The poorest countries of the world are those in which agriculture is the predominant source of employment. To a large degree, the poverty experienced in these countries is a result of unproductive agriculture.

About 70 percent of those living on less than $1 a day live in rural areas (World Bank 2002). For the majority of the poor in the world, agriculture is a critical component in the successful attainment of the MDGs. Although the rural poor pursue a range of strategies to assure their livelihoods, the dominant strategy is food production through cropping or raising livestock. The vast majority of people whose lives need to change the most to attain the targets specified in the MDGs are farmers and herders. The material well-being of these individuals and households is dependent upon the productivity of their cropping and livestock husbandry activities. As shown in figure 2.1 the poorest countries of the world are also those in which agriculture is the predominant sector of employment. To a large degree, the poverty experienced in these countries is a product of unproductive agriculture. Moreover, the dominance of agriculture in the economies of the poorest countries (as shown in figure 2.2) often is more a reflection of a poorly performing economy in which subsistence agriculture is serving as a safety net of last resort for populations with limited economic options, rather than as an effective engine of economic growth. Although in the longer term a broad transformation and diversification of rural economies away from a strong dependence on agriculture is desirable, more immediate gains in the welfare of poor households are most likely to come through the poor overcoming some of the critical constraints they now face in meeting their basic needs through agriculture. Thus, a necessary component in meeting the MDGs by 2015 in many parts of the world is a more productive and profitable agricultural sector.

In this chapter, we will make a broad assessment on an MDG-by-MDG basis to consider how more productive agricultural activities and a more vibrant agricultural sector in general might significantly advance a country’s efforts to attain each MDG. How might improved agricultural performance at household, community, and economy-wide levels bring progress toward the MDGs? A summary of the discussion on how the agricultural sector can contribute to the attainment of the MDGs, as well as how, in turn, progress in attaining the MDGs can animate the agricultural sector is provided in table 2.1 at the end of this chapter.

Direct and indirect effects need to be distinguished. We will pay more attention to those MDGs that are directly influenced by agricultural activities—most notably, MDG 1, halving by 2015 the proportion of those suffering from extreme poverty and from hunger. Moreover, some of the indirect effects will come about through broad economy-
Figure 2.1 Proportion of Population Living on Less than $1 Per Day (PPP), Most Recent Estimates

Note: PPP = purchasing power parity.

Figure 2.2 Agriculture Value Added, as a Percentage of GNP, 2001

wide processes across sectors, while others, particularly those operating at the household and community levels, will be more immediately felt. Of course, for the more localized indirect effects of agriculture to contribute effectively to achieving the MDGs, such effects must be spread widely throughout the rural population. Additionally, cause-and-effect relationships between the agricultural sector and the MDGs are not all one way. While the agricultural sector provides critical inputs to attaining the MDG targets, the broad improvements in human capital needed to reach those targets will also provide an important foundation from which a considerably more productive and resilient agricultural sector can be developed. Finally, while most MDG targets are complementary, some might actually involve tradeoffs. For example, enhanced access to improved drinking water sources might collide, in some regions, with the goal of reduced hunger through increased irrigated agriculture. Similarly, several indicators of MDG 7, ensuring environmental sustainability, might well be adversely affected by efforts aimed at increasing agricultural and economic development that are important for the achievement of MDG 1.

**MDG 1—ERADICATE EXTREME POVERTY AND HUNGER**

Progress in meeting the targets of the first MDG is encouraging in East Asia, generally adequate in South Asia and Latin America, but disturbingly poor in Sub-Saharan Africa. Based on the simple trend line shown in figure 2.3, the prevalence of dollar-a-day poverty in East Asia in 2015 should be considerably less than the 50 percent reduction from 1990 levels. In Latin America and South Asia, poverty rates should be close to the targets, if slightly above.

However, for Sub-Saharan Africa, the proportion of the population living on less than $1 per day in 2015 is quite likely to have increased from that of the reference year 1990. The regional trends in reduction of undernutrition, while all moving downward, are not as clear-cut as the trends in poverty. The undernutrition target is quite likely to be met in East Asia and in Latin America (see also the global assessment of childhood malnutrition in chapter 4). However, in both South Asia and Sub-Saharan Africa, undernutrition will likely remain at levels considerably above the targets for

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**Figure 2.3 Progress in Attaining MDG 1 Targets for Poverty and Undernourishment, by Region (Trend Lines Based on Recent Performance and Targets for 2015)**

2015. Indeed, in Sub-Saharan Africa, using recent performance as a guide, little progress in reducing undernutrition will have been made.

We have already observed that poverty has a strong rural and, hence, agricultural dimension: Approximately 70 percent of the world’s poor live in rural areas and primarily pursue agriculture-based livelihood strategies. Hunger is endemic in most rural areas of the developing world. Consequently, as shown in figure 2.4, malnutrition levels are consistently higher in rural areas than in urban zones.

Improving the productivity of and the economic returns of agriculture for farming households will have immediate effects in eradicating extreme poverty and reducing hunger. First, through the market, increased agricultural income will directly improve both household consumption levels today, and household asset levels to improve production and better weather economic shocks in the future. Increased food production will lead to real reductions in food prices, which will improve the purchasing power of the poor throughout the economy, whether they are engaged in agriculture or some other sector. More important, agriculture can serve as the basis for broad pro-poor economic growth to bring about permanent reductions in poverty. Second, with complementary nutritional factors in place, both subsistence farming households and those purchasing food in local markets will enjoy immediate physiological benefits from increased

![Figure 2.4 Child Malnutrition by Urban or Rural Residence, Stunting (Low Height for Age) Prevalence Among Preschoolers, Surveys Since 1999](image_url)

food production. As the first MDG is the one in which the impact of a more dynamic agricultural sector will be felt most directly, we will discuss in more detail these two issues—poverty reduction through agriculture-led economic growth and improved nutrition through agriculture.

**Poverty Reduction Through Agriculture-Led Economic Growth**

Income redistribution and economic growth are the two economic mechanisms for reducing poverty. While redistribution is a viable option to address poverty in many parts of the developed world, in the developing countries of the world with large segments of populations unable to meet their basic needs, income redistribution policies are unlikely to have much effect on general welfare levels. There are simply insufficient resources in such economies to assure the basic needs of all. In these countries, higher economic productivity—that is, economic growth enabling increased employment and rising wages—is the only means by which the poor will be able to satisfy their needs sustainably.

For both long-developed countries and for the handful of more recently developed countries, significant increases in agricultural productivity were a critical early step in building sustained economic growth. Initial growth in staple food production by the small-scale, labor-intensive agricultural sector through the use of improved technologies resulted in reduced food prices, increased real wages, and, consequently, lower poverty. Reduced food prices enabled greater access to food, resulting in better nutrition for the general work force while also freeing up additional household resources from food to other expenditures, including productive investments. In rural areas, investments initially went into cash crop production and agricultural processing activities, but, as the economy grew, rural nonfarm and urban activities became increasingly profitable. As this process of economic transformation advanced, the agricultural sector tended to play a decreasing role in sustaining economic growth. Movement of labor out of the agricultural sector occurs as employment opportunities in other economic sectors grow. Depending on rural population growth, larger-scale commercial enterprises may become more characteristic of the agricultural sector.

There is considerable empirical evidence that demonstrates the significant contribution that growth in agricultural productivity can make to reducing poverty. A recent cross-country analysis by Thistle and others (2002) found that, at the national level, a 1 percent increase in agricultural yields decreases the percentage of population living on less the $1 per day by 0.64 to 0.91 percent, with a slightly higher reduction for the countries in Africa. Notably, in analyzing the effect of growth in the manufacturing and service sectors on poverty, no significant change in poverty was associated with growth in these sectors.

This description of the process is necessarily simplistic and ignores a broad range of potential impediments to agriculture-led economic growth. One of the most critical of these at present is low prices for staple food crops globally, due to the success of the Green Revolution (as well as high levels of subsidies in the developed world). As a consequence, it now is difficult to generate profits through staple food crop production even at high levels of productivity, particularly for smallholders who are unable to achieve economies of scale in their production. Increasingly, in order to obtain an adequate return from their efforts in agriculture, farmers need to diversify their production into high-value, but knowledge-demanding, specialized crops. Similarly, agriculture cannot be expected to be an engine of economic growth for those countries that have no comparative advantage for agricultural production or face significant barriers to producing for global markets. Many of the drier inland countries of Africa face important challenges in this regard.

The initial distribution of agricultural assets in the economy is also a critical feature in whether or not agriculture-led growth will reduce poverty. Where land ownership is concentrated, as most notably in parts of Latin America, such economic development is unlikely to reduce poverty greatly (Timmer 2003). In contrast, in most of Africa and many parts of Asia where the poor continue to have access to land, agriculture-led growth should lead to significant reductions in poverty. Finally, where significant movement of the population out of rural areas to the cities and out of agriculture into urban-based economic sectors has already occurred, as in many of the middle-income countries of the developing world, there is little potential for the agriculture sector to catalyze broad economic growth and reduce poverty. In these countries, poverty reduction efforts should focus on the industrial and service sectors, while not ignoring the key role that agriculture plays in their rural economies.
While these caveats are important to recognize in tailoring economic development strategies, nevertheless, such a process of agricultural growth has proven in the past to be a common means by which to spur broad-based pro-poor economic growth. Yet, for the poorest countries, the process of small-scale agriculture-led economic growth leading to strong economies and minimal poverty will not occur by 2015, the target date for most of the MDG targets. For these countries, the relevant time frame is one of decades and generations. However, a process of building sustained economic growth requires that productivity increases in agriculture be achieved in the early stages. Moreover, the benefits of the initial steps of agricultural productivity increases accrue primarily to the farmers and herders, among whom the poor are concentrated. By pursuing such an economic growth strategy within the context of the MDGs, we can achieve both the significant improvements in well-being that the MDGs seek to promote, and lay the foundation for the sustainable economic transformations needed to attain, in the longer term, the broader aim of the Millennium Declaration of “freeing the entire human race from want.”

Only a few countries have dramatically reduced poverty and achieved rapid economic growth without significantly increasing the productivity of the agricultural sector. However, agricultural productivity gains alone are not sufficient to bring about sustained economic growth. No country has been able to sharply reduce poverty only through agricultural strategies. Institution building in the agricultural sector and parallel developments in other sectors of the economy are needed to transform the foundational contributions from the agricultural sector into sustained broad economic growth in the economy. Agricultural strategies alone will not lead to success. However, the converse also applies: For the poorest countries, economic growth and sustained poverty reduction are unlikely to be achieved without initially stimulating sustained agricultural production growth.

**Agriculture’s Contribution to Food and Nutrition Security**

The indicators for the second target of the first MDG include the reduction by half between 1990 and 2015 of the prevalence of underweight (low-weight-for-age) children and the proportion of the population whose food intake falls below the minimum level of dietary energy requirements (undernutrition). As shown in figure 2.5, the levels of under-
nutrition are high throughout the developing world, and particularly in many of the countries in which agriculture is also the dominant livelihood. To attain the MDG 1 second-target goals, food and nutrition security needs to be enhanced for the poor. A household is food secure if it can reliably gain access to food in sufficient quantity and quality for all household members to enjoy a healthy and active life. It is possible, however, for individuals in food-secure households to have deficient or unbalanced diets. Nutrition security is achieved when secure access to sufficient, safe, and nutritious food is coupled with a sanitary environment, adequate health services, and knowledgeable care to ensure a healthy and active life for all household members.

Clearly, food and nutrition security is closely tied to agricultural productivity. Increased food production increases local food availability. Higher production from one’s own farm or herds increases one’s access to food and enhances household food security. The nutritional quality of the food produced is also an important consideration in reducing malnutrition, particularly for households who acquire most of their food from their own fields and herds. For food purchasers, higher production generally means lower food prices and access to a greater quantity of food in the market for a given income level. Particularly in South Asia and Africa, the most potent force for reducing malnutrition is raising food availability through increased agricultural productivity, as well as trade (Smith and Haddad 2000, p. 84).

Many countries, particularly in Eastern and Central Africa, are characterized by a declining or slowly growing food crop sector and very low purchasing power. While stable access to food through the market requires that the food marketing system is effective in supplying food while also benefiting those who have food to sell, the systems in these countries are unable to provide effective markets. People living on less than $1 per day are unable to pay the prices necessary to import all of the staple food they require.

Consequently, if hunger is to be addressed effectively, a range of complementary actions are needed in addition to those aimed at enhancing crop and livestock production. An important component of these actions is the agriculture-led economic growth described previously, whereby real incomes and access to food are increased. However, a host of other institutional factors must be addressed, as well as several cross-sectoral challenges. The latter are particularly the case in going beyond food security to attain nutrition security. To reduce malnutrition in a comprehensive manner, agricultural strategies must be implemented as part of a broader set of actions that involve the health, water and sanitation, and education sectors (see also chapter 5).

Of the eight MDG goals, the first is the one whose attainment most clearly involves the agricultural sector: The poor around the globe are disproportionately farmers and herders, and, perversely, the hungry and undernourished also most commonly find their livelihoods through agriculture. The impact that a dynamic agricultural sector will have on the attainment of the other seven goals is less direct. Nonetheless, important gains in achieving these goals can be made through explicit attention to agriculture. We now consider these other MDGs.

**MDG 2—ACHIEVE UNIVERSAL PRIMARY EDUCATION**

Primarily in an indirect fashion, investments in agriculture will advance progress toward attaining by 2015 the goal of enabling children everywhere, boys and girls alike, to complete primary school. Higher productivity in agriculture leading to higher incomes will enable either the use of hired labor for agricultural operations or the use of labor-saving technologies in place of the labor of school-age children in farming households. However, a critical component of this equation is the value that farmers perceive that they or their children will obtain by sending their children to school. These benefits are to a large degree determined by the vibrancy of the economy and the extent to which the higher economic capacities of trained individuals are rewarded. In stagnant economies and particularly in rural areas where the range of employment opportunities is narrow, perceived returns of education commonly are judged to be significantly less than the opportunity costs associated with keeping a child in school, and so unable to work full time in the family’s agricultural enterprise. The broad-based agriculture-led growth discussed earlier is necessary to alter the outcome obtained by farming households making this comparison.

Such a pattern of growth, particularly as it extends to the nonfarm and urban sectors, will demand increasingly skilled labor, and will increase the returns of investment in the schooling of one’s children. Moreover, the relationship between increased educational attainment and a more active
The agricultural sector in most poor countries is unlikely to continue to expand for very long on the basis of productivity increases of staple food crops alone. Increasingly, the sector will have to turn to the production of high-value cash crops that usually have quite specific production and marketing requirements. Meeting the requirements to engage profitably in their production requires a better-trained workforce. As this sector of the local agricultural economy develops, the returns of providing basic education to one’s children become considerably more compelling.

MDG 3—PROMOTE GENDER EQUALITY AND EMPOWER WOMEN

Throughout the developing world, women are farmers and find their principal productive activities in agriculture. Considerable research shows that when men and women are able to use agricultural inputs at equal levels of intensity, women are equally effective as men in profitably engaging in agriculture, being responsive to changing market conditions in the suite of crops they produce, and effectively utilizing new technologies (Quisumbing 2003). Agriculture provides key contributions to the economic empowerment of women.

Moreover, the relationship between agriculture and the empowerment of women works both ways. A dynamic agricultural sector that offers broad welfare benefits can be expected to emerge only when women are given the opportunity to participate profitably in the sector. Where they have security in their access to productive resources and control of their agricultural production—that is, where women farmers are empowered to achieve their full economic potential within agriculture—the welfare effects of a productive agricultural sector can exceed the simple economic productivity measures for the sector. The economic empowerment of women both in agricultural production and in other economic spheres can be expected to advance significantly efforts to attain several of the MDGs.

Several of the MDGs are directly determined by the extent to which sufficient resources are provided to children as they develop and grow. The immediate provision of these resources—health care, feeding, life skills training, and so on—is inherently a gendered task. In most societies, women are the principal caregivers within the household. This being the case, if the benefits of a dynamic agriculture sector are to result in sustained improvements in the direct determinants of welfare—income, health, education, among others—it is necessary that women have an important role in determining how the fruits of their agricultural activities are used.

There is considerable empirical evidence of the importance of improving the status of women for improved general welfare. For example, in a broad cross-country analysis, Smith and others (2003) found that women’s decision-making power relative to men’s was significantly associated with improved nutritional status of their children. They conclude that sustainably improving nutritional status requires proactive efforts to improve the status of women, particularly in South Asia, but also in Sub-Saharan Africa. The authors suggest programs that will enable women to gain access to new resources and promote girls’ education and health care, subsidize childcare for working parents, and improve the nutritional status of adolescent girls and young women.

Moreover, regarding agriculture in particular, an important dimension in the empowerment of rural women is alleviating the labor burdens they experience so that they can adequately provide for their children’s needs. Domestic time demands upon women are greater than for men. Agricultural technology developed with close attention to alleviating some of the labor constraints experienced by rural women has the potential to improve not only the well-being of the woman farmer, but also of others in her household who are dependent upon her care.

MDG 4—REDUCE CHILD MORTALITY

The linkages between agriculture and child mortality are indirect but strong. Agriculture is a critical component in assuring food and nutrition security. As was described earlier, levels of child malnutrition are significantly higher in rural areas than in urban areas. It is estimated that 45–55 percent of all child deaths are due to malnutrition exacerbating the negative effects of disease on a child’s health (Pelletier and others 1994). As a consequence of poor nutrition security in rural areas, mortality rates for children under five years of age are significantly higher among rural children than for their urban counterparts (figure 2.6). Poor nutrition secu-
rity is poor food security coupled with poor access to quality health services, lower general knowledge of proper feeding and management of childhood illnesses, poor sanitation, and unprotected water sources.

A productive rural economy offering sufficient employment and rising wages is a necessary component in any effort to reliably and durably reduce the number of children dying in a rural community. Consumption poverty is an important part of the explanation for why child mortality rates are so high in many parts of the developing world. If efforts to attain MDG 1 by following a broad-based, agriculture-led strategy of economic growth bear fruit, we should see a parallel decline in child mortality rates.

However, poverty does not fully account for child mortality. Care is also a critical element in reducing child deaths. As women are the primary caregivers, MDG 3 is relevant here. Time and knowledge are both critical constraints in this regard. Women need to have the time and the knowledge to appropriately meet the survival needs of their children. Education, both the formal education sought through MDG 2 and informal education from peers and public health services, must be provided to a child’s parents so parents can take appropriate action to assure the child’s potential to live a healthy and active life.

The economy-wide effects of a dynamic agricultural sector can help reduce child mortality, because
more funding will be available for the public provision of medical care, health-care facilities, sanitation and clean water, and public health interventions. While one should not expect that agriculture-led economic growth necessarily will quickly provide economic surpluses that can be invested in this way, making the investments needed to reduce the number of children who suffer and die must be a priority as surpluses are generated in the economy.

**MDG 5—IMPROVE MATERNAL HEALTH**

Agriculture can contribute to the goal of reducing maternal mortality in a way similar to its contribution to attaining the previous three goals. Insofar as agriculture can contribute to the economic empowerment of women and enable them to participate better in decision making in their households and communities, women will have greater ability to pay attention to their own physical well-being and have access to increased resources to assure their own good health.

Agriculture can contribute to improved maternal health in another way. For the most part, the quality of the food produced by farmers is assumed to be irrelevant to how agricultural activities affect broad nutrition security. Yet, agriculture has considerable potential to directly improve maternal health by improving the diets of both rural and urban women, as well as the other household members for whom they are responsible. Micronutrient deficiencies are particularly severe among young children and women. Among women, the health effects of such deficiencies, particularly of dietary iron, are most pronounced during pregnancy, at birth, and in the months following birth. As shown in figure 2.7, the spatial pattern of the prevalence of iron deficiency anemia at the national level parallels similar patterns of poverty and malnutrition. It is estimated that more than 65,000 women die annually due to severe anemia.

By increasing the micronutrient content of food crops, deficiencies among women and children should decline, and maternal and child mortality rates drop. With this goal in mind, a global, interdisciplinary research program within the Consultative Group for International Agricultural Research seeks to increase the nutrient density of many global staple food crops, particularly by increasing the levels of bio-available iron, zinc, and vitamin A that the crops contain. Although this research effort is just beginning, if such traits can be bred into high-yielding varieties that enjoy wide consumer accept-

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**Figure 2.7 Estimated Prevalence of Iron Deficiency Anemia in Women Aged 15 to 49, Most Recent Estimates**

*Source: Micronutrient Initiative & UNICEF (2004).*
ability, farmers would be able to offer a direct, low-cost, and sustainable way to improve the nutritional status of millions around the world and, in particular, improve maternal health.

**MDG 6—COMBAT HIV/AIDS, MALARIA, AND OTHER DISEASES**

Efforts made to reduce child and maternal mortality levels to which agriculture contributes will also contribute to effectively combating HIV/AIDS, malaria, and other diseases. Although the indicators for this goal deal very little with agriculture, and the direct links between agriculture and these health issues are not immediate, they are important nonetheless. For agricultural households, as for all households, the productivity of their economic activities is an important determinant of whether people live in an environment that allows them to enjoy a healthy and active life and can acquire the health care required to do so.

However, a newly dynamic agricultural sector also has the potential to radically alter the disease environment in a region. For example, wage-labor migration associated with agriculture may expose populations to new diseases, increasing the health burdens they bear. Changes in local water management for irrigation may alter local disease ecologies, particularly for malaria and water-borne diseases. New health challenges likely will emerge with an evolving agricultural sector. The resources of the agriculture sector, particularly in the public sphere through extension services, can be used in a coordinated fashion with those of the health sector to address such issues.

The agricultural sector has an important role in addressing the important challenge to human development of HIV. Of the 25 countries in the world with an adult HIV infection level above 5 percent in 2001, all except two have predominantly rural populations. The long and fatal pathway of chronic illness with HIV infection, particularly in young adults, severely compromises the welfare of farming households. Loss of labor power and farming knowledge, and increasing nutritional requirements as the disease progresses, are among the most salient effects within the household (AIARD 2003). Professional agriculturalists—researchers and extension workers in particular—must tailor their work to assist such households to better meet the particular farming challenges they face. Households that are able to modify their practices appropriately to maintain sufficient levels of productivity in their agricultural activities will be better able to cope with the burdens of caring for HIV-positive members. Agricultural support service staff, working in close coordination with staff from the health and education sectors, have a role to play in stopping the transmission of HIV in farming communities. However, the challenges in accomplishing this are immense.

Moreover, the agricultural economy as a whole suffers from a heightened incidence of HIV infection. Declining aggregate agricultural productivity will result from insufficient labor as farmers and herders fall ill or must devote their time to household members who are ill. Savings will be depleted to meet increased health care costs and, consequently, needed inputs for profitable agricultural production will be inaccessible to many farming households. Any economic gains that might have been made by the sector will be negated. In a rural population ravaged by HIV, there is little scope for agriculture providing the lead in building strong economic growth. Although agricultural practices can be modified and support services provided to increase the resilience of farming households suffering from HIV/AIDS and strengthen households threatened by the disease, the scope of the epidemic is such that it poses a major threat to the already tenuous welfare of the poorest, most agriculturally dependent populations.

**MDG 7—ENSURE ENVIRONMENTAL SUSTAINABILITY**

This goal covers a broad sweep—biodiversity, critical natural habitats, energy use and global climate change, unsafe water and poor sanitation, and urban slums. Agriculture is implicated both as a means to effectively address many of these problems, and as a source of and a contributory factor to the problems that MDG 7 was formulated to address. It is unlikely that one can develop the agricultural sector in such a manner that only benefits and no negative externalities accrue. In this light, a judicious, comprehensive, and participatory assessment of the environmental costs and benefits must be undertaken in the planning process for any agricultural development efforts.

A productive agricultural sector will reduce pressure on and contribute to ensuring environmental
sustainability in most of the areas considered by MDG 7. In particular:

- Productive agriculture requires less land per unit yield, leaving marginal agricultural lands to other uses, including forests and other critical habitats.
- Proper agricultural policies will allow the full costs of agricultural technologies, including their costs for the environment, to be considered as they are being used. Policies that induce transparent assessment of these costs will, for example, reduce the scope for excessive nutrient runoff from agriculture, provide incentives for efficient energy and water use in the sector, and enable the ecologically sustainable use of a range of technologies, including pesticides and genetically modified organisms.
- As agriculture is inherently an organic, carbon-based enterprise, the sector is a potentially important component in any systems established to manage global carbon stocks.
- A dynamic agricultural sector fostering broad-based economic growth, as with any economic expansion, should provide additional public revenue to enable greater levels of public provision of safe drinking water and improved sanitation. Increasingly productive and profitable farmers in many developing countries will be able more and more to provide these amenities privately for their own households. Moreover, water infrastructure in agriculture, whether for irrigation or flood control, will also have important applications for the provision of safe water and adequate sanitation, particularly in small-scale agricultural systems.
- Population pressures in urban slums will be alleviated to a significant degree if profitable agricultural systems are developed in the rural hinterlands. Although broad agriculture-led economic growth should lead in time to a significant movement of workers out of rural, agricultural occupations and into the manufacturing and service sectors located predominantly in urban centers, such migration will be of a different quality than that most commonly seen at present. Today what is frequently observed is an unproductive agricultural sector that forces many farmers and herders to search for employment in urban centers that are only marginally more attractive in terms of economic opportunity. Moreover, enhanced urban agriculture can contribute to the income growth and nutritional status of slum dwellers.

However, agriculture can also exacerbate environmental degradation, fuel perverse rural-to-urban migration, and deepen poverty. For example:

- Agricultural expansion is a principal factor contributing to tropical deforestation and increasing global levels of atmospheric carbon dioxide. The underlying causes for agricultural expansion are case dependent. Sometimes expansion arises from accelerated growth in the agricultural sector (capital-driven), and at other times from poverty as poor farmers seek land with which to meet their basic needs (Geist and Lambin 2002). Agriculture-led economic growth in itself is not environmentally benign.
- A stagnant agricultural sector with low productivity and profitability will result in the unsustainable use of natural resources for agriculture. Most commonly this is seen in the mining of soil fertility down to a base state in which cereal yields, even under suitable agro-climatological conditions and adequate labor inputs, attain only a few hundred kilograms per hectare. Such environmental exploitation in agriculture can take many other forms, affecting a broad range of the components of local ecosystems.
- Poverty can actually increase due to the expansion of the agricultural sector of the economy if the distribution of agricultural assets—land, in particular—is skewed. If agricultural expansion is accomplished in a manner in which capital substitutes for labor and little growth in employment occurs, aggregate welfare will be little improved. Moreover, further consolidation of land may occur, resulting in greater pressures on the rural poor to migrate to urban slums.

With appropriate regulatory institutions in place to safeguard the benefits that society as a whole draws from the environment, an emergent agricultural sector need not lead to environmental degradation. The underlying driving force for environmental degradation through agricultural expansion and the harmful use of farming technologies is frequently poverty, rather than factors inherent to agriculture itself. If farmers realize personal economic benefits and also recognize the
social benefits from environmental protection, they will respond to these incentives and employ environmentally sustainable production techniques. However, sustainable agricultural practices must be profitable for this to happen. Whether or not this is the case depends on the vibrancy of agriculture within the overall economy.

**MDG 8—DEVELOP A GLOBAL PARTNERSHIP FOR DEVELOPMENT**

Although extremely broad in scope, the final MDG has important implications for agriculture. There are several areas where agriculture can contribute to efforts aimed at achieving the targets set.

First, it is under this goal that an open, rule-based, predictable, nondiscriminatory trading and financial system is called for. Given the demonstrable centrality of the agricultural sector to people whose conditions of life must change if the MDGs are to be attained, agriculture should be among the focus sectors of initial efforts in this area. Global agricultural trade must be harmonized and rationalized in a manner that includes consideration of the special needs of poor agricultural producers and how they might derive maximum benefit from such trade.

However, even with attention to these important aspects, the poverty impact of globalized agricultural trade remains unclear. Such trade will often exclude the smallholder farmer and herder, as it requires knowledge, capital, and quality assurance levels, as well as access to marketing networks that most smallholder producers cannot attain on their own. Smallholders may be uncompetitive and unable to participate in many of the most profitable subsectors under a wholly free-trade system. Establishing appropriate institutions is necessary to enable broad welfare gains to be achieved through trade. These issues will be addressed further in chapter 4’s discussion of trade and macroeconomic policies.

Second, the Heavily Indebted Poor Countries (HIPC) initiative contributes to the targets under this goal. Poverty Reduction Strategy Papers (PRSP) have been prepared by many of the HIPC countries to demonstrate to their development partners how the funds made available through debt relief would be used to reduce poverty. The PRSPs potentially are very effective means by which progress can be made in achieving the MDGs. It is critical that the framework within which these PRSPs are developed provide due and relatively detailed attention to the economic foundation for most of the poor people at whom they are targeted—agriculture. Most current PRSPs highlight the need for broad-based economic growth, and such growth is typically one of the four or five “pillars” of most PRSFs. Moreover, agriculture is frequently noted as being the most important livelihood for the poor and is prioritized as a key economic sector.

However, the means by which agriculture will lead to broad-based economic growth is frequently left unspecified in the documents. Indeed, a key criticism of the implementation of the PRSPs has been that social expenditures tend to be given priority over the investments, particularly in the agricultural sector, that would accelerate economic growth (Gautam 2003). Given the MDG’s strong social focus, they perversely provide additional justification for countries privileging social expenditures to the neglect of investments that would lead to sustainable pro-poor economic growth. A more balanced expenditure pattern is needed. In most HIPC countries that have prepared PRSPs, considerably more effort must go into framing the mechanisms by which agriculture will bring about the desired improvements in welfare. For example, Uganda has developed the relatively detailed Plan for Moderniation of Agriculture (MAAIF & MFPED 2000) as the principal cross-sectoral economic development strategy emerging from the Poverty Eradication Action Plan (MFPED 2000), Uganda’s Poverty Reduction Strategy Paper. Many more HIPC countries need to do likewise.

Measures are currently being undertaken to reorient the mechanisms for the delivery of bilateral and multilateral official development assistance to be consistent with efforts to achieve the MDGs. MDG 8 specifies several related to official development assistance. The sectoral allocation of such assistance is not specified in these targets. However, clearly this is not a tangential issue. If agriculture is to be effective in broadly improving the human condition, particularly that of rural residents, considerably greater levels of resources need to be made available to agricultural development. Currently, levels of assistance to agriculture, as well as budgetary allocations by governments themselves, are inadequate.

For example, the Comprehensive Africa Agriculture Development Programme strategy of the New Partnership for Africa’s Development (NEPAD) proposes investments of $251 billion over the period 2002 to 2015, or just under $18 billion per
year, to reduce the incidence of hunger and raise farm output (NEPAD 2002). Such a budget faces some stark constraints. Notably, estimated total annual government expenditures on agriculture in Africa in the late 1990s were roughly $6.2 billion (FAO 2001; World Bank 2003). Moreover, through the 1990s the major bilateral and multilateral donors annually committed globally only about $8 billion to agriculture, broadly defined (FAO/IFAD/WFP 2002). The agricultural development needs of Africa alone cannot be met under current levels of official development assistance, and the human needs that could be met through agriculture extend much beyond Africa alone. If the poor of the world are primarily farmers and herders and we want to see sharp improvements in their well-being in the near term by 2015, then important gains can be made if we start with where they are currently earning their livelihoods—in agriculture. Donor priorities should reflect this basic element of the global poverty profile.

Finally, the roots of deficient agricultural development found in so many poor countries often lies in power relationships in which the welfare of the population is not served, resulting in poor governance, political and social weakness, and adverse incentives. Although the agricultural sector is not blameless, such problems do not lie fundamentally within the agricultural sector, but are reflective of broader destructive processes within national political economies. The incentives for bringing about an active agricultural sector are not there because of these other problems. Little progress in attaining the Millennium Development Goals or in vitalizing agriculture can be anticipated in countries that are unable to confront these issues.

Table 2.1  Summary of Links Between the Agricultural Sector and the Millennium Development Goals, Principally at Household Level

<table>
<thead>
<tr>
<th>Goal</th>
<th>Direct</th>
<th>Indirect</th>
<th>Nature of Relationship</th>
<th>Complementary Requirements</th>
</tr>
</thead>
</table>
| 1. Eradicate extreme poverty and hunger. | • Increased food production  
• increased food consumption for subsistence farming households.  
• More diverse food production  
• higher-quality diets. For farming households:  
• Increased production  
• increased income through markets  
• increased consumption and household assets. For nonagricultural households:  
• Increased production  
• reduced prices for agricultural products  
• increased consumption or reduction in share of income spent on food. | • For both farming and nonfarming households, increased income  
• increased capital investments in existing economic activities or diversification into other sectors  
• enhanced welfare and increasing household economic resiliency. | • Two-way, quite strong, generally positive.  
• Less hunger  
• more productive workers in agriculture.  
• Less poverty  
• more investment in agriculture. | • Suitable agricultural production technologies available.  
• Relatively equitable distribution of farmland across the population.  
• Efficient, widespread rural markets that are linked to regional and international trade circuits.  
• Knowledge on proper diet and nutritional care. Sanitation and health services available. |
Table 2.1 Summary of Links Between the Agricultural Sector and the Millennium Development Goals, Principally at Household Level (Continued)

<table>
<thead>
<tr>
<th>Goal</th>
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<th>Indirect</th>
<th>Nature of Relationship</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2. Achieve universal primary education.</td>
<td>Few.</td>
<td>More dynamic agricultural sector will change assessments of the economic returns to educating one’s children compared to returns of keeping children out of school to work in household agricultural enterprises.</td>
<td>Two-way, principally indirect. Possibly some negative ramifications if increased returns from agriculture can be achieved using child labor or higher skills are not required.</td>
<td>Increased returns to skilled labor in agriculture. Primary schools with adequate quality of instruction are accessible.</td>
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<tr>
<td>3. Promote gender equality and empower women.</td>
<td>Increasingly profitable agriculture potential to economically empower women farmers.</td>
<td>Broader economic improvements through dynamic agriculture increased public expenditures on water and sanitation, health, energy sectors reduced time burden on women for domestic tasks.</td>
<td>Two-way, Increased willingness of women to invest in agriculture more dynamic agricultural sector. Possibly negative ramifications if more dynamic agricultural sector increased male domination of agricultural activities.</td>
<td>Security of female access to agricultural resources. Secure female control over own agricultural output.</td>
</tr>
<tr>
<td>5. Improve maternal health.</td>
<td>More diverse food production higher-quality diets improved health.</td>
<td>Primarily through same mechanisms as MDG 3 on empowerment of women.</td>
<td>Two-way, but not strong. Improved maternal health will result in more productive agricultural labor, both from women and from their children.</td>
<td>Degree of control women have over resources to assure their own health. Availability of nutrient-dense food crops.</td>
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</tbody>
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(continued)
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<td>6. Combat HIV/AIDS, malaria, and other diseases.</td>
<td>• Greater and more diverse food production&lt;br&gt;• higher-quality diets&lt;br&gt;• improved health.</td>
<td>• More dynamic agricultural sector&lt;br&gt;• increased income&lt;br&gt;• more resources to devote to health services.</td>
<td>• Two-way, principally indirect.&lt;br&gt;• Reduced health burden enables more productive agriculture.&lt;br&gt;• Possible negative ramifications if agricultural investments or labor migration patterns exacerbate or extend diseases.</td>
<td>• Effective health system, both curative and public health services.&lt;br&gt;• Effective interventions to limit HIV infection.&lt;br&gt;• Particularly for HIV infection in subsistence farming households, availability of nutritious food crops that are not labor-intensive.</td>
</tr>
<tr>
<td>7. Ensure environmental sustainability.</td>
<td>• Agriculture practices can be both direct causes of and important immediate solutions to environmental degradation.</td>
<td>• More productive agricultural technologies&lt;br&gt;• withdrawal of agriculture from marginal, sensitive environments.&lt;br&gt;• More profitable agricultural sector&lt;br&gt;• reduced migration to urban slums.</td>
<td>• Two-way. Both direct and indirect.&lt;br&gt;• Agricultural sector is as likely to have negative ramifications on the environment as positive. Unprofitable agricultural systems tend to unsustainably mine environmental resources.&lt;br&gt;• Declining environmental resource base is an erosion of the foundation for the agricultural economy.&lt;br&gt;• To minimize negative environmental externalities of agricultural investments, participatory planning processes required.&lt;br&gt;• Relatively equitable distribution of agricultural assets across the population.&lt;br&gt;• Environmental costs of agricultural production incorporated into economic assessments of production systems.</td>
<td>• Effective health system, both curative and public health services.&lt;br&gt;• Effective interventions to limit HIV infection.&lt;br&gt;• Particularly for HIV infection in subsistence farming households, availability of nutritious food crops that are not labor-intensive.</td>
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<tr>
<td>8. Develop a global partnership for development.</td>
<td>• Expanding global agriculture trade increases need for formal trading partners and rules.&lt;br&gt;• Capital requirements for comprehensive agricultural development&lt;br&gt;• Significant increases in development assistance offered to the agriculture sector.</td>
<td>• More profitable agricultural sector&lt;br&gt;• expectation of better governance and provision of public goods by governments to sustain the benefits from agriculture in the long term.</td>
<td>• Two-way, but principally toward agriculture. Primarily direct.&lt;br&gt;• Globalization is as likely to have negative as positive ramifications on agricultural producers, particularly small-scale subsistence farmers, in the short term.</td>
<td>• Sufficient knowledge, capital, and access to markets to enable agricultural producers to engage in regional and global trade.</td>
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