



# Executive Summary

## Relationship Between Agriculture and the Millennium Development Goals

In 2000 the member states of the United Nations adopted the Millennium Declaration as a renewed commitment to human development. The Declaration includes eight Millennium Development Goals (MDGs), each with quantified targets, to motivate the international community and provide an accountability mechanism for actions taken to enable millions of poor people to improve their livelihoods. The MDGs are as follows:

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), malaria, and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development.

About 70 percent of the MDGs' target group live in rural areas, particularly in Asia and Africa, and for most of the rural poor agriculture is a critical component in the successful attainment of the MDGs. Even though structural transformations are important in the longer term, more immediate gains in poor households' welfare can be achieved through agriculture, which can help the poor overcome some of the critical constraints they now face in meeting their basic needs. Thus, a necessary component in meeting the MDGs by 2015 in many parts of the world is a more productive and profitable agricultural sector.

While the linkage with agriculture is particularly strong for the first MDG, or MDG 1—halving by 2015 the proportion of those suffering from extreme poverty and hunger—all MDGs have direct or indirect linkages with agriculture. Agriculture contributes to MDG 1 through agriculture-led economic growth and through improved nutrition. In low-income countries economic growth, which enables increased employment and rising wages, is the only means by which the poor will be able to satisfy their needs sustainably.

MDG 2, on universal education, has the most indirect linkage to agriculture. A more dynamic agricultural sector will change the

assessment of economic returns to educating children, compared to the returns from keeping children out of school to work in household (agricultural) enterprises. Agriculture contributes to MDG 3 directly through the empowerment of women farmers and indirectly through reduction of the time burden on women for domestic tasks. Agriculture contributes to reduced child mortality (MDG 4) indirectly by increasing diversity of food production and making more resources available to manage childhood illnesses. Agriculture directly helps improve maternal health (MDG 5) through more diversified food production and higher-quality diets, and indirectly through increased incomes and, thus, reduced time burdens on women. Agriculture also directly helps to combat HIV/AIDS, malaria, and other diseases (MDG 6) through higher-quality diets, and indirectly by providing additional income that can be devoted to health services. Agriculture practices can be both direct causes of and important solutions to environmental degradation (MDG 7). More productive agricultural technologies allow the withdrawal of agriculture from marginal, sensitive environments. Developing a global partnership for development (MDG 8) will help maintain the steady increase in agricultural trade and significant increases in development assistance offered to the agricultural sector, increases that help sustain the benefits from agriculture in the longer term

### **Agriculture and MDG 1: Country-Level Analysis for Ethiopia and Zambia**

Compared with other regions of the developing world, Sub-Saharan Africa faces the largest challenge in terms of meeting MDG 1. In 2001, about 47 percent of the population was living below the international poverty line. Agriculture will be the primary means of addressing this challenge, as 65 percent of the people in the region derive their livelihoods from the sector. However, the contribution that agriculture can make in achieving the MDGs in this region depends on the particular constraints and opportunities prevailing within each of the countries.

In this report, Ethiopia and Zambia, with rural poverty rates of 45 percent and 86 percent, respectively, are analyzed according to the level and type of agricultural growth required to meet the MDGs

based on alternative development scenarios from economy-wide models. Ethiopia is a predominantly subsistence economy with agriculture contributing 52 percent to GDP and with almost 85 percent of the population living in rural areas. Productivity in the sector is low, due to frequent droughts, limited input use, and poor infrastructure. In contrast, mining traditionally has dominated economic growth in Zambia, which in turn has marginalized the country's agricultural sector. Zambia has both a higher proportion of its population living below the poverty line and a higher concentration of individuals at the low end of the income distribution.

Model results for Ethiopia show that if the country stays on a business-as-usual growth path, poverty will increase by another 10 million people, and food security will be compromised even further. The largest impact on poverty and food security can be achieved through a focus on growth in staple crops, which today account for 65 percent of agricultural value added as well as most smallholder employment. Rapid growth in the livestock sector has the most significant effect on overall economic growth but has a relatively smaller poverty alleviation effect. Very rapid growth in the nontraditional-export sector fuels total economic growth as well, but has little impact on rural poverty levels. Accelerated growth in all three sectors would help slash the poverty rate by 16 percentage points to 27 percent by 2015. The simulated growth in staple food production could be achieved through a doubling of the irrigation area by 2015, and by improving the efficiency of fertilizer use combined with enhanced seed use. Moreover, as more than 50 percent of the poor live in food-deficit areas where the availability of food staples per household is half the national average, market access and market development need to be integral parts of a national agricultural development strategy. Enhanced market access, chiefly through large investments in improved and extended road networks, would reduce the national poverty rate to 22.7 percent, and thus help Ethiopia reach the MDG 1 target.

In Zambia, the poverty rate under business-as-usual growth would still be 68 percent by 2015, only 7 percentage points lower than the current poverty rate of 75 percent. Annual GDP growth of 8.8 percent would be required to halve poverty by 2015. Although agriculture accounts for only

25 percent of GDP, it is still the main source of livelihood for most of the country's population, including the majority of Zambia's poor who live in rural areas where the incidence and severity of poverty is greatest. More rapid productivity growth under the Agriculture-Led Growth Scenario would lead to higher sectoral growth for both staples and export crops. Under a focus on nonagricultural growth, rural households would benefit from increased demand in urban areas, but the overall effect on poverty would be relatively small. Agricultural processing within the manufacturing sector, however, does in fact represent a potential area for growth and poverty reduction. Within the Agriculture-Led Growth Scenario, a Staples-Led Growth Scenario combined with poor market access would again have little impact on poverty among small-scale farm households. An Export-Crop-Led Growth Scenario would favor rural medium-scale households due to market and credit constraints for the rural poor.

### **Agriculture and MDG 1: Regional Analyses with a Focus on Child Malnutrition**

Malnutrition affects nearly one-third of all children under five years of age in developing countries—174 million children in 1990. More than half of childhood deaths are associated with underweight, and malnourished children who survive into adulthood are more likely to suffer from chronic illness and disability, and have a higher probability of reduced physical and intellectual productivity. The IMPACT-WATER model is used to project the proportion of malnourished children under business-as-usual and an alternative MDG scenario that attempts to close the gap between the MDG target rate of childhood malnutrition and business-as-usual outcomes. The gap is closed through growth in agriculture as well as complementary investments in social sectors, and special attention is given to those countries and regions least likely to reduce malnutrition significantly by other means. Under business-as-usual, the developing-country level of childhood malnutrition is still 24 percent by 2015, down from 30 percent in 1990. Regions least likely to reach the MDG target indicator on halving childhood malnutrition are Sub-Saharan Africa, where the number of malnourished children has increased over the last 30 years, South Asia, where substantial progress

was made, but from very high levels, and parts of Southeast Asia. Levels in West Asia and North Africa are comparatively low, but have remained virtually unchanged over the last 30 years.

The MDG scenario combines two broad courses for improving food security and reducing poverty in developing regions: the first way is through broad-based and rapid agricultural productivity and economic growth to increase effective incomes, effective food demand, and food availability; and the second is through investments in education, social services, and health (proxied in the model by female secondary enrollment rates, the female-male ratio of life expectancy at birth, and access to clean water).

The changes in agricultural and complementary social indicators result in a reduction in total child malnutrition from 24 percent under business-as-usual in 2015 to 17 percent under the MDG scenario, a reduction from 131 million children to 91 million children. Under the MDG scenario, to bring developing countries, particularly South Asia and Sub-Saharan Africa, within reach of the preschool malnutrition target indicator, total investments in agricultural and supporting sectors during 1995–2015 will have to increase by \$161 billion\* based on IMPACT-WATER calculations. The three main areas of investment for the MDG scenario in percentage terms are rural roads, irrigation, and education. Together these three areas will require \$403 billion between 1995 and 2015 to achieve the rapid reductions in childhood malnutrition simulated under the MDG scenario. Agricultural research investments account for \$109 billion, and \$78 billion of investments are required toward increasing access to safe water. Due to the long lags in the generation of impacts from agricultural research, increases in research expenditures—even beginning now—will have relatively small impacts on crop yields by 2015. Increased investments in agricultural research are likely to be essential to meet crop and animal production needs beyond 2015, however. Other investments, such as roads and irrigation, have significant lags in impact as well, so implementing the investment portfolio required for the MDG scenario will require very rapid action. As relatively high levels of access to clean drinking water are already achieved in the baseline scenario, only \$15 billion in investments are added for the MDG scenario; these investments have virtually no lag period in becoming effective.

## Role of Trade, Policies, and Governance Systems

In addition to the targeted investments required to help agriculture achieve its potential contribution for the MDGs, policies and governance systems need to be supportive for agriculture to achieve maximum impact.

Supportive systems and policies include trade and domestic support policies for agriculture in developed and developing countries, macro-economic reform and public-sector infrastructure and other investments, the role of the private sector and public-private partnerships, and general good governance.

Price support policies and border protection of wealthy Organization for Economic Co-operation and Development (OECD) countries, valued at hundreds of billions of dollars each year, cause harm to agriculture in developing countries. Removal of OECD protection could boost rural value added in low- and middle-income countries by \$60 billion per year. The increase in world prices from removal of OECD protection would lead to larger agricultural production in developing countries. An important area for developing countries to increase participation in international markets is through the buildup of capacity to produce for exacting standards of importing markets. Developing countries themselves retain substantial trade barriers and have varying requirements regarding agriculture liberalization, due to differences in trade specialization and needs of net food imports. When developing countries join in agricultural trade liberalization, they can achieve overall welfare gains of \$20 billion annually, twice the gains in national welfare compared to reforms in the developed countries only. Overall, a successful conclusion for agriculture in the World Trade Organization Doha Development Round trade negotiations can make an important contribution to achieving the MDGs, by establishing sustainable positive incentives for agricultural production among developing countries.

Food aid is another component of international transactions that directly and indirectly affects rural poverty in a globalized agricultural economy and therefore could have a significant impact in achieving the MDG targets. While the provision of aid in the form of food is not the optimal form for development assistance, donors would probably not provide equivalent cash development assis-

tance in place of food if existing food-aid programs were terminated. Thus, attention needs to focus on how its effectiveness can be maximized and potential harms mitigated.

Infrastructure is of particular concern as one of the key inputs entering into the “production function” of the MDGs and the achievement of many of the MDG targets, from poverty reduction to environmental sustainability targets. In Sub-Saharan Africa in particular, a lack of adequate infrastructure, typically attributed to geography and poor initial conditions, clearly impedes more productive agriculture. Achieving the health and education MDGs will require more than health and education interventions; in particular, infrastructure services have a crucial role to play. Piped water is crucial to reduce diarrhea in young children, while electricity allows for more hours of studying and road access promotes easier establishment of schools and higher attendance. Where the government believes that service should be provided beyond what a well-functioning market will offer, subsidies may be justified to promote additional investment to achieve these government goals.

To improve the effectiveness of public investment, increased coordination at the country, regional, and donor levels is necessary because the linkages and complementarities of infrastructure investment have often not been realized. Moreover, the traditional approach of top-to-bottom infrastructure development has to be changed to a more demand-driven approach. Finally, the impediments to efficient markets in rural areas need to be addressed through regulatory reforms in order to increase the availability and effectiveness of resources to address the real access gap in these areas.

Public intervention alone is not sufficient to deliver the services and investments required to achieve the MDGs. To alleviate rural poverty in developing countries, the private sector can contribute to economic growth through job creation both on and off farm. The private sector also has an important role in supporting timely and efficient credit availability to fuel agricultural development and growth. Finally, the private rural nonfarm sector is an important engine for rural development. In Asia, for example, the rural nonfarm economy accounts for 20–50 percent of total rural employment and 30–60 percent of total rural income.

Private financing of investment and MDGs may be explored as a general way to ensure availability of basic services, particularly as the official development assistance or aid for the water and other sectors has declined in recent years. Financing options should also include income redistribution and tax efforts in China, India, and other poor countries to co-finance the MDGs.

Foreign direct investment (FDI) and other long-term, relatively stable investments have a significant impact on agricultural and overall economic growth. However, the impact of this investment on hunger and poverty may be limited. Little of this investment goes directly into agriculture or rural areas. Moreover, FDI is largely concentrated in just a few countries.

Ideally, the public and private sectors complement each other, with the government providing an appropriate enabling environment for private initiatives to develop. Public-private partnerships are an important way to increase financial, human, and social capital in rural areas. Partnerships can include publicly provided training for small- and medium-scale enterprises, partnerships in education, agricultural research, the provision of information and communication technologies, the expansion of rural infrastructure including roads, and the development of rural industrial clusters. Moreover, through partnerships, public research institutions can gain access to advanced scientific knowledge and technologies held by the private sector, mechanisms for developing, processing, marketing, and distributing final products to farmers and consumers, and financial resources that are increasingly difficult to obtain. In the area of agricultural research, however, a sustained public role in funding agricultural research will be essential, particularly for crops and regions that are unlikely to be served by the private sector, such as those in less favorable environments.

Good governance is typically defined under the terms of accountability, transparency, predictability, and participation. These principles are only meaningful and supportive of agricultural development toward achieving the MDGs if adequate institutional and social structures are available. Countries with a good governance structure and adequate institutions tend to ensure political and economic stability, possess reasonable state capacity, enforce property rights and contracts, provide sufficient public goods, and limit government corruption and predation. Conversely, countries with

poor governance and poor institutions typically have poor public services, including those for agricultural extension and research, and have particularly poor social services like water provision and education. Good governance can be built through the development of social capital, particularly in rural areas, where participation by individuals in social networks increases the availability of information and lowers its cost, helps enforce property rights, and reduces opportunistic behavior in natural resource use—thus supporting all MDGs.

Effective community-based organizations, such as farmer associations or cooperatives, water user groups, and farm and other microcredit and lending groups can improve governance, for example, by educating and sensitizing the public about their rights and entitlements under public programs; by acting as a conduit to the government for public opinion and local experience; by influencing local agricultural development policies; and by helping government and donors fashion a more effective development strategy through strengthening institutions, staff training, and improving management capacity. At a higher level, donor countries and international aid agencies should focus their resources on those countries where good or improving governance structures will ensure that the rural poor are reached. Finally, at the international level, enhanced governance and commitment could help bring about improvements in the global trade and environmental agendas. Progress in the trade agenda will come from regarding the needs of the poorest countries, including enhanced access to both agricultural and other markets; progress in the global environmental agenda will come from the gains of developing countries from enhanced environmental standards, including protection of remaining biodiversity in these countries, or from participating in and gaining from climate mitigation policies.

## Conclusions

Given that the majority of poor people live in rural areas or rely on agriculture, and that agriculture paves the way for economic growth in the poorer nations, agricultural and rural development will underlie progress on the broad array of economic and social indicators emphasized by the MDGs. The most effective strategy for making steady, sustainable progress toward the MDGs is to serve all the goals in an integrated way. However, each goal

will need a well-defined package of technologies and services for success at the field level.

Of the eight Millennium Development Goals, the first goal 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 also most commonly find their livelihoods through agriculture. By increasing food availability and incomes and contributing to asset diversity and economic growth, higher agricultural productivity and supportive pro-poor policies allow people to break out of the poverty-hunger-malnutrition trap. As the country-level model simulations revealed, broad-based agricultural growth is the key for decreasing poverty and increasing growth in Sub-Saharan Africa. A global assessment of Target 2 of MDG 1 (halving child malnutrition levels) shows that the combination of agricultural and economic growth together with larger investments in social sectors, including health and education, can substantially narrow the gap between the business-as-usual outcomes for 2015—24 percent of developing-country preschool children malnourished—and the target indicator—15 percent children malnourished—to reach 17 percent. However, the outcome varies significantly by country and region. Latin America, West Asia and North Africa, and China will, on average, likely get close to the target indicator by 2015, even under business-as-usual; however, the likelihood that Sub-Saharan Africa and South Asia will come close to their respective target rates is much smaller. The total increase in investments estimated is \$161 billion in agricultural and supporting sectors during 1995–2015. In addition to these investments, significant policy and governance reform is required.

To achieve faster agriculture-based growth rates, there must be in place favorable macroeconomic and trade policies, good infrastructure, and access to credit, land, and markets. These conditions create level playing fields and give farmers incentives to adopt new and sustainable technologies and diversify production into higher-value crops, actions that raise incomes and lift households out of poverty. An improved domestic regulatory framework would intensify competition among suppliers of essential inputs, such as seeds and fertilizer. In addition, the elimination of trade barriers for agricultural products, especially the high-value-added products, would encourage a

greater number of private entrepreneurs to explore opportunities in agribusiness. A healthy market and private sector would provide value-added, skilled work to the landless poor and generate multiple livelihood opportunities in both the farm and nonfarm sectors. Other important reforms in the trade area include the elimination of export subsidies; the move toward measures that support income instead of stimulating production in developed countries, and the reform of the international and national governance of food aid programs.

As the financing requirements for realizing the MDGs are substantial, the private sector is increasingly called upon to fill investment gaps. Its complementary and supporting role in the provision of basic services in water, land, health, and other infrastructure development that is lacking in most developing countries cannot be ignored. It will take a particular kind of private-sector involvement to generate the necessary economic transformations. Private entrepreneurs are now increasingly held to environmental, social, and corporate governance principles that stress sustainable business practices and adherence to labor standards. Without these standards and practices, the private sector and disadvantaged groups cannot mutually benefit from consumer, employment, and entrepreneurial activities. Government agencies in developing countries urgently need to revisit the legal, regulatory, political, and institutional framework in agriculture, research, extension, and industrial sectors to facilitate private-sector involvement. Moreover, both the private and public sectors must foster private-public-sector partnerships and cultivate this relationship with the end objective of addressing the MDGs. Moreover, to allow the agriculture sector to develop its full potential for achieving the MDGs, the share of ODA spent on agriculture needs to increase significantly.

It is a promising development that the review of progress—and lack thereof—in achieving the MDGs has reached global attention. Calls for accountability and action that have real impact on people are growing because of that attention. Policy action and increased investment in the critical arenas of sustainable agriculture productivity and food and nutrition security will be essential for responding effectively and responsibly to reach the Millennium Development Goals.