



Reaching Sustainable Food Security for All by 2020

Getting the Priorities and Responsibilities Right

Each day our world witnesses 800 million people go hungry and 170 million children under 5 years of age suffer from malnourishment. This situation is a human tragedy on a vast scale, made even worse because it is avoidable.

IFPRI[®] was founded in 1975 to identify and analyze policies for sustainably meeting the food needs of the developing world. Research at IFPRI concentrates on achieving economic growth and poverty alleviation in low-income countries, improving the well-being of poor people, and sustainably managing the natural resource base that supports agriculture.

The 2020 Vision for Food, Agriculture, and the Environment is an initiative of the International Food Policy Research Institute (IFPRI), launched in 1993 in collaboration with partners around the world. The 2020 Vision Initiative seeks to develop and promote a shared vision for how to meet the world's food needs while reducing poverty and protecting the environment and seeks to generate information and encourage debate to influence action by all relevant parties.

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Responsibilities Right

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Preface

As we enter the 21st century, humanity faces a glaring contradiction: the persistence of desperate hunger and environmental degradation amid plenty. Official declarations made at international meetings have repeatedly decried this situation, and heads of state have agreed on measurable goals related to food security, poverty alleviation, and sustainable natural resource management. Yet few countries have achieved these goals, or even made much progress toward them. If the world remains on its current path, hundreds of millions of people will remain food insecure, millions of children will die each year from malnutrition, and environmental degradation will continue unchecked.

As part of its 2020 Vision for Food, Agriculture, and the Environment Initiative, the International Food Policy Research Institute (IFPRI®) has articulated a vision of what the world should look like in 2020: it should be a world free from poverty, hunger, malnutrition, and unsustainable natural resource management. The 2020 Vision Initiative has two main objectives: (1) to develop and promote a shared vision and consensus for action for meeting food needs while reducing poverty and protecting the environment; and (2) to generate information and encourage debate to influence action by national governments, nongovernmental organizations, business and industry, international development institutions, farmers, and other elements of civil society. In September 2001, IFPRI and its 2020 Vision Initiative, in collaboration with partners, sponsored an international conference in Bonn, Germany, to bring together the actors needed to achieve this vision. The 900 people who attended the conference considered the driving forces that will determine the difficulty of achieving the 2020 Vision, and they articulated the steps required to build the world the Vision describes.

This document reflects many of their discussions. Compiled here is what is known about the conditions facing the world in the next 20 years and about how to overcome the persistent and interlocking problems of food insecurity, poverty, and environmental degradation. As convenient as it might be, we do not present here a simple, one-dimensional solution. Like the problems, the solutions are complex. But with commitments of resources and personnel, they are feasible. Even more, they are essential.

Although the document that follows reflects a wide range of consultations and helpful advice received on an earlier draft distributed at the Bonn conference, it does not strictly represent a consensus. Rather it reflects our best judgment, as an institution, about the driving forces influencing the long-term prospects for food security and the key priorities and actions needed over the next two decades to free humanity from the scourge of hunger. These judgments are grounded mainly in our own research on food policy over the past 27 years, as well as research by others. Needless to say, IFPRI alone bears responsibility for the contents. Highlights of this document have been presented separately in *Achieving Sustainable Food Security for All by 2020: Priorities and Responsibilities*.

We owe our thanks to Marc Cohen of IFPRI, who expertly drafted this document. We are grateful to the many people who submitted comments on the earlier draft, both during the conference and after. And the document could not have been created without the contribution of IFPRI researchers and many other friends of IFPRI, whose work has informed much of the world's thinking on these issues.

It is our hope that this document will prove useful and inspiring to policymakers and to the wide range of civil society actors whom it calls upon to take action in the coming years. Through their efforts, freedom from hunger can become not just a lofty goal, but a reality.



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EXECUTIVE SUMMARY

Each day our world witnesses 800 million people go hungry and about 170 million children under 5 years of age suffer from malnourishment. This situation is a human tragedy on a vast scale, made even worse because it is avoidable. What would the world look like if the commitment to food security for all, so often articulated at international meetings, were real? The 2020 Vision of the International Food Policy Research Institute describes it this way: a world where every person has access to sufficient food to sustain a healthy and productive life, where malnutrition is absent, and where food originates from efficient, effective, and low-cost food systems that are compatible with sustainable use of natural resources. If governments, international agencies, nongovernmental organizations (NGOs), business and industry, and individuals are willing to back their words with sustained actions, great progress is possible.

NINE CRITICAL DRIVING FORCES

Nine driving forces will be critical to efforts to achieve the 2020 Vision.

1. Accelerating Globalization and Further Trade Liberalization

Globalization offers developing countries new opportunities for broad-based economic growth and poverty alleviation, but without the right policies and institutions at both national and international levels, globalization may either bypass or harm many poor people in developing and developed countries alike.

2. Sweeping Technological Changes

Technological advances in molecular biology, energy, and information and communications have the potential to help achieve food security for poor people and make natural resource management more sustainable. However, without changes in policies and institutions, technological revolutions may leave the food-insecure behind.

3. Degradation of Natural Resources and Increasing Water Scarcity

Degradation of natural resources is rampant in many resource-poor areas of developing countries. To be sustainable, food security solutions must address natural resource issues effectively.

4. Health and Nutrition Crises

Global health crises such as HIV/AIDS, malaria, and tuberculosis not only destroy human lives, but also impoverish millions of people, raise the cost of health care, and cause severe shortages of productive workers.

5. Rapid Urbanization

By 2020 more than half of the people in the developing world will live in urban areas. Future policy actions must pay increasing attention to growing poverty, food insecurity, and malnutrition in urban areas.

6. The Changing Face of Farming

With the aging of the farm population, the feminization of agriculture, and the decreasing cost of capital relative to labor, the nature of farming is changing rapidly in many developing countries. Small-scale family farms, traditionally the backbone of much of developing-country agriculture, are under threat.

7. Continued Conflict

Violent conflicts continue to cause human misery in many countries. Achieving sustainable food security for all will not be possible in the midst of conflict.

8. Climate Change

Many people believe that climate change is leading to more frequent and more severe natural disasters. Future agricultural policies must focus on finding ways to keep agriculture productive as climate change continues.

9. Changing Roles and Responsibilities of Key Actors

Local governments, business and industry, and nongovernmental organizations are undertaking many activities previously performed by national governments. Likewise, national governments in many developing countries are playing a new and diminished role, but they must retain their capacity to perform the functions that only they can do, such as ensuring the rule of law and developing nationwide infrastructure.

GETTING THE PRIORITIES RIGHT

Rapid economic growth is essential for achieving sustainable food security for all by 2020. The challenge is to achieve that growth in a way that benefits the poor—that is, pro-poor economic growth. This kind of growth, together with empowerment of the poor and effective provision of public goods, will be the foundation of any successful attempt to achieve the 2020 Vision. The specific policies that will be most appropriate will vary according to local and national circumstances.

1. Investing in Human Resources

Healthy, well-nourished, literate citizens are an essential precondition for successful pro-poor economic growth. Universal access to primary and preventive health care and access to clean water and safe sanitation are critical for people's good health and good nutrition. Like good health, education has a tremendous impact on economic growth and on the material well-being of individuals. Educating girls, especially, has beneficial effects on family size, spacing of births, child care practices, child nutrition, and household income.

2. Improving Access to Productive Resources and Remunerative Employment

Pro-poor economic growth can take place only if poor people have access to productive resources and remunerative employment. Small-scale, nonagricultural rural enterprises can play an increasing role in providing livelihoods for rural people. More productive agriculture is also vital. To be more productive farmers, many poor rural people need access to credit and savings institutions, yield-increasing crop varieties, improved livestock, appropriate tools, fertilizer, and pest management technology, as well as secure access to land.

3. Improving Markets, Infrastructure, and Institutions

Many rural regions consisting primarily of poor people, including small farmers, are often the last regions to get investments in infrastructure and, partly for that reason, markets in these areas are poorly developed. Rural poor people, whether farmers or not, will not benefit if they are excluded from participation or fair competition in the mainstream market economy.

4. Expanding Appropriate Research, Knowledge, and Technology

Technological developments in the biological sciences, energy, and information and communications offer new opportunities that could benefit poor people, their food security, and natural resource management. These benefits will materialize only if policies are in place to guide technological developments toward solving poor people's problems.

5. Improving Natural Resource Management

In many developing countries, poverty, low agricultural productivity, and environmental degradation interact in a vicious downward spiral, as desperately poor farmers mine soil fertility and climb the hillsides in an effort to survive. Unless properly managed, fresh water may well emerge as the key constraint to meeting future food security, and needed reforms include providing secure water rights for users and reducing or eliminating water subsidies. Low soil fertility and lack of access to reasonably priced fertilizers constrain farmers in many countries. Policies should encourage farmers to make appropriate use of organic and inorganic fertilizers and improved soil management.

6. Good Governance

Good governance—the rule of law, transparency, the elimination of corruption, sound public administration, and respect and protection for human rights—supports efforts to achieve food security for all. In the past 20 years or so the role of the public sector has shrunk while NGOs and business and industry have taken on additional responsibilities. Although this shift may be appropriate, the for-profit sector and NGOs have limitations in providing public goods, such as peace, the rule of law, affordable access to clean water and electrical power, public health, public research, and rural transportation infrastructure. Governments must also have the political will to stamp out corruption and must persuade business and industry, NGOs, and citizens to work to this end.

7. Propoor National and International Trade and Macroeconomic Policies

Unless governments are committed to long-term macroeconomic stability, reforms in agriculture are unlikely to be effective. In addition, developing countries must participate effectively in the current round of global agricultural trade negotiations and pursue better access to industrialized countries' markets. Industrialized countries must reduce and eventually end trade-distorting agricultural subsidies. These countries must also continue the recent reversal in the decline in overall levels of development aid. Aid to agriculture and education are especially important to

food security. Developed-country governments and international financial institutions must also do more to lift the burden of debt from highly indebted poor countries.

WHOSE JOB IS IT TO ACHIEVE FOOD SECURITY?

The forces that produce persistent and widespread hunger are local, national, and international. National governments in developing countries bear the primary responsibility for creating an environment within which individuals and communities can effectively address hunger. In addition, governments of industrial countries, parliaments and judiciaries, international organizations and multilateral institutions, civil society, business and industry, the private sector in developing countries including farmers, and food-insecure people themselves all have crucial roles to play in achieving sustainable food security for all.

FINALLY, TIME TO ACT

The cost of making significant progress toward the 2020 Vision is relatively modest. For instance, an investment equal to less than 5 percent of the total expenditures by developing-country governments could reduce the number of malnourished children from the current approximately 170 million to 94 million by 2020.

The cost of not making the necessary investments, however, is staggering. In the developed countries, the costs are greater global instability, more environmental degradation, and more emergency relief, among others. In the developing countries, millions will pay the cost with their lives.

National governments and the other actors mentioned here hold the key to the future. Policy-makers and leaders of development organizations must have the courage to manage the forces of change that can worsen poverty and food insecurity, rather than being buffeted by them. They must rearrange their policy priorities and budgets in a way that puts the well-being of the poor at the top of the list. They must begin to invest in people's health and education, strengthen markets and other institutions, improve natural resource management, and take the other desperately needed actions described here. And they must begin today.



SUSTAINABLE FOOD SECURITY FOR ALL BY 2020

Each day our world witnesses 800 million people going hungry and about 170 million children under 5 years of age suffering from malnourishment. This situation is a human tragedy on a vast scale, made even more heartbreaking because it is avoidable.

At the World Food Summit (WFS) of 1996 the global community agreed on an achievable target: to halve the number of hungry people in the world by 2015. To reach this target 22 million people must escape from food insecurity every year. But only 6 million have been fortunate enough to do so each year since the summit. Given the progress so far on this goal, this commitment seems to have been mere lip service. In the years since that summit, the countries who undertook this commitment have made choices each year about how to spend money and effort and about what policy goals to pursue. For the vast majority, food security has never made it near the top of the agenda.

What would the world look like if the commitment, not only to the WFS goal but to food security for all, were real? The 2020 Vision of the International Food Policy Research Institute describes it this way: a world where every person has access to sufficient food to sustain a healthy and productive life, where malnutrition is absent, and where food originates from efficient, effective, and low-cost food systems that are compatible with sustainable use of natural resources. The benefits to poor and hungry people are obvious—the possibility of a healthy and productive life, perhaps for the first time. Yet the gains to the well-off also bear mentioning: not only a healthier global economy, but also a world with less risk of conflict over scarce resources, less need for costly emergency relief, less poverty-driven migration, and less environmental degradation.

PROGRESS TO DATE

The world has made slow but significant progress in improving food security and human well-being over the past three decades. Since 1970 the number of food-insecure people in developing countries has declined by 17 percent to the current 780 million, in spite of rapid population growth. The share of people in the developing world who are food insecure has fallen from 37 to 18 percent.

But progress has been uneven. Whereas major improvements have occurred in East and Southeast Asia, the number of food-insecure people increased slightly in South Asia and more than doubled in Sub-Saharan Africa. In fact, if it were not for the substantial reductions in food insecurity in China,



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progress in improving food security would be dismal. Between 1991 and 1998 the number of food-insecure people declined by 76 million in China and increased by 40 million in all other developing countries.

Food insecurity is rooted in persistent poverty and worsening inequality. Twenty percent of the world's population lives on the equivalent of less than US\$1 a day and is too poor to afford the necessities of life. Fully half of the human race earns less than \$2 a day. The incomes of the richest 1 percent of humanity are equivalent to those of the poorest 57 percent. In 1960 the average per capita income in the industrialized nations was nine times the average in Sub-Saharan Africa. Since then incomes in industrialized countries have grown while those in Africa have shrunk, and the gap has doubled to 18-fold.

One distressing and costly manifestation of food insecurity is malnutrition among preschool children. It impairs children's mental and physical development, compromising their future health, productivity, and food security. Chronic child malnutrition reduces gross domestic product by 0.7 percent annually in India and 0.5 percent in China. While poverty is the main cause of food insecurity, food insecurity can in turn cause or worsen poverty. Strategies to reduce poverty must tackle malnutrition and food insecurity if they are to succeed.

Today, one-third of the preschool children in developing countries are malnourished. During the last 30 years the number dropped by 18 percent to approximately 170 million. Malnutrition is a factor in more than 5 million deaths of children under the age of five annually, accounting for 20–25 percent of the economic impact of childhood diseases in the developing world. Again, the regional record is uneven. In South Asia the decline was only 6 percent, leaving half the region's preschoolers malnourished. In Sub-Saharan Africa, preschooler malnutrition increased by 13 percent. At the 1990 World Summit for Children, the international community pledged concerted action to halve moderate and severe child malnutrition by 2000. In fact, the actual reduction during the period 1990–97 was a mere 5 percent.

As we move into the 21st century, South Asia and Sub-Saharan Africa are home to three-fifths of all food-insecure people and to three-quarters of the malnourished children. They form the center of gravity of hunger.

Other indicators of human development improved in the developing world during the past 30 years. Life expectancy rose from 56 to 64 years, mortality rates of preschool children fell from 167 to 89 per one thousand live births, and adult literacy rates rose from less than 65 percent to 73 percent. Incomes per capita more than doubled. The proportion of people living on the equivalent of less than \$1 per day in East Asia and Latin America now stands at 15 percent, compared with 40 percent in South Asia and 46 percent in Sub-Saharan Africa.

Food availability improved dramatically in developing countries as a whole during the past 30 years, with daily per capita calorie availability going up from about 2,100 to about 2,700. Sub-Saharan Africa and South Asia, however,

continue to lag behind other regions. In Sub-Saharan Africa average per capita calorie availabilities fall below minimum requirements.

Rapid productivity increases in the agricultural sector of many Asian and some Latin American countries during the past 30 years have led to gains in per capita production, reduced unit costs and prices, and increased incomes and purchasing power for low-income farmers and consumers in those countries. These productivity increases have also helped to restrain the expansion of agriculture into forests, grasslands, fragile lands, and wildlife habitats and thereby averted some forms of natural resource degradation. At the same time, however, the gains in productivity contributed to environmental problems such as increased soil salinity and lowered water tables in irrigated areas, human health problems due to excessive or inappropriate pesticide use, and water pollution and soil degradation resulting from excessive or inappropriate use of farming inputs.

The progress toward food security and good nutrition for all during the past 30 years has been genuine. It is worth remembering that in the late 1950s and early 1960s, much of Asia was written off as a “hopeless basket case.” There were fears that the world faced a Malthusian nightmare of too many people and not enough food. It is also worth remembering that in the mid-1970s, the international community was willing to entertain large visions, grounded in social justice, of how the future could and should look. The 1974 World Food Conference in Rome pledged that “within a decade no child would go to bed hungry, that no family would fear for its next day’s bread, and that no human being’s future capabilities will be stunted by malnutrition.” Then, as now, the political will and action to back such a vision remain the missing elements.

In the mid-1970s, the international community was willing to entertain large visions, grounded in social justice, of how the future could and should look.

WHERE ARE WE HEADED?

With business as usual, there is no possibility of achieving sustainable food security for all by 2020. IFPRI projections suggest that in the most likely scenario, the number of malnourished preschool children could decline by about 20 percent during the next 20 years. This means that by 2020, as many as 130 million children would still be afflicted by malnutrition. They will either die prematurely or will fail to reach their full human potential and dignity. Economies will fail to grow rapidly or equitably as a result.

The Food and Agriculture Organization of the United Nations (FAO) projects that the number of food-insecure people in developing countries could decline from the current 780 million to 675 million people by 2015. Although this reduction would be an improvement, it would not meet the WFS goal of halving the number to 400 million by no later than 2015. At current rates of reduction, the summit target is not expected to be reached until 2050. According to the FAO, in 2000, four years after the World Food Summit, virtually none of the 91 countries and nine international organizations that prepared follow-up reports could offer any concrete progress on meeting these commitments.

With business as usual, there is no possibility of achieving sustainable food security for all by 2020.

DRIVING FORCES

The conditions under which food security efforts will take place are constantly changing, and without a clear understanding of these changes, national and international decisionmakers have little hope of achieving the 2020 Vision. Nine driving forces, in particular, will be critical to their efforts.

1. Accelerating Globalization, Including Further Trade Liberalization

Globalization offers developing countries new opportunities for broad-based economic growth and poverty alleviation, but without the right policies and institutions at both national and international levels, globalization may either bypass or harm many poor people in developing and developed countries alike. If, for example, industrialized countries continue to protect and subsidize their domestic agriculture and increase their food safety concerns, it may be impossible for developing countries to reach industrialized-country markets with their goods. Policymakers will need to guide the globalization process so that it benefits poor people, improving their food and nutrition situation while preserving their natural resources.

2. Sweeping Technological Changes

Technological advances in molecular biology, energy, and information and communications may advance poor people's food security and improve the sustainability of natural resource management. If, however, researchers and policymakers continue to focus on meeting the needs of well-off people in rich countries, the result will be scientific and technological apartheid. Past agricultural research tailored to solving the problems of small-scale farmers and low-income consumers in developing countries has been effective in raising productivity, protecting the environment, and increasing food security. Yet rapid changes are occurring in how agricultural research is financed, managed, and organized. Globally, private business and industry account for a growing share of agricultural research and development, and they subject both the products and the processes of research to intellectual property rights protection. Without changes in policies and institutions, technological revolutions may leave poor and food-insecure people further behind.

3. Degradation of Natural Resources and Increasing Water Scarcity

Degradation of natural resources is rampant in many resource-poor areas of developing countries, particularly those areas with fragile soils, irregular rainfall, high population concentration, and stagnant productivity in agriculture. Natural resource degradation is also occurring in agricultural areas exposed to misuse of modern farming inputs. While natural resource degradation is often a consequence of poverty, it also contributes to poverty. This downward spiral is found in many locations where low-income people reside. Water scarcity is emerging as the most constraining factor for food security in many regions in the future, with an especially negative impact on women and children. Food security

solutions that fail to effectively address natural resource issues will not be sustainable.

4. Emerging, Reemerging, and Continuing Health and Nutrition Crises

Malaria, tuberculosis, micronutrient deficiencies, HIV/AIDS, and chronic diseases are all compromising food and nutrition security in many developing countries. Most developing countries are also facing a double burden of malnutrition: while still suffering from extensive undernutrition, they are confronting overnutrition issues such as diabetes and heart disease, sometimes within the same household. These global health crises are impoverishing millions of people, raising the cost of health care, and causing severe shortages of productive workers. They not only destroy human lives, but also slam the door on opportunities. Achieving a food-secure world for all calls for a healthy population.

5. Rapid Urbanization

By 2020 about half of the people in the developing world will live in urban areas, where they will make heavy demands on the capacity of cities to provide jobs, education, health care, and food. Although current policies must continue to focus on the countryside, where the majority of poor and food-insecure people still live, future policy actions must pay increasing attention to growing poverty, food insecurity, and malnutrition in urban areas.

6. Changing Structure of Farming

The nature of farming is changing rapidly in many developing countries because of the aging of the farm population, the feminization of agriculture, the growing labor shortages and depletion of asset bases resulting from the HIV/AIDS crisis, and the decreasing cost of capital relative to labor. Small-scale family farms, traditionally the backbone of much of developing-country agriculture, are under threat, while globalization and domestic investments are encouraging production on a larger scale. These rapidly emerging factors call for innovative approaches to agricultural policy and rural institutions.

7. Continued Conflict

Violent conflicts continue to cause human misery in many developing countries, especially in Sub-Saharan Africa, and their impact on food security, nutrition, and natural resource management is severe. Although humanitarian assistance can provide food and shelter for the many millions of refugees and displaced persons, policymakers must deal with the underlying causes and the effects on the people in war-torn and neighboring areas. Achieving sustainable food security for all will not be possible in the midst of conflict.

8. Climate Change

Many scientists and policymakers believe that climate change is leading to more frequent and more severe natural disasters. More research is needed on this hypothesis, as it has profound implications for food security. Policies and institutions will be needed to counter or compensate for the negative effects of climate change. Although agriculture may contribute to or reduce the increasing concen-

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tration of carbon dioxide (CO₂) in the air, future agricultural policies must focus on finding ways to keep agriculture productive as climate change continues.

9. Changing Roles and Responsibilities of Key Actors

National governments in many developing countries have found themselves playing a new and diminished role in the past couple of decades. Now local governments, business and industry, nongovernmental organizations (NGOs), and other parts of civil society are undertaking many activities previously performed by national governments. At the global level, transnational corporations and broad NGO coalitions are becoming increasingly prominent in policy debates. A new emphasis on exposing corruption where it occurs is likely to contribute to the ongoing changes in the roles and responsibilities of the various actors. National governments must not risk losing their capacity to perform the functions that only they can do, such as ensuring the rule of law and developing nationwide infrastructure.

GETTING THE PRIORITIES RIGHT

Actions to achieve the the 2020 Vision of sustainable food security for all must address the causes of food insecurity, malnutrition, and unsustainable natural resource management within the context of the driving forces just mentioned. The specific policies that will be most appropriate will vary according to local and national circumstances. This document describes the actions expected to be high priorities globally or for many countries. These policy actions are clearly not the only actions that can or should be taken but those that are likely to have the largest impact in achieving the 2020 Vision in the greatest number of countries. Although policy actions are also needed in industrialized and transition countries where food insecurity, malnutrition, and unsustainable natural resource use are significant problems, this document addresses these problems only as they apply to developing countries.

Rapid economic growth will be fundamental for achieving sustainable food security for all by 2020. The challenge is to achieve that growth in a way that benefits poor people—that is, pro-poor economic growth. This kind of growth, together with empowerment of poor people and effective provision of public goods, will be the foundation of any successful attempt to achieve the 2020 Vision.

High-priority policy actions are needed in seven broad areas:

1. investing in human resources;
2. improving access to productive resources and remunerative employment;
3. improving markets, infrastructure, and institutions;
4. expanding appropriate research, knowledge, and technology;
5. improving natural resource management;
6. promoting good governance; and
7. supporting sound national and international trade and macroeconomic policies.

The seven priority areas are not listed in terms of their relative importance but rather beginning with those that operate at the individual and household levels and moving to those that operate at societywide and international levels. The 2020 Vision will not be achieved by action in one or the other of these areas alone. The causes of food insecurity, malnutrition, and unsustainable natural resource management are complex, and comprehensive solutions must address all seven priority areas. Without investment in human resources, low-income, sick, and malnourished people will remain poor and their children will have little opportunity for better lives. Yet if people have no access to productive resources and remunerative employment, investments such as education and primary health care will not help them escape from poverty and food insecurity on a sustainable basis. Although access to productive resources and remunerative employment is critical, so is access to fair markets, appropriate infrastructure, and facilitating institutions. Research, knowledge, and technology are critical inputs into poor people's efforts to increase their productivity and improve their well-being. Mismanagement of natural resources will result not only in environmental degradation, but also in further poverty and food insecurity. Finally, good governance and sound national and international macroeconomic policies are critical to provide the environment within which the 2020 Vision can be achieved. Each of these seven areas is briefly discussed further here.

Investing in Human Resources

Investment in human resources is essential to reduce human misery. But it is also an important means to other ends, such as broad-based economic growth and sustainable food security. Healthy, well-nourished, literate citizens are an important precondition for successful pro-poor economic growth.

Improving Access to Health Care

Governments and international agencies must address health risks that compromise food and nutrition security as a key part of any comprehensive effort to achieve food security and poverty reduction.

Given the devastating impact of HIV/AIDS on people directly or through agriculture, nutrition, and food security, efforts to contain the pandemic must intensify. As the disease depletes agricultural labor, farmers need new cultivation technologies and varieties that require less labor yet produce drought-resistant and nutritious crops. Also pressing is the need to care for the hundreds of thousands of children who have lost both parents to AIDS. Better nutrition can help postpone HIV/AIDS-related illnesses and prolong life.

Family planning and reproductive health are closely related to the prevention of HIV/AIDS and other sexually transmitted infections. Policymakers must work to fulfill the promise of the 1994 Cairo International Conference on Population and Development that all couples have the right "to decide freely and responsibly the number and spacing of their children, and to have the information, education, and means to do so." Achieving reproductive and sexual health requires access to information, education,



Most developing countries are facing a double burden of malnutrition: while still suffering from extensive undernutrition, they are confronting overnutrition issues.

family planning services including contraceptives, prenatal care, and prevention of sexually transmitted diseases such as HIV/AIDS. These services must be consistent with individual values, consciences, and ability to use services.

The care of adolescent girls and pregnant women is crucial for protecting their own health and that of their future children. Given the importance of good maternal nutrition in achieving normal birth weights and good child health and nutrition, nutrition interventions should take a life-cycle approach.

Universal access to primary and preventive health care is a critical element of sustainable food security. Progress must accelerate toward achieving this by the internationally agreed target date of 2015.

Assuring Clean Water, Safe Sanitation, and Child Care

Access to clean water and safe sanitation is critical for both good health and good nutrition. Rapid urbanization in developing countries presents new challenges to governments to assure clean and safe environments, particularly in low-income communities. Caring practices, such as exclusive breastfeeding during the first six months of life, also are important to assure that children are well nourished. Good care practices can mitigate the negative effects of low maternal education and poverty on child growth. Policies should support female education, including education that promotes good nutrition, use of preventive health care facilities, and other caring practices. Low-cost, community-based child care facilities for preschool children of working mothers are also important. Child care can also be based in workplaces, although this is less common in the urban areas of most developing countries.

Fighting “Hidden Hunger”

Despite the huge numbers of affected people and the severe impact of micronutrient malnutrition (“hidden hunger”), inexpensive public health interventions could significantly reduce these problems. Fortifying foods and offering supplements with needed micronutrients may be cost-effective approaches. Promoting healthy and diverse diets through nutrition education programs has great promise for improving people’s consumption of minerals and vitamins. Development of iron- and vitamin A-rich staple crops through both conventional plant breeding and biotechnology is another potentially effective approach and may be more sustainable than supplementation or fortification. All of these strategies should be viewed not as either/or choices, but as complementary.

Ensuring Food Safety

Contaminated food and water are sources of much illness and death in developing countries. Policies and institutions are needed to improve sanitary conditions, storage, transport, processing, and conservation of food and to reduce other sources of food- and water-borne illnesses.

Educating Girls and Boys

Today's global economy increasingly places a premium on knowledge-based skills. Poor people have greater opportunities to earn income, advocate supportive policies, and increase their social capital when they achieve literacy and numeracy. Like good health, education has a tremendous and lasting impact on economic growth and on the material well-being of individuals.

Educating girls, especially, has beneficial effects on family size, spacing of births, child care practices, child nutrition, and household income. Improvements in educating girls and women during the past 30 years accounted for a greater share of gains in child nutrition in developing countries than any other factor.

Yet the international community has failed to deliver on the commitment made at the 1990 World Conference on Education for All to ensure universal primary education, for girls and boys alike, by no later than 2000. One year beyond the target date, only 55 percent of school-aged boys and 46 percent of girls in developing countries were enrolled. Girls account for 60 percent of the 130 million children aged 6 to 11 years who are not in school. At the current rate of progress, it will be nearly impossible to meet the revised goal of universal primary education by 2015. If food security is to be achieved, this unconscionable record will have to be reversed. Food-for-education programs can be effective in achieving the dual goal of better education and improved food security.

Improving Access to Productive Resources and Remunerative Employment

Promoting Broad-Based Agricultural and Rural Development

Pro-poor economic growth and sustainable food security require that poor people have access to productive resources and employment. As 75 percent of poor people in developing countries live in rural areas, productivity gains in agriculture, which will boost rural incomes on and off the farm, are critical. Considerable evidence shows that increases in farm income in developing countries promote strong income increases in the rest of the economy. To the extent that agricultural productivity gains lead to lower food prices, they will benefit poor farm and nonfarm consumers. Increasing productivity in agriculture can also slow the pace of rural-to-urban migration. In addition, agricultural growth helps meet rising food demand. A healthy agricultural economy offers farmers incentives for conserving the natural resource base upon which future agricultural production depends, and productivity gains on existing land make farmers less likely to clear wild, marginal, or forest land.

Healthy,
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literate
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precondition
for successful
pro-poor
economic
growth.

Many rural poor people lack access to land. Poor families need secure access to land through either individual or community ownership, long-term user rights, functioning rental markets, or some other means. Increasing the strength of women's property rights, in particular, can contribute to both their productivity and their well-being. Governments may need to intervene in existing land tenure arrangements either to redistribute land or to assure secure longer-term user rights for communities, households, and women. Clearly understood and implemented property rights or user rights to natural resources other than land, such as water and forests, are likewise important to achieving poverty alleviation and sustainable management of natural resources.

Poor farmers also need access to yield-increasing crop varieties, including drought- and salt-tolerant and pest-resistant varieties, improved livestock, appropriate tools, fertilizer, pest management, and other yield-increasing and environment-friendly technology. At the same time, policies should draw on and facilitate the resilience demonstrated by poor rural communities in the face of food insecurity. Sound policies and institutions can help scale up these coping and adaptation strategies. Innovations such as farmer field schools can help people transfer relevant knowledge and technology both within and between communities, particularly in areas badly hit by HIV/AIDS. Making institutions, including agricultural research centers, more client-focused can help natural resource management remain effective in the presence of weakened social capital and property rights due to the disease. Policies and institutions that facilitate small farmers' opportunities to produce higher-value cash and export crops can help increase the incomes of poor rural households, and therefore food security. The choice between producing staple food crops and cash crops is frequently posed in either/or terms. Yet households often experience greater food security when farmers can produce both: that is, not only staples for their families' own consumption, but also products that they can sell to generate income.

Increasing developing-country demand for livestock products is likely to be met primarily through production in the country where these products will be consumed. In many countries, rural poor people earn a higher share of their income from livestock than do larger-scale farmers. The rapid industrialization of livestock production, abetted by subsidies for large-scale credit, land use, and infrastructure, may threaten this major source of income and assets for rural poor people and damage the environment with the concentration of animal waste. Small-scale producers, who are handicapped by higher postharvest marketing and processing costs, should pursue options for reducing these costs, including vertical linkages with processors and marketers.

Fish are critical for poor people's livelihoods and nutrition status, providing a billion people with sustenance and 150 million with jobs. But fishers' ability to meet world demand from natural fish stocks, particularly marine capture fisheries, has in many places reached sustainable limits, and evidence is mounting that in some places the limits have been surpassed. Policies may be needed to expand production of low-cost fish that can be consumed by poor people, such as tilapia and carp, on low-cost fish farms. Presently, industrial fisheries in developing countries, producing for export to developed countries and generating fish for meal for livestock feed, are encroaching on the waters of small-scale, artisanal fisherfolk. But small-scale

fisheries generate a higher share of jobs and the fish consumed by poor people. Policies and institutions that permit artisanal fisherfolk to participate in production decisions that affect their livelihoods through, for example, fish cooperatives and comanagement of fisheries should be considered.

Although most rural poor people depend on agriculture for their livelihoods, many do so indirectly by working in small-scale rural enterprises providing goods and services for farm families or in agroindustries that add value to agricultural produce. Policies and institutions are needed to develop rural infrastructure, assure competitive and fair markets for small-scale enterprises, and allow poor rural households to participate effectively in rural labor markets.

For poor farmers to participate in growing global markets for high-value food products such as horticultural produce, fish, livestock, and processed foods, they need access to specialized information, technology, professional knowledge, assets, institutions, infrastructure, and credit. To maximize their profits and gain access to export markets, farmers must also produce reliably safe goods of a predictable quality, delivered on time in known quantities. Producer marketing cooperatives and equitable contract farming schemes can help assure that market organizations deal with small farmers rather than go around them to larger-scale producers.

Broad-based agricultural and rural development requires that rural poor people, including smallholder farmers, small-scale traders, and small-scale rural entrepreneurs, have timely access to credit and savings institutions that offer reasonable interest rates and other conditions. Policies should facilitate group lending and collective repayment responsibility, which help assure high repayment rates, equity, and economic growth. Policies are urgently needed to help small farmers producing primarily for the market gain access to unsubsidized credit. Microcredit and savings schemes have successfully lifted people out of poverty in many developing countries. Such programs are usually limited to very small-scale enterprises, however, and often exclude farming.

In all of these areas of rural development, policymakers must balance national policies with community action. In some cases market approaches may be appropriate. In others, delegating the necessary power to communities and user associations may be the way forward.

Fostering Secure Urban Livelihoods

Policy action is also needed to accommodate the rapidly increasing poor and malnourished urban population. Since most urban dwellers secure their food through purchases rather than production, policies must enhance access to income-earning opportunities. Policies are also needed to support environmentally sound urban and periurban agriculture, which can supplement incomes as well as improve diets among urban poor people.

Policies should support rather than stifle the informal economy that is often critical to poor urban families' livelihoods. Access to credit for small-scale

Small-scale family farms, traditionally the backbone of much of developing-country agriculture, are under threat.

Research has shown that giving women the same access to physical and human resources as men increases agricultural productivity dramatically.

entrepreneurs, through group lending and other schemes, might be needed. Urban workers should have access to formal education and training that can enhance their job skills. Policies should also address the discriminatory behavior of labor markets by gender, ethnicity, caste, and age. As in rural areas, programs and strategies must be participatory, putting intended beneficiaries in decisionmaking roles.

Promoting Civil Society Organizations

Another key to sustainable poverty reduction and food security is freedom of association and the right to form organizations that advance poor people's interests. In both rural and urban areas, policies, programs, and projects must engage low-income people as active participants, not passive recipients. Poor people's organizations can help assure responsive policies and access to resources.

Farmer organizations can help facilitate small farmers' access to inputs, credit, output markets, and opportunities to engage in more diversified, higher-value crop production. These organizations can reduce the transaction costs of reaching markets and improve the bargaining power of small farmers vis-à-vis large buyers and sellers. Community and producer associations also play critical roles in income generation, employment, and risk mitigation. Such associations are often important for natural resource management, particularly activities such as irrigation, watershed management, and integrated pest management that require collective action.

Where cooperatives are farmer driven, rather than fostered by the government in a top-down manner, they can better serve the interests of their members, strengthen the assignment of property rights to individual members, and discourage members from engaging in opportunistic behavior. Such organizations are especially important as markets privatize and liberalize.

Associations of small-scale traders can facilitate the exchange of information between traders, expand marketing networks, and allow access to credit. Such associations can also help discourage rogue trader activity and exploitation of farmers and assure that contract farming is fair and beneficial to traders and farmers.

Empowering Women

Women play important roles as producers of food, managers of natural resources, income earners, and caretakers of household food and nutrition security. Research shows that giving women the same access to physical and human resources as men increases agricultural productivity dramatically. In urban areas, women are overrepresented in less-secure and irregular jobs and frequently get paid less than men who work in the same or comparable jobs. Compared with men, women tend to devote a greater share of the resources they receive to household food security and the nutrition of their children. In many countries increasing the assets that women control also has a positive impact on the next generation, particularly on their education and health. Widespread evidence demonstrates that assets in the hands of women increase the share that households spend on education.



Gender equality is important for food security. Women need access to resources, including productive assets, education, extension services and information, organizations and social networks, credit, legal rights, and voice in the political system. Economic, political, social, and cultural institutions and practices that prevent women from reaching their full potential should be reformed. Egalitarian laws and norms work best when both men and women have economic opportunities. The human rights of women must be on a par with the rights of men.

Legal, political, social, and cultural institutions must be changed to create an environment in which women can realize their full potential. Social entitlement and transfer programs must be devised to benefit women, and property rights laws must be reformed to allow women to hold individual or joint titles to land.

Improving Markets, Infrastructure, and Institutions

Without access to well-functioning markets for outputs, inputs, consumption goods, capital, and labor, food-insecure people cannot fully capture the benefits from improved human resources and access to productive resources. Governments must assure that markets are not biased against small farmers, less-favored areas, or food-insecure consumers.

The development of private competitive markets along with the supporting institutions and infrastructure, especially in rural areas, is likely to contribute enormously to poverty alleviation, food security, and the overall quality of life in developing countries. Market performance improves and marketing costs fall when the government no longer monopolizes trade and a competitive private sector emerges. Yet even as the government reduces its role, competent public administration and investment in public goods will remain essential to assure that contracts are enforced, grading and quality control standards are maintained, and safety nets are provided for vulnerable groups, among other things.

Explicit and implicit capital subsidies as well as infrastructure investments in developing countries tend to be biased against small farmers. This may also be the case for access to input and output markets. Many rural regions consisting primarily of poor people, including small farmers, are often the last regions to get investments in infrastructure, and partly for that reason markets in these areas are poorly developed. There is a widespread and often erroneous view that small farmers are not competitive. Although the relation between efficiency and farm size depends on many factors, it is important that the distortions currently embodied in capital subsidies, infrastructure investments, markets, and related policies be removed to allow small farmers to compete on a level playing field. This is particularly important to assure that rural poor people get their fair share of the benefits from globalization and the associated changes in market competition. Rural poor people, whether farmers or not, will not benefit if they are excluded from participating and competing in the mainstream market economy.

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In urban areas policies should facilitate consumers' access to food and ensure investments in increasing food marketing under hygienic, healthy, and environmentally sound conditions. Many wholesale markets are old and poorly managed and maintained and are located in high-density areas. Food storage facilities are often insufficient, badly managed, or both. Supermarkets in urban areas of developing countries tend to cater to the needs of higher-income families and to stock mainly manufactured and imported products. Public retail markets likewise tend to be concentrated in city centers and are often congested, unhealthy, and insecure. Informal sector retailing often serves poor consumers and provides income to poor traders but lacks appropriate health and safety regulation. Policies should promote competition and regulate urban agriculture and food marketing for health and environmental safety. At the same time policymakers should leave to the private sector facilities and services that can best be run as businesses.

Expanding Appropriate Research, Knowledge, and Technology

Technological developments in the biological sciences, energy, and information and communications offer new opportunities that could benefit poor people, their food security, and their management of natural resources. These benefits will materialize only if policies guide research toward solving poor people's problems. The primary role of government should be to make available to small farmers and other poor people a menu of technology options from which they can choose, rather than choosing an option for them. Because of past neglect of less-favored areas, such a menu of technology options is particularly critical for these areas. Participatory research will be needed, so that the options are relevant and appropriate to the intended beneficiaries.

Investing in Pro-poor Agricultural Research

Sustainable productivity increases in small-scale agriculture are critical to achieving the 2020 Vision. In addition to the factors already discussed, productivity increases will depend on farmers' access to appropriate knowledge and technology. In most developing countries farmers cannot expand cultivated area without causing further land degradation, deforestation, and loss of biodiversity. Research and development (R&D) is thus essential to achieving sustainable expansion of yields on existing land. For example, researchers are studying how to better use plant nutrients and capture nitrogen from the air. R&D aimed at reducing postharvest losses, which are considerable in many developing countries, is also vital. Research should focus on sustainable productivity gains and reduced risk on small farms, emphasizing not only staple food crops and livestock but also high-value products.

Although private-sector research may produce some of the knowledge and technology small farmers need, publicly funded research is essential, partly because poor farmers offer business and industry too little profit potential and

partly because much of the knowledge and technology they need is of a public goods nature. Hence, current public underinvestment in agricultural research in low-income developing countries must be reversed.

Farmers must be able to choose agricultural practices and technologies from the full range of approaches to tackling their problems—agroecological methods, conventional research methods, and molecular biology research methods, such as genetic engineering. Moreover, researchers must link these approaches more closely with indigenous knowledge. Indeed, any notion of “food sovereignty” should include the right of poor farmers and countries to choose technologies that offer solutions to the problems they face.

Agricultural research and development must put farmers in decisionmaking roles. They must be fully informed about their options for improving productivity, reducing risks, and increasing the well-being of their families. It is also important for agricultural researchers to recognize that farmers themselves have carried out experimentation, adaptation, and breeding at the farm level for thousands of years and welcome active partnership with scientists. NGOs and small farmers’ organizations can often play an important role as intermediaries between scientists and farmers.

Making Use of the Agroecological Approach

The agroecological approach to agricultural research has focused on meeting the needs of small-scale farmers in less-favored areas, who were largely bypassed by conventional agricultural research. This approach also responds to concerns about excessive dependence on external inputs such as fertilizers, pesticides, and irrigation water embodied in the first generation of Green Revolution technologies. The agroecological approach aims to reduce the amount of external inputs that farmers must use. It relies heavily on available farm labor and organic material, as well as on improved knowledge and farm management. Use of locally available materials such as crop residues, farm manure, and compost to improve soil fertility is an important part of this approach, as is integrated pest management (which is often central in other approaches as well). In many projects the agroecological approach has increased productivity and contributed to more efficient water use, improved soil quality, and effective pest and weed control with few or no chemicals. In rice farming areas, elimination of synthetic pesticides permits farmers to raise fish, shrimp, and crabs in paddies, thereby enhancing protein and micronutrient supplies.

The great strengths of the agroecological approach are that it promotes sustainable management of natural resources and active participation by farmers in identifying problems and designing solutions. Its weaknesses are relatively low labor productivity and yields.

Tapping the Potential of Conventional Agricultural Research

Researchers have not yet fully exploited the productivity gains achievable from conventional technologies. New high-yielding varieties of rice, wheat, and other crops are in the research pipeline at national and international agricultural research systems. Farmers in high-potential environments have

Both food safety and biosafety regulations should reflect international agreements and a given society's acceptable risk levels, including risks associated with not using biotechnology.

excellent access to modern farming inputs but often lack the knowledge and technologies to allow them to bridge the gap between experimental yields and those in their fields. In some areas that have adopted Green Revolution technology, intensive cultivation and overuse or misuse of inputs have resulted in environmental and ecological stresses that are causing yield growth rates to decline. More judicious use of inputs and improved crop management would sustain productivity.

In less-favored areas farmers often lack knowledge, inputs, and crop- and resource-management technologies. Since the early 1980s farmers in these areas have begun adopting modern varieties of wheat, rice, and maize bred for high-potential areas. In the 1990s crop breeders began to focus specifically on developing varieties for use in less-favored areas.

Molecular biology techniques other than transgenic breeding can enhance conventional crop breeding efforts. Molecular marker-aided selection methods and tissue culture have made conventional breeding more efficient, allowing researchers to achieve results faster and at less cost.

Exploring the Potential of Modern Agricultural Biotechnology

Despite the controversy surrounding the use of modern biotechnology in food and agriculture, it has great potential to advance food security. Whether it will do so depends on whether R&D is relevant to poor people, on the economic, social, and policy environment, and on the nature of the intellectual property rights governing the technology. It is not a “magic bullet” solution to hunger but rather one tool to be used in comprehensive efforts to address food insecurity.

Adapting genetically modified (GM) crop technology to benefit poor farmers and consumers in developing countries will require institutions for assessing, managing, and communicating public health and environmental risks. Both food safety and biosafety regulations should reflect international agreements and a given society's acceptable risk levels, including risks associated with not using biotechnology. Poor people should be included directly in the debate and decisionmaking about technological change.

If opposition in developed countries leads to moratoria or outright bans on agricultural biotechnology research, most developing countries will be unlikely to receive scientific or financial support for their research. Such support is essential for developing effective biosafety regulation, for example. Loss of assistance from developed countries for biotechnology research in developing countries could thus mean lost opportunities for reducing hunger, poverty, child malnutrition, and natural resource degradation.

Bridging the “Digital Divide”

New information and communications technologies can also be used to serve farmers, rural entrepreneurs, and health care workers. Currently, information and

communications technology projects in developing countries are generally few and small in scale because of high costs, the multitude of approaches and local needs, and a lack of interest from both the private and public sector.

Policies should focus on expanding poor people's capacity to connect to these technologies, putting content into local languages to make it useful, and stimulating competition to lower prices and increase market growth. Connecting rural schools to the Internet is important for promoting computer literacy. A well-developed legal system must facilitate effective regulatory policy. Women need training to become users and producers of these technologies, so that there is no gender gap reinforcing the digital divide. Policies must create a congenial climate for both the public and private sectors to invest in spreading telecommunications and information infrastructure as broadly as possible. Farmers should be wired into Internet connectivity. Indigenous knowledge related to farm extension should be archived, and extension information should be made available via electronic mail. Government websites should make agricultural and fisheries price information widely available, with frequent updates.

Lack of funds is a critical factor perpetuating the digital divide, but the declining costs of the technology may help to close the gap. Mobile telephones are already widely available in developing countries and are likely to spread Internet access.

Because poor communities often suffer from a lack of literacy, social and physical capital, power, and physical infrastructure, they face significant hurdles in adopting information and communications technologies. Nonetheless, if governments provide the informational infrastructure as a matter of policy, communities can and undoubtedly will circumvent the limitations imposed by poverty, given the obvious benefits of this technology.

Improving Natural Resource Management

In many developing countries poverty, low agricultural productivity, and environmental degradation interact in a vicious downward spiral. It is commonly thought that intensification of agricultural production usually leads to environmental degradation. Although this problem is occurring in many industrialized countries, in most developing countries too little intensification is a major cause of natural resource degradation, as desperately poor farmers mine soil fertility and climb the hillsides in an effort to survive. Agricultural growth and poverty alleviation in much of the developing world are likely to benefit the environment. A great deal depends on specific social, economic, and agroecological circumstances. Agricultural development, poverty reduction, and environmental sustainability are likely to go hand in hand when agricultural development is broad-based, market-driven, participatory and decentralized, and driven by appropriate technological change that enhances productivity. Agricultural

A healthy agricultural economy offers farmers incentives for conserving the natural resource base upon which future agricultural production depends.



Rapid changes are occurring in how agricultural research is financed, managed, and organized.

researchers must pay greater attention to sustainability, to resource-poor areas, and to the role of property rights and collective action in farmers' adoption of technologies and resource management practices.

Overcoming Water-Related Constraints

Unless properly managed, fresh water may well emerge as the key constraint to future food security. Globally, the world holds enough water to meet demand for the foreseeable future, but water is poorly distributed across countries, within countries, between seasons, and among multiple uses. Industries and households are increasingly demanding water at the expense of agriculture. Although all users waste large amounts of water, many poor people live in constant water insecurity and cannot meet their basic water needs.

Rapidly falling groundwater levels and reduced flows of surface water are becoming widespread. A large share of the water needed to meet increased demand through 2020 must come from more efficient water use. Comprehensive water policy reform and appropriate institutions can help save water, improve use efficiency, improve child growth, and boost crop output per unit of water, while reducing the risk of armed conflict between countries and communities sharing scarce surface or groundwater sources. Such reforms will be difficult to carry out, because long-standing practices and cultural norms in many places treat water for agriculture as a free good. Also, vested interests benefit from current arrangements. The nature of the needed reforms will vary from country to country, depending on the level of economic development, institutional capability, degree of water scarcity, and the intensity of agricultural production.

Needed reforms include providing secure water rights for individual users or groups of users. In some countries and regions these rights should be tradable, thereby increasing incentives for efficient water use. If water user associations have control over irrigation infrastructure and management, as well as secure access to water, they will have incentives to use water more efficiently and to improve their operations and management.

Reducing or eliminating explicit or implicit water subsidies can also make water use more efficient. Privatizing and regulating urban water services can, for example, slow the rate at which cities take more water from agriculture. In the industrial sector increased water prices can encourage investment in water recycling and conservation technology. Funds freed by eliminating general subsidies will make it possible to provide targeted subsidies to underserved poor urban dwellers and farmers. New technologies such as sprinklers, computerized water control systems, small-scale water-harvesting techniques, and drip irrigation (which can also help reduce the spread of malaria by eliminating mosquito habitat) will be essential. Environmental protection policies—for example, to prevent overexploitation of aquifers—are also needed.

Managing Soil Fertility

Low soil fertility and lack of access to reasonably priced fertilizers constrain farmers in many countries. Policies should seek to both increase agricultural production and safeguard the environment for future generations, by encouraging farmers to make appropriate use of organic and inorganic fertilizers and improved soil management. Mineral fertilizers should be applied with appropriate balance and timing, and their use should be reduced where heavy application causes environmental harm. Although fertilizer subsidies that encourage excessive and inappropriate use should be removed, subsidies may remain necessary for areas where current use is low and soil fertility is falling. In such areas increased fertilizer use will boost production and reduce land degradation.

Promoting Sustainable Development in Less-favored Areas

Despite large investments in high-potential areas and rapid urbanization in most developing countries, population continues to grow rapidly in less-favored areas. Yet investments in these areas can yield relatively high returns and substantial reductions in poverty. In China and India investments in agricultural research and development, education, and rural roads have greater impact in less-favored areas, in part because opportunities for investment there have been neglected. In Sub-Saharan Africa, where overall public investment in agriculture is low, additional investment in both high-potential and less-favored areas remains critical.

Technologies that help reduce risks and conserve resources may be more appropriate in less-favored areas than those that simply promote high yields. Appropriate technologies might include labor- and land-saving technologies, such as improved fallows during a short rainy season or agroforestry.

Assuring Property Rights and Collective Action

Natural resource management technologies and practices may take several years to give full returns. Without secure rights to resources, farmers have little incentive to adopt these approaches. Some technologies also need to be adopted over a wide area to be effective, so adopting farmers must cooperate with their neighbors in collective action. Integrated pest management, for example, offers rapid returns but requires collective action. By contrast, terracing may be very localized, yet investment is continuous and long-term. Property rights and collective action are also important in determining who benefits from productivity increases, both directly by determining who can reap the benefits of improvements and indirectly through effects on access to resources.

Because of the many complex and site-specific factors, no property regime is most appropriate for all cases. Even if one were, simply passing laws specifying the rights and responsibilities of individuals, groups, or government is insufficient. Effective local and national institutions are needed to monitor and enforce

Fertilizer subsidies may remain necessary for areas where current use is low and soil fertility is falling.

specified rights. Collective action cannot be dictated from outside, but governments, academic institutions, and NGOs can help catalyze it.

Addressing Global Warming

Policy, research, and technology must also address the challenges posed by increasing global warming: increased carbon dioxide concentration, higher temperatures, changed rainfall patterns, and more severe weather fluctuations. Farmers can take a number of steps to help mitigate global warming. They can improve nitrogen use efficiency; reduce nitrous oxide emissions; improve water use efficiency; and sequester carbon in their agricultural systems through cropland, forest, and pasture management strategies that result in improved soil organic matter. Low- and reduced-tillage practices in wheat-rice rotations can maximize yields, conserve soil and water, and slow global warming. Reducing the burning of crop residues can also help. Planting trees and avoiding deforestation both offer potential carbon gains. Converting unproductive croplands and grasslands to agroforestry can soak up three tons of carbon per hectare per year. Improved livestock feeds can reduce herds' methane emissions while enhancing meat and milk production, although feed production may require increased fertilizer use.

Promoting Good Governance

Good governance—the rule of law, transparency, the elimination of corruption, sound public administration, and respect and protection for human rights—supports efforts to achieve food security for all. Democratic governments are more likely to be responsive to the needs of all their citizens, to make food security a high priority, and to welcome community participation.

The roles of the state, market, NGOs, and business and industry have changed markedly during the past decade in response to globalization, structural adjustment, and related market reforms, among other developments. Some institutional change has occurred, but many existing institutions are becoming inappropriate and new ones are needed as market liberalization proceeds. The role of the public sector is shrinking while NGOs and business and industry are taking on additional responsibilities. This shift may be appropriate, but it is important to recognize the limitations of the for-profit sector and NGOs in providing public goods, such as peace, the rule of law, affordable access to clean water and electrical power, public health, public research, and rural transportation infrastructure.

Most of the governance steps that need to be taken to reduce food insecurity and malnutrition continue to lie within the traditional jurisdictions of nation-states. Where governments fail to take action, food insecurity persists. In regions where food insecurity has declined, such as East and Southeast Asia, public investments in health, education, infrastructure, and research, as well as policies promoting broad-based agricultural growth and rural development, have played a major role.

As some activities and responsibilities are shifted from national governments to NGOs, business, and industry, developing countries must maintain a strong and effective public sector to provide public goods

needed by poor people. Such goods include research on technologies for small-scale farmers and for sustainable management of natural resources; rural infrastructure, particularly in regions with many poor people; primary health care; education; and development and enforcement of effective and fair legal systems, including contract enforcement and weight and measurement standards. Civil society may provide some public goods. Close partnership among the public and private sectors and other elements of civil society is likely to be the most effective approach.

Preventing and Resolving Conflicts

Where armed conflicts and civil strife are occurring or are likely to occur, governments and the international community must give priority to conflict resolution and prevention. Early warning systems and response mechanisms for food and political crises need to be supported and strengthened. Development program and project planning should identify areas where the potential for conflict is high and direct resources to those areas in ways designed to promote cooperation and reduce conflict. People living in conflict-prone and conflict-affected areas must participate in planning, implementing, and evaluating these projects. Emphasis should be given to the safe removal of land mines, which threaten humans and prohibit agricultural activities. Savings from conflict avoidance should be calculated as returns to development spending.

Ending Corruption

According to Transparency International, most corruption takes place at the national level. Governments must have the political will to stamp out corruption and must persuade business and industry, NGOs, and citizens to work to this end. An independent judiciary and free and independent media are important to achieving honest public administration. Reasonable civil service salaries that are paid on schedule can help deter corruption, as can improved training programs for civil servants. Governments must be willing to punish corrupt officials. International agreements are also important, for they can help national governments to recover public funds that corrupt officials have misappropriated and shipped abroad and prevent the establishment of money-laundering havens. Firms, banks, and institutions that are party to corruption must be held accountable.

Supporting Sound National and International Trade and Macroeconomic Policies

Unless governments are committed to long-term macroeconomic stability, reforms in agriculture are unlikely to be effective. Overvalued exchange rates and protection for industry, for instance, can do more to reduce farmers' incentives to increase production than lower agricultural prices. Stable and predictable macroeconomic policies encourage savings and investment, discourage capital flight,

National governments must not risk losing their capacity to perform the functions that only they can do.

The
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global farm
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focus private-sector effort on efficiency rather than on anticipation and reaction to macroeconomic shocks, and provide clear signals to consumers and producers about the scarcity of goods and services.

Many policies carried out at the level of global governance are also relevant. Global cooperation is necessary in such areas as international monetary policy and finance, climate change policy, and public health policy, all of which have a bearing on food security. Global governance with respect to the global trading system, development cooperation, debt, and conservation of genetic resources is particularly significant.

Making Globalization Work for Poor People

Developing countries must be encouraged to participate effectively in the current round of global agricultural trade negotiations. They should pursue strategies that will enhance their bargaining power in trade negotiations, so that they can persuade developed countries to eliminate high levels of trade-distorting subsidies for domestic production, import barriers, tariff escalation against high-value and processed products, export subsidies, taxes, and controls on a greatly accelerated basis. The industrialized countries account for 80 percent of the global farm subsidies that total \$360 billion annually (or nearly a billion dollars a day). This is roughly six times what these countries provide to the developing world in aid. Coalitions between developing and developed countries may be able to influence trade negotiations, as the experience of the Cairns Group of nonsubsidizing agricultural exporting nations has shown.

The World Trade Organization (WTO) should work closely with civil society and national governments to eliminate conditions that harm poor people, such as price distortions and lack of competition in international trade, intellectual property rights regimes that are adverse to poor people, and barriers to access to appropriate technology by developing countries. The WTO should cooperate with the International Labor Organization to ensure that globalization does not undermine respect for internationally recognized worker rights. Existing WTO mechanisms for assuring that globalization does not damage the environment should be strengthened.

Yet without appropriate domestic economic and agricultural policies, developing countries in general and poor people in particular will not fully capture potential benefits from trade liberalization. The distribution of benefits will be determined largely by the distribution of productive assets. Poor people can only hope to benefit from globalization if they have access to resources, infrastructure, and markets. Developing-country governments need to ensure that policies are not biased against small farmers and other poor people.

Expanding Development Assistance

Developed countries should reverse the decline in overall levels of development assistance and the steep declines in aid to agriculture, rural development, and education. Given that boosting food availability and female



education together accounted for nearly 70 percent of the reduction in child malnutrition over 1970–95, aid to agriculture and education are especially important to food security. Aid to agriculture must include additional resources for public agricultural research oriented toward poor farmers and consumers.

More generally, adequate financial and technical assistance is needed to support the policy actions outlined throughout this plan. Donor governments must fulfill their long neglected though oft-repeated pledge to devote 0.7 percent of gross national product to development assistance (a target currently met by only a few donors). Aid should be targeted on the basis of need, so that the least-developed countries, particularly those of South Asia and Sub-Saharan Africa, receive a higher share. In addition to broad-based agricultural and rural development and basic education, aid should be provided to other sectors likely to significantly reduce poverty, such as health, nutrition, shelter, microcredit, infrastructure that benefits poor communities and regions, and environmental protection. Bilateral aid should be primarily in the form of grants rather than loans. Donors must also rethink their 20-year insistence on shrinking the role of the public sector, which has contributed to public disinvestments both where it was appropriate and where it was not.

Food aid should be provided primarily in humanitarian emergencies and to help low-income countries adjust to globalization. Food aid can also play a valuable role in supporting human resource development, such as maternal and child health programs and food for schooling programs. Food aid donors should provide adequate levels of assistance, on a multiyear basis as appropriate, targeted to poor groups in ways that do not displace domestic production, to those low-income countries adversely affected by trade liberalization.

Undertaking Debt Relief

Developed-country governments and international financial institutions need to provide more substantial and accelerated debt relief to highly indebted poor countries. Developing-country resources freed up through debt relief should be targeted to poverty reduction, food security, health, education, and sustainable natural resource management.

Conservation of Plant Genetic Resources

A number of contentious issues surround the conservation and sustainable use of plant genetic resources for food and agriculture. One is the need for an equitable balance between the right of plant breeders to benefit from their innovations on the one hand and the right of farmers to save, reuse, exchange, and sell seeds on the other. Another issue is how to assure that developing countries are able to benefit equitably from their biodiversity. Also important, especially in a more proprietary research environment, is the ability of international agricultural research centers to continue conducting public goods-oriented research and to maintain free public access to their extensive collections of germplasm. Eleven of the 16 Future Harvest centers supported by the

Trade alone cannot raise developing countries out of poverty. Developed countries must continue the recent reversal in the decline in overall levels of development aid.

The roles of the state, market, NGOs, and business and industry have changed markedly during the past decade.

Consultative Group on International Agricultural Research maintain genebanks, containing more than 600,000 accessions of more than 3,000 plant species. The centers also work directly with developing-country farmers and communities on *in situ* conservation of plant genetic resources. Adequate financing to maintain the genebanks in perpetuity is essential to preserving biodiversity and assuring that these resources remain accessible for public foodcrop breeding efforts.

The conclusion of the International Treaty on Plant Genetic Resources for Food and Agriculture in late 2001 was an important step toward resolving some of these questions. The countries that have signed the treaty should proceed rapidly to ratify it, so that it can enter into force and permit continued access to, and conservation of, foodcrop biodiversity.

ROLES AND RESPONSIBILITIES

As the forces that produce persistent and widespread hunger tend to be local or national, it is **national governments** that bear the primary responsibility for creating an environment within which individuals and communities can effectively address hunger. But the steps needed to achieve food security cannot succeed if they are carried out in a top-down, technocratic manner. Governments should forge partnerships with NGOs, business, and industry and ensure that local governments and communities have the resources and authority they need to facilitate food security and good nutrition.

The **governments of developed countries** should put resources behind their repeated pledges to provide more aid, better focused on contributing to sustainable development and poverty reduction. They must accelerate progress on relieving the unpayable debt of poor countries. Every effort should be made to restructure the global trading system so that it is fair and provides benefits to a broad share of humanity.

In both developing and developed countries, **parliaments and judiciaries** can help advance food security along with executive branches of government. Parliaments that are democratically chosen and truly representative of a country's citizens can help assure that poor people have a political voice and that policies are responsive to them. Independent judiciaries are needed to uphold the rule of law, enforce contracts, protect human rights, prevent arbitrary government action, and assure that governments uphold their obligations. In a number of countries, judicial decisions have assured government action to facilitate and fulfill the right to food.

International organizations and multilateral institutions are an important source of development finance, technical assistance, and information, and they are developing governance mechanisms in areas that transcend the capacity of national governments. Institutions that provide global public goods in such areas as international food trade, international food aid, famine early warning and relief,

international agricultural research, and conservation of plant genetic resources should receive due support and resources from national governments so that they have adequate capacity to carry out their responsibilities. International agreements addressing industrial competitiveness and antitrust, minimum biosafety standards, internationally recognized human rights, and conventional weapons transfer need to be enhanced, and in some instances need to be brought into being.

Global civil society, from villages to transnational coalitions, has two important roles to play. First, it must continue to design and implement development activities. NGOs frequently operate development projects and programs that are cost-effective, well targeted, and participatory. In addition, its advocacy should continue to drive international development activities in a direction that is socially just. Open, vigorous, and peaceful debate is essential for good policymaking, and civil society must continue to put questions and challenges on the table, including those related to the fairness of current global economic institutions, environmental sustainability, and the governance of technology development.

Transnational business and industry should be encouraged, through public relations and tax incentives, to make useful proprietary technologies available to poor countries and communities, on a no-royalty basis where there is little likelihood of a major market developing. In addition, public funding can harness private R&D capacity for the benefit of poor people. Initiatives such as the Clean Development Mechanism, aimed at addressing global warming, seek to engage private financial resources in support of sustainable development. Companies should be encouraged to pay fees on financial transactions and royalties earned on technology patents to help finance food security, biodiversity, and poverty alleviation initiatives. Global standards and institutions are needed to help assure that markets and industrial sectors remain competitive and free from monopoly, oligopoly, or cartel control. Transnational firms should adhere to the voluntary Global Compact, proposed by U.N. Secretary General Kofi Annan in 1999, which encourages socially responsible business practices. Incentives are also needed to encourage private philanthropic efforts to address food security and poverty issues.

The **domestic private sector** in developing countries, including **farmers**, is critical to producing food, developing markets for agricultural products and inputs, providing credit, and investing in small enterprises to employ people and develop skills. Opportunities to invest and engage in entrepreneurship are an important path out of poverty.

Finally, **food-insecure people** themselves are important actors in the struggle to achieve food security—not passive victims. When policies remove barriers and make opportunities available, food-insecure people work eagerly to achieve and maintain the freedom from hunger that is their right as human beings.

The global summits in the 1980s and 1990s issued a plethora of goals and objectives, leaving the international development agenda unfocused, overloaded, and underfunded.

COSTS

Both public and private investments will be needed to achieve the 2020 Vision. The magnitudes of these investments are difficult to estimate. The IFPRI Food Policy Report *2020 Global Food Outlook* estimates the public investments needed in irrigation, rural roads, agricultural research, provision of clean water, and education to achieve three alternative outcomes. In the “baseline” scenario, global investments of US\$579 billion over the period 1997–2020 are estimated as necessary to reduce the number of malnourished children from 166 million to 132 million. In the “optimistic” scenario, an investment of US\$802 billion is estimated to reduce the number of malnourished children to 94 million, whereas a “pessimistic” scenario with a global public investment of “only” US\$323 billion will result in an increase to 178 million malnourished children. To put these investments into context, if total expenditures by the developing-country governments stayed constant at 1997 levels, the investments for the baseline scenario would amount to just 3.6 percent of total government spending by developing countries from 1997 to 2020. For the other scenarios, the shares would be 4.9 and 2.0 percent, respectively.

CONCLUSION

The Need for Political Will

It has become a cliché in hunger discourse to point to political will as the key ingredient in any recipe for food security. Nevertheless, it remains the case that unless policymakers in national governments, in partnership with the international community and civil society, can muster the will to make food security a higher priority, hundreds of millions of people will, to use the words of FAO, remain locked in “the prison of hunger.” Political will means more than assenting to declarations filled with ringing rhetoric. It means a high place for food security on the policy agenda, new programs and institutions, new partnerships, new ways of thinking, and, most of all, economic and political empowerment of poor people.

Despite the pledges made at the World Food Summit, food security has not received a high priority on the global development agenda. Indeed, the global summits in the 1980s and 1990s issued a plethora of goals and objectives, leaving the international development agenda unfocused, overloaded, and underfunded. Unfortunately for the world’s people who are poor and hungry, talk has indeed proved cheap.

Governments have made choices about where to take action and allocate resources. In some instances, they have chosen to improve food security and reduce malnutrition; in too many other instances, they have chosen not to do so. In some cases governments of low-income countries require technical assistance or financial support to implement policies to achieve food security. Where governments have adequate capacity to enact appropriate policies but choose not to do so, they must

be held accountable to their own citizens and to international public opinion.

The goodwill of particular governments or governmental officials is important but vulnerable to stronger political forces or changes in leadership. Institutions are needed that represent the interests of food-insecure people. Organizations of poor people, advocacy organizations, sympathetic media, local government, government programs that focus on hunger and poverty, and political parties can serve this purpose. Citizens can contribute time and money to such organizations, and national governments and development aid institutions can help strengthen them.

Advocacy groups often win funding or policy changes that are worth many times the groups' own budgets. NGO campaigns that mount coordinated advocacy in many countries simultaneously, such as the Jubilee campaign for debt relief, have achieved dramatic successes. A similar global advocacy effort to achieve food security is urgently needed.

Over the past 10 years many international organizations have put poverty alleviation and human rights at the center of their agendas and have worked with a broad range of civil society organizations. Member governments of the International Monetary Fund and the World Trade Organization can help assure that these organizations place much greater emphasis on poverty, sustainability, transparent decisionmaking, accountability, and human rights.

Will tomorrow bring the world described in the 2020 Vision, or simply another conference at which leaders wring their hands over lack of progress? National governments and the other actors mentioned here hold the key to the future. Policymakers and leaders of development organizations must have the courage to manage the forces of change that can worsen poverty and food insecurity, rather than being buffeted by them. They must rearrange their policy priorities and budgets in a way that puts the well-being of poor and hungry people at the top of the list. They must begin to invest in people's health and education, strengthen markets and other institutions, improve natural resource management, and take the other desperately needed actions described here. And they must begin today.



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This call for priorities and responsibilities arose out of a major international conference on "Sustainable Food Security for All by 2020," organized by IFPRI and its 2020 Vision Initiative in collaboration with partners in September 2001 in Bonn, Germany. IFPRI drafted an initial action plan and solicited feedback on it from the more than 900 policymakers, civil society leaders, private sector officials, academics, farmers, and others who attended the conference, as well as from many others. This document reflects the helpful advice received on that draft, but it does not represent a consensus as such. Rather, it reflects IFPRI's best judgment, as an institution, about the driving forces influencing the long-term prospects for food security and the actions needed over the next two decades to free humanity from the scourge of hunger. This action plan and the priorities and responsibilities it identifies are meant to help spur policymakers and others to take the necessary steps that are now so long overdue.



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