, an average income per capita of less than \$400 and received \$18 billion in net ODA flows. While many of the members of the second group were included in Collier and Dollar’s poverty-efficient aid allocation (see above), they are not identical. Of the 65 countries in group II, Collier and Dollar would have allocated aid to 40. These 40 received approximately \$20 billion in ODA in 1998; Collier and Dollar’s poverty efficient aid would have increased that to \$37.4 billion.

Given the key role of policies in aid effectiveness, we divide the second group of countries between those with higher and lower levels of policy effectiveness, looking at issues such as the macroeconomic policy framework, structural policies, the quality of public sector management and social inclusion. Forty-three countries were classified as having relatively good policies according to these criteria, while 22 were classified as having relatively poorer policy frameworks. For the better performing countries, we assume that their policy performance (as represented by the savings rate and incremental capital-output ratio) is equal to that of the 1990s.¹² Under this assumption, aid to these better-performing countries would have to rise to \$54 billion per year by 2003-05, or \$39 billion a year more than in 1999, to be on track to meet the poverty goal (see Table 11).

For the worse performing countries we consider two scenarios based on policy performance. Under the first, improved policies lead to improvements in savings rates and incremental capital-output ratios (ICORs) to at least equal the average of the better performing countries. To meet the poverty goal, aid to these countries would have to increase from \$3 billion to \$18 billion a year by 2003-05. Under the second scenario, the savings rate and ICORs of the worse performing countries do not improve compared with the 1990s, and aid requirements would have to rise to \$26 billion a year. Improvement in policies in the worse-performing countries results in

¹¹ This includes several countries that receive only limited amounts of aid relative to their GDP and have relatively high average incomes, but where an unequal distribution of income means that they have significant numbers of poor.

¹² There are some exceptions. Countries with missing data are assigned average values of ICOR (7) and savings rates (7.5). Countries with declines or stagnation in output growth (so the ICOR is meaningless) are assigned ICORs close to the maximum for the bulk of countries (10). And countries with negative savings rates are assigned a savings rate of zero.

a savings of \$8 billion in the cost of meeting the poverty goal, more than double the aid provided to these countries in 1999.¹³

Table 11: Additional aid levels required to halve poverty

	Current ODA levels	Additional ODA required to reach poverty goals	
	1999 (\$ billions)	Improved policies	Current policies
Official development assistance	57	54	62
Group I countries	40	--	--
Group II countries	18	54	62
Group II countries with good policies	15	39	39
Group II countries with poor policies	3	15	23
Total aid (% of high income OECD GNP)	0.25	0.37	0.45

Both increased aid levels and improved policy performance will help to increase progress toward the goal of halving poverty by 2015. Under all scenarios, significant increases in aid to the group II countries are needed to meet the goal, but the countries with worse than average policies “need” a much greater percentage increase in aid to halve poverty. The projections shown in Table 11 suggest that between \$39 and \$54 billion in additional aid will be needed. This range represents the amount of aid required to enable reforming countries to reach the poverty goal. If the worse-performing countries fail to reform and are still given aid, the total bill could be as high as \$62 billion.

There are serious limitations to these estimates, and they should be used cautiously. The historical data on income growth and poverty reduction are particularly weak in the poorest countries and in some countries where data are available a growing discrepancy between growth in income measured by the national accounts and mean income measured through household surveys has been observed (see Ravallion 2001). Furthermore, the projections depend critically on the assumption that changes in aid flows do not affect savings rates and ICORs. It is also assumed that the poor share equally in the benefits of growth. While this may be true on average, there are substantial differences among countries that could affect the aggregate level of aid requirements. Also, the rate of poverty alleviation in response to growth depends critically on the depth of poverty – the distribution of personal income in the vicinity of the poverty line.

These calculations assume that, with the exception of foreign aid, all other international exchanges continue as “business as usual.” Specifically, we assume that private capital flows, already quite small in these countries, will not increase as a share of GDP. If instead private capital flows increased by one percentage point faster than GDP, the difference in the aid requirement would be negligible. If private capital flows in the weak-policy countries rose to the average of those with adequate policies, the additional aid required to meet the income poverty goal would be reduced by \$0.5 billion.

¹³ It is worth noting that this result was quite sensitive to the level of improvement we assumed in the policy framework. Under more optimistic assumptions about improvements in the macroeconomic, structural and public management frameworks, the additional aid saved would be \$21 billion, rather than \$8 billion.

We also assume that the world trading system will remain essentially unchanged—becoming neither more protectionist nor more open. If the Doha summit produces tangible results, developing countries should gain greater market access. For developing countries as a group, the benefits of increased market access would be much larger than financial transfers through official development assistance over the period to 2015. Unfortunately, these gains would not substitute for development assistance in helping *all* countries reach the MDGs. There are two reasons.

First, Africa plays such a small part in world trade (and already has preferential access in certain areas) that the geographic distribution of trade-related benefits favors the high-trading, low- and middle-income countries. A general-equilibrium-model simulation of reducing protection by half worldwide yields a welfare gain in 2015 of about \$200 billion for developing countries as a whole. But only \$2.4 billion of that accrues to Sub-Saharan Africa, and another \$3.3 billion in South Asia outside India. While small, these gains are not trivial: when combined with the price changes and distributional effects of trade reforms, they would lift an additional 10 percent of Africans out of poverty¹⁴.

Second, these low-income countries are too poor to benefit fully from multilateral trade liberalization without aid. To take advantage of market access, they require hefty investments in trade-creating infrastructure, transportation, and telecommunications, as well as investments in trade-related government institutions, such as better customs and tax administration, and overall management of public investment. These in turn require development assistance—“aid for trade”. In short, even though it will undoubtedly benefit developing countries by stimulating growth and reducing global poverty, reducing trade barriers is not sufficient to eliminate the need for aid in those countries with the largest income-poverty MDG gap.

Finally, there is the question of whether this \$39 - \$54 billion in aid, even if accompanied by improvements in policies and institutions, would strain the “absorptive capacity” of recipient countries. There are different ways to look at absorptive capacity. One way is to examine whether there are diminishing returns to aid. One piece of recent research on the growth impact of additional aid calculates that, for countries which have policies and institutions that are among the best of developing countries, a “saturation point”—the point beyond which the growth impact is zero—is reached when aid is around 30 percent of GDP. By contrast, the saturation point for countries with extremely weak policies and institutions is calculated to be around 6 percent of GDP. Applying these estimates to our estimates, we find that for four of the 43 Group II countries with adequate policies, the saturation point would be reached. On average, the additional aid will leave the Group II countries with aid-to-GDP levels that are 35 percent of their saturation point. In short, for most Group II countries with adequate policies, absorptive capacity is unlikely to be a problem.

To be sure, these estimates may understate the effect of the absorptive capacity constraint. If there are diminishing returns to aid throughout, the amount of additional aid required to meet the income poverty goal would be higher. However, improvements in donor policies could mitigate

¹⁴ This is not enough to offset the increase in population growth, so the number of people living in poverty in Africa would still rise during the period.

this effect. Much of the diminishing returns to aid is the result of congestion effects—too many projects absorbing the limited technical and managerial talent in developing countries. A shift by donors towards simplified and harmonized aid modalities could therefore be an important element in reaching the goals. We emphasize that we are working to achieve the MDGs country-by-country. This strategy is different from an aid allocation scheme designed to maximize global poverty reduction.

No separate estimates were made of the cost of achieving the hunger target. It is generally agreed that economic growth combined with slowing population growth and continuing innovations in agriculture will be sufficient to reach the goal of reducing the rate of undernourishment by half.¹⁵ However, some estimates suggest that alleviating malnutrition in children will require, in addition to income growth, “additional direct measures to combat malnutrition.”¹⁶ Here we assume that additional spending on nutrition programs could be financed out of the additional ODA directed toward meeting the under-5 mortality goal.

Estimating the cost of meeting the targets for education, health and the environment

In this section, we estimate the costs of attaining the specific education, health and sustainable development targets of the development goals, excluding the poverty and nutrition goals. Investments in education, health and the environment have high rates of return and contribute to poverty reduction. Likewise, economic growth and poverty reduction are likely to increase demand for education and health service, improving the chances of achieving these goals. If the linkages between poverty reduction and improving social indicators are ignored, we run the risk of overstating the cost of achieving the goals. For this reason, we do not include a separate estimate of the cost of poverty reduction in this section. At the same time, we do not know the exact relationship between progress on these social indicators and poverty reduction so it is possible that additional resources would be required to meet the poverty reduction target even if the social targets were met (or vice-versa). Therefore, the estimate provided in this section should be interpreted as suggesting the order of magnitude of resources required rather than the specific amount.

Estimates of the costs of meeting specific human development goals, such as those for education and health, are highly problematic. The relationship between public expenditures and outcomes is complex and empirical evidence from developing countries suggests only a weak link between public spending on education and school enrollments, or between health expenditures and mortality or disease¹⁷. First, these human development outcomes depend on household characteristics, such as whether the mother is educated, or the family can afford to send the children to school. Second, as noted earlier, there is a difference between the average cost of providing services, and the incremental cost of enrolling a child or treating a patient. While average costs are reported below, they should not be automatically interpreted as incremental costs. Third, public spending does not always translate to outcomes because the delivery of public services, which is the vehicle for translating policies into desired outcomes, is often highly

¹⁵ See “The State of Food Insecurity in the World 2000,” Rome: Food and Agricultural Organization, 2000, p 19.

¹⁶ Harold Alderman and others, “Reducing Child Malnutrition: How Far Does Income Growth Take us?”, March, 2001, p. 18.

¹⁷ See Filmer (1999), “A Note on Public Spending and Health and Education Outcomes”.

Box 2: Failures in public service delivery

One reason for the weak link between public expenditures and outcomes is that public service delivery in many developing countries is notoriously poor. The following examples illustrate the extent and nature of the problems.

- 1) A study in India documents teachers arriving drunk with some regularity and high levels of absenteeism.
- 2) In a survey in Zimbabwe, 13% of respondents gave as a reason for not delivering babies in public facilities that "nurses hit mothers during delivery", 22% that nurses ridiculed mothers for not having baby clothes, and 16% that mothers were ordered to clean linens soon after delivery; these results were confirmed by a survey of nurses where 11% explained it as harassment by nursing staff.
- 3) In Guinea in 1984, 70% of government drugs disappeared.
- 4) World Bank studies (1994) find 30-40% misappropriation of drugs in developing countries.
- 5) In outlying regions of Indonesia, vacancy rates in public services are 50% or more.
- 6) Costa Rica's absenteeism rate is 30% in public health facilities.

inefficient (see Box 1 on Uganda and Box 2 on examples of failures in public service delivery). Fourth, in the case of infant mortality for example, it is not a single, public-health intervention such as immunization, but a combination of factors, including access to potable water and mothers' education, that influences its decline. Finally, in the case of maternal mortality, data quality is so poor that it is difficult to estimate the size of the problem, much less the cost of meeting the goal.

The most accurate way to estimate the cost of meeting the social and environmental goals is at the country level. Country work, and in some cases, even sub-national studies, allow an assessment of the efficiency of public service delivery, the costs of reaching the most vulnerable populations and the ability to identify specific interventions which are required to accelerate progress toward the targets. Estimates of the relationship between economic growth and poverty reduction are also much more meaningful at the country level. The World Bank is undertaking work in a selected group of countries, through the Poverty Reduction Strategy Paper (PRSP) consultative process, to identify the major constraints to accelerating progress toward the education, health, and environmental goals, including assessments of the resources (time, human capital, institutional, policy as well as monetary) required to meet the goals. Some country-level work has already been advanced, including estimates of the cost of meeting the health and education goals in Honduras and estimates for meeting the universal primary education objective in several African countries. This country-level work, together with other international experience in these sectors, including cross-country analytical work on the links between public expenditures and outcomes, form the basis for the estimates provided in this section.

Education

Estimating the cost of attaining universal primary education by 2015 is an exercise beset by many of the problems described above: weak, and sometimes contradictory, evidence on the relationship between public expenditures on education and enrollments (due in part to problems in public service delivery); difficulty in disentangling the complementary roles of supply and

demand for education in increasing enrollments; and poor data quality. Table 12 below provides four estimates for the additional annual resources required to meet the target for universal primary education, based on a unit cost approach. In column A, an average cost per student schooling in developing countries, \$110.60 per student, is multiplied by the number of primary school-age children not in school, estimated at approximately 100 million, resulting in an estimated \$11.4 billion in additional annual resources. Columns B and C use more targeted estimates of per-student costs, the regional median and the country average respectively, and obtain estimates of \$14.9 and \$10.4 billion. These are slightly higher than the “minimum global cost estimate” by UNICEF staff, which put the required additional recurrent and capital costs at \$9.1 billion. (Delamonica, Mehrotra and Vandermoortele 2001) Since they are derived from actual, current spending per pupil, these unit cost estimates are best interpreted as the cost of sustaining a child in primary school once he or she is enrolled. It may not represent the additional cost required to enroll a child in school, as that cost would entail increasing education system capacity, as well as improving the quality of schooling (which affects the demand for education).

**Table 12: “Unit cost” estimates of universal enrollment.
(billions of US \$)**

Region	A	B	C	D
	\$110.60 per out of school child	Regional / Group median of spending per student spent on each out of school child	Country level of spending per student spent on each out of school child	13 percent of GDP per capita spent on all children of school age
	(I)	(II)	(III)	(IV)
East Asia and Pacific	0.89	0.89	0.38	10.4
Europe and Central Asia	0.30	0.47	0.63	0.46
Latin America and Caribbean	0.73	1.45	3.23	8.10
Middle East and North Africa	0.90	0.87	2.18	5.73
South Asia	3.69	2.24	1.80	1.58
Sub-Saharan Africa	4.94	2.63	2.15	1.27
All regions	11.4	14.9	10.4	27.6

These per-student costs do not reflect, however, the adequacy of the budget dedicated to education or guarantee the quality of the education. A calculation that uses as a rule-of-thumb a norm of 13 percent of GDP per capita on each primary-school student yields an estimate of an additional \$28 billion¹⁸ and is presented in Column D.

¹⁸ Estimates using the measured response of enrollments to expenditures yields disturbingly high numbers—using the most responsive estimate yields an incremental cost of about \$130 billion.

In addition to the quality of education, the efficiency of public expenditures on education will play a large part in determining additional resource requirements. Work at the country level in several African nations underscores the importance of the policy environment in determining the costs and resource requirements of meeting the goals. Table 13 shows that the public financing gap depends upon assumptions about the education policies, the level of teacher salaries, and the priority given by the country for publicly financed primary education. If we consider the total for the four countries, we see that the financing gap amounts to \$487 million if no policy changes are undertaken in the countries. Assuming that policy changes are introduced just to improve education quality, the financing gap increases to \$683 million, because these quality-enhancing interventions are costly. But if policies are introduced to adjust teacher salaries to levels proportional to average incomes, the financing gap falls to \$394 million, a drop of almost \$290 million. Finally, if further policy changes are made such that public budgetary support for primary education is adjusted to adequate levels, the financing gap falls again, to \$258 million. Calculating the financing gap on an annual basis indicates that, for the period 2000-2015, the average annual financing gap to reach universal primary education of a reasonable quality in 2015 in the four countries is around \$191 million -- \$48 million per country on average.

The total number of children who will be enrolled in primary school in the four countries is about 3.1 million (see Table 14). Thus, an annual additional expenditure of \$191 million will enable 3.1 million children to enroll in primary school, meaning the per-student cost is about \$62, which is close to the sustaining cost in Africa and South Asia as well. In other words, if we extrapolate from these country studies to the population at large in Africa and South Asia, and apply appropriate multipliers for the other regions (to reflect their much higher per-student expense), the cost of reaching universal primary enrollment taking into account some of the additional policy and institutional changes required could amount to as much as \$10 billion but could be less if countries bring additional resources to bear.

Table 13 : Resources needed to achieve universal primary education in 2015 (1999 \$ millions)

	No Policy Change	Improvements in Education Quality (a)	Improvements in Education Quality + Teacher Salary Adjustments (b)	Improvements in Education Quality + Teacher Salary Adjustments + Ensuring appropriate public budget support for Education (c)
Country A				
Level of Spending in 2015	225	291	186	186
Public Resources in 2015	91	91	91	117
Financing Gap in 2015	134	200	95	69
Yearly average 2000-2015				49
Country B				
Level of Spending in 2015	58	67	88	88
Public Resources in 2015	35	35	35	38
Financing Gap in 2015	23	32	53	50
Yearly average 2000-2015				39
Country C				
Level of Spending in 2015	252	238	131	131
Public Resources in 2015	76	76	76	85
Financing Gap in 2015	176	162	55	46
Yearly average 2000-2015				41
Country D				
Level of Spending in 2015	335	470	372	372
Public Resources in 2015	181	181	181	279
Financing Gap in 2015	154	289	191	93
Yearly average 2000-2015				62
Total				
Level of Spending in 2015	870	1066	777	777
Public Resources in 2015	383	383	383	519
Financing Gap in 2015	487	683	394	258
Yearly average 2000-2015				191

(a) Improvement in primary education quality : The following elements are considered to lead to a reasonable setting for the operation of education : i) Teachers recruited with 10 years of general education plus 1 year of pre-service training, ii) Pupil teacher ratio set to 45:1, iii) Resources beyond teacher salaries (administrative and support services, textbooks for pupils and teaching guides for the teachers, in service training activities, student assessment) to represent 40 % of the teacher salary bill. These improvements in conjunction with direct measures to reduce repetition (use of sub-cycles of study with non repetition within each sub-cycles) are expected to bring repetitions rates below 10 % in 2010.

(b) Recruitment of new teachers according to a salary scale in which teacher remuneration to represent about 4 times the country's per capita GDP.

(c) The modeling used the assumptions on the likely overage rate of economic growth The country is supposed to i) to increase its allocation of resources to the sector (in particular by using at least 40% of its HIPC resources, but possibly beyond if the country was initially allocating too little to education), and ii) to allocate at least 50 % of its budget for education to primary schooling (this amount is assumed both to materialize a clear priority for primary education while ensuring that enough resources are secured for post-primary educational investments (lower and upper secondary, technical and vocational education and higher education).

	No. of children	Enrollment rate	Additional no. of children enrolled for UPE
A	1,244,003	0.4	746,402
B	1,223,956	0.55	550,780
C	1,770,072	0.3	1,239,050
D1	1,509,360	0.62	573,557
Total	5,747,391		3,109,789

Gender equality

The estimate for meeting the 2005 gender equality target in secondary education is \$3 billion. It was arrived at by assuming constant average costs for enrollment and then increasing the numbers of girls in school so that the ratio of girls to boys would be 1:1 by 2005. The basic underlying assumption for this estimation is that the progress towards the goal achieved in the 1990s will continue into 2005. In order to capture this assumption—and calculate only the additional resources needed to attain the goal—we fit a simple trend line for all outcome indicators to forecast actual targets that would be reached if the 1990s trends continued. The projected actual is then compared against the global target to see by how much each region falls short of the targets. If a region's performance is projected to exceed the global goal, the additional cost of achieving the goal is regarded as zero. Otherwise, the difference between the global target and the projected actual target would be multiplied by the relevant projected average annual population *and* the cost per unit to arrive at the additional spending required to meet the goal.¹⁹ Note that, while these cost estimates refer to additional resource requirements, they are based on average-cost calculations. Hence they are likely to understate the incremental costs of reaching the gender-equality target. Furthermore, they do not take into account the quality of education – a problem alluded to in the treatment of the universal primary education goal.

Health

One of the characteristics of the development goals, such as the goal of reducing under-five child mortality, is that they are not only targets to be met, but also robust indicators of a country's economic and social development. Countries experiencing economic growth and implementing successful poverty reduction strategies will usually see improvements in access to education, basic health care, income levels of the poor, access to potable water and other improvements in living standards which affect child mortality. However, the fact that so many factors affecting health indicators are not in the health sector makes estimating the cost of attaining the health goals very difficult. Inefficient delivery of public health services in developing countries also contributes to the difficulty of linking health expenditures and improvements in health outcomes.

There are health interventions, however, which can be identified as critical inputs to attaining the health goals, and which then lend themselves to cost estimates. In the case of infant mortality

¹⁹ Unit costs per pupil were obtained from UNICEF for 1998 and adjusted for inflation over the period 1998-2000. It is also assumed that the unit cost of educating a girl is the same as the unit cost of educating a boy. Projected annual number of school age boys (ages 5-14) for each region was obtained from the U.S. Bureau of Census, International Data Base, and a simple average was used to annualize the costs.

these inputs include access to rehydration therapy, vaccinations and promotion of breast feeding. For malaria, inputs include prophylaxis treatments for pregnant women and infants and bed nets treated with insecticide, as well as spraying in and around the home for mosquitoes. With tuberculosis, the DOTS strategy has proved to be very successful, and cost estimates exist for DOTS programs based on country experiences. In the case of AIDS, it is possible to estimate the costs of both prevention and treatment campaigns. The maternal mortality goal may be one of the most difficult development targets to cost, both because of the dearth of data about the scope and nature of the problem (many countries lack reliable statistics on maternal mortality) and because maternal deaths are largely due to bleeding and other acute problems that require immediate access to a functioning health system and not just a simple, targeted intervention.

Adding up the costs of achieving the different health goals, however, could easily lead to an overestimation of the resource requirements, because they are inter-related. For example, tuberculosis spreads much more rapidly in the presence of AIDS infections; AIDS also has a significant impact on both child and maternal mortality rates; and malaria kills a large number of young children so advances against malaria should reduce infant and child mortality. Moreover, progress toward other key development targets, especially education and access to potable water, are likely to have a very large impact on the health outcomes.

Adding up the costs of individual treatments could also lead to a major underestimate of the costs of reaching the goals, because of the many “weak links in the chain” between public spending on health and health outcomes (Filmer, Hammer and Pritchett 2000): average costs are not incremental costs; public supply sometimes displaces private supply (leading to no change in health outcomes); and public provision is often inefficient (see Box 2).

With the caveats described above, we estimate that approximately an additional \$15 to \$25 billion in ODA would be necessary to attain the health goals in the world’s poorest countries. This figure is consistent with other estimates of the cost of attaining basic health in the poorest countries, such as the estimate developed by the Committee on Macroeconomics and Health (CMH). The CMH estimate is arrived at by calculating the cost of the specific interventions required to reduce avoidable deaths (about \$30 - \$40 per person per year), and assuming that low-income countries will increase public spending on health by about 1.5 percent of GDP, and there is no increase in the efficiency of public spending.

A large share of the additional funds required should be allocated to HIV/AIDS prevention and treatment. The United Nations has previously indicated that an additional \$7 to \$10 billion is required on an annual basis to address the HIV/AIDS crisis worldwide. Analysis at the regional level, including a detailed cost exercise for the cost of addressing the epidemic in Sub-Saharan Africa, where 71 percent of people with HIV/AIDS live, roughly supports this estimate. Appendix 3 provides a detailed estimate of the cost of addressing the AIDS crisis in Sub-Saharan Africa, developed by the World Bank, using both low and medium cost estimates. The appendix table shows that Sub-Saharan African countries would annually need between \$2.6 and \$4.2 billion in additional aid for both prevention and treatment of the disease.

Additional resources are also needed to address the HIV/AIDS epidemic in other regions with high and growing, infection rates, especially in East Asia, South Asia and the transition

countries. Although the numbers of infected are lower than in Sub-Saharan Africa, the gap in funding is larger in relative terms in countries such as China and India, which are still developing their response to the disease.

It is particularly difficult to estimate separately the cost of reducing infant, child and maternal mortality because they depend on a variety of factors, such as education and income, which are outside the health sector. Furthermore, as noted above, the relationship between public spending and health outcomes is quite weak (Filmer, Hammer and Pritchett 2000). Even when the coefficient on public expenditures is found to be positive, its magnitude is minuscule (Bidani and Ravallion 1997). Another way to estimate the cost of reaching the under-5 mortality goal is to use a “frontier analysis” -- taking the maximum observed health expenditure for countries with GDP per capita of \$1,000 or less and the maximum performance in terms of health outcomes in that group of countries to estimate the impact that an increase in health expenditures to the maximum observed amount would have – and then what would be the expenditure gap, if any, for meeting the goal. This approach resulted in an estimated expenditure gap of \$5 billion for these countries. This estimate represents a lower bound for reaching this goal, because it assumes that countries will improve both their allocation of public spending and its efficiency up to the level of the best-performer in the group. It is analogous to the estimate of the savings in ODA required to reach the income poverty goal if all the Group II countries improved their policies to the level of the Group I countries.

There are no separate estimates of the cost of meeting the maternal mortality goal, although the frontier analysis mentioned above calculates the financing gap of meeting this goal to be of the same magnitude, i.e., about \$5 billion. We emphasize, however, that progress on this goal is likely to be highly correlated with the under-5 mortality goal. For example, birth attendance by a skilled health professional reduces both maternal and infant mortality. Improving the education of the mother also impacts on both statistics. Because maternal mortality is a much rarer event than infant and child mortality, it will depend more on access to critical care and a functioning health system that can deliver that care, so additional expenditures in the health sector are *important for progress on this indicator*.

Other communicable diseases, such as tuberculosis and malaria, have specific interventions and therapies which can be costed. In the case of malaria, it is the cost of prophylaxis, insecticides and treated bed-nets as well as drugs for treatment of malaria. For tuberculosis, the focus is on DOTS. In both cases, an estimate of between \$1 and \$1.5 billion in additional annual assistance is the estimated cost of prevention and treatment.

Environment targets

Work done by the Global Water Partnership, assuming that the costs and levels of new services would be similar to current mixes, estimate that it would cost an additional \$30 billion a year over the next 25 years to reach a target of universal coverage (excluding any costs of treatment). Looking only at very basic levels of coverage the Water and Sanitation Collaborative Council estimates that it would take \$9 billion a year (also over 25 years) to reach a target of universal water and sanitation coverage²⁰.

²⁰ “Financing the international goals for water and sanitation,” Washington, DC: The world Bank (processed), 16 October 2001.

Because of the many different institutional arrangements under which investments related to water supply are made, it is not possible to give an precise estimate of current annual expenditures. One approximation suggests that they are in the range of US\$13 billion a year. If this number is accurate and expenditures are incurred under appropriate institutional arrangements with proper incentive structures in place, then it is possible that there exist adequate resources to achieve the goal for water access. Given the measurement issues referred to earlier, it is possible that incremental public funds may well be required to meet the development goals, but in the current analysis we do not include additional funding for access to water.

Significant additional resources (approximately \$16 billion per year) would be required to improve sanitation and hygiene. Although a formal target has not been proposed within the framework of the Millennium Development Goals for access to sanitation, we include the cost estimates because improvements in sanitation and hygiene are likely to be highly correlated with improvements in child health outcomes. For the same reason, these expenditures should not be added directly to the costs of meeting the health goals.

The Cites Without Slums initiative has proposed a program for providing secure land tenure and upgrading slums costing \$3.5 billion per year, based on an estimate of \$51 billion (average cost of approximately \$500 per person for 100 million people, plus preparation costs) divided over 15 years.

Total costs of reaching the goals

In sum, we have estimated the additional foreign-aid costs of reaching the development goals using two, complementary methods. First, we calculated the additional foreign aid required to achieve the income poverty goal of halving extreme poverty by 2015. Focusing on those countries where additional aid is needed (namely low-income countries that are not currently projected to reach the goal), we estimate the incremental costs of achieving this goal to be in the range of \$54 - \$62 billion. We noted that achieving this goal will imply substantial progress towards, if not fulfillment of, many of the other goals, given the close connection between income growth and education and health outcomes..

Second, we attempted to calculate the costs of achieving the social goals by themselves. Here too there is a danger of double-counting, since these goals are interdependent. For instance, child mortality reduction is achieved by, among other things, increasing the number of mothers with primary education. Nevertheless, we made use of existing estimates of some of the individual goals, some of which are based on country-level analysis (which is always more reliable). These estimates yield a rough breakdown of the additional costs of achieving the social goals as follows:

Education :	\$10 - \$30 billion
Health:	\$20 - \$25 billion
Environment	\$5 - \$21 billion
Total	\$35 - \$76 billion

Because these figures are in the same range as those estimated to achieve the income poverty goal, there is some reason to think that an increase in foreign aid of an amount equal to current foreign aid (\$57 billion) is about the right order of magnitude for achieving the development goals. That said, we emphasize first that these estimates are extremely crude, and based on a host of heroic assumptions, many of which may not be borne out as history unfolds. Second, we cannot stress enough the fact that financial assistance is but one of the factors required to reach these goals. As the example of Uganda shows, country-level policies aimed at making all resources used more effectively, not to mention political commitment, are at least as important. To emphasize the fact that financial assistance alone cannot achieve the goals, we prefer to refer to these estimates as the costs that are likely to be incurred when achieving the goals. Finally, we reiterate our view that the most relevant and useful costing of additional foreign assistance must be done at the country level, a task we are currently undertaking in several countries.

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Millennium Development Goals Announcement by the United Nations

As part of the preparation of the Road Map report on the implementation of the Millennium Declaration, consultations were held among members of the United Nations Secretariat and representatives of the IMF, OECD and the World Bank in order to harmonize reporting on the development goals in the Millennium Declaration and the International Development Goals. The group discussed the respective targets and selected relevant indicators with a view to developing a comprehensive set of indicators for the Millennium Development Goals. The main reference document was section III of the Millennium Declaration on 'Development and Poverty Eradication'.

The list of MDGs does not undercut in any way agreements on other goals and targets reached at the global conferences of the 1990s. The eight goals represent a partnership between the developed countries and the developing countries determined, as the Declaration states, "to create an environment – at the national and global levels alike – which is conducive to development and the elimination of poverty."

In order to help focus national and international priority-setting, goals and targets should be limited in number, be stable over time, and communicate clearly to a broad audience. Clear and stable numerical targets can help trigger action and promote new alliances for development. Recognizing that quantitative monitoring of progress is easier for some targets than for others and that good quality data for some of the indicators are simply not (yet) available for many countries, we underscore the need to assist in building national capacity while engaging in further discussion (as in the ECOSOC mandated process) with national statistical experts. For the purpose of monitoring progress, the normal baseline year for the targets will be 1990, which is the baseline that has been used by the global conferences of the 1990s.

United Nations will report on progress towards the MDGs at the global and country levels, coordinated by UNDESA and UNDP, respectively. Reporting will be based on two principles: (a) close consultation and collaboration with all relevant institutions, including the UN Development Group (including WHO and UNCTAD), other UN departments, funds, programmes and specialised agencies, the World Bank, IMF and OECD and regional groupings and experts; and (b) the use of nationally-owned poverty reduction strategies, as reported in Poverty Reduction Strategy Papers (PRSPs), UN Common Country Assessments (CCAs) and National Human Development Reports (NHDRs), that emphasize a consultative process among the development partners. The main purpose of such collaboration and consultation will be to ensure a common assessment and understanding of the status of the MDGs at both the global and national levels. The United Nations Secretariat will invite all relevant institutions to participate in and contribute to global and country-level reporting with a view to issuing an annual UN report that has the wide support of the international community and that can be used by other institutions in their regular reporting on the goals.

The proposed formulation of the 8 goals, 18 targets and 40+ indicators are listed below. Other selected indicators for development, not related to specific targets, include population, total fertility rate, life expectancy at birth, adult literacy rate, and gross national income per capita. Where relevant, the indicators should be calculated for sub-national levels -- urban and rural areas, regions, socio-economic groups, and by age and gender.

Table 1
Millennium Development Goals (MDGs)

Goals and Targets	Indicators
Goal 1: Eradicate extreme poverty and hunger	
Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	1. Proportion of population below \$1 per day 2. Poverty gap ratio [incidence x depth of poverty] 3. Share of poorest quintile in national consumption
Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger	4. Prevalence of underweight children (under-five years of age) 5. Proportion of population below minimum level of dietary energy consumption
Goal 2: Achieve universal primary education	
Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	6. Net enrolment ratio in primary education 7. Proportion of pupils starting grade 1 who reach grade 5 8. Literacy rate of 15-24 year olds
Goal 3: Promote gender equality and empower women	
Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and to all levels of education no later than 2015	9. Ratio of girls to boys in primary, secondary and tertiary education 10. Ratio of literate females to males of 15-24 year olds 11. Share of women in wage employment in the non-agricultural sector 12. Proportion of seats held by women in national parliament
Goal 4: Reduce child mortality	
Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate	13. Under-five mortality rate 14. Infant mortality rate 15. Proportion of 1 year old children immunised against measles
Goal 5: Improve maternal health	
Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio	16. Maternal mortality ratio 17. Proportion of births attended by skilled health personnel
Goal 6: Combat HIV/AIDS, malaria and other diseases	
Target 7: Have halted by 2015, and begun to reverse, the spread of HIV/AIDS	18. HIV prevalence among 15-24 year old pregnant women 19. Contraceptive prevalence rate 20. Number of children orphaned by HIV/AIDS
Target 8: Have halted by 2015, and begun to reverse, the incidence of malaria and other major diseases	21. Prevalence and death rates associated with malaria 22. Proportion of population in malaria risk areas using effective malaria prevention and treatment measures 23. Prevalence and death rates associated with tuberculosis 24. Proportion of TB cases detected and cured under DOTS (Directly Observed Treatment Short Course)
Goal 7: Ensure environmental sustainability*	
Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	25. Proportion of land area covered by forest 26. Land area protected to maintain biological diversity 27. GDP per unit of energy use (as proxy for energy efficiency) 28. Carbon dioxide emissions (per capita) [Plus two figures of global atmospheric pollution: ozone depletion and the accumulation of global warming gases]
Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water	29. Proportion of population with sustainable access to an improved water source

<p>Target 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers</p>	<p>30. Proportion of people with access to improved sanitation 31. Proportion of people with access to secure tenure [Urban/rural disaggregation of several of the above indicators may be relevant for monitoring improvement in the lives of slum dwellers]</p>
<p>Goal 8: Develop a Global Partnership for Development*</p>	
<p>Target 12: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system</p> <p>Includes a commitment to good governance, development, and poverty reduction – both nationally and internationally</p>	<p>Some of the indicators listed below will be monitored separately for the Least Developed Countries (LDCs), Africa, landlocked countries and small island developing states.</p> <p><u>Official Development Assistance</u></p>
<p>Target 13: Address the Special Needs of the Least Developed Countries</p> <p>Includes: tariff and quota free access for LDC exports; enhanced programme of debt relief for HIPC and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction</p>	<p>32. Net ODA as percentage of DAC donors' GNI [targets of 0.7% in total and 0.15% for LDCs] 33. Proportion of ODA to basic social services (basic education, primary health care, nutrition, safe water and sanitation) 34. Proportion of ODA that is untied 35. Proportion of ODA for environment in small island developing states 36. Proportion of ODA for transport sector in land-locked countries</p>
<p>Target 14: Address the Special Needs of landlocked countries and small island developing states</p> <p>(through Barbados Programme and 22nd General Assembly provisions)</p>	<p><u>Market Access</u></p> <p>37. Proportion of exports (by value and excluding arms) admitted free of duties and quotas 38. Average tariffs and quotas on agricultural products and textiles and clothing 39. Domestic and export agricultural subsidies in OECD countries 40. Proportion of ODA provided to help build trade capacity</p>
<p>Target 15: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term</p>	<p><u>Debt Sustainability</u></p> <p>41. Proportion of official bilateral HIPC debt cancelled 42. Debt service as a percentage of exports of goods and services 43. Proportion of ODA provided as debt relief 44. Number of countries reaching HIPC decision and completion points</p>
<p>Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth</p>	<p>45. Unemployment rate of 15-24 year olds</p>
<p>Target 17: In cooperation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries</p>	<p>46. Proportion of population with access to affordable essential drugs on a sustainable basis</p>
<p>Target 18: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications</p>	<p>47. Telephone lines per 1000 people 48. Personal computers per 1000 people</p>

* The selection of indicators for Goals 7 and 8 is subject to further refinement

The Model

The following model was used to generate the level of aid required to achieve the goal of halving the share of the population living at less than \$1 a day (the headcount ratio) by 2015. (Lower case letters are rates of change; upper case letters are levels; all values refer to the previous period, except the growth rate of income.)

We first estimate the growth rate required in each country to meet the poverty goal. To do this we estimate the Lorenz curve for each country using data on the distribution of income (from table 2.8 in *World Development Indicators 2001*). Two functional forms for the Lorenz curve were tried, and the one with the best fit was used in the calculations.²¹ The calculated Lorenz curves appear consistent with the underlying data, as in virtually all cases, the Gini coefficient calculated on the basis of the estimated Lorenz curve matched the published values.

The next step was to calculate the growth in the mean income of the survey population necessary to halve the headcount ratio for extreme poverty. The headcount ratio can be calculated from the mean income, the poverty line and the Lorenz curve:

1. headcount ratio = F(mean income, poverty line, Lorenz curve)

Since we know the poverty line (\$1 a day) and the Lorenz curve (estimated above), this formula can be inverted to derive the mean income consistent with the target headcount ratio. This mean income can then be compared with the base year mean income to derive the growth rate necessary to halve poverty.²² For countries without data on income distribution or the headcount ratio, the average growth rate in the other countries was used as the target growth rate.

We then estimate the ODA required to meet this target growth rate, using a simple model.

2. $y = I / Y * 1 / ICOR - p$

y is growth rate of per capita GDP

Y is GDP

I is investment

ICOR is incremental capital output ratio

p is growth rate of population

²¹ The two functional forms were the generalized quadratic (GQ) and beta. See Datt, Gaurav (1998), "Computational Tools for Poverty Measurement and Analysis," *FCND Discussion Paper*, No. 50, Food Consumption and Nutrition Division, International Food Policy Research Institute, October, Washington, DC.

²² One issue that has complicated poverty forecasts is that the growth rate of the survey mean often differs from the growth rate of personal consumption or GDP from the national income accounts. However, this difference is not significant for most of the countries considered in this exercise.

Appendix 2

$$3. \quad I = sY + \text{AID} + \text{OF}$$

s is the savings rate

OF is non-aid flows

Equations (2) and (3) can be solved for the level of aid (at constant prices) in the previous period required to achieve the target growth rate.

$$4. \quad \text{AID} = (y + p) * Y * \text{ICOR} - sY - \text{OF}$$

**Annual Cost of Scaling-Up HIV/AIDS Activities for Sub-Saharan Africa
(US\$ millions; 2000 prices)**

	<i>Low Cost</i>	<i>Medium Cost</i>
Prevention-related activities		
Youth focused interventions	211	313
Interventions focused on sex workers and clients	132	258
Condom social marketing	73	143
Increased public sector condom provision	12	35
Improving STD management	383	454
Voluntary counseling and testing	34	123
Workplace interventions (incl. military, truckers)	76	93
Blood safety measures	2	6
MTCT HIV	10	29
Mass media	93	99
Start-up capacity and development	8	9
Sub-total for prevention	1,034	1,562
Care –related activities		
Palliative care	40	48
Clinical management of opportunistic infections	215	294
Prophylaxis for opportunistic infections	35	42
Home based care	25	79
Care for HIV infected infants	4	4
Support for orphans	162	267
Psychosocial support and counseling	2	4
Sub-total for care	483	738
Total prevention and care	1,517	2,230
Treatment (HAART) 1/	1,519	2,439
Surveillance, Monitoring and Evaluation 2/	50	77
Total prevention, care and treatment 3/	2,603	4,238

Note: 1/ Assumes that the prices of drugs will be reduced to US\$ 1,400 for the low cost estimate and US\$2,635 for the medium cost estimate – about 14% and 27% of current drug prices in the US. Further discussion of this is found in Annex 2.

2/ Figures are non-country specific and are based on estimates for regional surveillance, monitoring and evaluation costs by UNAIDS.

3/ Total is less than the sum of the sub-totals. This is due to the fact that care and treatment strategies were costed taking into account the potential for double-counting of activities. If all care and treatment activities were scaled-up separately, there would be some duplication of activities.

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