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Subject: Report of the International Conference on Nutrition, December 1992

IFPRI was asked by the Chairman of the CGIAR to represent the Group at the International Conference on Nutrition (ICN) which took place in Rome in December 1992. During ICN 1992, the Chairman requested that IFPRI submit a report of the conference at the mid-term meetings in May 1993. The report, which will be briefly summarized at the mid-term meetings is attached.

Comments on the report would be greatly appreciated. In particular, I would be interested in ideas and suggestions for the strengthening of the nutrition effect of on-going or future CGIAR activities. We will continue to consult with other CGIAR centers regarding such future activities.

Attachment

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REPORT OF IFPRI'S PARTICIPATION IN THE INTERNATIONAL CONFERENCE ON NUTRITION

THE ICN PROCESS AND IFPRI INPUT

The International Food Policy Research Institute (IFPRI) assisted the World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO) in the design and preparation of the International Conference on Nutrition (ICN) in the context of the United Nations Sub-Committee on Nutrition (SCN) meetings in 1990, 1991, and 1992. On July 27, 1992, the Chairman of the Consultative Group on International Agricultural Research (CGIAR) requested that IFPRI represent the CGIAR at the Preparatory Committee and at the ICN itself.

IFPRI was commissioned by the ICN Secretary General to prepare background material for the preparation of the ICN, including the theme paper on improving household food security, a case study paper on famine prevention in Africa, and a paper on agriculture-nutrition linkages. The latter, which emphasized the nutrition effects of agricultural research and technology, served as the background document for a seminar with agricultural experts during the ICN. The above-mentioned papers received coverage in the main background document for the ICN, the report entitled *Nutrition and Development: A Global Assessment* (FAO and WHO 1992). In addition, IFPRI together with the SCN prepared the *Second Report on the World Nutrition Situation*, which is based on a long-term collaborative study between IFPRI and SCN. The above-mentioned IFPRI documents were used in the preparation of the *World Declaration and Plan of Action for Nutrition*, which was prepared at a preparatory conference in Geneva in August 1992 and approved at the ICN in December 1992.

This international conference was prepared from the country level. More than 150 countries in 1992 prepared country-level action papers focused on the specific problems of nutritional improvement in the country concerned. Regional conferences complemented the country-level actions. In early 1992, IFPRI provided background materials with key literature on food and nutrition policy to the ministry contacts in all participating low-income countries.

During ICN in December 1992 in Rome, IFPRI made the following contributions:

- Plenary presentation by the Director General (attached);
- Press briefings by IFPRI senior staff, which included information briefs focusing on the broad nutritional improvement effects of CGIAR activities (attached);
- A background paper on agriculture-nutrition linkages presented at the agricultural research experts meeting during the ICN and participation in workshop of agricultural experts by IFPRI senior staff and Director General;

Follow-up activities after the ICN included participation in meetings of nongovernmental organizations held in Washington, D.C. and in the Twentieth Session of

the UN SCN held in February 1993 in Geneva. Both activities focused on ICN follow-up specifically.

IFPRI will continue to participate in and attempt to influence the follow-up activities of the ICN, pursuing the goals stated in the declaration released by the ICN and assisting with impact assessment. These goals are to eliminate before the end of this decade (1) famine and famine-related deaths, (2) starvation and nutrition-deficiency diseases in communities affected by natural and man-made disasters, and (3) iodine and vitamin A deficiencies. IFPRI's research work in the context of the CGIAR has implications for all of these declared goals for nutritional improvement in the 1990s.

ASSESSMENT OF THE ICN

It is premature to assess the impact of ICN and the benefits for nutrition. However, the conference has already achieved some notable results in the following areas:

- Greater international attention to nutrition;
- Better recognition of the need to address nutrition with a multisectoral approach in which agricultural development plays a critical role along with health and other sectors;
- Mobilization of a considerable number of initiatives, through the bottom-up, country-level process, in bringing together different agencies, ministries, and nongovernmental organizations to address nutrition deficiencies in low-income countries; and
- Identification of a narrow set of high-priority goals on which to follow up upon.

The *World Declaration and Plan of Action for Nutrition* includes a statement on agricultural research that recognizes that the suitable development of food and nutrition security needs to be addressed simultaneously with economic growth. It suggests that, in order to improve nutrition, governments, in collaboration with all parties concerned and supported where necessary by appropriate legislative measures, should direct additional investment into agricultural research where necessary to

- Address the problem of seasonality through diversification in food production, including fruits and vegetables, livestock, fishery, and aquaculture;
- Promote environmentally sound and economically viable farming systems to increase crop production and maintain soil quality to encourage resource management and resource recycling;
- Encourage the development of safe biotechnology in animal and plant breeding and facilitate the exchange of new advances in biotechnology related to nutrition;
- Develop techniques that decrease post-harvest crop losses and improve food processing, storage, and marketing;
- Develop and disseminate technologies that respond to women's needs and ease the workload of women;

- Improve extension services to cooperate more effectively with farmer and consumer communities in identifying research needs;
- Improve training methods at the international, national, and local levels to ensure dissemination of new technologies;
- Address the needs of small and poor farmers including those dependent on poor quality or fragile lands;
- Develop technology and systems applicable to small-scale agriculture;
- Encourage intensive food production at the farm and household levels, taking account of prevailing local conditions;
- Develop more effective techniques for the traditional production of food at the household and community levels (pp. 12-13).

Furthermore, it is stated that in countries where the food chain is not secure and household food insecurity is a problem, the government, NGOs and nonprofit organizations, the private sector, and international organizations should, as appropriate, work in a collaborative manner to

Encourage necessary research by governmental, international, and private institutions to promote household food security through better food production; handling and storage and prevention of food losses; crop and genetic diversity; and improved food processing, preservation, and marketing. Research should be done on household handling of food and intrafamily food distribution to assure adequate food availability and to protect the nutritional value of food and prevent food losses and wastage. Such research can enhance rural employment and promote the role of women, in particular, in all aspects of food production, processing, and marketing. Research should also be carried out on appropriate cost-effective indicators to measure household food security problems and to measure progress of appropriate programs in solving those problems (p. 17).

Other relevant research issues relating to CGIAR priorities are mentioned throughout the plan of action.

The main background paper for the conference, *Nutrition and Development: A Global Assessment* (FAO/WHO 1992), discusses research needs in general and the importance of CGIAR in particular. The following is an excerpt from the document:

60. Nutritional research is undertaken in many countries in all regions of the world. Both basic and applied nutritional research is undertaken on a large scale in many institutions in developed countries. Some of this field-work and laboratory research is carried out in developing countries, usually in collaboration with national institutions or governments. In these countries, such research is often backed by national resources or international partners and is commonly of an applied or operational nature, including studies on how to manage within a given sociocultural setting and on various types of nutritional problems and actions, especially at the community level.

Operational research is often needed to better implement field programs. Applied food science research is also commonly undertaken, although the resources available, including facilities and funds, are often inadequate. Researchers themselves are often not very well-trained or experienced in research protocol formulation or implementation. They often have to work in great isolation under extremely arduous conditions. Even with these constraints, networks of functioning research centers exist in each region. Valuable contributions that can improve nutrition are being made in each of these networks but there is a need to disseminate and apply the findings more widely.

61. In agriculture, the Consultative Group on International Agricultural Research (CGIAR) supports 18 centers worldwide, with mandates that cover specific crops such as wheat, maize, rice, and legumes; specific geographic regions such as semi-arid regions, as well as policy research. Through agricultural research and related activities, the goal of CGIAR is to contribute to increasing sustainable food production, including agriculture, forestry, and fisheries, in such a way that the nutritional level and general economic well-being of low-income people are improved. Working in partnership with national systems by providing assistance and advice in a priority setting, the CGIAR centers serve to bridge and fill gaps for national research systems, which are generally lacking in resources. In Asia, for example, research from the International Crops Research Institute for Semi-Arid Tropics (ICRISAT) has combined with Indian national adaptive research to have a major impact on sorghum and pigeon pea production among poor farmers in neglected regions. In addition, the International Food Policy Research Institute (IFPRI) has focused on food consumption and nutrition as an important area of policy research and has successfully worked with governments and institutions worldwide in promoting more effective policies to improve nutrition among the poor.

The official documents from the ICN are available from FAO. Copies can be obtained from IFPRI. The background papers prepared by IFPRI on food security and agriculture-nutrition are also available from IFPRI upon request.

IFPRI is currently negotiating with the U.S. Agency for International Development for collaboration and financial support for research by IFPRI and several other CGIAR centers to explore ways of alleviating micronutrient deficiencies, particularly iron and vitamin A, through agricultural research and policy.

IFPRI will pursue other opportunities for research and will keep other CGIAR centers informed of promising opportunities. IFPRI staff members are currently visiting several CGIAR centers to seek ideas and explore ways to further strengthen the nutrition effects of the work by CGIAR.

**PLENARY PRESENTATION BY PER PINSTRUP-ANDERSEN, IFPRI/CGIAR
AT THE INTERNATIONAL CONFERENCE ON NUTRITION
Rome, December 8, 1992**

Madam Chairperson, Directors General of FAO and WHO, Distinguished Delegates, Ladies and Gentlemen.

The draft declaration before us correctly states that current global food supplies are sufficient to meet requirements of the current population. However, available food is unevenly distributed with more than 700 million people suffering from inadequate access.

Access to future food supplies will also be unevenly distributed, particularly as an increasing amount of staple food is used as livestock feed. Thus, during the next 20-30 years, increasing requirements resulting from the largest annual increases in the world population ever, as well as increasing food demands due to economic growth, must be met by new expansions in food production.

Expanding food production by putting more land under cultivation has nearly reached its limits. Too much marginal land is already being cropped at the expense of the environment and the natural resource base. Most of the future increases in food production must come from higher yields on existing land. Food crop yields must increase by at least 40 percent in the next 20 years to keep up with demand.

This will require major new investments in agricultural development and in agricultural research and technology. It will also require accelerated investment in roads, transportation, and other rural infrastructure as well as reforms of agricultural input and output markets.

Current ample food supplies are a result of such investments in the past. In particular, expanded efforts in agricultural research beginning in the early 1960s resulted in dramatic yield and production increases in wheat and rice – results often referred to as the Green Revolution. Many millions of people in Asia and Latin America have access to food today at reasonable prices because of the Green Revolution and similar although less spectacular yield increases in other crops including maize, potato, and grain legumes. Mass starvation predicted for Asia for the 1960-70 were avoided largely because of these yield and production gains.

Unfortunately, investments in agricultural development and in agricultural research and technology decreased during the 1980s. Unless this trend is reversed, the global food situation and poor peoples' access to food will deteriorate significantly over the next 20-30 years. During the 1980s, many developing countries experienced decreases in food production per capita, and projections indicate a shortfall of 90 million metric tons of food in the developing countries by the end of the decade. These shortfalls will occur primarily in Africa and in South Asia.

The world has become complacent about future food supplies, governments tend to focus on short-term crises while ignoring the long-term dangers to global food security. This is true for many developing-country governments as well as many international assistance agencies.

In addition to gains in food supplies, investments in agriculture will increase incomes and employment among the rural poor, and productivity increases will lower the cost of food – a crucial development for the world's poor, who spend 60-80 percent of their incomes on food.

Technological advances in agriculture also play an important role in protecting our environment and managing natural resources through less pressures on fragile land and forests and by reducing the needs for chemical pest control.

The Consultative Group on International Agricultural Research is a consortium of 18 international agricultural research centers and about 40 donor countries and international institutions sponsored by FAO, UNDP, and the World Bank. It undertakes research and research-related activities in close collaboration with developing-country research institutions to improve the well-being of the poor in the developing countries, including their nutritional status.

Research of the 18 research centers together with developing countries own research has resulted in large productivity gains, improved production practices, and better food policy for the benefit of poor farmers and consumers.

We are currently benefitting from the foresight of people who invested in agricultural research and agricultural development during the 1960s and 1970s.

Decreases in these investments in developing countries during the 1980s indicate that such foresight may no longer prevail.

If we continue current trends of reducing investment in developing countries' agriculture, the global food situation is headed for disaster and opportunities for alleviating poverty and malnutrition will be missed.

Madam Chairperson, assuring ample food supplies at reasonable prices is necessary but not sufficient to alleviate malnutrition. We need a new international approach to combatting malnutrition that continues investment in agriculture and primary health care with income generation among the poor, appropriate government policies, and assistance to women who wish to practice family planning.

The International Food Policy Research institute (IFPRI), which is the lead institute on nutrition and on food policy, and its 17 sister centers within the CGIAR, stand ready to collaborate with developing-country governments, NGOs, and international agencies in a joint effort to successfully implement the plan of action before us.

As an illustration of such effort, IFPRI has just entered into negotiations with the United States Agency for International Development for research by IFPRI and several sister centers to explore ways of alleviating micronutrient deficiencies – particularly iron and vitamin A – through agricultural research and policy.

Thank you, Madam Chairperson.

DECEMBER 1992

Doomsday scenarios about population growth have been popular fare for the nearly 200 years since British economist Thomas Malthus's prediction that population would always tend to exceed the growth of food production and would be checked only by famine, war, and disease.

Although world population has continued to wax through the 1970s, 1980s, and into the 1990s, food output has kept pace with total need since the 1960s, with the exception of pockets of famine and starvation.

That most of today's five billion persons have escaped famine is credited in large part to the green revolution of the 1960s and 1970s and economic development in poor countries.

From the scientific work at the International Rice Research Institute (IRRI) in the Philippines and at the International Maize and Wheat Improvement Center (CIMMYT) in Mexico came new high-yielding varieties of rice and wheat that erased the specter of hunger in Asia, Latin America, and the Middle East. These centers became the foundation of the Consultative Group on International Agricultural Research (CGIAR), an association of 18 international research centers and 40 countries and global and regional organizations working to increase sustainable food production.

The green revolution continued as the CGIAR expanded research to cassava, maize, and wheat in the humid tropics of Africa; beans, cassava, and rice in the acid savanna areas of Latin America; cereals (sorghum and millet) and grain legumes (chick peas and pigeon peas) in the semiarid tropics of Asia and Africa; and potatoes in all regions of the developing world. During this period research was added on animals in agriculture.

Recognizing that the problem was more than increasing food supplies and developing better seeds and farming systems, the CGIAR added research on policies to promote agricultural growth and a center to assist national agricultural research institutions. A center was also added

to preserve biodiversity through fostering collection and conservation of plant varieties.

For almost all developing countries, agriculture is the basis of the economy. Bolstering agricultural production creates employment, which raises incomes of farmers and agricultural workers. Increased incomes foster food security as families are able to purchase what they need. Through the promotion of agriculture comes better nutrition.

As a result of the work of the CGIAR system, many poor developing countries, despite population growth, succeeded in cutting their food deficits or achieved surpluses—thereby reducing poverty by increasing productivity, raising farm family incomes, and lowering prices to consumers.

Since the late 1960s, cereal prices have continuously declined in developing countries, thus boosting the buying power of the poor, who spend up to 80 percent of their incomes on food. The resulting improvements in nutrition and health are perhaps among the most tangible benefits the CGIAR system has brought to the poorest.

CONTINUING ROLE FOR AGRICULTURAL RESEARCH

As developing countries have continued to expand their food supplies, new issues have emerged. Despite lower prices and greater availability of food, hunger has not been conquered. In the world today, between 700 million and 1 billion people are hungry. It is clear that

- Adequate food supplies on a national level do not necessarily translate into adequate food for families. In countries where food supplies are sufficient to meet needs, it is not uncommon to have as much as 30 percent of the population getting only 80 percent of the calories necessary for a healthy life. Although enough food may be available, the poor may not have the income to purchase what they need.

- Adequate family food supplies do not always mean adequate food is made available to individual family members. How much food different members of the family receive often varies according to who is earning the family income, age, sex, order of birth, and other sociocultural factors. In the cultures of some South Asian countries, such as Pakistan and Bangladesh, boys tend to receive more food than girls. As in many developing countries, women and children in Bangladesh consume a disproportionately small share of available calories in comparison with adult males.
- Having enough to eat in terms of calories alone does not mean that individuals will not suffer from malnutrition. If malnutrition is to be avoided, diets must also contain vitamins and minerals. Studies by the International Food Policy Research Institute (IFPRI) have shown a strong correlation between vitamin A and health. The more vitamin A was consumed, the lower the rate of sickness among children.

Health is another factor affecting malnutrition. Research has found that individuals who are sick cannot adequately absorb nutrients. Solving the problem of malnutrition requires work not only in the areas of food and nutrition, but in health, sanitation, and education.

Agricultural practices themselves have been linked to health problems. Lessons have been learned about the negative effects of irrigation, pesticides, and fertilizers on the health of farmers and their families. This has led to research efforts in safe, alternative pest-control practices and techniques to increase soil productivity without chemicals.

New pest-management practices, including cultivation of a pest-resistant potato, have been developed by the International Potato Center (CIP) in Peru. Among the world's major food crops, potatoes require the heaviest application of pesticides. High insect resistance of the new potato and successful introduction of parasites of insect pests, such as tiny wasps and bacteria, are helping farmers to grow potatoes with fewer toxic chemicals.

Scientists at the International Institute for Tropical Agriculture (IITA) have neutralized a

pest of cassava, the mealybug, by finding a predator wasp and establishing it across the African cassava belt. An economist has calculated that for every dollar spent in the mealybug control program, African farmers have reaped US\$149 in increased food production.

At IRRI, scientists and their national collaborators are studying the effects of pesticide use on farmers and their families. They have found that farmers face chronic health effects due to prolonged exposure to pesticides. Research at IRRI suggests that integrated pest-management techniques not only reduce pesticide use, they make better economic sense as well.

More than 70 percent of the world's irrigated cropland is in developing countries. Poorly managed irrigation can affect farmers' health through the spread of epidemics caused by waterborne pests and diseases. Research at the International Irrigation Management Institute (IIMI) in Sri Lanka has found that managing these irrigation systems properly can not only increase crop yields in irrigated areas but can greatly improve health.

Global food security today is in a precarious condition. A doubling of world population in the next 40 years will put extreme pressure on developing countries, where birthrates are high and resources are low.

One of the challenges extending into the twenty-first century will be to safeguard the green revolution gains already made and extend its benefits to new areas and farming systems. Another will be to look beyond supply to the links between diet quality, health, and nutrition.

The CGIAR has recognized the complexity of these challenges. Recent additions to the mandate of the CGIAR system include research on banana and plantain, aquaculture, agroforestry, and forestry.

Meeting the food demands of the developing world requires not only producing more food by generating economic growth but doing so in a manner that maintains the natural resource base. This will require increasing the biological control of pests, finding better agronomic methods of farming to reduce soil erosion, advancing biotechnology, and better understanding the socioeconomic links between poverty and natural resource management.

CGIAR CENTERS

- CIAT**—Centro Internacional de Agricultura Tropical, Apartado Aéreo 6713, Cali, Colombia. Founded 1967. Focus on crop improvement and ecoregional approaches to developing agriculture in the lowland tropics of Latin America. Research covers rice, beans, cassava, forages, and pasture.
- CIFOR**—Center for International Forestry Research, Bogor, Indonesia. Founded 1992. Focus on forestry policy research in Asia, with some work in Latin America. Collaborates with ICRAF on some projects.
- CIMMYT**—Centro Internacional de Mejoramiento de Maíz y Trigo, P.O. Box 6-641, Mexico 06600, D.F. Mexico. Founded 1966. Focus on crop improvement. Research covers maize, wheat, barley, and triticale.
- CIP**—Centro Internacional de la Papa, Apartado 5969, Lima, Peru. Founded 1971. Focus on potato and sweet potato improvement; special attention paid to ecoregional aspects of mountain area agriculture.
- IBPGR**—International Board for Plant Genetic Resources, Via delle Sette Chiese, 142; 00145 Rome, Italy. Founded 1976. Focus on conserving gene pools of current and potential crops and forages.
- ICARDA**—International Center for Agricultural Research in the Dry Areas, P.O. Box 5466, Aleppo, Syria. Founded 1976. Focus on improving farming systems for North Africa and West Asia. Research covers wheat, barley, chick pea, lentils, pasture legumes, and small ruminants.
- ICLARM**—International Center for Living Aquatic Resources Management. MC P.O. Box 1501, Makati, Metro Manila, The Philippines. Founded 1977. Focus on research on all aspects of fisheries to improve efficiency and productivity of culture and capture fisheries.
- ICRAF**—International Centre for Research in Agroforestry, P.O. Box 30677, Nairobi, Kenya. Founded 1977. Focus on initiating and supporting research on integrating trees in land-use systems in developing countries.
- ICRISAT**—International Crops Research Institute for the Semi-Arid Tropics, Patancheru P.O., Andhra Pradesh 502 324, India. Founded 1972. Focus on crop improvement; cropping systems. Research covers sorghum, millet, chick pea, pigeon pea, and groundnut.
- IFPRI**—International Food Policy Research Institute, 1200 17th Street, N.W., Washington, D.C., 10036-3006, U.S.A. Founded in 1975. Focus on food policy and socioeconomic research related to agricultural development. Provides policy research and institution-building assistance to developing countries.
- IIMI**—International Irrigation Management Institute, P.O. Box 2075, Colombo, Sri Lanka. Founded in 1984. Focus on performance of irrigation in developing countries. Research covers institutional conditions for managing irrigation systems and facilities; management of water resources, irrigation support to farmers.
- IITA**—International Institute of Tropical Agriculture, PMB 5320, Ibadan, Nigeria. Founded 1967. Focus on crop improvement and land management in humid and subhumid tropics; farming systems. Research covers maize, cassava, cowpea, plantain, soybean, rice, and yam.
- ILCA**—International Livestock Centre for Africa, P.O. Box 5689, Addis Ababa, Ethiopia. Founded 1974. Focus on farming systems to identify livestock production and marketing constraints in Sub-Saharan Africa. Research covers ruminants, livestock, and forages.
- ILRAD**—International Laboratory for Research on Animal Diseases, P.O. Box 30709, Nairobi, Kenya. Founded 1974. Focus on control of major livestock diseases in Sub-Saharan Africa. Research covers theileriosis (East Coast fever) and African animal trypanosomiasis.
- INIBAP**—International Network for the Improvement of Banana and Plantain, Parc Scientifique Agropolis, 34397 Montpellier Cedex 5, France. Founded in 1984. Focus on production on small-holdings. Documentation and information related to Musa varieties. Research covers germplasm exchange and breeding, testing, and pathology research.
- IRRI**—International Rice Research Institute, P.O. Box 933, Manila, The Philippines. Founded 1960. Focus on global rice improvement.
- ISNAR**—International Service for National Agricultural Research, P.O. Box 93375, 2509 AJ, The Hague, Netherlands. Founded 1979. Focus on strengthening and developing national agricultural research systems.
- WARDA**—West Africa Rice Development Association, 01 B.P. 2551, Bouake 01, Côte d'Ivoire. Founded 1971. Focus on rice improvement in West Africa. Research covers rice in mangrove swamps, inland swamps, upland conditions, and irrigated conditions.

DECEMBER 1992

The world's approach to the problems of hunger and malnutrition is very shortsighted. Governments and individuals tend to focus on crises at specific places and times rather than on the persistence of hunger in many parts of the globe.

In the mid-1970s, there were severe food shortages around the world, and famines plagued Sub-Saharan Africa. The developed world responded by increasing financial support for agricultural research and food shipments. But few developing-country governments acted to establish necessary policies to deal with future famines. These policies include incentives to expand production of subsistence and commercial food crops, improvement of rural infrastructure through job programs, and provision of basic health and sanitation services.

In the 1980s, agricultural aid was declining and African governments were again facing famine conditions. Not surprisingly, the 1992 crises in southern Africa have found some African countries less prepared and poor families more vulnerable to hunger and malnutrition than during the 1980s, while development and agricultural aid continue to decline.

Although notable progress has been made in reducing world malnutrition—the Food and Agriculture Organization of the United Nations and the World Health Organization find that the proportion of malnourished families in developing countries has actually decreased from 36 to 20 percent—research conducted at the International Food Policy Research Institute finds that the number of malnourished (underweight) children throughout the developing regions of the world increased from 166 million to 188 million between 1975 and 1990. Projections to the year 2000 suggest that although the prevalence of malnutrition will probably continue to decline world-

wide, the number of malnourished children will increase—particularly in Sub-Saharan Africa and South Asia.

Never has the world had so many well-fed people and so many malnourished children at the same time.

LOOMING CHALLENGES

Emerging problems pose substantial new risks to the nutritional well-being of families in developing countries.

Population growth. In the next two decades, two billion more persons—the equivalent of two Chinas—will be added to the world population. It will be the largest population increase ever during a 20-year period and will put extreme pressure on developing countries, where birthrates are generally high and resources stretched most thinly.

Limited farming land. Expanding food production by putting more land under cultivation has nearly reached its limit. Too much marginal land is already being cropped at the expense of the environment and the natural resource base. The impact of population on land resources is also taking its toll. The amount of cropland per person worldwide dropped 25 percent between 1950 and 1975, and will likely drop another 15 percent by the turn of the century. The loss of arable land through desertification each year is 6 million hectares, with another 400,000 hectares lost to waterlogging and salinity.

Technology development. Growth of food production in many developing countries slowed in the last decade. Developing countries produce three to four times as much food today as they did in 1950, but food-crop yields per hectare must increase by at least 40 percent in the next 20 years if the current level of food availability, unsatisfactory as it may be, is to be maintained. Given the current

trends, developing countries will be unable to meet the predicted demand over the next two decades. And the technologies necessary to increase and sustain food production will also have to preserve the natural resource base.

Urbanization. Unprecedented urban growth, especially in Africa, has increased the need for substantial investment in infrastructure, marketing, and processing facilities. At the same time, food quality and food safety concerns for the urban poor are growing due to increased crowding and deteriorating urban services in megacities.

SOLUTIONS

Meeting long-term food and nutrition goals and eliminating short-term crises will require

1. A new approach that combines agriculture, nutrition, and health objectives in order to eliminate starvation and death caused by famine, accelerate reduction of severe energy and protein malnutrition, and eliminate severe vitamin and micronutrient deficiencies.

2. A new or renewed attention to agriculture by developing countries. This will be essential to provide the needed food and to

stimulate the employment and incomes necessary for equitable economic growth.

3. Stimulation of sustainable agricultural growth through a cooperative national and international research effort to develop new technologies, and the development of extension programs to transfer results to farmers.

4. Provision of more education programs, especially for women, and access to health services.

The International Conference on Nutrition (ICN) underscores the importance of this approach. The governments represented at ICN can create the momentum to achieve these goals through effective follow-up after the conference. In developing countries, nutrition objectives must be incorporated into food and development policies as part of broad-based economic and political reforms.

Eliminating hunger and malnutrition in the developing world is a long-term effort that links agricultural and health objectives to ensure food security and the alleviation of poverty. Trying to solve the problem by tackling these issues separately or in the short run will lead to the repetition of past mistakes.

DECEMBER 1992

The Food and Agriculture Organization of the United Nations (FAO) estimates that in the early 1970s, 36 percent of the world's population did not eat enough food to lead a healthy life. Despite rising population levels, the figure dropped to 20 percent in 1990.

Likewise, between 1975 and 1990, the number of malnourished children aged four or younger declined in Southeast Asia and Latin America. However, in Sub-Saharan Africa the number rose from 18 to 30 million, and in South Asia, consisting of India, Pakistan, Sri Lanka, Bangladesh, and Nepal, the number increased from 90 to 101 million.

The percentage of malnourished children declined in all Third World regions except Sub-Saharan Africa. But projections to the year 2000 suggest that while the prevalence of malnutrition will probably go down overall, the number of children who are underweight for their age will increase, particularly in Sub-Saharan Africa and South Asia.

In an effort to map future trends in the prevalence of malnutrition in children to the

year 2000, analysts used optimistic and pessimistic projections based on historical trends. These were compared with the goals set at the 1990 World Summit for Children, and adopted by the International Conference on Nutrition, of reducing by half the prevalence of malnutrition by year 2000 (Table 1). They do not account for possible breakthroughs in food production or for disasters such as uncontrolled spread of AIDS.

For South Asia, the optimistic scenario predicts there would be only a 9 percent reduction in the number of malnourished children by 2000—to 49 percent. The World Summit goal for South Asia is 20 points lower at 29 percent.

The optimistic scenario suggests that Southeast Asia is likely to be closer to the summit goals than South Asia. In both the optimistic and pessimistic scenarios for Southeast Asia, the numbers of underweight children will decline in the year 2000—a continuation of a 15-year trend.

In three regions—the Near East and North

Table 1—Projections of malnourished children by region, 2000

Region	Pessimistic Scenario	Optimistic Scenario (millions)	Target*
Sub-Saharan Africa	38	30	18
Near East/North Africa	5	3	2
South Asia	110	100	59
Southeast Asia	17	15	11
China	30	24	15
Middle America/Caribbean	4	2	2
South America	2	1	1

Source: Marito Garcia, IFPRI/ACC-SCN, 1992.

* Goals of the 1990 World Summit for Children and the International Conference on Nutrition.

Africa, Central America and the Caribbean, and South America—the prevalence of malnourished children is likely to decline to within 2.5 percent of summit goals.

The projections in these scenarios, which all fall short of the goals of the 1990 summit, indicate that a satisfactory nutrition situation will not be realized in the foreseeable future in South Asia or Sub-Saharan Africa unless new approaches are tried. There are signs that targeted programs of health, food, and education can improve the nutrition situation quickly in some areas. Thailand, for example, has achieved remarkable malnutrition declines in eight years of continuous community programs. Another intervention in India's Tamil Nadu State notably decreased the prevalence of underweight children within five to eight years. Clearly, the rate of improvement has to be increased in South Asia and established in Sub-Saharan Africa.

FOOD DEFICITS TO INCREASE EXCEPT IN ASIA

The general outlook for developing countries to meet their food requirements by year 2000 are hardly optimistic except for Asia.

Based on food crop production and consumption projections, Asia appears to be the only developing area in the world that will show a surplus by the turn of the century. The region, which includes China, is expected to produce nearly 36 million tons of food in excess of its needs by the year 2000 (Table 2).

The remaining three Third World areas, North Africa and the Middle East, Sub-Saharan Africa, and Latin America, are projected to have food requirements between 6 and 69 million tons more than the harvest.

Worldwide by 2000, developing countries are expected to fall 88 million tons short of needs, compared with the 1979-83 average deficit of 51 million tons.

Table 2—Production and consumption of major food crops in developing countries, projections to 2000

Country Group	Production	Consumption
	(million metric tons)	
Total	1,461.6	1,550.1
(Excluding China)	(954.9)	(1,027.7)
Asia	1,049.0	1,013.2
(Excluding China)	(542.3)	(490.8)
North Africa/Middle East	105.7	174.7
Sub-Saharan Africa	107.5	157.2
Latin America	199.4	205.0

Source: International Food Policy Research Institute using FAO and United Nations data.