

P A R T



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CHAPTER 5

Successes and lessons learned in policy development

Responses to the challenges of increasing world hunger over the past two decades have been manifold. FAO and its member countries have acted in a range of policy areas to identify effective actions and to engage stakeholders and the public at large in the fight against hunger. This is a critical part of the fight, even if, on its own, it is not enough. At the global level, one important task is now to strengthen the capacity of developing countries to participate in multilateral trade negotiations and adjust their agriculture and trade policies effectively. At the production level, the business side of farming must be supported. Farmers and others operating in the agriculture sector need the support of governments and their partners in the form of policies and extension methods that develop their capacity to save, accumulate fixed capital and continually reinvest in their own farms and related activities.

Policy assistance in a changing environment

In the mid-1990s, FAO began a move towards decentralization which, among other things, made its decentralized regional and subregional offices the first port of call for national and regional policy advisory support. The role of FAO's headquarters in Rome has become more one of providing backstopping support to the decentralized policy officers, dealing with global and interregional policy issues and developing related studies and methodological guidelines.

Ultimately, FAO's policy support is effective only if its recommendations lead to policy decisions and subsequent implementation at national, regional or international levels. Still, measuring their effectiveness is difficult in practice, especially when the policy support is provided through the modality of global or regional agreements, which may require different action from country to country, and each action may have its own circumstances, needs and procedures. However, a number of approaches are common to many of FAO's policy support activities, such as linking operational assistance to normative frameworks, ensuring adequate financial resources for investment and using a variety of modalities for delivery.

■ Evolving nature of policy support

FAO has been providing policy assistance to its member countries and their regional economic integration organizations (REIOs) since its creation. The nature of the

policy assistance, one of FAO's "core functions", has evolved over time, taking into consideration emerging issues and the changing priorities of its membership. An external evaluation of FAO's work in 2006 and 2007 found that member countries consider policy support one of the two areas of greatest priority; the other is capacity development.

FAO provides its policy assistance at global, regional and national levels, across the full range of its mandate, including agriculture, livestock, forestry, fisheries and aquaculture, trade, food and nutrition, rural development and natural resource management. Assistance is offered in the form of policy advice, capacity development for policy formulation and implementation, institutional strengthening and restructuring, country information, policy intelligence and monitoring, and identification of members' priorities for effective field programme development. Taking it further, FAO also supports the design of strategies and policies for agriculture, and for food security and nutrition in individual countries and REIOs, and the mobilization of financial resources for their implementation.

For example, FAO has supported the African Union and its New Partnership for Africa's Development (NEPAD) Programme since their founding in 2001. This has included assistance in formulating the strategy for NEPAD's Comprehensive Africa Agriculture Development Programme (CAADP), which was launched in 2003. Within the framework of CAADP, FAO has supported 51 African countries in the formulation of their National Medium-Term Investment Programmes and associated Bankable Investment Project Profiles.

FAO provided policy support to the 2003 Maputo Summit. The Summit produced the Maputo Declaration on Agriculture and Food Security, by which African Heads of State and Government committed to allocate at least 10 percent of their national budgets to agricultural development. This also included support in organizing several summits and high-level events focusing on agriculture and food security. Since 2009, FAO has supported African countries and REIOs in the development of their CAADP Compacts, which identify priority areas for investment, and national and regional investment plans for agriculture and food security and nutrition.

Developing and strengthening institutional capacities

FAO has increasingly oriented its policy assistance towards developing and strengthening the capacities of regional and national public institutions. This work, carried out in coordination and partnership with national and international organizations, involves activities such as provision of in-service training programmes and workshops, including training materials and case studies disseminated online. Easypol, maintained by FAO, is an Internet gateway for online policy resource materials, and includes material on functional analysis for policy reform, multilateral trade negotiations, natural resource management, and policies for sustainable agricultural development.

FAO pursues capacity development through an annual high-level policy learning event designed for senior government officials and FAO Representatives at its headquarters in Rome. Other policy learning programmes, for specific areas, are

usually held at regional or subregional levels. For example, in the area of multilateral trade negotiations, FAO undertook activities to enhance the capacity of developing countries to analyse the implications of the WTO Agreement on Agriculture and to participate in the ongoing negotiation process. It also focused on strengthening countries' capacities to adjust their national food, agricultural and trade policies so as to take advantage of opportunities and minimize any adverse effects arising from the AoA.

For example, FAO organized a series of regional and subregional policy seminars for high-level policy-makers, with the participation of development partners, farmers' organizations and the private sector, on the design of appropriate immediate policy responses to the food price volatility that engulfed the world in 2007–2008 and again in 2010–2011. The *FAO Guide for Policy and Programmatic Actions at Country Level to address High Food Prices* formed a basis for discussion at the seminars.

With regard to institutional strengthening, FAO member countries often request assistance in establishing or strengthening policy and planning units in ministries of agriculture or in coordinating ministries or structures. Countries also have requested support in restructuring entire ministries.

Monitoring national policy decisions

FAO monitors policy decisions, and also notes shifts in those decisions following major shocks or events. For example, in monitoring the policy decisions made following the global food price crisis in 2007–2008, FAO found government reactions taken in haste, if not in panic, sometimes contributed to exacerbating the crisis and aggravating its impact on food insecurity. Export bans, for example, often worsened the crisis; and emergency distribution of seeds and fertilizers by public organizations undermined existing private-sector distribution systems in some countries, weakening the services available for farmers once the crisis receded. It is this monitoring exercise that informed the guide that was the basis for the regional and subregional policy seminars.

■ Identifying emerging and contemporary development issues

As part of its policy assistance, FAO identifies emerging and contemporary development issues, with the view to mitigating their adverse effects and harnessing their potential benefits for sustainable food security and agriculture development in member countries.

Migration and remittances. FAO's work on migration and remittances aims to support countries in designing policies that facilitate the mobilization and channelling of remittances from citizens abroad into investments in agriculture and rural development in their home countries. Officially recorded remittances reached a high of US\$370 billion in 2007 and now stand around US\$335 billion a year, with remittances now the largest source of external financing in many developing countries. In addition to working on the link between remittances and

PHOTO 13

Investing in irrigation reduces dependence on imported food.



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agricultural development and food security, FAO also focuses on the migration issue itself.

Migration reallocates labour associated with productive activities. In home countries, out-migration reduces labour available for food production and increases the work burden on those left behind. It also changes the comparative advantages for agriculture between originating and destination countries. FAO supports governments in designing policies aimed at counterbalancing the negative effects of migration, while creating an enabling environment for investment of remittances in the agro-rural sector.

Incremental investments in agriculture. The global food crisis in 2007–2008 awakened the international community to the chronic underfunding of agriculture and the need to increase the volume of resources going into the sector. FAO's policy assistance in this area starts from the premise that while every effort should be made to increase the volume of investment in agriculture, volume is not enough. FAO's experience in working with developing countries strongly suggests that making a transition from economic stagnation to self-sustaining economic growth in agriculture – and consequently the overall economy – requires a sustained increase in the rate of domestic capital formation in agriculture.

The nexus between capital formation and agricultural growth, and agricultural growth and poverty alleviation, is complex. Empirical analysis clearly suggests, however, that the volume and composition of capital formation are the major determinants of agricultural productivity and output growth. Therefore, the quality of investment is as important as the quantity of investment.

The increase in domestic capital formation should be viewed in its broad sense, including investment in social overheads and economic infrastructure. Although such investment may yield only a small increase in income in the short term, it will create an environment needed for more profitable and cumulative subsequent investments. Experience in China, Thailand, Brazil and Viet Nam clearly demonstrates how a sustained increase in capital formation in agriculture generates subsequent growth opportunities in agriculture and the economy as a whole.

■ Future direction of policy support

There is a constantly growing demand for policy assistance, which FAO will need to respond to with shrinking human and financial resources. Of necessity, its policy work will focus on those issues that are of priority to member countries and for which FAO has a clear comparative advantage. These include:

- the unacceptably slow progress in the alleviation of hunger and poverty in several countries where the number or the prevalence of undernourished people is large or even increasing;
- the effects of the swift transformation of agriculture worldwide;
- the imbalances between food supply and demand, in light of the increased use of food products for biofuel;
- the increasing transboundary movements of humans, goods and services in food and agriculture.

Policy support to technical areas

FAO provides policy advice on issues dealing with threats to, and the suboptimal supply of, global public goods, in particular healthy ecosystems, water, biodiversity, climate and energy. The related need for sustainable intensification of resource use in the rural sector is itself another challenge, which is linked to facilitating adequate and effective innovation and exchange of best practices. Generally, development policies that facilitate broad access to technologies are part of a wider process that helps overcome the existing knowledge divide between and within countries through efficient and effective communication and capacity development. In this context, FAO policy work – through case studies and high-level policy seminars – contributes to promoting intercountry and interregional transfers of best practices in agriculture and of the food security development policies and strategies using the value-chain approach.

As can be seen, this calls for two types of global policy work. FAO must maintain or even strengthen its capacity to provide general and cross-cutting policy support with regard to global public goods, meaning global governance in food, agriculture, fisheries and aquaculture, and forestry; and information and knowledge exchange. FAO should also take the lead in initiatives that address specific and thematic policy issues that require concerted action, such as:

- accelerating progress in the alleviation of hunger and poverty;
- dealing with rapid transformations in agriculture and the strong demand growth that has frequently been associated with limitations in the supply-side response;
- addressing the global threats to natural resources and ecosystems, in particular from the effects of climate change;
- enabling agriculture and rural areas to adapt to changing environments;
- improving data availability, knowledge generation and dissemination;
- responding to energy scarcity;
- facilitating the effective functioning of innovative systems and ensuring broad access to new technologies;

- assisting member countries and their populations in coping with food emergencies;
- reducing vulnerability and building resilience to the threats and changing nature of disasters and food emergencies.

At the same time, a proven set of four key principles guides, and will continue to guide, FAO's policy work:

- Support must conform to FAO's three global goals: overcoming hunger and malnutrition, agriculture contributing to economic and social development, and sustainable management of the natural resource base for food and agriculture.
- Policy support must assist countries and the global community in making their own informed decisions and contribute to concrete actions that have a realistic chance of delivering positive outcomes.
- Policy advice provided must be neutral and evidence-based.
- Focus must be maintained on areas of comparative advantage.

Changing context of FAO's comparative advantage

In terms of the policy advice and support FAO provides to its members, the key question remains the extent to which national governments, in collaboration with international partners, civil society and the private sector, are able to take the necessary policy action to address the future challenges resulting from the driving forces of global change, and, where this is not the case, how the necessary political will can be galvanized.

Over the years, FAO has sought to meet the demand for policy assistance from its members and their REIOs, adapting the nature and method of delivery to the changing times. It supports its members in confronting current challenges and is prepared to support them in facing the new challenges as they emerge.

FAO has a comparative advantage where it is the sole provider of a good or service, and where it can demonstrate evidence of high effectiveness and impact in its work relative to other providers. Evidently, what constitutes FAO's comparative advantage will be subject to change over time due to various factors, such as changes in FAO's own capacity and performance, or changes in priorities and performance of development partners and other UN agencies.

Gender-sensitive policy advice

Achieving gender equality plays a central role in eliminating poverty, raising levels of nutrition and standards of living as well as improving the productivity in agriculture, forestry and fisheries sectors and livelihoods of rural populations. Understanding gender roles and addressing gender inequalities are of key importance for improving livelihoods in developing countries. Women and girls continue to face limited access to and control over productive resources, and agricultural and rural development responses have traditionally not been sufficiently aware of

or responsive to the distinct roles, priorities, knowledge, constraints and opportunities of women.

While FAO has consistently aimed to provide gender-sensitive policy advice to policy-makers in member countries, there has been an evolution in the focus. Initially, policy-makers targeted issues and data specifically dealing with women. In later years, FAO adopted a gender-sensitive approach, providing policy advice relevant to needs of both men and women farmers. This proved a successful shift, as it gave policy-makers the opportunity to address sociocultural and economic impediments that would hold women back *vis-à-vis* men. However, this has not always been successful, as the term “gender” is still often interpreted as considering only women rather than the existing social relations of power between men and women.

FAO has learned that, for successful policy development, any intervention must be preceded by a thorough gender analysis. All stakeholders – from ministries to farmers – need to be involved at all stages of the decision-making process in a consultative and participatory way, and progress needs to be monitored and evaluated and accompanied by capacity development. Successful policies emerge from the recognition and definition of the needs of those they are designed to help and they are subsequently evaluated by those same people in terms of the impact they have had on their lives.

■ Contribution of women to agriculture

Women make essential contributions to agriculture in developing countries, but their roles differ significantly by region and have been changing rapidly due to globalization. Women comprise, on average, 43 percent of the agricultural labour force, ranging from 20 percent in Latin America to 50 percent in eastern Asia and sub-Saharan Africa. Their contribution to agricultural work varies even more widely depending on the specific crop, type of involvement and activity.

Despite this variability, women also share commonalities across regions: they have less access than men to productive resources and opportunities, and also live

BOX 19

Fighting hunger by closing the gender gap

Closing the gender gap in agriculture would generate significant gains for the agriculture sector and for society. If women had the same access to productive resources as men, they could increase yields on their farms by 20 to 30 percent, raising total agricultural output in developing countries by 2.5 to 4 percent, which in turn could reduce the number of hungry people in the world by 12 to 17 percent. The potential gains vary by region depending on how many women are currently engaged in agriculture, how much production or land they control, and how wide a gender gap they face.

with pre-existing socio-cultural prejudices. The gender gap is often found in access to assets, inputs and services – land, livestock, other productive assets, labour, education, extension and financial services, and technology – and it imposes costs on the agriculture sector, the broader economy and society.

■ Gender constraints

Gender is not only a key determinant of access to productive resources, it also is the basis for the division of labour within the household, the social value attributed to different types of work, and bargaining power – making it a key determinant of decent work outcomes. Access and denial, opportunities and privileges are granted according to gender, often embedded in the legal, social and cultural norms of the society in which men and women live. Institutions may resist or remain slow to change, which is one of the main challenges to policy-making and policy adoption.

Gender inequalities are widespread in rural employment, which includes paid and self-employment in farming, fisheries and aquaculture, forestry, small enterprises providing goods and services, and on- and off-farm wage labour. Women often work in the lowest paid and most precarious forms of employment.

Furthermore, women continue to be affected by the invisibility of their contribution. They are heavily engaged in domestic and reproductive tasks, which are crucial to the maintenance of households, families, kin groups and communities, but which are nevertheless regarded as an extension of household duties and hence, for the most part, remain hidden economically. The fact that many of these care burdens are transferred to girls (daughters) tends to perpetuate cycles of impoverishment and gender inequality, especially as it keeps young girls out of school and away from education opportunities. This, in turn, translates into low-skilled and precarious employment opportunities in the future.

Burden of unpaid work

Household work often involves activities that are time-consuming and insufficiently remunerated, if compensated at all. Rural women spend much of their day caring for their children, preparing food and collecting water and fuel as well as assisting other family members who are ill or disabled. This burden increases even more in households stricken by HIV and AIDS and aggravates labour shortages for agricultural production and income generation. Besides having the sole responsibility for domestic chores, rural women often work as unpaid family workers on family farms or in family businesses. In areas with increasing climate variability, where traditional agricultural activities have become less viable or profitable, men are pushed to migrate and the burden of both farm and domestic work is left to women. To stimulate gender-equitable poverty reduction in rural areas, the importance of the economic implications of unpaid work needs to be addressed, as does the disproportionate burden that falls on women and limits their access to all forms of paid employment, and rural women's access to decent agricultural and non-agricultural employment needs to be facilitated.

Access to land and credit

Land access and ownership is the prime productive asset in most rural areas of developing countries. Owning and working on land owned by others and securing waged farm work often depends on complex gender-based society-specific customary and legal frameworks. These institutional issues are key indicators of poverty and lower incomes because the allocation of labour and the benefits and distribution of the products from land are determined by gender. The specifics vary from place to place, but globally there is a sociocultural and historical bias that impedes women's control of land as a productive resource.

Women seldom own the land they cultivate. In all countries for which data are available, women are less likely to own land, and they own smaller amounts of land when they do own it. Women's restricted control over land reflects deep-rooted land tenure customary practices and laws. Especially important in this respect are the customary inheritance norms that determine access to land and that may contradict the existing legal norms.

The limited and insecure access to land that women tend to have usually affects their water and grazing rights, hinders their access to credit, and limits their land use and cropping choices and their ability to maintain diversified livelihood systems. All these, in turn, constrain their farm and off-farm income-generation activities, particularly in the case of environmental, political or economic shocks and crises.

Even where land is less of a binding constraint for women, limited access to credit and finance can further hinder their decision-making power and autonomy within the household and in the community as access to markets is not gender-neutral. Legal barriers and cultural norms may bar women from holding bank accounts or entering into financial contracts in their own right. Women have less control over the types of fixed assets that are usually necessary as collateral for loans. Institutional discrimination by private and public lending institutions keep women out of the market or grant women loans that are smaller than those granted to men for similar activities. Moreover, even when women are able to obtain credit, resources may not be used to support their own activities but those of the men, particularly in male-headed households.



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PHOTO 14

Women's limited and insecure access to land affects their water and grazing rights, hinders their access to credit, and restricts their land use choices.

BOX 20**Women's participation in rural employment**

Gender-sensitive policy will take into consideration that women's participation in the labour force – whether they are employed in the agriculture, fisheries or forestry sectors or as simple labourers – exhibits significant differences compared with rural men.

Contract farming. Female farmers are largely excluded from modern contract-farming arrangements because they lack secure control over land, family labour and other resources required to guarantee delivery of a reliable flow of produce. Moreover, much of the farm work done on contracted plots is performed by women as family labourers, who may work longer hours and receive less remuneration than men.

Livestock. Within pastoralist and mixed farming systems, livestock play an important role in supporting women and improving their financial situations. An estimated two-thirds of poor livestock keepers are women. They share responsibility with men and children for the care of animals. Particular species, such as poultry and dairy animals, and types of activity are more associated with women than men. Female-headed households are as successful as male-headed households in generating income from their animals, although they tend to own smaller numbers of animals, probably because of labour constraints. However, women's presence in intensive production and market chains associated with large commercial enterprises tends to be minimal.

Fisheries and aquaculture. Although comprehensive data are not available, case studies suggest that women may comprise up to 30 percent of the total employment in fisheries. They are more commonly occupied in subsistence and commercial fishing from small boats and canoes in coastal or inland waters. In aquaculture, women take care of fish ponds, feed and harvest fish and collect prawn larvae and fish fingerlings. Although they rarely engage in commercial offshore and long-distance capture fisheries because of the vigorous work involved or because of their domestic responsibilities and/or social norms, they contribute as entrepreneurs and labourers along all phases of the fisheries supply chain.

Forestry. Women contribute to both the formal and informal forestry sectors in many significant ways. From nurseries to plantations, and from logging to wood processing, women make up a notable proportion of the labour force in forest industries throughout the world. Although women contribute substantially to the forestry sector, their exact roles are not fully documented, their wages are not equal to those of men and their working conditions tend to be poor.

Labour markets. Women generally face gender-specific constraints as agricultural labourers and in hiring-in labour. They not only have lower labour

productivity as a result of inadequate training and education and nutrition-related health problems, such as iron deficiency, but also face pronounced gender division of labour for particular agricultural tasks, with the result that male and female labour cannot be easily substituted.

Access to employment opportunities

Education and training are the key to accessing remunerative jobs, and women without such assets are often in a disadvantaged economic position relative to men in terms of benefiting from wage labour. They are disproportionately employed in jobs of a low standard, including activities in which gender equality rights are not adequately respected and social protection is limited or non-existent. Partly because of this, women earn less for a given type of work than men (see Box 20). Moreover, because of the competing demands of care responsibilities and their engagement in the informal non-market economy, women, on average, spend less time in remunerated work and therefore earn less.

Access to education, training, information and extension

Human capital is a major factor in determining the opportunities available to individuals in society and is closely linked to the productive capacity of households and their economic and social well-being. Gender differences in education are significant and widespread, reflecting a set of culturally based biases against girls, especially those living in rural areas. Although recent evidence suggests that the gap is closing, female household heads in rural areas are still found to be disadvantaged with respect to capital accumulation in most developing countries, regardless of region or level of economic development.

The provision of education is a crucial mechanism in child labour prevention, which is even more significant in rural areas because the majority (60 percent) of child labourers worldwide work in agriculture. Given that rural girls tend to spend more time on domestic chores than rural boys, they are at a higher risk of not attending the school and gaining less education. In turn, their entry into the labour markets will be on the lower end and under worse conditions.

This gender gap is not confined to general education, but extends to extension services, which include a wide range of services provided by experts in the areas of agriculture, agribusiness and health. They are designed to improve productivity and the overall well-being of rural populations, and they can lead to significant yield increases. In developing countries, the availability of such services remains low for both women and men, but women benefit less than men, as they do not have the necessary access to information or adequate preparation to take advantage of them.

The very low numbers of female extension officers in developing countries makes it harder for women to be able to attend public meetings, which are usually run and attended by men. This is especially significant in social contexts where meetings between women and men from outside the family nucleus are restricted. Other

reasons are directly related to women's general access to education and access to resources, as training often entails reading a considerable volume of written materials, whereas rural women continue to have higher illiteracy rates than men. Male farmers are targeted for extension training as they are (erroneously) considered to be the only ones able to adopt modern innovations, thus bypassing women who, on the contrary, have been shown to be great innovators in agriculture.

Access to markets

Both domestic and international markets are gender-based institutions. The unequal access to markets for women results from gender inequalities in access to resources such as capital, technology, information, education and land. All these constraints interact with each other and determine the bargaining power of the various actors participating in the production, processing and sale of goods.

Cultural factors play a significant role in maintaining these inequalities. Women's contributions to household care services, cultural biases that determine women's roles, potential harassment by market or trade officials, all make it difficult for women to travel long distances and seek the best prices for their output. As men are holding the visible power in market exchanges, they are more likely to be approached by agricultural companies or other representatives wanting to engage in business. Women may also face cultural and socio-economic barriers to membership in rural organizations and cooperatives, which may further inhibit market access.

■ Addressing the gender gap: a complex challenge

The livelihood issues faced by women are all related to inadequate access to the relevant resources, services, benefits and decision-making mechanisms that could alleviate the underlying processes determining poverty and hunger. Dominant cultural norms lay the foundations for the existing gender gap in most societies where women are in a disadvantaged position. Because of this, reducing and eventually closing the gender gap requires the implementation of adequate measures and policies specifically designed to eliminate existing inequalities in all areas. The approach should not be confined to changing the elements of the existing legal system that permit differential treatment of women and men, but it should also include measures designed to address the direct causes of the gap, as well as aiming to change the cultural perceptions of deep-rooted unequal gender relationships.

The challenge of ensuring gender equality is not insurmountable but it is complex. Major constraints such as access to and ownership of land, access to and control of credit, illiteracy and insufficient access to markets, are deeply rooted in sociocultural norms (sometimes even legislation) and are difficult to change. They need to be addressed in a holistic and committed manner with dedicated political will and resources in the short term and long term.

The question in the 21st century remains: can FAO deliver on its mandate to assist policy-makers in achieving gender equality in agriculture? Learning from past

lessons and applying renewed commitment and resources, FAO as the key specialized agency for agriculture, can deliver on its promise.

Access to land

Land and natural resources provide a platform for livelihoods and a basis for social, cultural and religious practices. Pressure on these resources is increasing as new areas are cultivated, occupied by urban extension or abandoned because of degradation, climate change or violent conflict.

In light of such pressures, secure access to land and other natural resources has become even more important to the alleviation of hunger and rural poverty. Rural landlessness is often the best predictor of poverty and hunger: the poorest are usually landless or land-poor. Inadequate rights of access to land and other natural resources, and insecure tenure of those rights, often result in extreme poverty and hunger.

When participants at the World Summit on Food Security in 2009 called for improved access to, and secure tenure of, land and other natural resources, they reaffirmed the linkages between food security and land tenure that have been part of FAO's focus since the organization was founded, and particularly since the 1966 World Land Reform Conference.

■ Governance of land tenure

While weak governance of land tenure and other natural resources hinders economic growth and sustainable use of the environment, responsible governance can help reduce hunger and poverty and support social and economic development. Weak governance has the most severe impact on the livelihoods and survival of people in developing countries and is not specific to country, region or development level. The FAO-supported Global Corruption Barometer 2009 of Transparency International highlighted the fact that corruption in land issues is commonplace throughout the world (Transparency International, 2009).

The rapid development of contemporary geospatial technologies, such as satellite imagery, aerial photography, global navigation satellite systems, hand-held computers and geographic information systems, has created unprecedented opportunities to use geographic information in support of good governance. FAO promotes technical and other forms of cross-border cooperation in establishing infrastructure for spatial information compatible and usable in a national and transboundary context.

Responding to widespread interest, in 2009 FAO embarked with global partners on the development of the *Voluntary Guidelines on Responsible Governance of Tenure of Land and Other Natural Resources* (FAO, 2011e), an initiative which builds on normative work that started in 2005. FAO is also working with IFAD, the World Bank and UNCTAD on *Principles for Responsible Agricultural Investment that Respect*

BOX 21**Land redistribution project in the Philippines**

FAO has supported the Philippine Government's Comprehensive Agrarian Reform Programme (CARP) through technical assistance targeted at agrarian reform communities, which are clusters of villages (*barangays*) where 60 per cent or more of the population have received land through the land reform programme.

FAO focus has been on raising agricultural productivity by:

- supporting farmer-led development teams within agrarian reform communities to identify problems, needs and priorities and to incorporate these in community development plans, all carried out in a participatory and holistic way through the farming systems development approach;
- training in a variety of areas, including farm and non-farm activities, accounting and book-keeping, and gender issues;
- promoting the establishment of linkages between agrarian reform beneficiaries and agribusiness in order to provide the former with market outlets;
- facilitating access to credit by fostering matches between agrarian reform beneficiaries and financing institutions.

Rights, Livelihoods and Resources. These two initiatives address different but inter-linked issues, and they will be complementary and refer to each other.

Improving access to land through redistribution

Although the number of major land reform programmes has decreased since the 1979 World Conference on Agrarian Reform and Rural Development, redistributive land reform remains an important instrument to provide land to the poor. Such redistribution is of particular importance in countries where much of the land is possessed by a relatively small number of landowners, and where the land is idle or underutilized. Land reform interventions require much more than the redistribution of land, and beneficiaries must be provided with institutional inputs, such as credit and marketing, and physical infrastructure, such as road networks and irrigation. Land for the beneficiaries of reforms is usually acquired from private landowners but, in some countries, state-owned land has also been used. Box 21 describes an example of FAO's work in this area.

Improving access to land through leasing

For many of the poor who have little or no land or capital, leasing offers a way to gain access to land. The promotion of family-owned farms has not necessarily led to the demise of leasing arrangements and, even though some governments have

made an effort stop it, leasing continues to be significant. In reaction to such government efforts, many leasing arrangements have become “informal”, meaning they no longer have any legal protection. In addition to providing benefits to poor farmers, equitable leasing arrangements also provide some landowners, particularly the elderly and infirm who can no longer work their land, with an opportunity to have an income.

Improving access to land in emergencies

Some of the most drastic effects of natural disasters on peoples’ livelihoods relate to disruption of land tenure systems and property loss. If people leave their land as a result of a natural disaster in an area where property rights are unclear, land grabbing and abusive building practices can take place, especially where there are no suitable norms or where norms are not enforced.

In countries emerging from violent conflicts, the provision of land to refugees and internally displaced persons (IDPs), and sometimes to members of militias involved in the conflicts, is an essential part of establishing lasting peace. To be sustainable, disaster risk management strategies must address the rights of resident communities as well as refugees and IDPs. Access to land by refugees and IDPs should be understood in the context of achieving tenure security of customary rights for resident communities while also taking into consideration gender issues.

Improving access to land for pastoralists

The expansion of agriculture into arid or semi-arid areas has placed pastoral rights of access under threat. At times, policies promoting commercial ranching or cultivation have failed to recognize that the variability of rainfall in arid and semi-arid areas requires pastoralists to have access to extensive rangelands. Removal of some lands traditionally used for pastoralist production for commercial ranching restricts the mobility of pastoralists. As a result, there is an overconcentration of pastoral livestock in those rangelands still accessible to the pastoralists, which can give rise to conflict.

Improving tenure security of privately held land

An important aspect of providing tenure security is preventing the arbitrary loss of land rights. Countries retain powers of compulsory acquisition in order to enable governments to acquire land for specific purposes, but these powers are not always well exercised. FAO has prepared the guidelines “Compulsory acquisition of land and compensation” to assist governments in acquiring land in ways that balance public needs with the protection of private property rights (FAO, 2008f).

Rights to land can be made more secure through appropriate and effective land administration. Increasingly, the establishment of land registration and cadastre systems is being included in programmes to improve the security of access to land. In such programmes, it is important to give due attention to the interests of the poor and vulnerable, particularly women and indigenous peoples. To support countries, FAO has prepared a series of land tenure studies that include guidelines

BOX 22**Land consolidation in Eastern Europe**

FAO and its partners are conducting a multi-year programme to assist transition countries in Central, Eastern and Southeastern Europe in developing responses to their specific problems of fragmentation and adverse rural conditions. The resulting development of expertise has had a catalytic effect and has expanded and strengthened other initiatives, including Future Approaches to Land Development (FARLAND), supported by the European Union. Based on the outcomes of earlier workshops, which identified the need for information on how to start land consolidation activities in a country, FAO prepared guidelines on the design and operation of land consolidation pilot projects, a technical manual for project managers and training materials on pilot project implementation.

Workshops and guidelines have allowed countries in the region to initiate activities in land consolidation. FAO has supported Armenia, Hungary, Lithuania, Serbia, Albania and Bosnia and Herzegovina in the introduction of land consolidation activities. FAO is promoting the development of the *Voluntary Guidelines on Responsible Governance of Tenure of Land and other Natural Resources* throughout the region and has begun related activities with the Russian Federation and countries in Central Asia.

on how gender matters should be addressed in land titling projects. New guidelines are under preparation on how to deal with gender dimensions in territorial development (FAO, 2002; World Bank, FAO and IFAD, 2009; Groppo and Sisto, 2009-2010).

Land registration systems commonly fail to secure the land tenure rights of the poor and the vulnerable. Weak governance as well as technical and institutional shortcomings reinforce the failures. The introduction of information technology has made rapid improvements in transparency possible by providing electronic access to records, and also has reduced discrimination through standardizing services and fee structures for electronic accounts. FAO initiated work in 2007 to assist member countries in improving tenure security through quick improvements in transparency and equity of governance by introducing affordable IT systems.

In Africa, most land is held under customary tenure even though it is formally owned by the state. FAO has worked on the recognition of customary tenure in formal, statutory law and has supported the formal delimitation and registration of community lands.

Improving farming structures through land consolidation

When farms are fragmented into parcels that are distant from where owners live, are not easily accessible, or are inappropriately shaped for agricultural purposes, it becomes difficult for farmers to implement new competitive production arrangements and to

BOX 23**Learning from interventions in land use**

Following are some of the lessons learned from, or emphasized by, FAO interventions:

- Good governance and the rule of law are closely correlated with the successful implementation of processes to improve access to land, which requires non-biased macroeconomic policies.
- Reforms that aim to improve access only to land are not enough. They need to be coupled with provision of support services for beneficiaries, including access to capital, services and markets.
- Reforms are more likely to succeed when beneficiaries have experience in managing the land. Otherwise, knowledge and skills related to the technology and production systems used by successful local farmers need to be transferred to the new beneficiaries.
- Keeping a rational system of individual economic incentives is crucial. When incentives benefit individual families, the response to change is usually quick and highly dynamic.
- Reform of land rights and administration are best dealt with through long-term engagement that allows participatory policy-making and legislative processes; through continuing support in the implementation of new land laws, including training of officials and the judiciary; and support for the legal empowerment of the poor.
- Ensuring fairness between parties is essential to avoid conflicts and potential negative impacts. This includes addressing the rights of IDPs and the local communities in which they will be settled.
- Social capital formation through the participation of local communities and beneficiaries is important.
- Appropriate capacity for the administration of processes to improve access to land is crucial.
- Gender analysis and objectives should be explicitly included in programmes from the outset to ensure meaningful and equal participation of women and men.

use machinery and appropriate technologies. Land consolidation can enable farmers to acquire farms with fewer, but larger and better-shaped parcels. This also may enable them to expand the size of their holdings if state land reserves are available or if neighbours choose to exit farming. Box 22 gives an example of FAO's work in this area.

■ Changing context of access to land

The issues surrounding access to land continue to change in parallel with changing dynamics in the agriculture sector. In addition to improving access to land, FAO

also addresses areas such as recognition of indigenous people's rights to land and other natural resources, reflecting the generally collective character of indigenous rights. In addition, FAO has undertaken significant work in the context of:

- international private investments in agriculture, namely the purchase or lease of large areas of farmland for the production of food, biofuel, livestock and other products;
- mitigation of climate change, because tenure reforms, including the legal recognition of customary rights, are necessary to ensure that local communities, who are the *de facto* managers of forest lands, are able to benefit from payments under the REDD+ climate change programme (discussed in Chapter 3);
- creation of sustainable, local sources of revenue through property taxation, resulting from policies of decentralization of responsibilities for providing services from central government to local levels of government.

Equitable access requires political commitment

Efforts to provide more equitable access to land usually involve a complex process addressing a multitude of ethical, political, social and economic objectives. The complexity of such processes precludes a simple evaluation of success or failure. Yet, it is evident that FAO's interventions to improve access to land have made a positive difference in the lives of people around the world. Although the conditions vary widely, the interventions have in common that they help improve household food security and provide an asset to reduce poverty. Of course, the problems related to access to land remain, and they are often those faced several decades ago. However, the answers to those problems have changed in accordance with changing social priorities.

Improving access to land requires strong political will and commitment by government institutions at all levels, as well as political, institutional and technical support from civil society organizations. Land policy reforms, including principles of gender equity, have to be embedded in comprehensive policy and institutional reforms to ensure the harmonization of all provisions, especially in countries where legal pluralism is practised. A legal framework for the clarification and regularization of individual rights and of common property resources is necessary to ensure tenure security and to favour investment.

Engagement with civil society

The summit process that began in the 1990s was only one aspect of the new policy of outreach that FAO deemed necessary to support the battle against hunger in the world. Freeing millions of people from lives of poverty and malnutrition is too great a task for governments alone. The direct contact between high-level politicians and their counterparts during summits and other intergovernmental meetings can be very useful but, subsequently, it can still be difficult to marshal the required support for FAO's strategic objectives.

Civil society organizations (CSOs) have long been among FAO's principal partners outside government. Since the 1980s, CSOs have grown progressively in size, scope, number and geographical distribution. Step by step, they have acquired major local, national, regional and international impact to a degree that the world's institutional actors, FAO included, make concerted efforts to engage with them. The United Nations summits of the 1990s – including the Rio de Janeiro Earth Summit in 1992 and the Rome World Food Summit in 1996 – were instrumental in paving the way for the large-scale participation of CSOs, raising their influence in global governance to unprecedented levels.

The role of CSOs in advocacy, communication, policy formulation and field operations has become an essential component in all attempts to achieve sustainable development and food security. The three world food summits of 1974, 1996, 2002 and the High-Level Conference on Food Security in 2008 were attended by thousands of representatives from civil society and NGOs. They participated actively and dynamically and made major contributions to policy debates and dialogues and to the negotiated outcome documents of member governments. It is safe to say that, to date, a range of institutionalized spaces for policy dialogue have been put in place within the different bodies responsible for summit follow-up and monitoring that enable CSOs to participate in great numbers and to influence decisions taken by member governments.

■ Strengthening the CSO partnership

Over the decades, CSOs have come to recognize FAO for the catalytic role it has played in stewarding the policy outcomes of all the summits into concrete processes, mechanisms and programmes that are now embedded within FAO's activities. They have increasingly come to view FAO as a trusted, neutral broker in the field of food and agriculture.

FAO's ability to combine technical expertise with policy application has facilitated the establishment of partnerships between governments and civil society. FAO



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PHOTO 15

Inhabitants of Kibezi camp for internally displaced persons, sustained by FAO and the NGO "Sauvons les Orphelins", work in the communal potato patch.

provides technical assistance in implementing global conventions, regulatory frameworks and voluntary guidelines and, in turn, gives CSOs and NGOs access to the technical data, information and knowledge, enabling them to build good working relationships at the field level and to produce their own information.

On FAO's part, there has been growing realization that interaction with the world of civil society provides an effective tool for both making policy and implementing it. CSOs, NGOs and their partners often give a voice to those most affected by hunger, malnutrition and poverty. This is particularly true when it comes to emergency interventions, especially in complex humanitarian disasters where governments do not have the immediate capacity to provide vulnerable populations with adequate services or inputs for food production, nutrition and food security.

The overall result of the FAO-civil society dialogue has been increasingly vibrant, and often indispensable, discussions between governments and non-state actors on policies and programmes, monitoring and implementation, as well as resource allocation. This first became apparent in the mid-1990s during debates on matters as important and varied as the Code of Conduct for Responsible Fisheries (1995), the Code of Conduct on the Distribution and Use of Pesticides (2002), the International Treaty on Plant Genetic Resources for Food and Agriculture (2001) and the Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security (2004).

Full partners for the new millennium

Committee on World Food Security. During 2008–2009, CSOs and NGOs directly contributed to the reform of the global governance of agriculture in the CFS, participating actively in the contact group in charge of negotiating the new vision, role and procedures for the Committee. Today, CSOs and NGOs occupy four of the 13 seats in the Advisory Group to the CFS Bureau. Following the Committee's endorsement of civil society's collective proposal for an international food security and nutrition civil society mechanism, the 36th Session of the CFS invited CSOs and NGOs to participate fully in the proceedings, taking roles in both plenary debates and negotiations which ensured them full visibility and effectiveness.

The mechanism promotes ambitious people-centred participation with equitable geographic representation, including constituencies of smallholder family farmers, artisanal fishers, herders and pastoralists, the landless, the urban poor, agricultural and food workers, women, youth, consumers, indigenous peoples and NGOs. It can be expected to further heighten CSO/NGO participation in key policy areas (such as land, water, gender, the right to food, climate change and biosafety) in the FAO regional conferences and in national food security and nutrition fora and platforms.

Special Programme for Food Security. FAO's Special Programme for Food Security (SPFS) also offers opportunities for FAO and NGOs to exchange experiences in field work and bring constraints perceived by local farmers and civil society groups to the attention of policy-makers at various levels. In some countries, farmers'

organizations have been involved in the initial identification and planning phases. The facilitating role played by FAO in the development community related to food security enables civil society to build intersectoral and knowledge-sharing networks on food security and nutrition. The SPFS is discussed in detail in Chapter 6.

Farmers' organizations

FAO has a long history of partnering with farmers' organizations. One of its oldest NGO partners is the International Federation of Agricultural Producers (IFAP). Founded in 1946, IFAP recently reconstituted itself and is now called the World Rural Forum, representing more than 600 million farm families grouped in 110 national organizations in 75 countries. It is a global network in which farmers from industrialized and developing countries can exchange concerns and set common priorities.

FAO also partners with the International Planning Committee for Food Sovereignty (IPC), a global network of NGOs and CSOs promoting food sovereignty. IPC includes social organizations representing small farmers, fishers, indigenous peoples, the urban poor and agricultural workers' trade unions. Many of these civil society actors remain engaged in global networking established during the NGO Forum held in parallel with the World Food Summit in 1996.

FAO's success in bringing the theme of agrarian and land reform back to the international agenda also cemented positive relationships with the CSO population. In March 2006, FAO convened the International Conference on Agrarian Reform and Rural Development (ICARRD) in Porto Alegre, Brazil, where civil society organized well-attended parallel fora and greatly influenced the outcome document of the conference. The *Voluntary Guidelines on Responsible Governance of Tenure of Land and Other Natural Resources* (discussed in Chapter 4) constitute the follow-up to this event.

Social movements

The position of social movements on the conflict between trade liberalization and food security is often apparent in global debates. At the same time, FAO's member countries enjoy a constructive and frank dialogue with social movements in which the latter increasingly consider FAO a significant partner in the UN system, where consensus is achieved through the "one country one vote" system – a characteristic that sets it apart from multilateral economic and financing institutions such as the World Bank and WTO.

Public outreach

Communication is crucial to FAO's role as a knowledge-based, information-sharing organization. It also is at the heart of FAO's mission to rally support for a world without hunger and lobby for more investment in agriculture. Climate change, the soaring cost of food commodities, debate over biofuels, anxiety about food security and zoonotic animal diseases such as swine flu, have brought food and agriculture

into the public eye. This attention also has given FAO a huge opportunity – and responsibility – to frame the debate on these issues.

■ Information dissemination and media relations

Public information outreach to the media is considered one of the core functions of the organization. FAO is seen as a trusted source of information by national governments and technical experts in agriculture and rural development, NGOs and civil society organizations, but also by the news media, whose standards for reliable information are highly demanding. Sharing information and communicating knowledge are inherent in FAO's work, but at the same time, positioning FAO as a key player in international affairs and development debates, maintaining FAO's visibility and media profile, and promoting FAO's virtues and strengths are also crucial corporate activities. Today's public information audiences range from mass media journalists in the developed and developing world to specialist media to the growing number of world citizens who now use social media and other new channels to work for positive social change.

■ Awareness-raising and fund-raising campaigns

World Food Day (WFD) is held annually on the 16 October anniversary of FAO's founding, each year with a different theme selected to focus global attention of specific aspects of FAO's work in reducing hunger. For example, FAO celebrated its 50th anniversary in 1995 with the theme "Food for All". In 1999, the theme "Youth against Hunger" highlighted the issues of rural youth, promoting public awareness of their role in the global fight against hunger; in 2000 FAO observed the turn of the millennium with the WFD theme "A Millennium Free from Hunger"; and after the World Food Summit: *five years later* (in 2002), it used the WFD theme to promote the "International Alliance against Hunger".

BOX 24

FAO media outreach well received

In 2010 alone, FAO and its efforts to stem world hunger were featured in thousands of newspaper articles, television and radio broadcasts, and online features by news organizations from around the globe, including major international outlets such as Al Jazeera, BBC, CNN, *El País*, *Le Monde*, *The Economist*, *the Financial Times* and *The New York Times*. To help project FAO's messages, FAO issued more than 150 news releases in the Organization's six official languages via the online FAO media centre, and FAO experts gave 500 interviews to the media.

In 2008, when FAO hosted the High-Level Conference on the Challenges of Climate Change and Biofuels, it was carried through as the theme for World Food Day. That was also the year in which the estimated number of hungry people in the world exceeded 1 billion.

It was in this context that Director-General Jacques Diouf launched the *1billionhungry* campaign with a hunger strike that he organized and in which he personally participated. The campaign tallied almost 3.5 million signatures to a global petition calling for political support in the effort to end hunger. In May 2010, the *1billionhungry* project was re-launched and woven into the framework and activities of the October 2010 World Food Day, under the theme “United against Hunger”.

The impact of WFD is felt at country level, with countries carrying out observances and events related to the annual theme. FAO decentralized offices collaborate with partner agencies and other sponsors and arrange field demonstrations, site visits, television talk shows, radio broadcasts, school competitions, cultural and sports events to mark the day.

The TeleFood Programme was launched by FAO in 1997 to increase public awareness of global hunger and of the need for action, and to raise money from the public in order to sustain the momentum created by the 1996 World Food Summit.

Through the staging of events, which at the outset were televised, FAO sought to create a constituency to change public opinion and to attract input and support from civil society. Events were designed to raise awareness of the problem of hunger and to provide a mechanism to collect funds directly from the public, which was quite a novelty for a UN technical agency at the time. The collected funds went entirely to finance small projects. None of the funds collected covered FAO administrative costs.

For the most part, TeleFood projects were simple grassroots micro-projects in developing and transition countries, designed to provide sustainable solutions for hunger and poverty by helping families and poor communities produce their own food and generate income. For example, projects set up school gardens and farms

BOX 25

Spain TeleFood events net fans and funds

The most successful long-term TeleFood event, the Spanish “GalaFao” telethon, raised more than US\$15 million. Thanks to the political and cultural situation in Spain in the mid-1990s, and the willingness of Spain’s telecommunication companies to be involved, GalaFao succeeded in keeping the Spanish public informed about FAO’s campaign against hunger while collecting money for small-scale income-generating projects with which Spanish people could identify.

The final edition of GalaFao, on 8 November 2008, attracted some 19 million television viewers, and more than half a million text messages and

34 000 phone calls pledging donations. The live event featured actors, singers, presenters and sports celebrities whose earlier on-site visits to FAO projects in Egypt, Mauritania, Guatemala and Ethiopia were broadcast during the show, helping viewers see exactly how their money had been spent and encouraging them to donate even more. A record US\$3 million was raised during the eight-hour broadcast.

Football teams join fight against hunger

In October 2007, FAO and the Spanish Football League organized an awareness and fundraising campaign named *The Football League with FAO against Hunger*. Launched on that year's World Food Day by Real Madrid Captain Raúl González, an FAO Goodwill Ambassador, it was celebrated in all the stadiums of the first division of the Spanish BBVA football league, with a contest among the league's 42 teams involving text message donations to each team's microproject against hunger.

The success of this event had important repercussions for FAO, when the Spanish football league proposed broadening the initiative to the Association of European Professional Football Leagues (EPFL), which comprises 28 European leagues and more than 900 individual clubs. In 2008, FAO and EPFL signed a cooperation agreement, and that same year similar pacts were concluded with the Confederation of African Football and the South American Football Confederation, thus beginning an important new phase in communications outreach that included further agreements with the Asian Football Confederation, the Fédération Française de Football and the European Commission's Humanitarian Aid Department.

The *Professional Football against Hunger* solidarity campaign was launched in October 2008, to use the emotional power of football as a communication tool to involve European society in the fight against hunger. The first two editions of the *European Match Day against Hunger* were celebrated in March 2009 and October 2010, with the players of 314 professional football clubs pouring out onto the fields of 157 stadiums in 14 countries across Europe, blowing yellow whistles associated with the FAO *1billionhungry* campaign or wearing the campaigns' white and yellow T-shirts. Other football-based events supporting the fight against hunger have been created in Chile, France, Brazil and Angola.

where students could learn how to grow their own crops and breed livestock, at the same time ensuring the availability of healthy school meals prepared with the food they themselves produced. Whenever relevant, projects were closely linked to other ongoing development or rehabilitation activities in the beneficiary countries.

Since its launch, some 130 countries have been involved in TeleFood awareness and fundraising activities, which are often timed to coincide with World Food Day

ceremonies but which are increasingly part of an overall communications programme that stages events wherever and whenever a successful attempt to capture public attention can be made. TeleFood projects have been shown to have a real and positive impact on the life of the beneficiary populations and have proved to be a useful and powerful tool to advocate for the need to fight against hunger and poverty at the community level.

The FAO Goodwill Ambassadors Programme, initiated in 1999, has given additional impetus to TeleFood and other advocacy campaigns and initiatives by involving personalities of global stature in both funding appeals and visits to FAO field projects, thereby promoting FAO's specific activities and outreach. By helping to mobilize resources within fundraising projects, the celebrities who work with FAO send a clear message to broad audiences worldwide: food security is an urgent priority.

BOX 26**Global personalities accept FAO Ambassador role**

The ambassadors have proved to be highly effective in spreading FAO's message to a larger audience than otherwise would be reached. For example, two FAO goodwill ambassadors, Italian football player Roberto Baggio and American Olympic champion Carl Lewis, promoted the FAO–EPFL partnership. Among other celebrities who have been enrolled and helped promote FAO's messages over the years are the late South African singer Miriam Makeba, Italian Nobel prize winner Rita Levi Montalcini, and actress Gina Lollobrigida, New Zealand athlete Beatrice Faumuina, American singers Dee Dee Bridgewater and Dionne Warwick, Mali songstress Oumou Sangaré, Lebanese singer Magida Al Roumi, American Oscar winner Susan Sarandon, Cuban musician Chucho Valdés, Philippine singer and actress Lea Salonga, Mexican rock group Maná, Irish singer Ronan Keating, French stylist Pierre Cardin, Canadian singer Céline Dion and football stars Patrick Vieira and Raúl González.

These envoys support FAO's work by enhancing the visibility of the global fight against hunger and malnutrition, and mobilizing political opinion in support of FAO's objectives. Similarly, they have proved selflessly devoted to attempts to draw public and media attention to emergency or post-emergency issues such as the 2004 Indian Ocean tsunami, the 2008 Chinese earthquake, and the 2010 Haiti earthquake. With their outreach growing through social media and other Internet tools, they also have provided extensive support to the *1billionhungry* campaign and several have been asked to join United Nations Goodwill Ambassadors, to serve as MDG Champions and Messengers of Peace.

The power of knowledge

Strengthening the knowledge and capacities of individuals is central to fortifying national capacities, but this cannot happen in a vacuum. The organizations and individuals involved also must have the ability to absorb and maintain their new knowledge and capacity and also to anticipate emerging needs.

That is why capacity development addresses three interlinked dimensions: i) improving the knowledge, skills, behaviour and attitudes of individuals; ii) modifying the mandates, priorities, processes and structures of public, private and civil society organizations; and iii) strengthening political will, policy framework and other elements to provide an overall environment that enables capacities to be enhanced and sustained. Meaningful change is achieved when all three dimensions are targeted in an integrated way and interventions are sustained over time, for as long as five to ten years.

■ Increased focus on capacity development

The Paris Declaration on Aid Effectiveness, endorsed in 2005 at a meeting hosted by the French government and organized by the OECD, and the follow-up Accra Agenda for Action, drawn up in 2008, heightened expectations for developing countries to formulate and implement their own development plans, and for donor resources to be more closely tied to results. This has required increasing the capacity of national and regional actors to plan, prioritize and implement programmes. In parallel, capacity development has been given even greater focus by FAO and the international development community since 2005. FAO considers capacity development a “core function”, closely related to knowledge and information sharing, and thus factors capacity development goals into the strategies, programmes and work plans of its technical departments, including decentralized offices.

FAO’s renewed approach to capacity development embraces an important principle: activities must be country-driven and consistent with the member countries’ priorities. Furthermore, it does not seek to “infuse” capacity from the outside but rather facilitates a process of change through which countries enhance their abilities from within. Capacity is developed in partnership, with FAO, its member countries and other key players working together in ways that harness the comparative advantages of each. All this is reflected in FAO’s Corporate Strategy for Capacity Development, finalized in 2010, which was developed through consultation with members and all FAO units worldwide. The strategy incorporates the major findings of the 2010 Evaluation of FAO’s Activities on Capacity Development in Africa. This new corporate approach to capacity development enables FAO to learn from its collective efforts and then provide member countries with support that represents a consensus of the entire organization.

■ Revolutionizing impact of Internet

The advent of the Internet in the mid-1990s had a profound impact on FAO as a knowledge organization, enabling it to increase the efficiency and outreach of knowledge-based services on an unprecedented and massive scale. Previously, obtaining access to an FAO technical document or to a set of agricultural statistics could take days, if not weeks. Today, with Internet and FAO's online virtual libraries and up-to-date statistical databases, searches and queries can run directly through the FAO Web site facilities.

The Internet has also revolutionized FAO's outreach. It is hardly surprising that over the past 15 years, the FAO Web site has become FAO's primary mechanism for disseminating multilingual technical information, data and knowledge to all its member countries. The site received 774 000 user visits in 1997, 5.5 million in 2000 and 28 million in 2005, with more than 43 million user visits projected for 2011.

FAO's online document repository is an important function of the Web site, providing access to more than 36 000 publications. Progress has been made in the language balance of information and publications disseminated by FAO, with the Web site and the document repository allowing for coverage in Arabic, Chinese English, French, Russian and Spanish as well as non-official languages for selected works.

Tapping and sharing tacit knowledge

While FAO has invested significant resources in improving online access to explicit knowledge that can be expressed in documents or in databases, this is only one aspect of FAO's work as a knowledge organization. Today, FAO devotes increasing attention to improving access to and sharing of tacit knowledge, meaning the knowledge, expertise, experience and best practices, particularly from the field, which are "trapped" within the heads of experts or confined to a small circle of individuals. In 2009, the Rome-based agencies (FAO, IFAD, WFP and Bioversity



PHOTO 16

Users can run their own queries using FAO's online statistical and geospatial databases.

International) as well as the knowledge management programme of the Consultative Group on International Agricultural Research (CGIAR), organized an innovative knowledge “Share Fair” to enable staff members to showcase their experience and learn new ways for sharing knowledge and improve access to it. The 1 000 participants who attended were able to share and learn from each other’s good practices; experiment with various tools and methodologies for knowledge sharing, including blogs and wikis; and create links and networks for future collaboration between and within the organizations. Since then, more than 2 270 people have attended eight share fairs around the world in locations including the Niger, Colombia, Mexico and Ethiopia.

Social media

Supporting knowledge exchange. Knowledge management is fully mainstreamed into FAO’s work. Social media are proving to be useful tools for FAO’s technical work. For example, FAO supports the global e-Agriculture Community of Practice which has more than 7 000 members from 200 countries who focus on improving the use of ICTs in rural and agricultural development. Community members use the interactive community Web site developed by FAO and social media to facilitate information exchange and online conversation.

The Community’s Twitter account, which has more than 2 500 followers, is its most frequently used social media channel. Its “tweets” have been picked up by a wide range of interested people, including university students, other UN agency staff and news correspondents. Twitter also brings new information quickly to the community through conversations arising from other Twitter users. Through Facebook, the e-Agriculture Community shares selected news and information, increasing awareness of the larger set of materials available on www.e-agriculture.org. The community also benefits by learning from news and information shared by younger people who would not normally be exposed to the e-Agriculture Community.

Supporting advocacy. The emergence of social media radically changed the game for public information and corporate communication, not to mention for advocacy. FAO established its presence in several key networks starting with YouTube in late-2007, followed by Facebook, Twitter and Flickr at the start of 2009. These four are still the leading channels of engagement, but FAO is also involved in a number of newer networks including “giving” sites such as Jumo and Ammodo.

To take best advantage of social media while also mitigating risks, FAO has developed flexible policies for its departments and staff. The guiding principle is to help FAO benefit from social media tools while also protecting and enhancing its corporate public image. FAO publications, videos, databases, reports, news releases, photography and other multimedia assets are shared with both traditional media outlets and interested individuals, who increase in number every day.

The *1billionhungry* project advocacy campaign broke new ground for FAO communication in several senses, not least for its heavy reliance on social media. For the

campaign's 2010 season, *1billionhungry* project accounts were established on Twitter, Facebook, Flickr and YouTube, which enabled the campaign to welcome partners and partner content, but more importantly to attract a new, younger and less technical public. Still in evolution, the *1billionhungry* project demonstrates that social networks are powerful opportunities not only for sharing knowledge but also for building solidarity and influencing public opinion.

The significance of social networks to FAO's objective of a world without hunger cannot be overstated. Now more than ever, there is a growing awareness that it may be individual people who will ultimately make the difference and bring an end to hunger. Humanity may be nearing a tipping point, where a critical mass is no longer willing to accept the presence of chronic hunger, poverty and other gross inequities. The challenge for FAO in the near future will be to align its communication resources and approaches so as to find, inform, cultivate and energize that critical mass.

Facilitating access to scientific journals

To assist member countries' education and research institutes in accessing current technical and scientific knowledge, since 2003 FAO has worked with more than 60 commercial publishing houses to establish AGORA (Access to Global Online Research on Agriculture), an innovative Web-based portal that enables developing country users to access specialized journals at little or no cost. AGORA is part of the Research4Life initiative, in which a number of UN agencies, with different fields of specialization, are participating. The journal publishers rely on the UN agencies to regulate access to their content via authenticated Web portals or gateways. To date, more than 2 500 institutions from the public domain and civil society of 107 countries have registered for AGORA.

■ Supporting knowledge sharing

In addition to producing and disseminating knowledge and statistics, FAO will strive to facilitate access to knowledge wherever it may reside, with special attention to making knowledge freely available, especially for the LDCs. In this emerging role, FAO will become a strategic reference point to improve connections between those who have access to knowledge and those who need it. This will be done through a variety of means, such as capacity development in knowledge-sharing approaches and the strengthening of thematic knowledge networks.

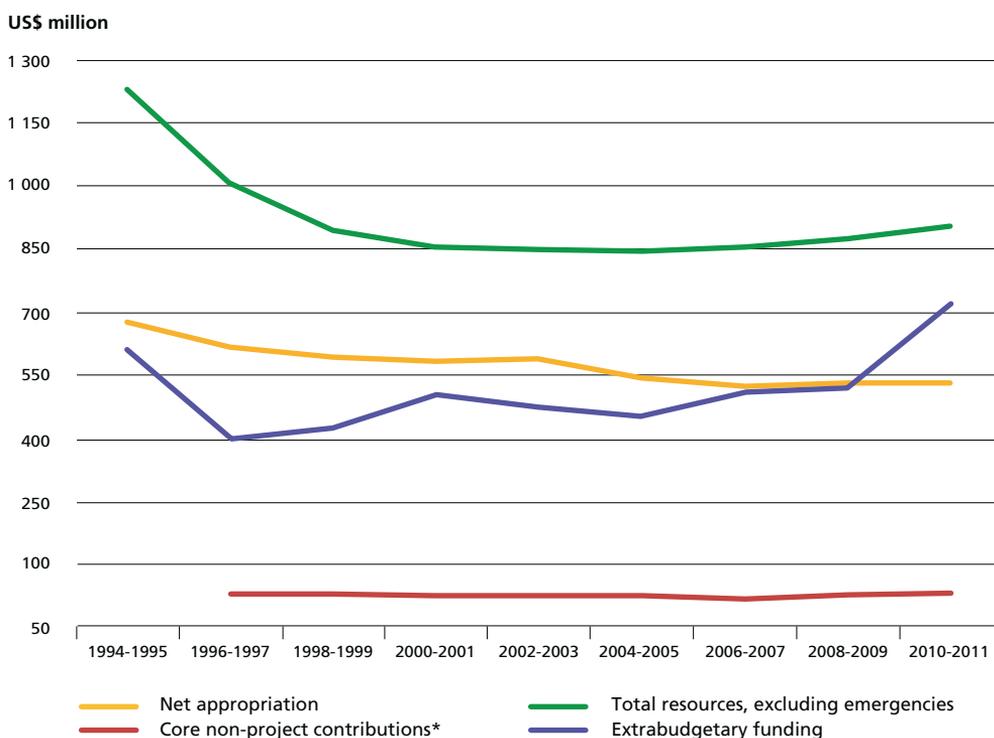
Achieving a level playing field between developing countries and the developed world requires significant investment and adjustments to the world trading system. However, it also requires equal access to vital knowledge and information, an area in which FAO can make a major contribution. This rapid development of ICTs suggests that more and more farmers, pastoralists, fishers, foresters as well as researchers and other practitioners in developing countries will be able to access that information and knowledge at a relatively affordable cost.

Strategic development and organizational reforms

From 1994 to 2010–2011, the resources of FAO's Regular Programme (funded through member countries' assessed contributions set at its biennial conference) declined by 21 percent, while the Organization's total amount of financial resources, including voluntary contributions but excluding emergency assistance) declined by 26 percent in real terms. During the same period, FAO has been consistent and vigorous in its efforts to use funds efficiently. It has achieved sustained efficiency savings of US\$111.9 million per annum by reducing spending on inputs and operating processes and through cost-recovery measures. Figure 24 shows the evolution since 1994 of the total resources available to FAO in real terms. Resources are broken down into the net appropriation (Regular Programme budget) approved every two years by the FAO Conference and additional extrabudgetary voluntary contributions from members and partners.

FIGURE 24

Trends in FAO resources since 1994 (in real terms)



* Called "Other income" before 2010.

Significant savings have come from a 30 percent reduction in staff members, from 5 560 in 1994 to 3 877, considering staffing under all sources of funds as of April 2011. Recognizing that staff is FAO's most important resource, in 2008 the Organization adopted a human resource strategy aimed at generating a favourable environment for attracting and motivating a top-level workforce. Staff members have also been moved to the field, putting them closer to project operations while lowering cost and allowing for a better response to the needs of countries.

In November 2009, the FAO Conference voted a Regular Programme budget of US\$1 billion for the 2010–2011 biennium, with additional voluntary contributions estimated at US\$1.2 million, to achieve a unified programme of work. This represented a slight increase in real resources at the disposal of the Organization, reflecting the magnitude of the challenges to be addressed in food and agriculture and the increased effectiveness of FAO through progressive reforms.

■ Reforms beginning in 1994

Following the appointment of a new Director-General on 1 January 1994, a significant series of reforms took place in the mid-1990s. This initial reform process was followed a decade later by a further set of reforms which, although complementary, were also in response to a period of severe budgetary stringency.

The first reforms involved a reappraisal of the Organization's priorities. There was a compelling need to refocus work to address food security concerns more incisively. The Special Programme for Food Security (SPFS) was launched (see detailed section on the SPFS in Chapter 6) and its scope was soon broadened from small-scale practical demonstrations designed to boost food production at the field level to encompass policy assistance in the formulation of comprehensive food security strategies at the national and regional levels. This consolidated the valuable work done by FAO in connection with major threats to crops and animal production systems, and the Organization's governing bodies accepted that this work should converge. The result was the launch of the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES).

In order to improve the coherence of FAO services to member countries, a key structural change was made at headquarters to group previously scattered units into a Technical Cooperation Department. This enabled a smooth transition, in subsequent periods, to reach the situation of largely decentralized responsibilities for project operations and policy services, which remains FAO's prevailing model. Finally, steps were taken, first to strengthen the five regional offices by positioning stronger multidisciplinary teams in them; and second to expand outreach to groups of countries not well served by these regional offices by establishing subregional offices. The scope of this essential innovation was restricted to five geographical areas, again owing to budgetary limitations.

Other changes to FAO's way of doing business included administrative streamlining and the introduction of new partnership modalities to procure expertise. Among the latter was the use of experts from developing countries to deliver tech-

nical assistance to other developing countries. This had the added advantage of much lower costs than using internationally recruited experts, thereby helping FAO to cope with the cap put on its regular budget imposed by the governing Conference.

Close to the end of decade, in November 1999, the Conference adopted a new blueprint for action: the *Strategic Framework for FAO: 2000–2015*, formulated by the secretariat and based on extensive consultations with member countries and a broad range of partners. This was the first time since the founding of FAO that the governing bodies and the secretariat were able to share a common vision around a limited number of focused, long-term objectives.

■ Reforms of 2005

A second set of reforms was proposed to the governing bodies in 2005. These were aimed at equipping the Organization to play an increasingly effective role in assisting its Members in specific areas of its mandate and in contributing to the broader effort by the UN system to achieve all the MDGs. The Organization's programmes were redefined to reflect more accurately the three major thrusts of its work in the areas of sustainable food and agricultural systems; knowledge exchange, policy and advocacy; and decentralization, UN cooperation and programme delivery. More effective means of action were put in place, including the following:

- Organizational measures and new financial incentives to enhance multidisciplinary work in such key areas as knowledge management (giving a boost to major contributions by FAO to the advancement of rural and agricultural development in the world through the generation and dissemination of knowledge) and capacity building; or in relation to serious emerging challenges such as the implications of climate change on agriculture, fisheries and forestry, and bioenergy.
- More effective clustering of technical responsibilities in essential areas by placing them under the same roof: i) nutrition and consumer protection – concerns that were the object of much greater international attention – were more closely integrated with agriculture within a more inclusive “farm to table” approach; and ii) a dedicated department was set up to enable natural resource management and environmental issues to be handled in a holistic manner.
- A further, gradual expansion of subregional offices, staffed with specialists in disciplines that closely matched local requirements.
- A drastic reduction in the number of units and locations at which administrative actions were processed resulted in economies of scale as well as reduced overhead costs. This led to the creation of a shared services centre, based in Budapest, Hungary. The choice made it possible for FAO to benefit from favourable cost differentials, compared with the headquarters location in Rome. This major initiative in the administrative area was coupled with further delegations of authority to the decentralized offices.

- Reinforced monitoring, evaluation and oversight of all of FAO's programmes.

■ Independent external evaluation of 2006–2007

The first-ever independent external evaluation (IEE) of FAO in its 60-year history took place in the 2006–2007 period. Commissioned by the FAO Conference in November 2005, the evaluation was undertaken by a fully independent team of consultants from around the world. Findings and recommendations were submitted to the FAO Conference session held in November 2007.

The IEE sought to respond to four basic questions:

- What is the appropriate role for FAO in an international development architecture that is vastly different from 1945 when the Organization was founded?
- What are the needs of FAO's constituents and what are its comparative advantages? What is currently required to ensure the maximum relevance and effectiveness of FAO's normative and technical cooperation programmes?
- Are FAO's management and administrative practices and its organizational culture and structure sufficiently flexible and fit for modern times?
- Is the governance of the Organization exercising its dual roles of contributing to global governance and ensuring an effective and relevant FAO with the ownership of all members?

One of the most telling conclusions of the IEE was that: “the world needed FAO, but a reformed FAO to address the challenges our planet faces”. The authors confirmed that only FAO provided the global forum for food and agriculture and brought together the full range of technical disciplines to integrate the technical and policy response in addressing agriculture's challenges in the 21st century. However, while the evaluation underlined a number of issues that needed to be addressed urgently by both governing bodies and the secretariat, the authors stressed that this necessary renewal should be predicated on “Reform with Growth”, which requires both substantive reforms in the directions discussed in the evaluation and additional resources. The two must move hand-in-hand and neither would be possible without the other.

While the report of the IEE and the Director-General's management response was welcomed by the FAO Conference in 2007, much work remained to be done to translate its extensive findings and recommendations into an effective, operational programme of change. It established a Conference Committee, which worked intensively during 2008 to develop an Immediate Plan of Action for FAO Renewal (IPA), which was adopted by a special session of the Conference in November 2008. The implementation of the ambitious set of changes the IPA embodies, the most far-reaching ever attempted in a UN institution as large and complex as FAO, is taking place over the five years from 2009.

■ FAO renewal – an ongoing progress

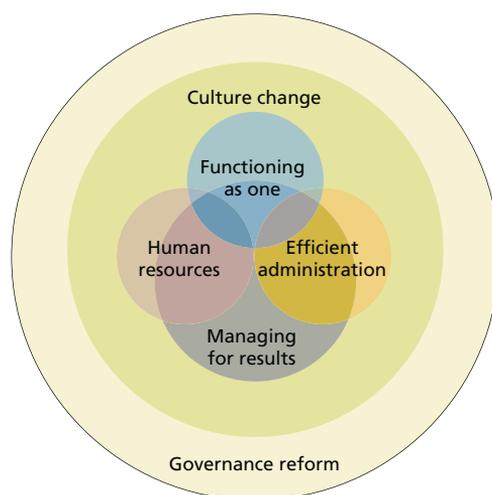
At the time of writing, significant progress has been made in the implementation of the IPA and starting to realize the benefit from the reforms, through which FAO will:

- direct all actions towards clearly defined outcomes for a world free from hunger and contribute to improving living standards in a sustainable manner, achieving this through improved governance to ensure clarity of members' needs and improved internal management practices to deliver against those needs;
- ensure that all its resources, at all geographic locations, work in synergy and in productive partnership with external partners to achieve the greatest impact;
- have a balanced and motivated workforce working in an enabling environment with the necessary knowledge and experience to deliver better against its mandate;
- benefit from support services that are client-oriented and streamlined and be able to provide timely and trusted financial and other resource information, in the most cost-efficient manner.

The high level framework of the IPA Programme (Figure 25) includes six thematic areas, each with its own set of major IPA actions and associated benefits. The completion of IPA actions in all thematic areas will deliver the overall FAO reform benefits.

FIGURE 25

Six thematic areas of FAO reform



BOX 27**Members define FAO's vision and global goals**

Vision

- A world free of hunger and malnutrition where food and agriculture contributes to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner.

Three global goals

- Reduction of the absolute number of people suffering from hunger, progressively ensuring a world in which all people at all times have sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.
- Elimination of poverty and the driving forward of economic and social progress for all, with increased food production, enhanced rural development and sustainable livelihoods.
- Sustainable management and utilization of natural resources, including land, water, air, climate and genetic resources, for the benefit of present and future generations.

Managing for results

The target benefit for managing for results is a clear and measurable impact of FAO's products and services on beneficiaries. In order to accomplish this benefit, FAO's work under all sources of funds must be systematically planned, implemented, measured and monitoring using results-based management principles. This requires successful completion of two elements: the clear articulation of members' objectives and, within this context, the design and delivery of measurable results with clear impact.

Starting in 2010, a new results-based framework was put in place to shape the design of all programmes as well as underlying processes for priority setting and resource management. The focus is no longer on what FAO does, but on the impact of its activities on constituents, both nationally and globally. The new Strategic Framework for FAO: 2010–2019 articulated the vision and the global goals sought by its members, to be implemented through a four-year Medium-Term Plan with indicators and targets for achievement, and a two-year programme of work and budget.

Functioning as one

The target benefit of functioning as one is that all the resources of the Organization at all geographic locations, and external partners, work in synergy and complementarity to achieve Organizational results within the results-based framework. To

deliver this Organizational benefit, FAO must have all its resources work in synergy across geographic boundaries with an improved balance between Headquarters and Decentralized Offices in delivering FAO services and across institutional borders, and by achieving an improved collaboration between FAO and partner organizations in delivery of Strategic Objectives, based on comparative advantage.

A new headquarters structure was put in place at the beginning of 2010, with a view to: ensuring manageable spans of control; consolidating units where feasible and reducing potential “silo” effects; and introducing flexible, delayed modalities at lower levels. The long sought-after fuller integration and representation of decentralized offices in senior management decision-making processes is now a reality. At the same time, FAO’s Regional Conferences have increased their participation in the decision-making process of the Organization. Through the delegation process, Regional Offices have improved the coherence of the decentralized offices network, strengthened their overall monitoring function and provide timely support to country offices. Technical Cooperation Programme (TCP) resources have been allocated to regions under the authority of the Regional Representatives – the TCP was introduced in the 1970s under FAO’s regular budget as a flexible, fast-response facility to meet urgent requests for assistance by countries.

Human resources

The target benefit for human resources reform is to ensure an enabled, effective and motivated workforce better able to deliver FAO’s mandate. Achieving benefits in this area means that FAO’s staff must be balanced in its demographics, nationality and gender, and its knowledge and experience must be broadened and targeted to achieve agreed organizational results. These benefits are being progressively realized through the corporate human resources strategic framework put in place in 2008.

Preparatory work is now complete with respect to improved demographic composition, through the work undertaken with the Junior Professional Programme, and actions taken to improve gender and geographic balance. There is an expected benefit of rejuvenation of FAO’s workforce over time by recruiting younger professionals from non-represented and underrepresented developing countries, by prioritizing the correction of gender imbalances and by focusing on the needs of decentralized offices – especially at the country level. The initiatives on gender balance are achieving concrete results.

FAO will improve its staffing capacity in knowledge and experience through progressive increases in resources allocated to staff training, especially management training. This training will be reinforced by the completion of the competency framework and improved recruitment procedures as well as by introducing robust performance management processes and systems and increasing staff mobility between different offices and functions of FAO. The introduction of a Performance Evaluation Management System (PEMS) in 2010 has supported the objective of improving accountability and performance across FAO, and PEMS implementation represents a concrete change in the way the Organization works because, for

the first time, staff are linking objectives of their daily work to those of the Organization.

Administrative efficiency

The target benefit of efficient administration is better delivery of FAO technical services through client-oriented and streamlined administrative processes, improved value and relevance of financial and other resource information, and innovative administrative service delivery options. To deliver this organizational benefit, it is necessary to focus on three areas: i) efficient administrative processes need to be obtained through an improved alignment of administrative services with the support required for more effective delivery of technical services; ii) administrative information must ensure an improved availability and scope of financial and other resource-based information; and iii) service delivery options must introduce innovative mechanisms that result in more efficient administration services.

This area of reform brings together the largest and most complex projects. These projects are well under way, and efficiency benefits will begin to be delivered in a significant manner during 2012 and 2013. Benefits already achieved under this thematic area include efficiency savings and standardization across the Rome-based agencies resulting from the successful tendering activities by the Common Procurement Team. Furthermore, improved focus on streamlined and customer-focused administrative services is provided by the Business Improvement Unit. Improvements in management information systems and telecommunications, particularly in human resources and financial reporting, have brought managers in decentralized offices as well as headquarters a wide variety of much-improved financial and human resources information.

Culture change

The target benefit in the area of culture change comes from creating an enabling, inclusive work environment which allows the Organization to optimize the talents of its employees and accomplish its mandate more effectively. This is an ongoing process with tangible benefits now being realized. Evidence that culture change is occurring is can be seen through the proliferation of local culture change teams and a significant increase in departmental and cross-departmental knowledge sharing. Through these new mechanisms, employees have opportunities to voice ideas, opinions and influence change in their locality, leading to more participatory decision-making processes at various levels as well as a dynamic working environment.

Governance reform

The target benefit of governance reform and oversight is to provide the strengthened governance framework required by the FAO reform process in order to be fully successful. The governing body reform will result in a more inclusive, open and trusting system of member governance and will ensure that the internal governance

provides a more effective oversight, including learning and accountability through evaluation, to enhance overall performance and improve management of resources. Benefits have already been achieved under several of the IPA actions affecting this area, as a more open and transparent governance process has been achieved through the presence of silent observers at sessions of the Finance and Programme Committees and the Committee on Constitutional and Legal Matters (CCLM).

Conclusion

FAO's programmes and activities to eradicate world hunger have evolved over time in response to countries' needs as well as the challenges faced by the Organization and its members and partners. Policy advice, one of FAO's most critical functions, has evolved accordingly. In addition to developments introduced with a series of organizational reforms carried out since 1994, the more recent global food, fuel and financial crisis awakened FAO to the need to increase its policy support to member countries in order to ensure that they had policies in place to accommodate new challenges.

In addition to supporting countries in their policy formulation, FAO also has focused on increasing public awareness of hunger issues, thus encouraging the world's citizens to keep pressure on developed and developing countries to establish and fund the policies and actions needed to support the agriculture sector.

This has included the following:

- supporting gender-sensitive policies aimed at achieving gender equality by illustrating constraints faced by rural women and action needed to close the gender gap;
- working to improve people's access to land and natural resources through a focus on land-tenure governance;
- increasing partnerships with CSOs and NGOs, involving them more at the policy level;
- disseminating FAO's messages to the public through traditional and social media and involving the public through awareness-raising and fund-raising events;
- developing capacities of individuals, governments and organizations;
- reforming the activities of FAO itself in order to ensure it responds to member countries' needs effectively and efficiently.

FAO has considered policy advice a core activity since its inception, an understanding increasingly supported by member countries who consider policy assistance and capacity building FAO's two areas of greatest priority.

CHAPTER 6

FAO in action: past, present and future

For more than six decades, FAO has called on its broad technical expertise and experience to address a wide range of global issues related to food, nutrition, agriculture, rural development and the management of natural resources. FAO's actions to support members in combating hunger and malnutrition have been and continue to be many and varied, both in the field and in the normative and policy arena. Selected activities, reflecting the Organization's core functions and global goals, are highlighted in this chapter.

Negotiating international instruments

Throughout its history, FAO has been involved in the development and implementation of international instruments – some legally binding, some voluntary – that establish minimum requirements, standards, norms and best practices for the food and agriculture sector. FAO's constitution calls on the Organization to provide a neutral forum, where its members can negotiate international instruments. FAO's reputation for neutrality and its knowledge baseline constitute a comparative advantage in this area, and it is increasingly recognized by the global community.

In recent years, FAO has responded to a significant number of requests to develop international instruments from its members, statutory bodies and international organizations such as WTO and the United Nations General Assembly.

Developing international instruments on food and agriculture under the aegis of FAO has added value because the negotiation process can draw directly on FAO's vast information base and technical capacity. FAO provides direct technical input by hosting most of the negotiation meetings while also acting as the meeting secretariat. Relying on its technical expertise and practical experience, FAO ensures that the international instruments are not only legally and technically sound but that they also respond to prevailing needs, address recognized priorities and provide the framework for the continued engagement of the relevant parties and partners to address future challenges.

FAO's role does not end at the closure of negotiation processes. The effective implementation of international instruments is crucial for generating positive effects on food security, food safety and sustainable management of natural resources. Effective implementation of globally endorsed standards, obligations and best practice at the national level depends largely on national capacities, which are inadequate in many developing countries. In addition to assisting member countries

PHOTO 17

Plant genetic resources are the raw material that farmers and plant breeders use to improve the quality and productivity of agricultural crops.



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in developing these capacities, including through the review and development of national legislation, FAO helps countries formulate policies that reflect globally established minimum requirements and recognized best practices to address national priorities and needs.

■ Binding instruments

Port state measures agreement: a binding instrument to fight illegal, unreported and unregulated fishing. Illegal, unreported, and unregulated (IUU) fishing jeopardizes the livelihoods of people around the world and threatens marine resources, in particular fish stocks. While it is relatively easy for fishing vessels to avoid fisheries enforcement authorities on the open seas, they cannot avoid landing their catches in port because they need to access markets. Strengthening the authority of port states to deny fishing vessels engaged in IUU fishing access to their ports, or to deny their use of the port to refuel, resupply or land fish, is an effective means to intercept IUU fishers before they can sell their produce.

Recognizing FAO's mandate in dealing with global fisheries issues, in 2005 the UN urged FAO's Committee on Fisheries (COFI) to develop an instrument using port state measures to fight IUU fishing. After intense negotiations from June 2008 to August 2009, the FAO Conference approved the binding *Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing* in November 2009. The Agreement will enter into force 30 days after the twenty-fifth instrument of ratification, acceptance, approval or accession has been deposited. The widespread application by coastal states of a minimum set of uniform measures under the agreement will help fight the scourge of IUU fishing.

International Treaty on Plant Genetic Resources for Food and Agriculture: the first operational access and benefit-sharing scheme. Plant genetic resources for food and agriculture are crucial in feeding the world's population. They are the raw material that farmers and plant breeders use to improve the quality and productivity of agricultural crops. The future of agriculture depends on international coop-

eration and on open exchange of the crops and their genes that have been adapted, improved and shared by farmers since farming began more than 10 000 years ago. Continuing this exchange of plant genetic resources among farmers, and also among countries, is essential for food security.

Responding to the need to guarantee future access to plant genetic resources for food and agriculture, FAO initiated negotiations for the International Treaty on Plant Genetic Resources for Food and Agriculture in 1994. The Treaty was adopted by the FAO Conference in 2001 and entered into force in June 2004. It currently has 127 contracting parties who have committed to the conservation of plant genetic resources, the sustainable use of these resources and the equitable sharing of the benefits derived from their use.

At the heart of the Treaty is a multilateral system of access and benefit sharing, which facilitates access to the world's 64 most important food and forage crops as well as to some of the world's most important *ex situ* collections of plant genetic resources. The crops covered by the multilateral system produce 80 percent of the food derived from plants.

The multilateral system facilitates access to plant genetic resources for research, breeding and training for food and agriculture, either free or at minimal cost. The precise conditions for access to plant genetic resources covered by the system are governed by the Standard Material Transfer Agreement, which was approved by the Treaty's governing body in 2006. With a global gene pool of more than 1.5 million samples of genetic material, more than 800 accessions are transferred daily through the multilateral system.

If material that is accessed through the multilateral system is incorporated in new plant genetic resources and those resources are commercialized, with restrictions on further research and breeding, the recipient agrees to pay 1.1 percent of gross sales (minus 30 percent) into an international benefit-sharing fund which is under the direct control of the Treaty. Voluntary contributions to the fund have already enabled FAO to carry out a number of small-scale projects. e.g. for the *in situ* conservation and sustainable use of plant genetic resources in developing countries in 2009. In 2009, further capitalization of the fund enabled the implementation of a significant number of larger projects, focused on the use of plant genetic resources for adaptation to climate change.

International Plant Protection Convention: stemming the introduction and spread of plant pests.

As international travel and trade reach historic levels, and more people and commodities move around the world than ever before, more organisms that can pose risks to plants travel with them. Pest introductions and outbreaks cost governments, farmers and consumers billions of dollars every year. Once pest species are established, their eradication is often impossible, and controlling them accounts for a significant proportion of the cost of producing food.

The *International Plant Protection Convention* (IPPC) provides an international framework for plant protection. Activities include the development of international standards for phytosanitary measures aimed at protecting plant resources from pests

of plants. The IPPC is the only recognized global phytosanitary standard-setting organization and is formally recognized as such by the WTO in relation to trade in all plants and plant products. It enables countries to analyse risks to their national plant resources and to use science-based measures to safeguard their cultivated and wild plants.

The IPPC also helps protect farmers from new, economically devastating pest outbreaks. It facilitates the protection of: i) the environment, against loss of species diversity; ii) ecosystems, against loss of viability and functions as a result of new pest invasions; and iii) of industries and consumers, against the costs of new pest management or eradication. The IPPC facilitates trade and minimizes disputes by providing international standards for the harmonization of phytosanitary measures, and it provides capacity-development opportunities in support of their implementation.

■ Non-binding instruments

Right to Food guidelines: consensus on the meaning and implementation of the human right to adequate food. Although the human right to adequate food has been firmly established in international law for decades, there was previously little understanding and no consensus about the implications of this right for different areas of state policies, laws and institutions. In 2004, the FAO Council unanimously adopted the *Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security* to bring clarity to the meaning of the “right to food” and to provide practical guidance on its implementation. The guidelines have been accepted by all FAO members and constitute the current international consensus on the right to adequate food.

The drafting and adoption of the guidelines followed a decision by the World Food Summit: *five years later* in 2002 and, subsequently, two years of negotiations by a special intergovernmental working group established under the CFS. The process was a major development in the field of socio-economic rights and it allowed all FAO and UN member countries and civil society to debate questions related to the right to food in detail.

The guidelines are a human rights tool. They are not legally binding, although they build on international law and provide guidance on implementation of existing obligations. They apply to all states, parties and non-parties to the *International Covenant on Economic, Social and Cultural Rights*, including developing and developed countries.

The guidelines address a number of policy areas of relevance to the realization of the right to food and stress the importance of institutional, legal and policy coherence and coordination. They emphasize a wide range of principles including equality and non-discrimination, participation and inclusion, accountability and rule of law, and the principle that all human rights are universal, indivisible, interrelated and interdependent. They also seek to strengthen good governance and the rule of

law. Throughout, the guidelines encourage a gender perspective and stress equal rights of women as well as special protection for pregnant women and mothers.

Code of Conduct for Responsible Fisheries: a living guide for all stakeholders. Fisheries and aquaculture are important sources of food, employment, income and recreation for millions of people throughout the world. To guarantee access to fish for future generations and respond to the call for new concepts for responsible conservation, management and development of fisheries, FAO initiated negotiations for a non-binding Code of Conduct for Responsible Fisheries in the early 1990s. The negotiations resulted in the adoption of the code in 1995 by the FAO Conference.

The Code is the one broad international fisheries instrument that provides an overarching framework for the development and management of fisheries and aquaculture. It sets out principles and international standards of behaviour for responsible fishing and aquaculture practices, with a view to ensuring the effective conservation, management and development of living aquatic resources with due respect for the ecosystem and biodiversity. It recognizes the nutritional, economic, social, environmental and cultural importance of fisheries and the interests of all those concerned in the sector.

The Code has also provided the inspiration and foundation for the development of other fisheries and aquaculture instruments, including the adoption of international plans of action such as the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. It has also formed the basis for a range of international guidelines, including those relating to bycatch and discards, the management of deep-sea fisheries on the high seas, ecolabelling and aquaculture certification.

Although the Code is a non-binding instrument, many of its elements are based on international law. It has been used as a checklist for the review and development of national policies and legislation, as evidenced by the numerous references to it in such instruments and by the compliance of these instruments with the provisions in the Code. Since its adoption, the fisheries sector has made considerable progress in areas such as strengthened fisheries monitoring, control and surveillance, improved fish food safety and quality assurance systems (including traceability and ecolabelling schemes) and sustainable aquaculture.

Pesticides code: application of a revitalized global instrument for the management of pesticides. In many parts of the world, pesticide use remains a major concern regarding food safety, environmental contamination and the health of farmers. Pesticide legislation is often incomplete or hard to implement because of constraints in human resources. The intensification of production and climate change exacerbate pest pressure, which, in turn, leads to steady increases in pesticide use – and abuse. International trade in pesticides and in agricultural products treated with pesticides make pesticide management an area that requires international coordination.

PHOTO 18

Production intensification and climate change exacerbate pest pressure.



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For more than 25 years, FAO has provided an international forum for ensuring a coordinated approach to strengthening the regulatory framework for the control of pesticides. The backbone of this work is the International Code of Conduct on the Distribution and Use of Pesticides, which was adopted in 1985 by the FAO

BOX 28**Pesticide control in action**

An example of how FAO is assisting countries in reducing risks from the use of pesticides is its close collaboration with the member countries¹ of the *Comité permanent Inter-États de Lutte contre la Sécheresse dans le Sahel* (CILSS). Working with CILSS, FAO supported the establishment of the *Comité Sahélien des Pesticides* (CSP) in 1994, establishing common legislation and pesticide registration processes among member countries. Legislation and registration of pesticides in the CSP member countries is now exemplary, although capacity development is needed to strengthen enforcement of regulations controlling post-registration of pesticides. This harmonized system remains a model in the developing world, which many other country groupings hope to emulate.

In addition, successful projects have been implemented in CSP member countries that: promote integrated pest management (IPM), monitor the environmental impacts of pesticides, remove obsolete pesticides, control pesticide stock movements, decontaminate pesticide polluted sites and recycle pesticide containers. These initiatives help farmers to: intensify crop production using sustainable methods; produce safer food for domestic and export markets; protect the environment – including international waterways – from contamination; and benefit from lower input costs.

¹ Burkina Faso, Cape Verde, Gambia, Guinea-Bissau, Mali, Mauritania, the Niger, Senegal, Chad.

Conference and revised in 2002. The pesticide code establishes voluntary standards of conduct for all public- and private-sector entities engaged in or associated with the distribution and use of pesticides, particularly where national legislation to regulate pesticides is inadequate or absent. Adopted by all major stakeholders, including national governments, the pesticide industry, civil society groups and international organizations, it continues to provide the international benchmark for sound pesticide management.

The support provided by FAO through implementation of the pesticides code and specific technical assistance in capacity development have contributed to a significant reduction in the availability and use of highly hazardous pesticides, more sustainable crop protection, decreases in farmer poisoning, decreases in environmental contamination, improved food safety and enhanced international trade in agricultural commodities.

Supporting investment in agricultural development

FAO supports country investment in agricultural development through investment planning, led by its FAO Investment Centre Division. Established in 1974, the Investment Centre works in partnership with countries and both public and private financing institutions to increase the efficacy and flow of external, domestic and private investments to agriculture and rural development. Its role is to bring FAO's knowledge to bear on each step of the investment process. The Investment Centre, supported by FAO's technical and policy divisions, helps developing and transition countries prepare long-term agricultural investments, create synergies between investment programmes, define and strengthen national capacities and design specific investment programmes and projects intended to bring the greatest environmental, social and economic benefits to the lives of rural people.

FAO recently formalized its extensive, long-term investment support to developing countries and countries in transition under its strategic objective of “increased and more effective public and private investment in agriculture and rural development”. It helps governments to attain economic growth, food security and improved rural livelihoods through sustainable and quality-assured investments that are in line with national priorities.

■ Investment partnerships and initiatives

International financing institutions

Since 1964, FAO has established cost-sharing agreements with some 27 development financiers. Most operations under these agreements are carried out by its Investment Centre. Each year, the Centre delivers technical expertise in investment planning and project formulation to some 100 countries through more than 700 missions, in partnership with the principal international financing institutions

(IFIs). Over the last decade, this work has resulted in about US\$3 billion being approved annually for investment projects for member countries. In 2010, this figure rose dramatically to US\$5.6 billion, reflecting both the rising loan portfolio of some financing partners and the approval of a few particularly large irrigation development loans in South Asia.

Since 1964, under FAO's Cooperative Programme with the World Bank, the Centre has provided upstream and technical assistance to World Bank-funded operations, covering a wide range of development activities in the agriculture and rural sector. During the last decade, this collaboration has helped to mobilize some US\$900 million in World Bank Group commitments annually and has directly contributed to one-third of its financing to the agriculture sector.

Since 1977, the Investment Centre has also managed a busy programme of work with IFAD, which includes the provision of the Centre's technical support to IFAD field operations, and the provision of IFAD's financial support to activities undertaken by FAO's technical divisions in areas of common interest. From 1994 to 2010, IFAD approved 150 operations prepared with Investment Centre expertise.

Regional development banks

FAO also has a long history of engagement with the regional development banks. During 1968 to 2007, the African Development Bank (AfDB), a major FAO partner, approved 159 projects prepared with Investment Centre assistance and valued at more than US\$3.7 billion, representing about 25 percent of its support to the sector. Since the 1970s, through collaboration with the Asian Development Bank (ADB), the Centre has contributed to 51 operations approved for total investments of over US\$2.6 billion for 15 countries in the Asia and Pacific region. From 1970 to 2010, 23 projects were approved by the Inter-American Development Bank for Latin American and Caribbean countries while, in the Near East and North Africa region, the Islamic Development Bank has been an important financier of investment projects prepared by the Centre.

FAO's role with the European Bank for Reconstruction and Development (EBRD) differs from its relationship with other IFIs because EBRD investment projects are formulated by the investor. Thus, the Investment Centre focuses on the identification of investment opportunities, public-private sector dialogue, sector reviews and improvement of linkages between agribusiness and primary agriculture. In coordination with the EBRD and the World Bank, the EastAgri Network, hosted by FAO, was also created to exchange best practices and lessons learned on agricultural and agribusiness investment activities in Eastern Europe and the CIS region.

Other FAO investment financing partners include the subregional development banks, Arab funds, the Global Environment Facility, bilateral donors and the governments themselves.

Africa

FAO has been a strong partner with the African Union in the conceptualization and subsequent implementation of the Comprehensive Africa Agriculture Development

Programme (CAADP), which is Africa's first coordinated continental approach to agriculture development. Key outcomes of the CAADP were approved by African heads of state in Maputo in 2003, including an agreement to commit at least 10 percent of their national budgets to agricultural development and to achieve at least 6 percent annual growth in the sector. While these budget allocation and growth targets remain elusive for most of the signatories, 24 countries have completed their CAADP Country Strategic Compacts, of which about 20 have also prepared Country Agriculture Investment Plans.

L'Aquila

FAO has supported the design and implementation of the Global Agriculture and Food Security Programme (GAFSP), a US\$925 million grant fund stemming from the 2009 G-8 Food Security Conference, held in L'Aquila, Italy. On this occasion, world leaders committed more than US\$20 billion for sustainable agriculture over three years. Known as the "L'Aquila Food Security Initiative", the commitment was endorsed by 27 countries and 15 international organizations. Since its adoption, FAO has assisted four African countries in receiving significant GAFSP grants, including Rwanda (US\$50 million), Ethiopia (US\$51.5 million), Sierra Leone (US\$50 million) and Togo (US\$39 million). Outside Africa, FAO has supported successful GAFSP applications by Bangladesh (US\$50 million), Haiti (US\$33 million) and Mongolia (US\$12.5 million).

European Union

The European Union Food Facility (EUFF), an FAO-executed investment programme, is the largest FAO field programme with a single donor. EUFF projects, which involve an investment of €228.6 million (US\$314.6 million), are being implemented in 28 countries in Africa, Asia and Latin America, boosting the agricultural production of 1.8 million vulnerable households. Project activities include input distribution, conservation agriculture, establishment of agricultural business centres, support to national seed systems, livestock production and rural infrastructure development.

Promoting sustainable forestry development

Forests and trees on farms make a major contribution to the food security of millions of poor people, especially those living in and around forests. They provide nutrient-rich supplements to the diets of rural people, including wild leaves, fruits, seeds and nuts, roots and tubers, mushrooms, honey and wild animals and fish. Many forest trees also provide feed for animals, either browsed or collected and fed to livestock in stalls.

Forests also have many indirect benefits for rural people. For example, they regulate water flow; absorb carbon; help to offset the effects of extreme weather events; support bees and other pollinating insects; conserve the gene pool for many

agricultural crops, such as coffee, cocoa, tea, and avocado; and provide an important buffer against storms.

Trees also contribute directly to increased and sustained agricultural production. Agroforestry systems throughout the tropics integrate trees into agricultural systems, helping restore and sustain soils and boost food production. Trees also provide shade for important agricultural crops such as coffee and cocoa and, in upland areas, help stabilize topsoils and prevent loss of critical nutrients.

Food insecurity is directly linked to poverty, and it is usually the very poorest households that are the most dependent on forests. During the lean season and in times of famine, forests provide a life-saving safety net for these families. Forests and trees can make a major contribution to the incomes and therefore to the food security of rural households. Small enterprises based on the processing and sale of non-wood forest products are often run by women, and the income generated from such activities can be an important means of providing food for the family.

Fuelwood is the main energy source for cooking and food processing in most developing countries. About 80 percent of the wood harvested in Africa is used for fuel. Dwindling supplies in many countries are forcing rural households to spend a higher proportion of their limited incomes on fuel, leaving less income for direct expenditure on food. Scarce fuelwood supplies also affect the quantity and quality of the food consumed.

■ Climate change, forests and food security

Forests and trees absorb carbon dioxide from the atmosphere and store it as carbon. Potentially, about one-tenth of global carbon emissions projected for the first half of the 21st century could be absorbed by forests. Forests produce woodfuels that are, in climate terms, a benign alternative to fossil fuels. Reducing the rate of forest degradation or loss, which accounts for about one-sixth of global carbon emissions, could make a significant contribution to climate change mitigation.

However, climate change poses a huge threat to the world's forests and to food security. Increased desertification, drought and floods linked to climate change are degrading or destroying millions of hectares of productive agricultural lands in all regions of the world. Climate change is having direct adverse impacts on the livelihoods and food security of rural people, and these effects are rapidly increasing in some of the world's most vulnerable ecosystems. Many of the poorest of the poor are directly dependent on the forest ecosystems that are the most vulnerable to climate change.

The threat to forest health from insects, disease and wildfire is increasing in many countries. These threats come on top of deforestation and forest degradation resulting from the conversion of forests to other land uses and the overutilization of forest resources. FAO's Global Forest Resources Assessment 2010 found that the world is losing 13 million ha of forest each year to other uses or through natural losses. The International Tropical Timber Organization (ITTO) has found that another 850 million ha of forests are degraded worldwide. Effective action to halt

or reverse global deforestation and to restore degraded forests would have a significant impact on mitigating global climate change.

The role of sustainable forest management

Food security can be enhanced and the risks and negative effects of climate change can be reduced if forests are protected and managed sustainably. Sustainable forest management is a broad concept that encompasses legal, technical, economic, social and environmental aspects of the use and conservation of forests and trees. It implies a number of human interventions, ranging from actions to safeguard and maintain forest ecosystems, to actions to promote the increased production of valuable species for the production of goods and services. The goal is to ensure that goods and services derived from forests and trees meet the needs of today's population, while at the same time securing the continued availability and contribution of forest goods and services to long-term development.

BOX 29

FAO support to Tanzania's forest sector: an integrated approach

The United Republic of Tanzania's National Forestry and Beekeeping Programme provides a strategic framework and coordination mechanism for the integration and harmonization of forest and beekeeping activities at local, regional and national levels.

The country's first comprehensive forest inventory, the National Forest Monitoring and Assessment (NAFORMA), is a multisource and multipurpose assessment supported by field measurements, observations and household interviews on the ground and remote sensing data. With FAO's support in design and implementation, NAFORMA will provide key information for the revision of the National Forestry and Beekeeping Programme for the period 2011–2020.

NAFORMA introduces a policy-relevant, holistic and integrated approach that addresses national and subnational information needs as well as international reporting requirements, including REDD+. In addition to information on forest conditions, it will provide a baseline for changes in carbon stock, local people's use and management of forest resources, and forest governance. Analysis of these data will help generate the knowledge to improve policy performance, especially concerning sustainable forest management and the drivers of forest degradation and deforestation.

FAO also provides support in the development and implementation of a national strategy for fire management. It will be integrated with the ongoing forest policy process and implemented at the national and local level, including a monitoring component linked with NAFORMA.

PHOTO 19

Well-managed and healthy forests will be less susceptible to an increased incidence of pests, diseases, fires, storms and drought linked with climate change.



There is widespread agreement on the key principles of sustainable forest management, for example the “Forest Principles” adopted in 1992 at the Rio de Janeiro Earth Summit. However, sustainable forest management is easier said than done. It requires political commitment and financial investments that are difficult to secure, especially in developing countries. Nonetheless, sustainable forest management is critical to food security; without it, the benefits described above will not be delivered to the people who need them.

Sustainable forest management also has a significant role to play in climate change mitigation and adaptation. Sustainably managing forests and trees in areas that are most vulnerable to climate change, such as drylands, mountains and coastal areas, will help reduce the impacts of climate change on ecosystems and on forest-dependent people. Well-managed and healthy forests will be less susceptible to increased incidence of pests, diseases, fires, storms and drought linked with climate change.

FAO support to sustainable forest management

Today, FAO plays a key role in the global effort to promote sustainable forest management. As shown below, it works on three broad fronts: i) forest policies, governance and institutions; ii) forest practices and management; and iii) forest information.

Policies, governance and institutions. FAO has developed policy guidelines to incorporate climate change adaptation and mitigation into national forestry strategies, as well as practical guidelines for use by forest managers. Through the National Forest Programme Facility, FAO works directly with 70 developing countries to develop and implement improved forest policies and programmes using participatory approaches.

FAO has developed guidelines for improved forest governance, which is key for reducing deforestation and forest degradation. In collaboration with the EU and other partners, FAO is strengthening the capability of stakeholder groups to develop and implement effective action to strengthen forest governance and trade, directly

addressing illegal logging, corruption, and the resulting distortions in the market for forest products.

At the community level, FAO works directly with the rural poor and with local communities to develop small- and medium-size forest-based enterprises. The result is to improve the livelihoods and increase the incomes of the rural poor, directly contributing to food security.

The potential of forests to contribute to food security can only be achieved if local people have secure tenure of land and forest resources. FAO has developed guidelines for forest tenure reform aiming to improve access of local people to forest resources and a more equitable distribution of benefits from forests.

Limited availability of land often leads to land-use competition between forestry and agriculture. FAO is promoting the practice of agroforestry, where trees and agricultural crops are cultivated on the same piece of land. The trees produce food or fodder and many of them fix nitrogen, thus helping to improve the soil.

Good forest practices. FAO has developed guidelines for improved forest practices, including voluntary guidelines for planted forests, for improved harvesting practices and for addressing the problem of forest fires as well as pests and diseases. National and local capacities are being strengthened to implement these guidelines.

FAO works directly with countries and communities to promote investment in improved forest management, including tangible investments in planted forests and reforestation. The result is increased income as well as enhancement of forest carbon stocks and sequestration capacity through improved forest management practices.

Significant new levels of funding are becoming available to developing countries to help mitigate climate change by sustainable forest management through Reducing Emissions from Deforestation and Forest Degradation (REDD+) programmes. These programmes give a financial value to carbon stored in forests and provide incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. It goes beyond a focus on deforestation and includes conservation of forest carbon stocks, sustainable management of forests and enhancement of forest carbon stocks. Jointly with UNDP and UNEP, FAO implements the UN-REDD Programme, a collaborative initiative to assist developing countries in preparing and implementing national REDD+ strategies and developing associated forest monitoring systems. FAO is helping countries to build their own capacities to implement sustainable forest management, in part by emphasizing that new funding reaches local levels where key decisions about forests are made on a day-to-day basis.

Information. Effective forest policies and practices are based on good information. In this era of information overload, the challenge for FAO is to monitor, assess and analyse huge amounts of data in order to focus on the most important information that can be translated into useful knowledge for national and local decision-makers.

At the global level, FAO's *Global Forest Resources Assessments* and *State of the World's Forests* provide a solid foundation for national and international decision-making. These assessments have been expanded from information about forest resources to include socio-economic and institutional aspects. At the national and local levels, FAO works directly with the users of information to build their capacities to monitor and assess their own forests, and to focus on the most critical information that will be the basis for implementing sustainable forest management.

One of the most important roles of FAO is bringing together representatives from member countries to identify the most critical issues of the day and to develop strategies and approaches for addressing these issues. FAO's Committee on Forestry, which meets biennially, and its six Regional Forestry Commissions provide an opportunity for the heads of national forestry agencies to develop policies and encourage practices for achieving the sustainable management of the world's forests. In addition, FAO organizes a World Forestry Congress every six years, bringing together senior representatives from government, the private sector, academia and NGOs to consider approaches to the major forest issues of the time.

FAO's focus in the future

As FAO continues to play a pivotal role in efforts to implement sustainable forest management in all countries, in the future, its focus will remain on forest policies, practices and information, and its work will be results-based. This means building on its most successful initiatives to ensure that good ideas are translated into positive outcomes.

Climate change, and especially REDD+, have brought forests to the centre of international attention. FAO can play a key role in helping countries capitalize on new sources of funding to help combat deforestation and forest degradation. Addressing critical issues such as forest governance, land-use planning and forest tenure will become increasingly important in ensuring the success of REDD+, and FAO will increase its support to countries in these areas.

It is equally important to highlight the adaptive role of forests in the context of climate change and food security. Wise watershed management helps mitigate the effects of increased floods and drought. Forests play an important role in the livelihood strategies of poor people affected by climate change. FAO will increase its efforts to strengthen community-based organizations to ensure a positive impact of REDD+ schemes on the livelihoods of local people and to safeguard against potential negative impacts.

Food security, forestry and climate change cannot be treated separately. To be effective, policies to promote food security must be integrated with policies to address climate change and policies to promote sustainable forest management. Forests must be included in poverty reduction strategies, and in climate change strategies. To increase its impact, FAO must improve its own ability to integrate the advice it provides to countries across disciplines.

In the area of forest information, FAO is pioneering efforts to involve every country in a global assessment of forest cover (used to monitor deforestation rates)

by training people in the countries to analyse their own resources. This initiative will require increased attention and investments in the future.

To sum up, FAO will continue to work with all member countries to improve the management of their forests. Sustainable forest management must be a critical component of each country's overall development strategy if food security is to be achieved. Sustainable forest management has the capacity to help mitigate the most severe effects of climate change and to reduce the potentially devastating impacts of climate change on food security and agricultural production.

The role of fish and fisheries in food security and nutrition

The fisheries and aquaculture sector is crucial to food security, poverty alleviation and general well-being, and its importance is growing. People have never consumed so much fish or depended so much on the sector for their livelihoods as they do today.

Fisheries and aquaculture provide an excellent source of affordable, high-quality animal protein and micronutrients that are particularly important for pregnant women and young children. In 2008, the contribution of fish to global diets reached an all-time high of about 17 kg per person on average, supplying more than 3 billion people with at least 15 percent of their average animal protein intake.

Employment in fisheries and aquaculture has grown faster than the world's population and employment in traditional agriculture. In 2008, almost 45 million people were directly engaged in the sector. Added to these are important secondary sectors such as handling and processing, where women represent half of those involved. Altogether, including the family dependants of these workers, fisheries and aquaculture support the livelihoods of some 540 million people, or 8 percent of the world's population.

The sector also has increased its importance in the global market. Fish and fishery products continue to be the most-traded of food commodities, worth a record US\$102 billion in 2008, yet seafood is often overlooked as a component of global food security (Smith *et al.*, 2010).

■ Consumption and supply

Since 1961, fish consumption has increased most substantially in East Asia, Southeast Asia and North Africa. As of 2007, consumption was lowest in Africa, while Asia accounted for two-thirds of total consumption. However, the increase has not been uniform across and within countries and regions, reflecting the different levels of availability of fish and other foods, including the accessibility of aquatic resources, as well as diverse food traditions, tastes, demand, income levels, prices and seasons. In many countries, fish contributes more than or close to 50 percent of total animal protein intake (Figure 26).

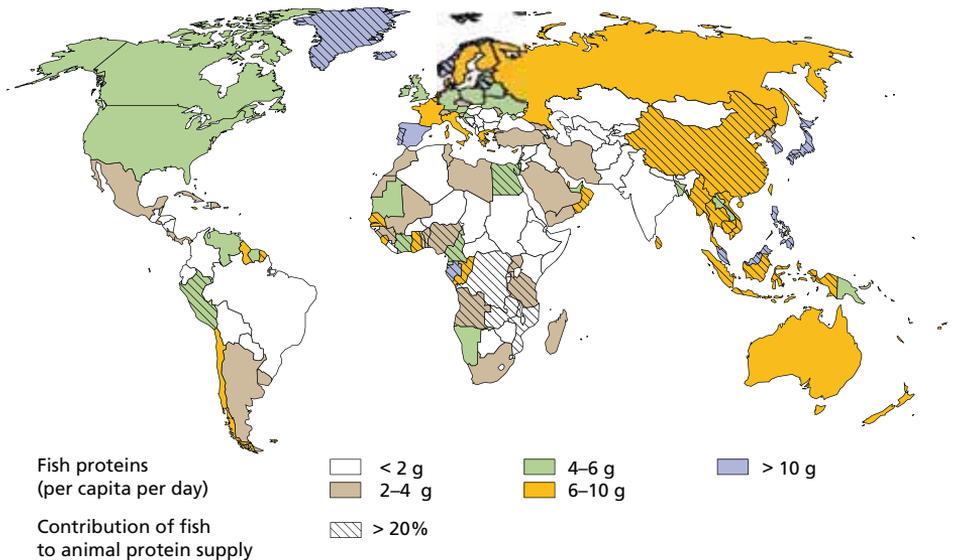
In the last decade, the surging demand for fish and fishery products has increasingly been met by the growing production of aquaculture, which now accounts for almost half of total food fish supply and is set to overtake capture fisheries as a source of food fish (FAO, 2010e). In 2008, capture fisheries and aquaculture supplied the world with about 142 million tonnes of fish, of which 115 million tonnes were used as human food. Global capture fisheries produced about 90 million tonnes, valued at US\$94 billion, of which some 80 million tonnes were from marine waters and a record 10 million tonnes from inland waters.

Aquaculture fish production in 2008 reached 52.5 million tonnes, valued at US\$98.4 billion. World aquaculture is heavily dominated by Asia, in particular by China, which account, respectively, for 90 percent and 62 percent of global production in quantity terms.

Fish consumption levels are affected by deterioration of fish product quality and significant post-harvest losses, which equals 10 percent by weight of world fish catch (Akande and Diei-Ouadi, 2010), due to poor handling, transportation, processing, storage and distribution. In addition to physical losses of fish, the economic losses resulting from a lower quality and value of the end-product are often significant. FAO promotes technology and knowledge that could help the fisheries industry, including the post-harvest sector, reduce waste and increase the amount of fish ending up as food. Improvements in post-harvest handling as well as in

FIGURE 26

Contribution of fish to animal protein supply (average 2005–2007)



marketing have led to significant efficiency gains, lower costs, wider choice and safer and improved products (FAO, 2010e; 2009j).

■ Nutrition security

Fish from both culture and capture fisheries can make significant contributions to improving and diversifying dietary intake and promoting general nutritional well-being. Fatty fish, in particular, are an extremely rich source of essential fatty acids that are crucial for normal growth and mental development, especially during pregnancy and early childhood (FAO, 2003b). Fish are also rich in vitamins and minerals and therefore can provide an important source of nutrients, particularly for those whose diets lack other animal source foods.

Fish and fisheries products are also among the best sources of essential micronutrients. Micronutrient deficiencies affect hundreds of millions of people, particularly women and children, in the developing world. Many rural diets lack diversity, making it vital to have access to foods that provide the essential nutrients.

In coastal populations, fisheries products often are the major source of animal protein, essential fatty acids and needed micronutrients. Although the cost of fish can be high for some species, there are others with very high nutritional value that can be affordable to low-income populations.

Capture fisheries

The maximum potential from the world's oceans in terms of production from wild living marine resources has probably been reached, necessitating more closely controlled approaches to fisheries management to ensure that current supplies are maintained. The estimated proportion of underexploited or moderately exploited marine fish stocks declined to 15 percent in 2008, whereas the proportion of over-exploited, depleted or recovering stocks increased to 33 percent. Both these trends give cause for concern. The proportion of fully exploited stocks has remained relatively stable at about 50 percent (FAO, 2010e).

Fisheries management poses challenges for all countries. In some, improvements in resource management are proceeding hand-in-hand with public-sector reform and measures to promote better governance. However, there has been only limited progress in the implementation of effective management measures in most of the world. Key issues include the lack of progress in reducing fishing capacity and related harmful subsidies (FAO, 2009j), and the high levels of unwanted and often unreported bycatch and discards in many fisheries. Global discards amount to about 7 million tonnes per year (FAO, 2010e). FAO, regional fishery bodies, national fisheries administrations and concerned fishery stakeholders continue efforts towards promoting implementation of the Code of Conduct for Responsible Fisheries, and associated international action plans, strategies and guidelines, including the ecosystem approach to fisheries (FAO, 2010k).

TABLE 7

World capture fisheries and aquaculture production and consumption

PRODUCTION	2008	2009 (estimate)	2010 (forecast)
	Million tonnes		
Total production	142.3	145.1	147.0
Capture fisheries	89.7	90.0	89.8
Utilization	Million tonnes		
Total	142.3	145.1	147.0
Food	115.1	117.8	119.5
Feed	20.2	20.1	20.1
Other uses	7.0	7.2	7.4
Aquaculture's contribution	Percentage		
To total production	36.9	37.9	38.9
To food fish	45.6	46.8	47.9
CONSUMPTION	kg/year		
Per caput food fish consumption	17.1	17.2	17.3
From capture fisheries	9.3	9.2	9.0
From aquaculture	7.8	8.1	8.3

Source: FAO, 2010e and 2010k.

Inland fisheries

Inland fisheries support 61 million people worldwide. A vital component in the livelihoods of people in many countries, they contribute very significantly to poverty alleviation and food security in many small communities (FAO, 2010e). However, irresponsible fishing practices, habitat loss and degradation, water abstraction, drainage of wetlands, dam construction and pollution have caused substantial declines in inland fishery resources.

The role of inland fisheries in poverty alleviation and food security needs to be better reflected in fisheries policies and in strategies for rural development and particularly in programmes concerning the use of freshwater. The tendency to undervalue inland fisheries has resulted in inadequate representation in national and international agendas.

Small-scale fisheries

Small-scale fisheries contribute more than half of the world's marine and inland fish catch, almost all of which is destined for direct human consumption (FAO, 2010e; 2009j). Such fisheries employ more than 90 percent of the world's capture fishers and support another 84 million people employed in associated jobs (FAO, 2009k). Millions of other rural dwellers, particularly in Asia and Africa, are involved in seasonal or occasional fishing activities with few alternative sources of income and employment. Almost half of the people employed in small-scale fisheries' primary and secondary sectors are women and more than 95 percent of those involved live in developing countries.

Small-scale fishing communities are often poor, vulnerable and marginalized, yet they contribute significantly to local economies and the potential for growth is enormous. Where fish is produced and processed locally, the net income benefit to the community is more than twice the value of the fish sales. Increasing the role of small-scale fisheries as contributors to poverty alleviation and food security should be a priority, yet government policy agendas tend to give little weight to such issues.

Aquaculture: trends, prospects and challenges

Between 1970 and 2008, the production of food fish from aquaculture increased at an average annual growth rate of 8.3 percent (or 6.5 percent excluding China). Aquaculture is perceived as having the greatest potential to produce more fish to meet the growing demand for safe and high quality aquatic food (FAO, 2011f). By 2012, more than 50 percent of global food fish consumption will probably originate from aquaculture.

Aquaculture has not grown evenly around the world. There are marked intra-regional and interregional and country variations in a number of areas, such as production level, species composition, farming systems and producer profile. Asia accounts for almost 90 percent, while China contributes two-thirds of global aquaculture production. In China, 80 percent of food fish consumed is farmed, while 27 percent of total fish consumption in the rest of the world is supplied by aquaculture.

Aquaculture has pushed the demand for, and consumption of, species that have shifted from being primarily wild-caught to being primarily farmed, with a decrease in their prices and a strong increase in their commercialization. These include shrimps, salmon and bivalves, as well as tilapia and pangasius.

Aquaculture makes valuable contributions to local, national and regional economies through goods and services sold on domestic and export markets. While its contribution to GDP is often small, its importance to the national economy in terms of poverty alleviation and nutritional benefits can be significant. Generally, subsistence and small-scale aquaculture contribute directly to poverty alleviation and food security. Small- and large-scale commercial aquaculture, with species such as shrimp, salmon, tilapia, catfish, grouper, seabass and seabream, flatfishes, mullet and carp, can enhance production for domestic and export markets, and generate employment opportunities in production, processing and marketing sectors. Indirectly, tax revenues from commercial aquaculture enterprises and foreign exchange export earnings allow governments to invest in sectors that contribute to food security.

Numerous countries have formulated or are in the process of formulating policies, strategies, plans and legislation that facilitate growth and efficient management of the aquaculture sector. Many countries are strengthening their aquaculture legislation to address competition for scarce land and water resources from other economic development activities, such as agriculture and tourism, through zoning, licensing, environmental assessment, and management and control measures.

BOX 31**Aquaculture development: key factors for future success**

According to an FAO analysis of the future of global aquaculture, the following factors determine the supply of aquaculture products:

- access to land and water resources, and intensification;
- access to adequate feed (and their substitutes): fishmeal, fish oil and trash fish;
- greater capitalization and diversification of production systems and species;
- access to capital;
- environmental management, biosecurity, conservation of genetic resources and climate change adaptation;
- rising energy cost;
- human resources development;
- research and development;
- information and communication technologies and networking;
- access to markets;
- sound policies and governance;
- government support.

Many, if not all, apply in regions where aquaculture has generally not yet developed major capacities of fish production, including Africa, Latin America, Central Asia, South Pacific and Eastern Europe. Even in Asia, Western Europe and North America significant challenges to development, expansion and consolidation of the aquaculture industry remain.

Source: Based on FAO (2007c) and Hishamunda, Poulain and Ridler (2009).

Research and development

Major research and development achievements include the genetic improvement of the farmed tilapia strain of Nile tilapia, closing the life cycle and hatchery production of white legged shrimp larvae, and closing the life cycle of southern bluefin tuna. New technologies include developing cages and nets that can be used in open seas and larger inland waters, and upscaling recirculation systems. Future gains may also come from larger-scale production technologies, the culture of a wider range of species, and use of biotechnologies allowing for temperature and salinity tolerance, disease resistance and cheaper feed substrates (Godfray *et al.*, 2010). To address the issue of the sustainability of using fishmeal and fish oil in aquafeeds, global research efforts seek affordable and high-quality plant- and animal-based feed ingredients, to reduce dependence on wild fish resources. Any

development in aquaculture should be made with a view to diminishing reliance on wild stocks.

With increasing demand, there is growing recognition of the need to address consumer concerns for quality and safe aquaculture products, environmental integrity, animal health and welfare, as well as social considerations. Food safety, traceability, certification and ecolabelling are becoming increasingly important for the sector.

In 2003, FAO presented the CFS with a framework for increasing the contribution of aquaculture for food security, poverty alleviation and nutrition (FAO, 2003b), covering the following strategic elements:

- integration of aquaculture into national development;
- stakeholder participation in decision-making in aquaculture;
- strategic planning, appropriate policies and good legal and institutional frameworks;
- information, awareness raising and capacity development;
- public-private sector partnership and regional cooperation.

■ Fisheries sector requires good management and good governance

Widespread recognition of the benefits of fish consumption could lead to additional demand. While massive demand for fish and fishery products might reduce their affordability, supply might also be enhanced to some extent through:

- reducing post-harvest losses, quality assurance and more efficient marketing;
- improving resource management, fishing operations, fishery enhancements and culture-based fisheries;
- protecting fishery resources from adverse impacts by other activities;
- promoting utilization of anchoveta and other nutritious low-value fish for human consumption;
- providing due recognition of, and support to, small-scale fisheries and inland fisheries.

Aquaculture production is likely to continue expanding, though at a lower rate, in part thanks to research and technological advances. Expansion in aquaculture production will put a downward pressure on prices, thereby increasing access to fish and fishery products. For aquaculture to be able to play this role, policymakers and the industry will have to tackle some of the likely impediments to the sector's development, including more stringent requirements for environmental protection and higher food safety standards, shortage of feed and increasing energy prices.

The global aquaculture sector's long-term success will depend on commitments by governments to support a good governance framework for the sector. It will also depend on improved public recognition of its contribution to food security and poverty alleviation. As the sector further expands, intensifies and diversifies, it should address environmental and social concerns in a transparent manner, backed

with scientific evidence. The sector should also prepare for potential impacts of climate change and global economic crisis, and further assist small-scale producers. It is after addressing these issues that aquaculture's contribution to food security and nutrition will be enhanced.

Preparing for and responding to threats and emergencies

People around the world are increasingly exposed to disasters, and the impact of these crises tends to be most severe on those who depend on agriculture. FAO helps protect and rebuild agricultural livelihoods with the aim of restoring local food production, bolstering self-reliance and strengthening community resilience. Finding ways to develop the capacity of vulnerable populations to prepare for and respond to threats and emergencies is one of the guiding principles of FAO's approach to reducing and managing risk in food and agriculture.

Crises and disasters of all types have devastating impacts. However, they can also create opportunities to build back more soundly, for example by creating more robust structures and institutions to reduce and manage risk, and introducing more sustainable agricultural and natural resource management practices to improve food security and nutrition and strengthen community resilience.

Globally, the number of recorded disasters has doubled from approximately 200 to nearly 400 per year over the past 20 years, with 76 percent of all disasters climate-induced, and nearly half the loss of human life and some 80 percent of economic loss due to natural disasters (IASC-UNISDR, 2010). Mega-disasters, such as the 2002 drought in India, Indian Ocean tsunami in 2004, Cyclone Nargis in Myanmar in 2008, Haiti earthquake and Pakistan floods in 2010, resulted in very significant loss of life and livelihoods.

Sudden-onset natural disasters, such as earthquakes, floods and storms, lead to great loss of life, destroy countless livelihoods and leave millions of people devastated every year (IASC-UNISDR, 2010). These large-scale natural disasters have immediate and ongoing impact on lives and livelihoods and tend to shape humanitarian assistance in food security. Yet, slow-onset natural disasters must not be forgotten, such as droughts; complex emergencies or protracted crises linked to conflict, weak institutions and lack of governance; outbreaks of transboundary animal and plant pests and diseases; food chain crises; and economic and social emergencies, such as HIV/AIDS or soaring food prices (FAO, 2010a).

Complex emergencies, either post-conflict or resulting from other socio-economic crises, continue to affect tens of millions of people globally every year. Furthermore, recent increases in the number of outbreaks of transboundary animal diseases, explained in detail in the section below, have underlined the need to address such threats in a comprehensive approach, oriented to the entire food chain. Changing agro-ecological conditions, intensifying food production systems and expanding global trade increase the likelihood that animal and plant diseases and pests will

emerge and spread farther and faster than ever before, and of unsafe food reaching numerous consumers in distant markets.

■ Disaster risk management

Given the increasing frequency and intensity of disasters and their impact on agriculture-dependent populations, a comprehensive and integrated approach based on disaster risk management (DRM) is essential to enhance people's resilience before, during and after crises. For FAO, the three pillars of the DRM are disaster risk reduction (preparedness, prevention and mitigation); emergency response and rehabilitation; and transition to development. A significant proportion of FAO rapid response is related to crises of transboundary animal diseases, such as avian influenza or foot-and-mouth disease, as well as prevention and mitigation (early warning/early action) related to transboundary plant pests and diseases, such as locusts, wheat rust and cassava diseases.

The systematic adoption of a DRM approach in food and agriculture helps people develop the capacity to prepare for the potential impact of crises in food security and nutrition, and prevent and mitigate the effects of transboundary animal and plant pests and diseases. FAO has continued to develop an integrated approach to DRM aimed at reducing the vulnerability of people before, during and after disasters. DRM helps ensure that disaster-affected populations recover swiftly from the initial damage and disruption of the crisis and that affected people are once again able to benefit from interventions focused on sustainable development.

Emergency preparedness, response and rehabilitation in food and agriculture must address very specific needs of smallholders, pastoralists, fishers and fish farmers, forest users, landless farm workers and their dependants, with particular focus on food insecure and nutritionally vulnerable groups.

Longer-term measures for preventing and mitigating the adverse impacts of crises and disasters on the most vulnerable people and places need to be promoted and sustained. This includes improving institutional capacities and agricultural



PHOTO 20

For FAO, the three pillars of disaster risk management are disaster risk reduction (preparedness, prevention and mitigation); emergency response and rehabilitation; and transition to development.

technologies and collaborating with UN agencies and other partners, regional organizations, national counterparts and other sectors (such as health, education, environment, social affairs) to ensure integrated support at global, regional, national and local levels. Such support needs to increase the resilience of communities and people and develop their capacity to prepare for and respond to disasters in food and agriculture.

Disaster risk reduction

Disaster risk reduction (DRR) is the concept and practice of reducing disaster risks through systematic efforts to analyse and manage factors that cause disasters through, for example, reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and environment, and improved preparedness for adverse events. DRR is an integral component of disaster risk management. Hazards, or the degree of exposure to potentially damaging events, vulnerability, or the susceptibility of populations to external shocks, and inadequate capacity of populations to withstand shocks are the main elements that result in risk. Natural hazards do not automatically lead to disaster. Rather, disaster often results from the combination of hazard exposure, overpopulation, and vulnerable and poorly prepared communities. Human activity, leading to degraded lands and soils, changes in land use, poor natural resource and environmental management and unplanned settlements, often exacerbates risk levels.

A variety of concepts and tools, used by FAO and its partners, analyse causal factors in the context of food security and livelihoods. Effective responses that link short- and long-term needs depend on baseline information developed through situation analysis and forecasting that identifies the severity, causes, and magnitude of food and nutrition insecurity for key livelihood groups, households and individuals. Emergencies in food and agriculture can often increase existing vulnerabilities and exacerbate gender differences, particularly in societies characterized by significant gender inequality. Gender and age are thus critical factors in determining levels of vulnerability and resilience to crisis, and effective preparedness and response needs to identify ways to bridge gender and age gaps.

Sustainability and resilience

Strategies that link short-term responses with long-term goals of sustainability and resilience are essential if vulnerable countries are to avoid large-scale loss of life, destruction of the environment, infrastructure and economic activity, and degradation of livelihoods and nutrition. FAO provides proactive support such as livelihoods-based risk, vulnerability and food security assessments, support for better preparedness (such as enhanced early warning, crop forecasting and climate forecasting for agricultural producers at local level), sector-specific emergency response and rehabilitation, promotion of good agricultural practices for disaster risk reduction, and better integration of risk reduction strategies and coordination between local, sectoral and national institutions. The shift between all of the phases

of this support should be considered dynamic and fluid, and based on interventions focused on saving and sustaining livelihoods (Baas *et al.*, 2008).

For FAO and its partners, attempts to link short- and long-term perspectives in protracted, complex and socio-economic crises cut across multiple dimensions that include programming, situation and response analysis tools and processes, humanitarian and development coordination, and aid architecture. Beyond the challenges of immediate life-saving measures, technical solutions need to be selected and applied based not only on the type of crisis, but also the potential for medium-term recovery and a longer-term vision of sustainability. For example, after acute, sudden-onset disasters, seed provision to affected farmers can help vulnerable households resume agricultural production for the next season and rebuild livelihoods. However, in the context of chronic slow-onset disasters, such as drought in some parts of Africa, the repeated provision of seed will not necessarily solve seed and food insecurity. FAO support in the establishment of functioning national seed systems has proven successful in chronically seed insecure situations. Taking a longer-term approach, however, may not always be possible due to often short-term operational approaches to response and humanitarian funding availability that may constrain more sustainable approaches to restoring production in protracted crises and other types of disasters.

Food price volatility

Lessons learned from the soaring food price crisis in 2007–2008 revealed that certain groups of people were particularly vulnerable to food price volatility, including hundreds of millions of small-scale food producers, millions of daily wage agricultural workers, people living in poverty in urban areas, and people living in countries in protracted crisis or experiencing complex emergencies (UN, 2010d). As the complexity of analysing the causal factors of food insecurity increases, in terms of emergency response to volatile food prices within globalized and integrated food systems, there is a real need to focus across disciplines and identify ways to reduce and manage the risk of surging food prices and fluctuating food supply to vulnerable populations.



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PHOTO 21

People living in poverty in urban areas are particularly vulnerable to food price volatility.

Climate change

The agriculture sector is particularly sensitive to the consequences of climate variability and change, and communities that rely on agriculture are increasingly vulnerable. Climate variability and change add to the complexity of analysing causes of food and nutrition insecurity, exacerbate disaster risk, and increase vulnerability to existing hazards. The Inter-Agency Standing Committee Informal Task Force on Climate Change has concluded that extreme climate variability and associated consequences are likely to become the norm, rather than the exception, in terms of future emergency response, and more sharply outline the need for addressing vulnerability to natural disasters and climate change impacts at several different levels given the complex interaction of many cross-cutting issues.

Nearly 634 million people live in at-risk coastal areas a few metres above existing sea levels, three-quarters of which are located in the Asian flood-prone river deltas or in low-lying small island states. Almost two-thirds of mega-cities with populations above 5 million are located, at least partially, in low-lying flood-prone areas, and slightly more than 20 percent of the urban population in the least-developed countries live in highly vulnerable environments, prone to floods and other disasters (UN, 2008).

The implications of climate change are significant in terms of crises and threats in food and agriculture, including more frequent and intense storms, coupled with rising sea levels and increased risk of floods. The impacts of increasingly frequent and severe hydro-meteorological disasters can be avoided or minimized if proper mitigation measures are implemented. Establishing early warning systems to alert communities with regard to potential cyclones, tsunamis or similar hazards are important actions for saving lives and limiting fatalities and damage in coastal areas, and may protect the lives and livelihoods of fishing communities and other coastal populations. However, in worst-case scenarios, some low-lying areas may no longer be viable for human habitation.

Early warning. Early warning systems for drought can alleviate the dramatic consequences on livestock assets and herder livelihoods in pastoralist areas. Providing weather and climate information to farmers on a regular basis, through radio or mobile phone technology, can address the need for proactive adaptation of farming practice to manage climate risk. Early warning systems may exist in many countries, but decreasing risks and multiple hazard exposure of vulnerable populations often goes beyond what they provide.

For agriculture, reducing exposure means finding ways to ensure that farmers have access to seed varieties that are better adapted to recurrent natural disasters and the new prevailing climatic conditions, such as varieties with enhanced drought resistance, earlier maturity, resistance to waterlogging or resistance to emerging pests and diseases. Farmers also need support in adapting agricultural practices, for example, the use of conservation agriculture, which would help reduce vulnerability to climate variability and change.

Many of the vulnerable people in countries currently challenged by humanitarian crises will most likely face even greater risk due to the expected impacts of climate variability and change that heightens the productive risks faced by people dependent on farming, fishing and fish farming, livestock-raising or forests, particularly in fragile environments. DRR and its focus on building resilience to existing climate variability is a useful entry point for climate change adaptation, and proactive strategies to reduce risk are a first line of defence against the potential impacts of changing and variable climate.

■ Government response

Reducing vulnerability to crises and disasters requires a major response by governments and relevant stakeholders throughout complex food and agricultural systems. Heightened global focus on the development of national DRR platforms has grown since 2005, with the launch of the Hyogo Framework for Action international strategy for disaster reduction.

Many of the defining characteristics of complex or protracted crises, such as conflict, chronic food insecurity, poor agricultural performance and absence of effective institutions are also considered within other international frameworks that address peace-building, conflict early warning or governance (UNISDR, 2007). Moreover, many countries in a protracted crisis are also vulnerable to two or more natural hazards, so finding ways to incorporate political and economic risk while reducing the risk of recurrent natural disasters must be considered (Dilley *et al.*, 2005).

At the country level, the governments of countries experiencing crisis situations will need to play new and stronger roles in risk reduction and the coordination of external assistance through capacity development of national and local disaster management institutions. National capacity to provide emergency relief when local coping capacities have been exceeded needs to be strengthened for all types of crises in food and agriculture. Response capacity needs to be developed and supported by focusing on ways to protect livelihoods, provide inputs to restore agricultural production, control plant and animal pests and diseases, and assess environmental and agricultural damage and hazard exposure.

■ Disaster preparedness critical to development

FAO support to country-level preparedness, emergency response and rehabilitation will necessarily be influenced by changing financial, institutional and market conditions. Partnerships are evolving and deepening to address the need to better link short- and long-term programming objectives. Funding modalities will continue to evolve to be more diversified and pooled at global and country levels, and ongoing humanitarian reform within the United Nations system will offer opportunities for FAO with regard to coordination and leadership on food security and

nutrition issues at global, regional, national and local levels. The reactive nature of humanitarian response needs to be replaced by an integrated approach based on DRR that incorporates political and security hazards currently missing from the risk reduction discourse, and takes a more proactive approach to livelihoods (Maxwell, 2010).

Ensuring a deeper understanding of the constraints related to enhancing resilience, understanding vulnerability and diversifying livelihoods is necessary, particularly through greater understanding of local concepts of hazards and community-based risk reduction measures. A key challenge is to understand the linkages between increasingly complex food and agricultural systems, deepening vulnerabilities across a wider range of populations, and multiple and growing hazard exposure that signals the need for increased focus on more integrated ways to reduce and manage the risk of disasters. For many stakeholders at all levels, the DRM approach lessens the need for emergency relief, reduces food and nutrition insecurity, and enhances the sustainability and impact of FAO efforts to strengthen the capacity of countries and partners to prepare for and respond to threats and emergencies in food and agriculture.

Fighting transboundary plant, animal and fish diseases

Plant pests and diseases of animals have threatened societies since farming began and, in severe cases, have resulted in famines and migration. Natural resource managers and users themselves are at the forefront in combating pests and diseases, but given the propensity of diseases to spread, the presence of a pest or disease in one area poses a threat to adjacent areas and, in today's globalized world, even to very distant localities. Sudden and unexpected outbreaks of transboundary pests and diseases can thus imply negative impacts for third parties, calling for additional response through collective action from affected parties or a national or international public agency.

More than a dozen transboundary plant pests and diseases may cost over a billion US dollars in losses and control operations annually. Outbreaks of forest insect pests damage nearly 35 million ha of forest annually, threatening their ability to provide economic, environmental and social benefits (FAO, 2009l, 2010d). Diseases of livestock reduce production by close to 20 percent, while individual epidemics can cause losses of several billion US dollars (FAO, 2009c). Estimated losses due to transboundary aquatic animal diseases in aquaculture range from several hundred million US dollars caused by a single infection to several billion from mixed infections, in some cases leading to the total collapse of the sector (Bondad-Reantaso *et al.*, 2005).

Pests and animal diseases pose the greatest immediate threat when they occur irregularly, are introduced after long absences, or enter for the first time into ecologically favourable conditions where there are few natural factors to limit their

BOX 32

Recent spread of selected transboundary pests and diseases

- *The Desert Locust* is probably the best-known example of a migratory plant pest because of the speed at which outbreaks occur and the scale infestations can reach. Locust swarms may spread over millions of square kilometres. In 2003–2005 swarms severely affected most countries of North and northwest Africa.
- *Wheat stem rust* became a new cross-border threat of a global dimension in 1999 when a novel strain (Ug99) emerged in East Africa and reached the Islamic Republic of Iran in 2007. The regions of East Africa, the Near East and Central and South Asia at immediate risk account for 37 percent of global wheat production. This new rust strain is highly virulent to almost all wheat varieties and could cause devastating crop losses if its spread is not prevented.
- *Stripe (yellow) rust* threatens the same regions as Ug99. Major epidemics of new, highly aggressive strains of stripe rust have occurred in Ethiopia, Iraq, Morocco, the Syrian Arab Republic, Turkey and Uzbekistan. An estimated 15 million ha are considered susceptible in the wheat regions of North Africa and South Asia.
- *Highly pathogenic avian influenza* H5N1 emerged in China in 1996, spread to Southeast Asia in late 2003 and, from there, westwards, reaching Europe and Africa in 2005. The virus causes severe and often fatal disease in humans although, to date, the virus does not readily transmit between humans.
- *African swine fever* outbreaks were reported in the Caucasus region in 2007–2008 for the first time ever. If not contained, it is likely to spread north, threatening pig production in the Ukraine and Russian Federation.
- *Rift Valley fever (RVF)*, historically confined to Africa, occurred in southwest Saudi Arabia and northwest Yemen in 2000, its first occurrence outside the African continent and Madagascar.
- *Foot-and-mouth disease* virus of Asian origin was introduced into the United Kingdom in 2000, causing direct and indirect economic losses totalling more than US\$10 billion.
- *Epizootic ulcerative syndrome*, whose original distribution was only in Asia and the USA, expanded its geographic range to the Chobe-Zambezi river system in Africa in 2006, mainly affecting wild fish and some cultured populations.
- *Infectious salmon anaemia* has severely affected the salmon aquaculture sector, particularly in Chile since 2007, causing millions of dollars of losses to the industry and seriously impacting on the livelihoods of people dependent on the sector.

- *White spot disease*, one of the most serious diseases of cultivated shrimp, has affected more than 20 shrimp producing countries over the past two decades.
- *The mountain pine beetle*, or *Dendroctonus ponderosae*, native to North America, has devastated more than 11 million ha of native pine forest in Canada and western United States since the late 1990s and is spreading well beyond its normal range of occurrence, an unprecedented outbreak exacerbated by milder winter temperatures.
- *The cypress aphid*, or *Cinara cupressivora*, native to Europe and Near East, spread throughout East and southern Africa during the 1990s, causing an initial loss of US\$44 billion and US\$4.6 million per year through reduction in annual growth increment. It has now spread to countries in South America.

spread, and people do not have experience in managing them. Such occurrences often have the most evident social and economic impact and, in many cases, affect poor and marginalized people most severely. The emergence and spread of diseases, pests and invasive species has increased dramatically in recent years as a result of trade liberalization, increases in movements of goods and people, vastly reduced travel times, extreme weather events and climate change that causes ecological changes. These developments have heightened the need for international cooperation in controlling and managing the risks posed by transboundary pests and diseases.

■ **FAO turns commitments into practical action**

FAO helps translate international commitments into national actions through preparation and support to implementation of international phytosanitary standards, guidelines and codes of conduct (e.g. FAO, 2000b; 2005; 2006; 2011g).

Concerned about the immense losses in agricultural production and associated social and economic impacts, FAO established the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES) in mid-1994, with particular emphasis on the Desert Locust and rinderpest, although also to threats posed by other pests and diseases.

EMPRES makes a significant contribution to the containment of transboundary animal and plant pests and diseases by initiating and coordinating international control programmes; tracking the spread of pests and diseases to facilitate early reaction; supporting the establishment of local, national, and regional capacities for pest and disease control through technical and development assistance; mounting emergency responses; and engaging in international zoosanitary and phytosanitary standard setting to reduce the risk of spread of pests and diseases.



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PHOTO 22

The emergence and spread of diseases, pests and invasive species in recent years has heightened the need for international cooperation in controlling and managing such risks.

Coordinating international control programmes

The following examples of FAO activities in the area of transboundary animal and plant pest and disease risk management indicate the importance of a proactive preventative approach.

Desert Locust. EMPRES Desert Locust Component was designed to allow Desert Locust-affected countries, regional organizations, donors and FAO to collaborate in the development of improved risk management and control strategies. The programme was first launched in the EMPRES Central Region (covering Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, the Sudan and Yemen) because most previous Desert Locust plagues originated in the area around the Red Sea, but was then extended to the EMPRES Western Region (Algeria, Chad, the Libyan Arab Jamahiriya, Mali, Mauritania, Morocco, the Niger, Senegal and Tunisia) in 1997.

The immediate advantages of EMPRES became obvious during the Desert Locust crisis in 2003–2005, which started simultaneously across the Sahel in Mauritania, Mali, the Niger and the Sudan as a result of extraordinary heavy rains in summer 2003. Through development and investment in early warning, national locust surveillance and reporting systems, human capacity development, contingency planning and timely reaction mechanisms, the outbreak in the Central Region was brought under control in May 2004. New locust swarms that arrived in the Central Region from the Western Region in October 2004 were controlled by the national control units and prevented from expanding further. In subsequent years, at least three new outbreaks were effectively contained in the Central Region, preventing a major upsurge that could have affected the entire region. In 2007 the worst Desert Locust outbreak in 15 years developed in Yemen, but was brought under control within three months, facilitated by unprecedented rapid release of emergency funds provided under the United Nations Central Emergency Response Fund.

Wheat rust. FAO's Wheat Rust Disease Global Programme was launched in 2008, based on the EMPRES Desert Locust approach, to support countries at risk in strengthening their preparedness capacities to prevent and manage the spread of rust diseases. Under the framework of the Borlaug Global Rust Initiative, FAO works with the International Centre for Agricultural Research in the Dry Areas (ICARDA), the International Maize and Wheat Improvement Centre (CIMMYT), Cornell University, national programmes and the donor community. The objective of the Initiative is to establish priorities and coordinate global activities to safeguard the food security of wheat-producing countries. As part of the programme, rust-resistant varieties are being tested and promoted in at least ten countries.

Rinderpest. In 1994, under the EMPRES Livestock component, FAO launched the Global Rinderpest Eradication Programme (GREP) as an international coordination mechanism to promote eradication of the disease by 2010. Due to GREP's efforts, the last outbreak of rinderpest was recorded in Kenya in 2001, the last time the vaccine was used was in 2006, and in June 2011, the Directors-General of FAO and the World Organisation for Animal Health (OIE), announced global freedom from rinderpest – marking the first ever eradication of an animal disease and the second ever eradication of a pathogen. The first, smallpox, was declared eradicated in 1980.

The United States Agency for International Development (USAID), the EU, and the United Kingdom's Department for International Development (DFID) provided most of the financial support for GREP, earmarked to improve research and diagnostic techniques, strengthen national laboratory services, assist national veterinary services in surveillance, coordinate regional vaccination campaigns, develop strategies to respond to re-introduction of the disease, and continuously monitor the global rinderpest situation.

Prior to the initiation of mass vaccination campaigns, disease caused around 100 000 cattle deaths per year in Africa, and veterinary services carried out more than 30 million vaccinations each year, yet outbreaks still occurred. Destruction of

PHOTO 23

The last outbreak of rinderpest was recorded in Kenya in 2001, the last vaccine administered in 2006, and in June 2011, FAO and the OIE announced global freedom from rinderpest.



virus stocks still kept in laboratories will take several years and will be part of the future GREP activities.

Establishing pest and disease intelligence systems

FAO has established a number of information systems that collate a broad spectrum of information from a wide range of sources with proactive output tailored to enable proactive responses to priority plant pests and diseases.

For example, FAO continuously improves and updates its global Desert Locust Monitoring and Early Warning System with new technologies such as remote sensing imagery of green vegetation and models used to estimate locust development rates. These technologies have significantly increased the chances of detecting likely hotspots of locust developments in the vast recession area. For animal diseases, a joint Global Early Warning System for animal diseases transmissible to humans has been developed by FAO, OIE and WHO. It builds on the added value of the three agencies, combining and coordinating their disease event analysis, early warning and forecasting mechanisms and, in turn, enabling the international community and stakeholders to assist in prediction, prevention and control of animal disease threats, including zoonoses. For fish, FAO has collaborated with the Network of Aquaculture Centres in Asia-Pacific (NACA) and OIE to establish a regional aquatic animal disease surveillance and reporting system, which is now fully integrated in the OIE reporting system. Another outcome of this collaboration is the FAO Aquatic Animal Pathogen and Quarantine Information System, a Web-based information system providing aquatic animal health information within the aquaculture landscape.

Providing emergency response and development assistance

FAO provides assistance in efforts to contain emergencies and supports capacity development in pest and disease response at country and regional levels.

- *Desert Locust*. FAO provided emergency assistance to reduce the risk of various locust outbreaks and upsurges to food production in Timor Leste and Indonesia in 2007; the Sudan, Ethiopia, Eritrea and Yemen in 2007/2008; Tanzania, Malawi and Mozambique in 2008/2009; Georgia in 2009; and Madagascar in 2010.
- *Rift Valley fever*. When RVF was detected in sheep in Namibia in 2010 after an absence of 25 years, FAO deployed a veterinary team at the request of the Namibian Government to provide guidance in outbreak control. By stopping the movement of cattle, sheep and goats from, into, within and through the affected regions and suspending animal auctions, it was possible to bring the outbreaks under control.
- *Epizootic ulcerative syndrome (EUS)*. When EUS was first confirmed in the Chobe-Zambezi River system, Botswana, in 2007, FAO provided emergency and technical assistance on EUS to seven bordering countries. Assistance included targeted capacity development in basic diagnosis, active surveillance,

risk analysis, and strengthening of a regional resource laboratory. EUS now affects four countries sharing the system with implications for negative impacts on native fish species; the communities dependent on fishing and aquaculture in the affected region; and risk of further spread to other natural water bodies in the African continent.

Supporting the Food Chain Crisis Management Framework

The human food chain faces continuous threats from increasing outbreaks of aquatic and transboundary animal diseases, plant pests and diseases, and food safety emergencies. Avian influenza, H1N1, cassava diseases, locust infestations, Salmonellosis and dioxin are some examples of threats to the human food chain that can have a potential impact on human health, food security, national economies and global markets. Through its Food Chain Crisis Management Framework, FAO assists its members in addressing the risks to the human food chain, especially the assessment, management and communication dimensions of the risks involved through a comprehensive, interdisciplinary approach.

■ FAO's proactive approach yields benefits

Many countries have made substantial progress in reinforcing their preventive management capacities with regard to threats of transboundary pests and diseases. However, given that today diseases spread faster than ever, their potential consequences for food security, human health and ecosystems also escalate. Developed and developing countries now share a global commons of disease risk and would greatly benefit from a strong international response and capacity development on the principles and lessons of FAO's proactive EMPRES approach to disease prevention and control.

This approach to disease risk management can only be implemented with the appropriate support from pertinent national and international actors in line with their strengths and core competencies. Foresight capacity should rest in the hands of already established centres of disease control and prevention in close collaboration with academic centres of excellence and the respective disease foreknowledge units at FAO and WHO.

Most importantly, early reaction capacity to tackle diseases as they arise falls within the remit of countries and their public and private health systems. Domestic institutions need to be equipped with the financial, technical and human resources to support the first and second line of defence. The private sector needs to play an important role as a catalyst of change, by embracing measures to reduce risks and collaboration with national public entities. CSOs, which are in close proximity to the realities on the ground, should liaise more frequently with national and international agencies to complement pest and disease control systems after careful identification of operational gaps and overlaps.

Global partnerships are needed to address the pressing problem posed by pests and diseases of plants and animals. However, endeavours of the required magnitude

need to be championed by strong advocates who support a holistic and proactive approach to sustainable disease risk management.

Increasing agricultural production and productivity

With the increasing demands of a growing population, the world must now produce more food and other commodities from the same area of land. As reiterated several times in this book, a 70 percent increase in agricultural production will be needed to feed the projected world population of 9.2 billion in 2050. The task is further complicated by the limited availability of land for expansion; poor and declining quality of land and soil resources; and compromised resilience of ecosystems in the face of climate change effects.

In most developing countries, there is little or no additional land suitable for agriculture. It is therefore estimated that 80 percent of the required extra food production will need to come from increased yields and productivity. In the past, many of the agricultural practices responsible for yield increases, such as fertilizer use, irrigation, pesticide use and intensive tillage, have often had significant environmental costs (FAO, 2010h). Today it is generally recognized that well-managed ecosystems are essential for ensuring a healthy resources base on which to intensify in a sustainable manner. To increase the productivity of agro-ecosystems now and in the future, farming practices need to shift away from a heavy dependency on non-renewable inputs and chemical-based products towards other forms of intensification, which complement natural biological processes and biodiversity.

■ Sustainable agricultural intensification

Sustainable intensification has been defined as producing more from the same area of land while reducing negative environmental impacts and increasing contributions to natural capital and the flow of environmental services (Godfray *et al.*, 2010). Sustainable intensification of crop and livestock production is characterized by a systemic approach to managing natural resources, and it draws on a set of environmental, institutional and social principles. When effectively implemented and supported, sustainable agricultural intensification provides the “win-win” outcomes required to meet the dual challenges of feeding the world’s population and protecting the planet. Adopting a sustainable intensification approach has multiple benefits for food security and environmental health and could be implemented in the short term over large production areas.

FAO works to help countries achieve sustainable increases in agricultural productivity by providing technical and policy assistance in four areas:

- increasing agricultural productivity through improved use of resources to achieve higher yields while promoting the sustainability of the production and farming systems;

- enhancing sustainable crop and livestock protection, with a focus on animal diseases and crop pest and pesticide-related issues;
- managing biodiversity and ecosystem services, including through the identification and use of mechanisms for valuing agricultural biodiversity and ecosystem services, and sound agronomic and land management practices;
- strengthening livelihoods, by applying the benefits of increased productivity and diversification within the value chain (to be achieved within an institutional framework of global and regional instruments, treaties, conventions and codes).

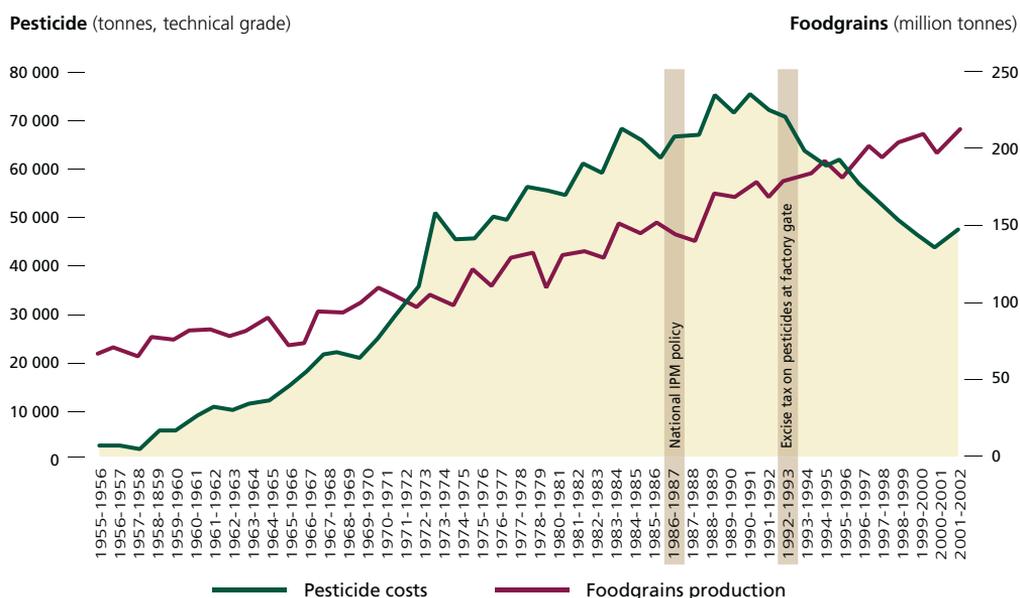
In addition to working at the field level, FAO also contributes at the international level by encouraging dialogue between the agriculture and environment sectors, and among public, private and civil society sectors. It also works to harmonize and improve adaptation of existing international instruments, conventions and treaties relevant to production intensification, often in partnership with other institutions.

Crops

Agricultural inputs such as seed, fertilizer, land, water, chemical pesticides or biopesticides, power and labour complement the biological processes supporting plant growth. These biological processes include the action of soil-based organisms

FIGURE 27

India: Annual foodgrains production versus total pesticide use (1955-2002)



Source: FAO, 2009m.

that allows plants to access key nutrients, to maintain a healthy soil structure which promotes water retention and the recharge of groundwater resources, and to sequester carbon. They also include such actions as pollination and the natural predation that leads to pest control (FAO, 2009m). Utilizing information on these supporting biological processes can help farmers boost the efficiency of conventional inputs.

Agricultural practices and adapted production systems that manage ecosystem services to improve productivity and reduce environmental impacts have developed over time. FAO works with countries on approaches such as integrated plant nutrient management, integrated agriculture-aquaculture, integrated pest management, conservation agriculture, organic agriculture, integrated crop-livestock systems, agroforestry systems and integrated weed management as well as pollination management, all of which aim for sustainable improvement in productivity.

Integrated pest management is an ecosystem approach to crop production and protection that encourages natural predation as a corollary to reducing the overuse of insecticides. It also combines management strategies and practices such as cropping management practices, biological control agents – including biopesticides – and the judicious use of relatively safe pesticides. In practice, countries such as India, Indonesia and the Philippines removed insecticide subsidies and reduced insecticide use by 50 to 55 percent, yet rice production continued to increase annually. In India, from 1994 to 2002, total food grain production rose by more than 20 percent while pesticide use fell by more than 35 percent.

Efficient water management is a key to sustainable crop production intensification. Experts estimate that in developing countries, about 20 percent of all arable land is irrigated yet it accounts for 47 percent of all crop production and almost 60 percent of cereal production. Feeding 9 billion people requires the expansion of irrigated areas as well as the wider use of management practices that will improve the efficiency of water use, for example water “harvesting” techniques and conservation of soil moisture.

Integrated plant nutrient management and similar strategies call for the combined use of mineral, organic and biological resources to balance the use of limited resources and ensure ecosystem sustainability against nutrient mining and degradation.

Animal pollination services make an estimated US\$214 billion contribution to the global economy, representing 9.5 percent of the value of world agricultural production used for human food in 2005. Crops that depend on pollination services have average values of US\$1 060 per tonne, compared with US\$211 per tonne for crops that do not depend on animal pollination (Batello *et al.*, 2010). Pollinator-friendly management practices, in multiple agro-ecosystems and ecologies, enhance yields, quality, diversity and resilience of crops and cropping systems. A number of

BOX 33

Development assistance to farmers in remote areas of Montenegro and Kosovo

Since 2006, in the northeastern region of Montenegro and the Shara Mountains of Kosovo, an FAO project funded by Luxembourg has been promoting the improvement of rural household income through support to livestock production and livestock products marketing. The project has provided technical training and field demonstrations and has facilitated the creation of associations, generating significant benefits for the farmers who, on average, managed to triple their incomes.

Working on the premise of inclusive and comprehensive consultation and decision-making, farmers were invited to describe their needs and the type of income-enhancing support required. Two components in particular were defined: a *winter training programme* and *key farmers*. Key farmers were usually rural entrepreneurs and they subsequently made significant contributions to the project's activities and success by serving as group leaders and peer trainers as well as mentors for the young. For example, at one winter training workshop in Montenegro, the need for more assistance in silage production was expressed. Drawing on the expertise made available and grass-silage techniques demonstrated by the project, one Farmer's Association President was able to generate a fourfold increase in annual income. He also highlighted how this transfer of animal nutrition expertise helped to allay his anxieties about the source of feed for his cows during the long, pastureless winter months.

In 2010 together with the Agrosjever Farmers' Cooperative the project organized joint programmes for *certified seed production* in Montenegro. This was the first such undertaking in the country and resulted in improved seed quality that is more disease resistant and generates higher yields and incomes.

Wool storage had been a major problem for Montenegrin fleece farmers for ten years, with the common practice being that of burning most of the unsold wool. An alternative sustainable wool market option was proposed by farmers during a participatory cooperative meeting, with start-up and technical support from the project. In 2010 the cooperative was able to meet all EU wool export standards, with the first truckload being exported to the United Kingdom. Today, the members of the farmers' cooperatives run the business alone and have invested in modern equipment and additional training, particularly for the new cooperative members.

Improved milk production has also benefited from the project's support. The production and marketing of traditional soft-white cheese from mountain-grazed sheep and cows was hampered by storage and transporta-

tion problems, often compounded by payment difficulties. These factors rendered this type of cheese production challenging and financially risky. Interested farmers received specialized comprehensive training in product diversification, resulting in a semi-hard nationally recognized quality product. Cheeses from two of the units, Komovski and Koritski, received top awards in 2011 at national and international food and agriculture fairs in the region.

This positive experience with a participatory approach prompted FAO to extend the reach of the project to the young people of the region as a means of stemming migration and addressing demographic changes, two factors that threaten the sustainability of mountain farming. With FAO's support, Young Farmers' Clubs have been established, which provide opportunities for agricultural training and social and voluntary activities. Young people, particularly girls, are encouraged to decide on the activities they wish to see organized and identify their training needs. The result is a win-win situation for the young people as well as for the region, as young participants are motivated to view farming as a noble profession and, together with older club members, to move away from low-output, small-scale subsistence farming systems towards modern but sustainable activities that harness the regions' abundant natural resources.

practices exist that favour pollination services, for example preserving wild habitat; managing cropping systems; cultivating shade trees; managing bee nest sites; reducing application of pesticides and the associated risks; and establishing landscape configurations.

Conservation agriculture is a production method based on three principles: minimum mechanical soil disturbance; permanent organic soil cover; and diversification of crop species grown in sequences or associations. Conservation agriculture practices can create stable living conditions for micro- and macro-organisms, providing a host of natural mechanisms that support the growth of crops. It also results in significant efficiency gains and decreasing needs for farm inputs, in particular power, time, labour, fertilizer, agrochemicals and water. Furthermore, in many environments, soil erosion is reduced to below the soil regeneration level or avoided altogether, and water resources are restored to levels that preceded putting the land under intensive tillage.

Well-integrated crop and livestock systems increase the diversity and environmental sustainability of smallholder production systems. This intentional integration reflects a synergistic relationship among the components of crops (including pastures and trees) and livestock which, when appropriately managed, results in enhanced social, economic and environmental sustainability.

Livestock

Since the 1960s, beef production has more than doubled and production of poultry meat has increased tenfold, while milk and egg production has increased by 30 percent. These increases have been achieved through both an expansion of stock numbers and an increase in productivity. They have been accompanied by major changes in land and water use. A considerable expansion of arable land, much of it resulting from deforestation, has been devoted to cultivation of cereals and pulses (soybean) for use in animal feed. Approximately one-third of global grain production is now channelled through animals as feed.

Further increases in stock numbers are inevitable, but sustainable growth will depend mainly on increases in productivity and a reduction in losses and wastage. Increasing productivity, producing more from the same or fewer inputs, requires optimization of the use of primary inputs such as land, feed and water.

Poor animal nutrition, probably the major constraint to animal production, has a wide-ranging effect on growth, reproduction, yields (milk and eggs) and disease resistance, as well as a significant impact on the environment through emissions. The intensive commercial poultry, pig and milk sectors are well aware of the importance of balanced nutrition, which has been a major cause of the increased productivity in these systems. However, where livestock depends largely on crop residues, their diets are invariably deficient in nitrogen and minerals. Balancing the nutrients in crop residue-based diets leads to a better utilization of feed resources and higher animal productivity. This can be achieved with protein supplements, such as cottonseed cake or with urea-molasses multinutrient blocks. Work is ongoing on the efficient utilization of existing feeds but also efforts are being made to explore and exploit novel feeds that are less competitive than the cereals and pulses that can be consumed directly by humans.

Animal breeding. Conventional breeding techniques have been a major factor in increasing animal productivity. Whereas most of the genetic gain has occurred in developed countries, developing countries also have opportunities to make substantial genetic improvement. There has been virtually no within-breed selec-

PHOTO 24

Increasing livestock productivity requires optimization of the use of primary inputs such as land, feed and water.



tion of local breeds, largely owing to the lack of the necessary institutional infrastructure. Crossbreeding in cattle can result in substantial increases in productivity when combined with adequate management. Crossbred dairy cows are making an increasing contribution to milk production in emerging dairy sectors. Increasingly, future changes will be met by application of new molecular genetics techniques, especially with the complete genome map for farm species. Although there will be challenges, advances in genomics are likely to revolutionize animal breeding.

Pest and diseases. Diseases and parasites that do not necessarily lead to high mortality but still impact animal performance can have serious effects on farm-level productivity. Major transboundary diseases also adversely affect local and international trade. While the eradication of rinderpest is clearly a major achievement, the emergence of avian (H5N1) and pig (H1N1) influenzas, and the spread of diseases such as African swine fever, remain major concerns. Some diseases influence land use – trypanosomiasis, a disease of ruminants in Africa, limits livestock production in areas infested with the tsetse fly. This also impacts on the surrounding agriculture by reducing the options for animal traction. Effective disease control measures exist for many diseases, the issue remaining one of implementation.

Mixed systems. In pastoral communities, where the livelihoods of many people are highly dependent on livestock, any sustainable intensification will come from reducing pre-weaning losses, which can be achieved relatively easily and cheaply with good husbandry, inexpensive vaccines and strategic supplementary feeding. However, throughout much of the developing world, mixed crop-livestock farming remains the predominant production system. Animals utilize the crop residues, spent grains, cultivated fodders and fallow land grazing. Fodder legumes that fix nitrogen, such as lucerne or berseem, are commonly grown for animals as part of the crop rotation. Animals provide power for cultivation and manure as an organic fertilizer or fuel.

Small- to medium-scale commercial animal production may flourish where there is reliable access to markets, goods and services (including credit) which are major determinants for investing time and money in such enterprises. In these systems, changes are market driven and occur where market opportunities exist. Access to markets also exposes producers to competition from the large-scale commercial sector and consumer demand for safer, more ethical (animal welfare) and higher quality products.

Intensification. Highly efficient, capital intensive, large-scale production systems that evolved in the developed world are increasingly found elsewhere. Intensification, often associated with concentration, also increases the problem of pollution, effluent disposal and bio-security. Furthermore, the close proximity of high concentrations of humans and animals increases the public health risks associated with known and emerging new zoonoses. New approaches based on nanotechnology, automa-

tion and molecular genetics have the potential to increase efficiency in producing meat, eggs and milk in these large-scale production systems. However, these systems are likely to become increasingly controversial as means of providing safe, ethical and environmentally neutral products.

■ Biotechnology

Biotechnology in food and agriculture, particularly genetic engineering, has become the focus of a global war of rhetoric. Supporters hail genetic engineering as essential to addressing food insecurity and malnutrition in developing countries and accuse opponents of crimes against humanity for delaying the regulatory approval of potentially life-saving innovations. Opponents claim that genetic engineering will wreak environmental catastrophe, worsen poverty and hunger and lead to a corporate takeover of traditional agriculture and the global food supply. They accuse biotechnology supporters of “fooling the world”.

The Green Revolution, while not without shortcomings, illustrated that technological innovation – higher-yielding seeds and the inputs required to make them grow – can bring enormous benefits to poor people through enhanced efficiency, higher incomes and lower food prices. This virtuous cycle of rising productivity, improving living standards and sustainable economic growth lifted millions of people out of poverty. Yet many remain trapped in subsistence agriculture. The question is whether the current “gene revolution” can reach those left behind.

Today’s rapidly urbanizing global population demands a wider range of quality attributes from agriculture, not just the quality of the products themselves but also of the methods used in their production. The agriculture sector will need to respond in ways beyond the traditional focus on higher yields, addressing the protection of environmental common goods, consumer concerns for food safety and quality, and the enhancement of rural livelihoods both in developed and developing countries.

There is clear promise that biotechnology can contribute to meeting the challenges. It can overcome production constraints, speed up conventional breeding programmes and provide farmers with disease-free planting materials. It can create crops that resist pests and diseases, replacing toxic chemicals that harm the environment and human health, and it can provide diagnostic tools and vaccines that help control devastating animal diseases. It can improve the nutritional quality of staple foods, such as rice and cassava, and create new products for health and industrial uses.

Biotechnology is not a panacea, however. It cannot overcome the gaps in infrastructure, markets, breeding capacity, input delivery systems and extension services that hinder all efforts to promote agricultural growth in poor, remote areas. Some of these challenges may be more difficult for biotechnology than for other agricultural technologies, but others may be less difficult. Technologies that are embodied in a seed, such as transgenic insect resistance, may be easier for small-scale, resource-poor farmers to use than more complicated crop technologies that require other inputs or complex management strategies. On the other hand, some biotechnology

packages, particularly in the livestock and fisheries areas, require a certain institutional and managerial environment to function properly and thus may not be effective for resource-poor smallholders.

The safety and regulatory concerns associated with transgenic crops constitute a major hurdle for developing countries, because many lack the regulatory frameworks and technical capacity necessary to evaluate these crops and the conflicting claims surrounding them. Although the international scientific community has determined that foods derived from the transgenic crops currently available on the market are safe to eat, it also acknowledges that some of the emerging transformations involving multiple transgenes may require additional food safety risk analysis procedures.

There is less scientific consensus on the environmental hazards associated with transgenic crops, although there is general agreement that these products should be evaluated against the hazards associated with conventional agriculture. There is also wide consensus that transgenic crops should be evaluated on a case-by-case basis, as is the case with pharmaceuticals, taking into consideration the specific crop, trait and agro-ecological system. Because very few transgenic crops have been evaluated for their ecological impacts in tropical regions, a major research effort is required in this area. However, apart from a few initiatives here and there, there are no major public- or private-sector programmes to tackle the critical problems of the poor or targeting crops and animals that they rely on. Concerted international efforts are required to ensure that the technology needs of the poor are addressed and that barriers to access are overcome.

■ Moving forward with sustainable intensification

Sustainable production intensification requires an ecosystem approach and an enabling policy and institutional environment that allow different sectors to apply appropriate practices. While the options for moving towards this environment are site-specific, certain approaches are common to most sectors:

- linking public- and private-sector support;
- increasing coordination and reducing transaction costs of incorporating smallholders into the development of sustainable production intensification policies, programmes and strategies;
- incorporating the value of natural resources and ecosystem services into agricultural input and output price policies;
- building regulatory, research and advisory systems for heterogeneous production and marketing conditions (for example, including informal seed systems in seed regulatory policies and integrating traditional knowledge into research and extension);
- recognizing and incorporating customary access and management practices into sustainable production intensification initiatives.

FAO will have a pivotal role in ensuring that agriculture is able to feed a growing and demanding human population equitably, safely and without adversely affecting

the natural resource base or the environment. As a neutral, intergovernmental body, FAO is uniquely placed to advise and guide the future of sustainable agricultural development through analysis of major and often contentious issues, supported by readily available evidence-based information.

Agricultural research, technology development and extension

In the 1960s, the development of new agricultural technologies or innovations was seen as the prime responsibility of National Agricultural Research Institutes and agricultural extension services. In this linear, top-down approach, the national institutes developed new techniques and the farmers adopted them. Extension services were used as a conduit to deliver research findings to the field. This approach was modified in the 1980s into the broader National Agricultural Research System (NARS) approach. The NARS concept recognized that innovation, rather than research, was the driver of development and it could originate with and be promoted by other actors, including farmers, farmers' organizations, the private sector, NGOs and universities.

In 2000, FAO and the World Bank published *Agricultural Knowledge and Information Systems for Rural Development: Strategic Vision and Guiding Principles*. This was the natural evolution of the NARS model and defined the integration of education, research and extension. The triangle used to illustrate this framework highlights the contributions of each of these three components to knowledge development, and the central purpose of the system – to serve farmers. In defining this concept, FAO advocated that farmers be considered partners and custodians, not simply recipients of agricultural knowledge.

■ Focus on outcomes to improve effectiveness

FAO is one of the key agents of change in defining and using the concept of the Agricultural Innovation System (AIS) to serve the needs and demands of resource-poor farmers and consumers. The AIS concept emerged from the need to shift agricultural research and extension towards development mechanisms centred on outcomes, recognizing that innovation is not a research-driven process that simply relies on technology transfer. Innovation should become a process of generating, accessing, sharing and putting knowledge into use in which stakeholders learn and innovate together, managing the benefits and the risks. The alignment of development policies and resource allocations, the reshaping of research and extension institutions, increasing communication and interactions among all actors and players, and the interactive learning processes as a means of evolving new arrangements specific to local contexts, thus become pivotal to this process of innovation.



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PHOTO 25

FAO has been a key player in developing an international architecture for agricultural research and in promoting inter-country collaboration.

More effective research and development and extension

At the global and regional levels, FAO has been a key player in the development of an international architecture for agricultural research, and it was instrumental in promoting intercountry collaboration for research by cosponsoring the establishment and evolution of a number of NARS regional fora. These included the Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA), the European System of Cooperative Research Networks in Agriculture (ESCORENA), the Asia-Pacific Association of Agricultural Research Institutions (APAARI) and the Forum of Agricultural Research for Africa (FARA). More recently, it supported the establishment and hosting of the secretariat of the multistakeholder Global Forum on Agricultural Research (GFAR).

FAO has championed the development of these fora, where NARS can voice their priorities, set the international agricultural research agenda, including through the process of the Global Conference on Agricultural Research for Development (GCARD), and pursue a regional approach as a component of their national strategies for agricultural development. This achieves complementary gains by focusing national efforts on specific areas where they have an intrinsic advantage and allows them to work with partners for needs common to a region. FAO played an active part in the process of reform of the Consultative Group on International Agricultural Research (CGIAR) and it also supports the Global Forum on Rural Advisory Services (GFRAS) as well as the Global Consortium of Higher Education and Research for Agriculture (GCHERA).

More effective institutions and policies

After decades of neglect, agricultural innovation systems in many developing countries are weak, fragmented, and poorly linked with farmers and other stakeholders to meet the challenges of ensuring food security, environmental sustainability and reducing poverty.

In research, FAO supports member countries in developing their capacities by formulating research policies and programmes geared to development objectives; strengthening research institutions; creating conducive environments for technology generation and adaptation; and developing human resources.

FAO offers policy advice and technical assistance for the transformation of extension into a pluralistic, demand-led and market-oriented system for member countries, a needed reform for effective agricultural and rural development. This includes tailoring capacity development regarding national policies, and human resource development to national institutional settings. It considers the roles and potential of private firms, NGOs, producer organizations, universities and others along the value chain.

Institutions are witnessing major changes in the ways research outputs are made accessible and communicated – through the application of digital ICTs. It is in this context of the rapidly changing landscape of research communication that a group of major experienced international and regional organizations, led by FAO, GFAR and the CGIAR, came together to combine their experience and to address the issues of coherence and capacity in developing countries and establish the global initiative on Coherence in Information for Agricultural Research for Development (CIARD), aimed at making agricultural research information truly publicly accessible. Partners in the initiative, including an increasing number of national institutions, are coordinating their efforts, promoting common formats for information sharing and exchange, and adopting open information systems approaches. The partners developed a manifesto for change, supported by a checklist of good practices and a set of pathways to achieving the manifesto. A global network of truly accessible outputs of research and innovation is being created, which greatly increases the chance that those outputs can be put to use, locally, nationally and globally.

Communication for development

Since the 1970s, FAO has pioneered communication for development methods and systems that are central to inclusive and efficient innovation systems. Communication for development integrates the systematic design and use of communication strategies and media to improve knowledge, information sharing and the active participation of all stakeholders in an agricultural innovation system. It integrates local and traditional media with use of the new ICTs to improve linkages, knowledge sharing and mediation processes among institutions and stakeholders, leading towards the configuration of new demand-led innovation services. In this context, communication for development strategies and the new ICTs can result in greater and more cost-effective access to information, knowledge and technologies, an improved fit to local conditions and to the promotion of producers' organizations, empowering them and giving a voice to the demand side of extension.

Communication for development projects and services developed by FAO have proven instrumental as strategic components of agricultural innovation systems

BOX 34**Innovation and Competitiveness for Peruvian Agriculture Programme**

In the late 1990s, the Government of Peru decided to promote agricultural innovation to reform its research and extension system. With a loan from the World Bank and technical assistance from FAO, a programme for Innovation and Competitiveness for Peruvian Agriculture (INCAGRO) was set up as a modern and decentralized agricultural science and technology system. It was designed to be pluralistic, demand-driven and led by the private sector. One of INCAGRO's distinguishing features has been the use of competitive funding schemes to promote a market for agricultural innovation services.

Farmers were the owners of the projects being funded – agricultural service providers were contracted to complete specific activities while farmer groups contributed in cash and in-kind to the projects. The key to INCAGRO's success, which led to a new demand-driven market for agricultural innovation, was that it enhanced the power of the clients to formulate, cofinance, regulate, implement, monitor and evaluate extension services through the mechanisms and tools of the competitive funds. It thereby created a situation in which farmers' voices were heard and their demands became authentic drivers of agricultural innovation.

in improving the generation and sharing of knowledge among rural people and in enhancing the linkages among research, advisory services and their clients. Communication for development plans and strategies have also added value in new areas of work related to innovation systems, especially those involving community mobilization and participation, such as climate change adaptation, disaster risk reduction and natural resources management. In 2006, the First World Congress on Communication for Development took place in Rome, jointly organized by FAO, the World Bank and the Communication Initiative Network.

Technical assistance

FAO advocates a shift from interventions focusing on single components towards a system approach aimed at strengthening institutional and stakeholder networks to facilitate the development of an inclusive and integrated agricultural innovation system that is tailored to the needs of smallholder farmers. Through its technical assistance programme, the Organization supports participatory processes for improving national agricultural innovation systems by involving key stakeholders, including producers and their organizations, in assessing research and extension systems and planning interventions to improve these systems at policy, institutional, human resources and technical levels.

Considering the great potential offered by recent advances in life sciences, FAO has also been active in developing national capacities in biotechnology policy development and biosafety. Intensive efforts have been made to provide neutral, balanced information on biotechnology, to enable policy-makers and managers to make informed decisions. The FAO International Technical Conference on Agricultural Biotechnologies in Developing Countries, held March 2010 in Guadalajara, Mexico, offered countries a neutral forum to discuss how to promote the use of biotechnologies to meet development objectives.

Knowledge into use

New agricultural innovation system tools focus on facilitating innovative exchange and the use of knowledge and technologies to achieve social and economic advancement. The examples below illustrate some of the FAO contributions.

Virtual Extension and Research Communication Network (VERCON) employs Internet-based technologies and communication for development methodologies to strengthen linkages among agricultural policy, research and extension institutions and other key stakeholders. It uses ICTs and participatory communication techniques to connect geographically dispersed people and facilitate networking among various institutions and individuals. FAO has supported knowledge and communication systems based on the VERCON concept in several countries throughout Africa, Asia, the Near East, Latin America and Central and Eastern Europe.

Rural radio has been a focus of FAO for more than 20 years, particularly in Africa. FAO has helped build rural radio methodology on the principles and approaches of communication for development. Community participation is a fundamental characteristic of rural radio. Live public shows, village debates and participation in the actual management of the radio station empower rural people to participate in the dialogue and decision-making processes essential for them to control their own economic, social and cultural environment and play an active part in development activities.

National and regional programmes for food security

In 1990–1992, when improved agricultural production technology made it possible to produce enough food to feed a world population of more than 5 billion, 816 million people, or 20 percent of the developing world's population, remained undernourished. The moral injustice of this paradox led FAO to launch an ambitious initiative to make simple but improved agricultural production technologies accessible to the large numbers of poor farmers in developing countries – those who had been bypassed by the economic and technological progress that had led to the

reduction of hunger elsewhere. This initiative was the Special Programme for Food Security (SPFS).

■ Special Programme for Food Security

The SPFS was launched in 1994 to support member countries in undertaking action against hunger and malnutrition on a scale sufficient to achieve a significant reduction in undernourishment. The initiative was endorsed by the World Food Summit in 1996.

Pilot phase

While the aim of the SPFS was to reach out to large numbers of poor farmers around the world, it did so in a phased manner. In its first decade (1994–2005), essentially a pilot phase, small-scale demonstration projects were implemented in 105 countries, reaching out to an estimated 1.5 million people. The purpose was to demonstrate how hunger and malnutrition could be reduced by helping small-scale farmers improve productivity, reduce year-to-year production variability and increase farm incomes and food availability by forming local self-help groups and adopting simple low-cost technologies.

The design of the pilot projects started with a participatory constraints analysis aimed at identifying practical problems faced by farmers and offering technical solutions centred on three main areas: improved water control, sustainable intensification of crop production, and diversified production. Following the demonstration phase, the widespread application of successful technologies by small-scale farmers (the “scaling-up” phase) was expected to contribute to food security by improving and stabilizing food availability at the national level; increasing the availability, stability and access to food; and enhancing the nutritional quality of diets.

Scaling-up phase

The period 2001–2002 was an important milestone for the SPFS. An independent evaluation concluded that while the programme remained highly relevant, its scope needed to broaden to include all four dimensions of food security, and the scale of its outreach needed to increase significantly. The evaluation’s findings were echoed by the World Food Summit: *five years later*, which concluded that, despite the commitments made at the 1996 Summit, too little action had been undertaken globally towards eradicating hunger.

Recognizing that time for meeting the hunger targets set by the summit and the MDGs was running out, the focus of the second phase of the SPFS was redirected towards direct action to tackle food insecurity through large-scale and more comprehensive national and regional programmes for food security (NPFS/RPFS). Such programmes were to be designed, owned and implemented by national governments and REIOs, and the objective was to achieve the WFS and MDG 1 targets by 2015. FAO facilitated the process of programme development, assisting

PHOTO 26

The FAO Micro-Gardens Project in Senegal, initiated through the FAO Special Programme for Food Security (SPFS), promotes horticultural production in unused and unusual spaces.



in mobilizing resources from governments, international financing institutions and other resource providers, and providing its own technical assistance as well as that provided through the SPFS South-South Cooperation initiative (introduced in the following section). By the end of 2010, 20 countries were implementing national programmes for food security and regional programmes were operational in four regions: the Caribbean Community, the Pacific Islands Forum, the West African Economic and Monetary Union, and the Economic Cooperation Organization (an intergovernmental organization involving seven Asian and three Eurasian nations). By 2014, the number of large-scale national and regional programmes is expected to double.

During the second phase of the SPFS, the number of direct beneficiaries increased to around 30 million, as more and more countries scaled up their actions through national and regional programmes. Africa, where national programmes for food security are already operational, has nearly 20 million beneficiaries. Factoring in the number of people who benefit from non-targeted outreach activities and spillover effects, the number of beneficiaries could reach as high as 80 million over the next five years.

South-South Cooperation

Since 1996, South-South Cooperation (SSC) has been an important pillar of the SPFS outreach strategy. By making the know-how of technicians and experts from emergent developing countries available to extension agencies and rural communities in less developed recipient countries, FAO's SSC initiative has been an essential vehicle for knowledge transfer among developing countries. By the end of 2010, a total of 49 SSC agreements had been signed to provide technical assistance among developing countries and more than 1 500 experts and technicians had been fielded within the framework of the SPFS. At present, FAO is supporting the development of strategic SSC alliances with selected countries in support of national and regional programmes for food security.

Impacts of the SPFS

The pilot phase demonstrated how intensification and diversification technologies, when accompanied by access to improved inputs and management skills, can increase yields in a way that is sustainable. Increases ranging from 25 to 135 percent were observed for major staple crops such as wheat, rice, maize, sorghum and cassava. The Sudan obtained a remarkable 350 percent increase in sorghum yields through a combination of deep ploughing, bund construction and planting of improved varieties. Rice yields increased by almost 200 percent in Ghana and by around 400 percent in Guinea.

Participatory extension methodologies played an essential role in the programme's technology transfer strategy. Strengthened village and farmers' organizations and the creation of small banks and revolving credit schemes were fundamental to the success of the SPFS in countries such as Mauritania, Nigeria, Pakistan and Tanzania. Farmer field schools produced very good results in Cambodia, Mozambique, Sierra Leone and Tanzania.

An important indicator of success was the rate at which new technologies and practices were adopted. The adoption of improved crop varieties was usually accompanied by improvements in the management schemes for regular supply of improved seeds and for marketing the crops. In Tanzania, success with small livestock prompted the government to support the provision of improved breeds. In Honduras, the demonstration of practices for maintaining soil humidity and using drought-resistant maize varieties and agroforestry led to their wider uptake. In several countries, poor farmers were introduced to and adopted gravity irrigation as a cheaper alternative to pump irrigation.

Food security

SPFS activities often produced direct positive food security impacts among participating households. Increased productivity of staple cereals led to shorter periods of seasonal food shortages. Income derived from diversification activities meant that farmers were able to rely on other sources of income and did not have to sell their crops at harvest time when prices were lowest. In Nigeria, average incomes of participating households increased from around US\$300 to around US\$750, which allowed them to invest in assets such as metal roofs, motorcycles and cell phones. Some locations showed a 50 percent reduction in the number of farm households eating fewer than three meals per day. In Colombia, the SPFS contributed to increased availability of home-produced staples (banana, yam, maize, beans), vegetables and protein-rich foods (meat, eggs, cheese), and reduction in child malnutrition (wasting: from 38 to 32 percent, stunting from 57 to 54 percent, underweight from 55 to 50 percent).

The SPFS also led to various forms of social capital formation. Countries with strong rice irrigation programmes benefited from formation and strengthening of water user groups for management of small-scale irrigation infrastructure and water distribution. Savings and credit groups run by local people generally proved sustain-

able. In Mali, farm groups benefiting from diversification activities dealt directly with the decentralized financing institutions to fund their production and marketing activities. The revolving fund provided by the Libyan-funded project, in addition to their own savings, was used as collateral by farmer groups. In SPFS projects in Bangladesh, Indonesia, the Lao People's Democratic Republic and Sri Lanka, communities prepared farmer group development programmes to guide improvement for all SPFS site development. These programmes included revolving funds for seed, livestock and other assets as well as capacity development through field schools, farmer-to-farmer exchanges and community workshops.

SPFS activities often had important spillover effects whereby the adoption of new technologies and practices spread beyond the initially targeted sites. This resulted in increased local and national investments in food security, programme visibility and commitment of national authorities. Guatemala's 2005 National Food Security Law was developed through a broad-based multistakeholder process that FAO's SPFS support team in the country helped to facilitate.

National and regional programmes

Since the start of the second phase of the SPFS in 2002, 20 countries and four REIOs have embarked on the implementation of large-scale programmes for food security, supported by political commitment at the highest level and embedded in broader national and regional efforts to achieve the MDGs, as well as national objectives such as equitable economic growth, sustainable agriculture, poverty reduction and rural development. Programmes are tailored to country-specific needs and priorities, and they typically receive significant funding from the national government budget. National programmes have often scaled-up their successful SPFS pilot experiences.

Indonesia incorporated the community empowerment approach that was successfully piloted by the SPFS in the country's General Food Security Policy: 2006–2009. Programme participants in selected target villages formed farmer groups. With support from extension workers, the groups selected and implemented a variety of activities that would help them improve their livelihoods. A nationwide village food resiliency programme, initiated in 2006 in 250 villages in 122 districts, has now been extended to 1 174 villages in 275 districts in 33 provinces, and a further extension is foreseen for 2010–2014.

Mexico established decentralized rural development agencies through the Strategic Project for Food Security to promote and develop capacities of individuals and rural communities to define their own problems and identify viable solutions. Currently 135 agencies are operating in 18 states and 655 districts, including 105 of the 125 districts with the lowest human development indices in the country. More than 100 000 poor families have participated directly in community-level projects, focusing both on improving living conditions (housing, stoves, water tanks, grain storage, poultry and vegetable gardens) and on expanding productive options (soil

and water management, organic coffee, maize and beans, marketing, ecotourism). Funding comes from the federal budget and has steadily increased in response to local demand.

In Africa, NEPAD's Comprehensive African Agricultural Development Programme (CAADP) – introduced in Chapter 5 – has provided an important framework for action against food insecurity. The 2007–2008 food price crisis accelerated CAADP's country roundtable process as well as the mobilization of significant funding for the programme's food security pillar. Malawi and Togo are two examples of how the NPFS was used as a building block for developing a CAADP action plan for this pillar. This work has been important for countries that opt to work through sectoral or cross-sectoral programmes, rather than channelling investments in food security through stand-alone programmes.

Malawi was assisted by FAO in 2005 in the formulation of a strategic framework for a National Action Plan for Food Security and Nutrition. The document built on SPFS successes in enhancing smallholder productivity and introduced additional components to address the food security needs of the landless poor. Some priority components were selected for immediate implementation but most were included in Malawi's Growth and Development Strategy. After its release in November 2006, this became the framework for all subsequent sectoral and cross-sectoral development programmes in the country. Within the framework of the strategy, the Government of Malawi and its development partners formulated and endorsed an agricultural development programme, called the Agriculture Sector Wide Approach, which has a food security pillar and now constitutes the country's national programme for food security.

Togo validated its NPFS in December 2008 through a broad-based consultative process involving all stakeholders at different levels. It was conceived as a cross-sectoral food security strategy that covers the four dimensions of food security as well as a plan of priority actions and investments for the period 2008–2015. During 2009 the programme was incorporated into the poverty reduction strategy framework and served as the basis for a stakeholder meeting on the approach to be followed for developing a national agricultural investment programme. At this meeting it was decided that five of the six components of the national programme fit comfortably within the orientations of the CAADP.

SPFS vision remains relevant

Seventeen years after the launch of the SPFS, despite remarkable technological and economic achievements, the number of undernourished has not diminished but has increased – to nearly 1 billion in 2010. While new challenges such as climate change, the recent food price crises and the global economic and financial crisis certainly contributed to this lack of progress, it is also widely accepted that chronic underinvestment in smallholder agriculture, food security and rural development over the past few decades is the major reason for the world's failure to reduce the number of undernourished.

In those countries where the SPFS has been able to mobilize significant investment in food security through national and regional programmes, tangible improvements are emerging. There are also signs that the ongoing food and economic crises are giving new impetus to the food security agenda globally and nationally and that investments in food security, agriculture and rural development are on the rise in many countries.

With the paradox that inspired the launch of the SPFS still with us, the vision and strategy of the SPFS remain as relevant today as they were in 1994. It is thus essential for FAO to continue intensifying and expanding its support to countries' medium- and long-term anti-hunger programmes, and also to make greater efforts to draw lessons from past and ongoing programme implementation. Successful programmes benefit from political commitment at the highest level, as has been reflected in the size of the national budget allocations and the diversity of external funding.

Food safety, quality and nutrition in a changing environment

■ Increased focus on food safety

Food safety became an important item on the political agenda of many countries in the 1990s with the emergence of new food-borne hazards, such as bovine spongiform encephalopathy (BSE), the threat of existing hazards such as cholera and salmonella spreading through international food trade, and the use of growth promoters and antimicrobials and application of new technologies in food production and processing. Increased awareness of these issues also led to the emergence of consumer groups as important stakeholders in shaping food safety policy.

The Joint FAO/WHO Food Standards Programme has fostered the development of international food safety standards within the framework of the Codex Alimentarius Commission since 1963. Scientific advice on the safety of chemicals in foods was already being provided by the Joint Expert Committees on Food Additives (JECFA) and the Joint FAO/WHO Meeting on Pesticide Residues (JMPR).

These existing programmes gave FAO a strong basis on which to build its food safety and quality activities and contribute to the development of a new food safety environment. In 1994, under the WTO agreements on Sanitary and Phytosanitary Measures and Technical Barriers to Trade, the food standards of the Codex Alimentarius became the reference for food safety in international trade. In addition to increasing the relevance of Codex, the agreements also positioned science as the basis for regulatory and trade measures. Considering food safety along the entire food chain became an obvious necessity, which increased the call for capacity development in addressing the specific needs of developing and transition countries.

As the work of the Codex Alimentarius Commission became more important, its membership increased from 144 in 1994 to 185 (184 countries and the European Community). The increased importance of Codex standards also highlighted the

need to ensure that the standard-setting process was as inclusive as possible. Thus, in 2004, the body set up a Trust Fund for Enhanced Participation in Codex specifically to increase the participation of developing countries in the work of the Commission and its subsidiary bodies.

Leader in food safety risk analysis

To ensure that FAO standard-setting processes and scientific advice programmes led the way in meeting WTO requirements, FAO made the development of a framework for food safety risk analysis and risk-based approaches the cornerstone of its food safety activities. Now incorporated into FAO's standard-setting and scientific advice programmes, they strongly influence the means by which technical support is provided to countries in the development of their food control programmes. For example, the *Framework for the Provision of Scientific Advice on Food Safety and Nutrition* (FAO and WHO, 2007) documents the approaches FAO uses when providing scientific advice, requests for which have increased considerably since 1994. The programme, which began by covering chemical hazards, has broadened to include microbiological hazards, new and emerging hazards and technologies, and risk-benefit assessments of various practices, such as the use of chlorine-based disinfectants. For example, the safety assessment of food derived from modern biotechnology, such as engineered plants, animals, fish and genetically modified micro-organisms, is an emerging area that has generated great interest.

Improving food safety capacity along the food chain continuum

Capacity development to ensure the production of safe good quality food for both domestic and international markets is in high demand and remains a critical element of FAO's food safety and quality work. This was emphasized and guided by a series of regional and global FAO/WHO meetings on food safety implemented between 2000 and 2005.

Technical assistance for capacity development. FAO's technical assistance programme in the area of food safety and quality revolves around three main pillars:

- developing policies, institutional and regulatory frameworks for food safety systems at national and regional levels;
- designing risk-based food control programmes and strengthening the technical capacity within a country for their implementation and enforcement;
- promoting the uptake of, and adherence to, good food safety management and operational practices by food chain operators.

Planning and implementing effective food safety programmes requires a multi-disciplinary approach involving all stakeholders from farm to table, including government agencies, food enterprises, academia and consumers. Capacity development programmes are required to enable these stakeholders to perform their functions better and assume their responsibilities in ensuring safety and quality of food for domestic consumption and export. In each biennium, approximately 50 countries receive FAO technical assistance in food safety through projects and other

PHOTO 27

FAO provides guidance on food safety management at the operational level.



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in-country activities. In addition, FAO works with groups of countries in support of greater economic integration and safe movement of goods.

Outreach builds on technical assistance. FAO's food safety and quality technical assistance programme goes beyond direct support to countries and regions. There is further outreach through the guidance, tools and training materials that are developed and made freely available to all interested parties. These include;

- guidelines and tools for improving policy environments, legal and institutional frameworks for effective national food control systems, and effective participation in the international standard-setting mechanisms of the Codex Alimentarius;
- guidance for the assessment of food safety capacity development needs, and manuals and training materials aimed at strengthening technical food control programmes covering risk analysis, food inspection, food analysis, sampling and other specific issues;
- guidance, resource and training material on food safety management at the operational level, including Good Hygienic Practices and Hazard Analysis and Critical Control Points from both a generic and commodity- and hazard-specific perspective (e.g. mycotoxin contamination in green coffee).

To further enhance this outreach, the formats and delivery systems for such material vary according to the intended audience and where appropriate new technologies are used to increase access to training through for example e-learning and Web-based tools.

There are numerous organizations involved in capacity development, making coordination and collaboration critical to ensuring delivery of efficient and effective programmes. FAO, in collaboration with WHO, OIE, WTO and the World Bank, established the Standards and Trade Development Facility in 2002 to facilitate coordination and resource mobilization for capacity development.

Food safety emergencies

At the request of its members, FAO established the EMPRES-food safety programme in the context of the Food Chain Crisis Management Framework. This

serves as a key international system to assist in the prevention and management of global food safety emergencies, and included the three pillars of early warning, emergency prevention and rapid response. Early warning in particular is addressed together with WHO through the International Food Safety Authorities Network.

FAO contributes to global call for food safety

Expectations of the Codex standard-setting process and the scientific advice programmes continue to increase, which requires an ongoing evolution of FAO's approaches. Evolving food production systems and shifting market dynamics are expected to challenge governments to identify emerging hazards, recognize changing food safety and quality priorities, and adapt relevant programmes accordingly. Facilitating the identification of new trends and emerging hazards through the horizon scanning activities of EMPRES and the provision of scientific advice on these are likely to be important aspects of FAO's future work on food safety. Ensuring that food safety concerns are addressed effectively requires an appreciation of food safety's relevance to other areas such as food security, public health and economic development. Achieving this requires improving communication, education and the available tools which facilitate more integrated approaches and addressing food safety under umbrellas such as the One Health initiative, which is a worldwide strategy for collaboration in all aspects of healthcare for humans, animals and the environment. Strengthening multidimensional evidence-based decision-making on food safety policies and strategies in order to guide public investment in food control systems is an important element of this. Capacity development will continue to be critical but will also have to evolve to address the ever-changing environment of food safety and quality.

■ Nutrition

The nutritional well-being of a population is a reflection of the society's social and economic performance and an indicator of the efficiency of national resource allocation. A well-nourished, healthy population is a precondition for sustainable development. Nutritional deficiencies and poor nutritional status affect the mental and physical state of adults, reducing productivity and quality of life. Poorly nourished children are less able to learn. Diet-related chronic diseases are costly to treat. Thus, poor nutrition undermines the agriculture, education, health and other development sectors and lowers the quality of life of individuals.

Millions of people do not have access to food of sufficient quantity and quality to meet their dietary energy needs and their nutritional requirements. Grains, roots and tubers, which are largely carbohydrate, provide most of the energy consumed. Other foods of plant and animal origin provide protein, fats, vitamins and minerals that are needed for growth, maintenance and activity. Diets lacking diversity can threaten health. Underweight, stunting and micronutrient deficiencies affect the development of millions of children and have lasting impacts into adulthood.

Urbanization, sedentary lifestyles and globalization of the food supply contribute to changes in diets, which often contain excessive levels of sodium, sugar and fat. Worldwide, the leading causes of mortality affecting all income groups relate to high blood pressure, high blood glucose, overweight and obesity, which are strongly affected by dietary patterns (WHO, 2009).

Supporting a food-based nutrition approach

FAO endeavours to eradicate hunger and nutritional deficiencies, as well as contribute to the prevention of diet-related non-communicable diseases. FAO advocates a food-based approach as the most sustainable way to prevent poor nutrition. At the 1992 International Conference on Nutrition (ICN) and 1996 World Food Summit, countries made strong commitments to ending hunger and improving nutrition. The strategies laid out at these conferences set a framework for scientific work, policy advice and capacity development activities in nutrition during the 1990s which continue today. A second ICN is being prepared by FAO together with WHO and other members of the United Nations Standing Committee on Nutrition (UNSCN).

Providing scientific information on nutrients

One of FAO's fundamental tasks is the provision of scientific information about nutrients for use by decision-makers and development practitioners. Initially, this work focused on producing information on human nutrient requirements but since 1994, expert consultations and technical meetings have been held on energy, proteins, carbohydrates, fats, vitamins and minerals, often in collaboration with WHO – promoting food composition work to identify the nutritional contents of foods. The recommendations resulting from these meetings are used worldwide and FAO reports are considered authoritative sources for the Codex and national governments.

In 1994, FAO and the United Nations University renewed efforts to support food composition work in developing countries (Lupien, 1994). FAO hosts the International Network of Food Data Systems, which mobilizes resources for improving the quality, quantity and accessibility of food composition data in the developing world. The exchange of data and sharing of technical knowledge is fostered by regional data bases, international food data conferences and international training courses. Technical publications strengthen capacities in developing countries.

Promoting nutrition education

FAO's nutrition education activities at country level aim to influence public policies and promote access to a variety of nutritious foods; increase knowledge of the nutritional value of foods; influence behaviours, attitudes and beliefs; and develop personal skills and motivation to adopt healthy eating practices.

In 1995, FAO and WHO sponsored an expert consultation on food-based dietary guidelines (WHO, 1996). The guidelines are a tool for nutrition education to be used by health providers, teachers, journalists, extension agents and others working directly with the public; they also provide policy guidance for other sectors.

FAO has sponsored more than 20 regional workshops in different parts of the world to promote development of the guidelines and carried out projects to develop capacities in this area in the Caribbean and Africa.

Eating habits are learned early in life, making schools especially important in strategies to improve nutrition. FAO's approach to nutrition education in schools includes curriculum development to teach skills and knowledge that will be used throughout life, such as gardening, food processing, hygiene and food preparation. It has supported work on nutrition in schools in Argentina, Chile, the Bahamas, the Dominican Republic, El Salvador, Honduras and Paraguay.

Recognizing the connection between nutrition and agriculture

Agriculture offers numerous opportunities for improving nutrition. FAO provided assistance for the development of national plans of action for nutrition in the 1990s. Policy briefs and guidelines continue to be tools for incorporating nutrition considerations into agricultural and rural development. A specific connection between agriculture and nutrition where FAO has been particularly active is collaborative work on horticulture and prevention of micronutrient deficiencies. FAO has produced a number of popular books on home gardening and school gardens. Most recently, FAO produced a book that illustrates various food-based approaches to preventing micronutrient deficiencies. It also collaborates with WHO in the Initiative on Fruits and Vegetables for Health, which focuses on prevention of diet-related non-communicable chronic diseases.

FAO increasingly integrates nutrition into activities

Although the work of FAO in nutrition has followed the themes framed by the 1992 ICN, today's realities imply that projects will increasingly be multifaceted and nutrition better integrated with other FAO activities. In the twenty-first century, FAO's nutrition work will place greater emphasis on environmental concerns and sustainability of diets. FAO is leading the crosscutting Initiative on Biodiversity for Food and Nutrition, in collaboration with Bioversity International, and developing tools for addressing these concerns. As urban populations grow and more packaged foods are consumed, FAO will assist in capacity development and the provision of scientific advice related to nutrition labelling. Finally, there will be stronger linkages between the scientific advice on nutrition that is produced by FAO and the work of the Codex Alimentarius.

Conclusion

This chapter has provided an overview of the depth and breadth of FAO's normative and field activities, all of which share the common long-term goal of helping to reduce hunger and ensure global food security. From protecting and enhancing natural resources to increasing agricultural production and ensuring food is safe and nutritious – the list goes on. As shown, these projects and focus areas have been

successful, yielding the results sought in terms of identifying needs of producers and other practitioners in the food and agriculture sector as well as governments and development partners, and then helping them meet those needs.

Yet, in spite of this dedication, greater efforts are needed to achieve poverty and hunger reduction today and in the future. As shown in earlier chapters, new challenges and crises have certainly contributed to the lack of progress made. But it is now widely accepted that chronic underinvestment in smallholder agriculture, food security and rural development over the past few decades is the major reason for the world's failure to reduce the number of undernourished.

It has taken recent events, such as the food and financial crisis, to prompt more concerted efforts by governments and the development community and to reaffirm the importance of issues related to food security on the international agenda.

CHAPTER 7

Towards total eradication of hunger in the world

Translating the vision into sound policy and effective action

Over the past two decades, the world has come a long way in its understanding of the complex causes of hunger and malnutrition, and FAO has contributed significantly to that understanding. In those years, world leaders have come together time and time again to sign up to noble declarations of their intent to end hunger.

At the World Food Summit in 1996, they declared:

“We pledge our political will and our common and national commitment to achieving food security for all and to an ongoing effort to eradicate hunger in all countries, with an immediate view to reducing the number of undernourished people to half their present level no later than 2015. We consider it intolerable that more than 800 million people throughout the world, and particularly in developing countries, do not have enough food to meet their basic nutritional needs. This situation is unacceptable.”

Yet, today the number is more than 900 million. While the proportion of the world’s population suffering from chronic hunger may have fallen, the absolute numbers have risen.

In July 2009, some 13 years after the World Food Summit, the G8 Summit in L’Aquila, Italy, produced another statement, uncannily like the earlier one:

“There is an urgent need for decisive action to free humankind from hunger and poverty. Food security, nutrition and sustainable agriculture must remain a priority issue on the political agenda, to be addressed through a cross-cutting and inclusive approach, involving all relevant stakeholders, at global, regional and national level.”

The L’Aquila event also obtained pledges of more than US\$20 billion for investment in promoting food security over three years, although, two years on, only about 22 percent of this has actually been spent. In November of 2009, at the World Summit on Food Security at FAO headquarters in Rome, the aspiration was reaffirmed:

“We, the Heads of State and Government or our Representatives and the Representative of the European Community have assembled in Rome at the World Summit on Food Security to take urgent action to eradicate hunger from the world. In adopting this declaration we agree to undertake all necessary actions required at national, regional and global levels and by all States and Governments to halt immediately the increase in – and to significantly reduce – the number of people suffering from hunger, malnutrition and food insecurity. We will reinforce all our efforts to meet by 2015 the targets of Millennium Development Goal 1 and the World Food Summits. We commit to take action towards sustainably eradicating hunger at the earliest possible date.”

This chapter looks at the major summits and conferences held in Rome in the last two decades and their contributions to the fight against hunger. It then goes on to look at how the current world situation, with its enhanced market information systems, has supported these efforts, but also indicates gaps that remain. Finally, it discusses efforts underway for strengthening global governance of food security and nutrition.

Three World Food Summits and a High-Level Conference

The World Food Conference, convened in Rome in 1974 under the auspices of FAO, was a novelty. Never before had so many governments and world leaders come together at the highest level to examine the global problem of food production and consumption. The conference was in part a response to the devastating famine that had hit Bangladesh in the preceding two years, as well as the frequent extreme food shortages in many developing countries in Africa and parts of Southeast Asia.

It had become clear that insufficient attention was being paid to hunger and malnutrition and it was hoped that a world conference, attended by representatives of 135 countries, 26 intergovernmental organizations and 161 NGOs, might galvanize policy-makers into taking important steps forward. The sentiment was there, with the United States Secretary of State Henry Kissinger expressing the conviction that the world had acquired the capacity to free humankind from the scourge of hunger and could set for itself a “bold objective: that within a decade no child will go to bed hungry, that no family will fear for its next day’s bread and that no human being’s future and well-being will be stunted by malnutrition.”

The conference endorsed an inspiring proclamation that “every man, woman and child has the inalienable right to be free from hunger and malnutrition in order to develop their physical and mental faculties”. Governments attending the conference committed to a goal of eradicating hunger, food insecurity and malnutrition within a decade.

The conference established a 36-member ministerial-level World Food Council, to make annual reviews of major problems and policy issues affecting the world food situation. The Council made valiant – if poorly conceived – efforts to bring

political influence to bear on governments and UN bodies, before being disbanded in 1993. However, the World Food Conference also established the Committee on World Food Security (CFS), which continues to serve as a forum to review and follow up on policies concerning world food security and has become one of the major instruments for food security and nutrition governance.

Also thanks to the conference, the world saw new actors arrive on the world stage. The final document called for an organization to finance agricultural development projects primarily for food production in the developing countries, and thus the International Fund for Agricultural Development (IFAD) was set up in Rome in 1977. Many NGOs and other agencies drew energy from its pronouncements. However, more than 20 years later the prospect of eradicating hunger, food insecurity and malnutrition appeared to be as much a chimera as ever. At FAO, where a new administration had come into office in 1994, the perception was that something radical needed to be done.

■ World Food Summit – 1996

In its creation of the short-lived World Food Council, the 1974 conference had mistakenly thought that the world's agriculture ministries represented the proper vehicles for proceeding along the road to achievement of global food security. But that proved not to be the case. FAO's new Director-General, Jacques Diouf of Senegal, realized that the issue needed to be escalated to the level of heads of state and government.

By the early 1990s, the issue of hunger appeared to have fallen off the world awareness map. Food security and related issues were fading from public consciousness. The new FAO chief felt something had to be done to return food security to the global agenda and that the best way was to enlist the help of the mass media. He scheduled a World Food Summit for November 1996.

Scepticism was widespread, but the world's leaders proved strongly receptive to the invitation to confront this issue on a global platform, and of the 186 participating countries, more or less FAO's entire membership at that time, 41 were represented by their heads of state, 15 at the level of deputy head of state, 41 by their heads of government, 15 at the level of deputy head of government and the remainder by other high-level national representatives. The summit was addressed by 176 heads of delegation and by the EU, by speakers for 19 UN agencies, 23 other intergovernmental organizations and 13 NGO caucuses. It was, however, Cuban President Fidel Castro who caught the public attention with his outspoken and scathing condemnation of a world that let people go to bed hungry, allowed children to die of malnutrition, ignored the needs of the world's small farmers, but at the same time spent billions of dollars annually on arms production.

Looking back, the 1996 summit did make a difference. It was the summit's Rome Declaration through which world leaders first promised to cut the number of hungry people by half by 2015, reaffirming the right of everyone "to have safe and nutritious food" and recognizing poverty as a major cause of food insecurity,

While the summit did not result in the immediate eradication of hunger, it did move vital questions regarding food production and availability, nutrition, food safety and food security higher up the agenda of world leaders, politicians, producers and consumers. Naturally, there are other reasons why food-related issues have grown in importance, but the 1996 summit definitely played a key role and, paradoxically, represented the start of a new beginning in FAO's relationship with CSOs, which helped ensure that these issues would remain permanently on the table.

■ **World Food Summit: *five years later* – 2002**

FAO's post-1996 commitment was unflagging. When, four years later, world leaders came together again at the 2000 Millennium Summit at the UN headquarters in New York, they picked up where the FAO Summit had left off. They adopted the Millennium Declaration, committing their nations to a new global partnership to reduce extreme poverty, and set a series of eight Millennium Development Goals (MDGs), the first of which was the commitment to fight extreme poverty and hunger.

The MDGs also committed the international community to combat disease, illiteracy, environmental degradation and discrimination against women. But making the elimination of poverty and hunger its number one goal meant FAO's involvement would be decisive. This was, after all, FAO's principal mandate, making it natural that FAO would develop a strategy to support the implementation of the MDGs through advocacy and support to MDG-related initiatives, better targeting of FAO's programmes, pursuit and expansion of strategic alliances and partnerships and proactive participation in country-level cooperation with United Nations partners.

Early in the new millennium, it was decided at FAO that progress towards achievement of the WFS targets and the MDGs was too slow and that another summit was needed to give new impetus to the search for solutions to the problem of hunger and food insecurity. Efforts were marshalled to bring the heads of state and government back to Rome, in June 2002 for the World Food Summit: *five years later*. This time, 180 delegations (179 countries and the EU) participated. At the inaugural ceremony, Kofi Annan, then UN Secretary-General, stressed the need to give hope to the 800 million hungry people of the world through concrete action.

The 2002 meeting drew even more criticism than the 1996 summit, with critics calling it "disappointing" and pointing out the low attendance by developed country leaders. However, wide media coverage served the purpose of heightening awareness of the world's hungry.

It also engendered renewed action and in 2003, an International Alliance Against Hunger and Malnutrition (AAHM) was established to improve coordination of hunger-focused activities at country level. Founded jointly by FAO, IFAD, WFP and Bioversity International, all located in or near Rome, the Alliance has become a multistakeholder platform and forum where those who run top-down and bottom-up development initiatives – that is, both governments and CSOs – can meet in a

neutral and open environment, share ideas, learn from each other's successes and lessons, and establish networks for supportive communication within countries, across national borders or with countries in distant parts of the world. It operates internationally, as a global partnership that brings together a wide range of relevant stakeholders including UN organizations and international NGOs, and at the country level through National Alliances Against Hunger and Malnutrition, which for the most part are self-financed.

As food prices spiralled in 2007 and 2008, leading to riots in more than 30 poorer countries, FAO's Director-General was convinced that FAO's policy of media engagement and outreach was the right track. He scheduled first a High-Level Conference on Food Security in June 2008 and then, only 16 months later, another World Summit on Food Security.

■ High-Level Conference on Food Security – 2008

The High-Level Conference took place in the midst of a dramatic world food crisis, attracted an outstanding turnout – more than 4,500 delegates from 181 countries, including 43 Heads of State and Government and 180 Ministers. But beyond that, the event achieved global reach through continuous, live satellite feeds, and was covered by 1 354 journalists, leading to almost 14 000 articles in the international media and hundreds of radio and television broadcasts. The net result – precisely that desired – was to put agriculture and food security back at the top of the international agenda. Some US\$12 billion was put on the table for the fight against hunger during and shortly before the meeting. FAO successfully communicated its main message to world leaders and international opinion: that the key to feeding the world today and tomorrow lies in increasing food production, particularly by small farmers in developing countries. This consensus was enshrined in the final Declaration, and the massive news coverage had an enormous ripple effect, with the world media giving great space and emphasis to the overall question of food security.

The conference resulted in a number of further initiatives, including the High-Level Meeting on Food Security for All, hosted by the Government of Spain in January 2009 and strongly supported by FAO; the establishment in April 2009 of a High-Level Task Force on the Global Food Security Crisis, chaired by the UN Secretary-General with FAO's Director-General as vice-chair; and the L'Aquila Food Security Conference, where G-8 leaders committed more than US\$20 billion over three years for sustainable agriculture.

■ World Summit on Food Security – 2009

The message of the 2009 World Summit on Food Security – that agriculture and food security must remain at the very top of the current international agenda so long as hundreds of millions of people continue to suffer chronic hunger and malnutrition – was picked up readily by world leaders and the world media. There

BOX 35

High-Level Expert Forum on “How to Feed the World in 2050”

A High-Level Expert Forum on “How to Feed the World in 2050” was held in Rome in October 2009. It examined long-term perspectives and policy options that governments should consider adopting to ensure that the world population can be fed when it nears its projected peak of 9.2 billion people in the middle of this century. For two days, more than 300 eminent experts from around the world reviewed and debated the investments, technologies and policy measures needed to secure the world’s food supplies. In addition to background issues briefs and synthesis papers, experts presented technical papers with the participation of audiences in moderated panel sessions – all Web-cast live. At the end of the conference, ten policy papers and a background document were incorporated into the documentation prepared for the World Summit on Food Security the following month.

is little doubt that the presence on the opening day of both Secretary-General Ban Ki-moon and Pope Benedict XVI was a big draw.

However, it was at this summit that Director-General Diouf became the personification of the message, beginning with a press conference on 11 November, at which he announced the *1billionhungry* campaign. Diouf also staged an overnight hunger strike in the unheated FAO lobby, viewed by many as the symbol of the summit. He gained further credibility when, at the close of the summit, he joined critics and expressed his disappointment with some aspects of the Final Declaration. In comments that made headlines around the world, he said “to my regret the official Declaration adopted by the summit this past Monday contains neither measurable targets nor specific deadlines which would have made it easier to monitor implementation.”

However, the Summit did result in four significant commitments, as underlined by the Director-General at the end of the meeting:

- a firm pledge to renew efforts to meet the target of the first MDG – halving the incidence of hunger by 2015 and eradicating hunger from the world at the earliest date;
- a pledge to improve international coordination and the governance of food security through a profound reform of the CFS, which would become a central component of the Global Partnership for Agriculture, Food Security and Nutrition;
- a promise to reverse the downward trend in domestic and international funding for agriculture, food security and rural development in developing countries and significantly increase their share in public development aid;
- a decision to promote new investments in agricultural production and productivity in developing countries in order to reduce poverty and achieve food security for all.

In the big picture, the broad dissemination of the summit's message about raising awareness of the problems of hunger and the grave lack of adequate support to the agriculture sector in the developing world – had been the aim of much of the Organization's work since the 1996 World Food Summit.

Enhancing market information systems

In recent years, and notably since the 2007–2008 global food crisis, there has been an increasing interest in agricultural market information services. Accurate and timely information on food and agricultural market conditions are key for guiding informed decisions. Without the right information at the right time, proper decisions simply cannot be made. Better information also means less uncertainty.

Efficient market information provision can benefit farmers, traders, policy-makers and governments alike. Up-to-date information enables farmers to make informed decisions about what to grow, when to harvest, to which markets to sell the produce and whether or not to store products. It can also be used by government officials, planners and traders to monitor food availability, identify shortages and act accordingly. So it is clear that information plays a role in determining the behavioural dimensions of markets and, in the effort to improve the functioning of markets, the provision of accurate and timely information becomes a necessity.

Lack of reliable and up-to-date information on crop supply, utilization, stocks and export availability contributed to recent inappropriate policy decisions and higher price volatility. Better information on, and analysis of, global, regional and local markets and improved transparency could reduce the incidence and magnitude of wrong action price surges and thus limit the negative implications for food security.

■ Increased need for reliable market information

In September 2010, the Extraordinary Intersessional Meeting of FAO's Intergovernmental Groups on Grains and on Rice highlighted the lack of reliable and up-to-date information on crop supply, demand and export availability as one of the root causes of sudden price hikes and volatility. As a remedy, the Groups proposed to enhance market information and transparency, recommending intensification of FAO's information gathering and dissemination at all levels.

With the increased globalization of agricultural markets, the liberalization of trade, and consequently greater integration of markets among countries and across sectors, the demands for information have grown tremendously. While there are numerous institutions, organizations and private firms engaged in the collection, analysis and dissemination of agricultural market information, perhaps the most important aspect of the activity is the need for obtaining regular, credible and centralized information, particularly in the public, free-access sector.

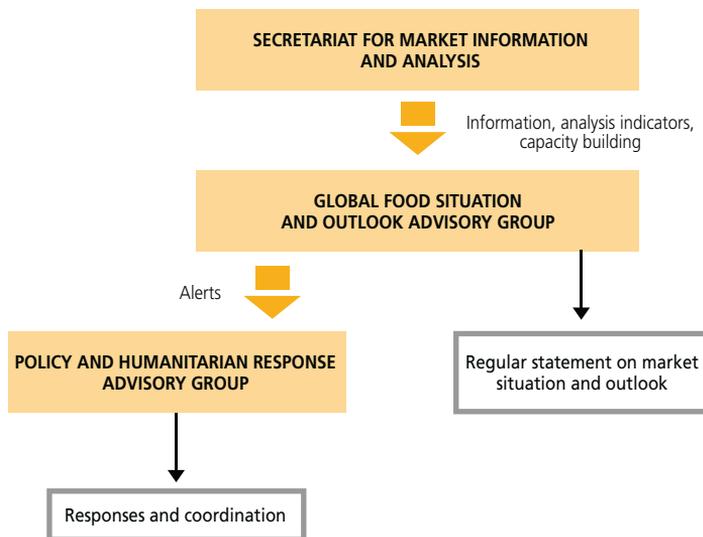
FAO focus on early warning with GIEWS

Since its inception, FAO has sought to amass, synthesize, interpret, discuss and distribute market information. Activities underpinning its Global Information and Early Warning System (GIEWS) have built databases and published current and prospective information on crop shortages and emergencies and on market outlooks for basic food commodities (such as *Food Outlook*, *Crop Prospects and Food Situation* and the *Global Food Price Monitor*) to better inform the global community of emerging pressures, future trends and the underlying issues. Indeed, FAO's services in this area have been increasingly sought in recent years by government officials, specialists and the press, attempting to find explanations for the higher food price levels and volatility. Over the years, GIEWS has become a worldwide network including over 100 governments, more than 60 NGOs and numerous trade, research and media organizations. GIEWS has repeatedly demonstrated its capacity to alert the world to emerging food shortages. As early as September 2007, FAO was able to warn the international community about the looming global food crisis triggered by rising prices and to take early action by launching the Initiative on Soaring Food Prices (ISFP) by the end of the year.

In March 2009, GIEWS was complemented by the Food Price Data and Analysis Tool, as a platform allowing the study of different data series of prices in both nominal and real terms as well as comparisons of domestic and international price trends. An improved version of the tool was launched in April 2011, covering 78 countries and containing over 1 000 monthly domestic price series and 11 international cereal export price series, for a total of 20 different food commodity groups.

FIGURE 28

International mechanism for monitoring global agricultural commodity markets



Naturally, there are other institutions that provide food market information at the global level, including the United States Department of Agriculture (USDA), IFPRI and the International Grains Council. In addition to GIEWS, WFP's Vulnerability Analysis and Mapping (VAM) and USAID's Famine Early Warning System Network (FEWS NET) forecast food balances, assess food security and provide valuable information for countries facing food emergency situations.

For countries facing a serious food emergency, FAO and WFP carry out joint Crop and Food Security Assessment Missions (CFSAMs) to provide timely and precise situational information so that proper action can be taken by the governments, the international community and other concerned parties.

Information gaps remain

Despite the increased awareness of the importance of timely and rigorous market information that enable both preparation for, and swift and effective response to, threats to food security, weaknesses and gaps still exist:

- Official country data on crop production and consumption forecasts often is not available to international information providers and even when available, forecasts often are not timely and can be inaccurate.
- Reliable official information on food stocks is not available for most of the main producing and consuming countries.
- No formal links exist between national market outlook agencies and international information providers.
- Market and food security indicators need to become more meaningful and comprehensive.
- Market outlook analysis scope should increase, to include developments in the energy and agricultural futures markets in price monitoring activities.
- Linkages with the private sector are often weak, especially as far as information on private stocks is concerned.
- Major food market players often have little capacity to collect and analyse information on expected production, stocks, trade flows and utilization.

The benefits of addressing and finding durable solutions to these deficiencies cannot be underestimated. Enhanced market information and early warning systems would enable both governments and the private sector to plan ahead. Governments would be able to assess needs more accurately, make budgetary provision for producer and consumer safety nets and better position emergency food security reserves. Better market information and analysis also could reduce uncertainties and assist producers, traders and consumers in making informed decisions, and thus contribute to improved food security.

Furthermore, the experience of the recent food price crisis and the current excess in price volatility in world food markets have exposed weaknesses in relation not only to the provision of market information but also to the coordination of policy responses. There is a critical need to ensure better preparedness and more rapid and consistent responses in times of crisis.

■ Proposal for Agricultural Market Information System

It is in this context that in the framework of the current G20 work on price volatility that a new platform – the Agricultural Market Information System (AMIS) – is being proposed. The initiative builds on and complements existing systems with the aim of improving global market information reliability, timeliness and frequency as well as policy coordination through a collaborative effort among all relevant actors.

AMIS could be built on the model of the Joint Oil Data Initiative (JODI), which was launched in 2000 to improve information about oil markets. However, AMIS would have the additional function of issuing global food price surge alerts and promoting policy coherence. It would involve the major food-producing exporting and importing countries, and would be serviced by a joint secretariat consisting of international organizations with capacity to collect, analyse and disseminate information on a regular basis regarding the food situation and outlook, as well as food policies.

The structure of AMIS would consist of two groups: a Global Food Market Information Group responsible for market data collection and analysis, and a Rapid Response Forum tasked with the promotion of international policy coordination. Through the comprehensive coverage of global major food markets and the close monitoring of prices in combination with food security assessments across vulnerable countries, AMIS would also provide a mechanism for global early warning. This would increase the scope for more “automated systems” for evaluating food security implications of changing market situations whereby an indicator of different degrees of severity can be calculated routinely and where appropriate trigger an alert, and thus the need for action.

On the other hand, the AMIS Rapid Response Forum would provide policy advice and promote policy coordination when the market situation and outlook indicates a high food security risk. Through the participation of policy actors and specialists, the Forum would meet to evaluate the situation and, as required, mobilize the necessary political support to achieve agreement on appropriate policy response and actions in times of crisis. It would also need to work closely with the CFS to promote greater policy convergence and coherence and to strengthen policy linkages at the global level.

It should be noted, however, that while having access to good and timely information is necessary, it is not a sufficient condition for success. There is an equal need for having the capacity to use this information properly. That is why building capacity in the participating countries to collect and use market information would constitute an important component of the AMIS initiative. Efforts in this regard would focus on:

- a manual defining best practices and methodologies for agricultural market data collection and analysis, aiming at improving data quality and harmonization of the collection process across countries;
- a series of regional training sessions to enhance data collection capacity and to assist in the development of methodologies for food market assessment and outlook; and

- the identification, design and implementation of special projects, aiming at enhancing data collection and market outlook capacity at country level.

AMIS would also seek the active involvement of the private sector, as commercial enterprises could be important providers of data as well as data users. On the one hand, the private sector can assist significantly in improving the quality of food balance sheets through providing information, particularly on stocks. On the other hand, it can benefit from strong links with AMIS and the participating organizations by having regular access to timely information and also to specialized expertise. The increased transparency that comes from strengthening dialogue between the private sector, exporting and importing countries and international organizations can also serve to lend trust and increase confidence among the various actors.

Strengthening global governance of food security and nutrition

Global food security and nutrition has deteriorated and continues to represent a serious threat to national and international peace and security. Of the 1 billion people, or 15 percent of the world's population, suffering from chronic hunger, about 150 million have joined the ranks of hungry people as a result of the effects of the food, fuel and financial (triple F) crisis. Yet hunger had in fact been on the rise since the mid-1990s, when food prices were low and economic growth was healthy. The presence of such high levels of hunger, malnutrition and poverty in the face of increasing global wealth and food abundance, and the inability to protect vulnerable people from the effects of crises point to a serious need for reform of the global food security governance.

Unless purposeful action is taken now, the future performance of the world agricultural system will not be sufficient to meet the increased demands for food, fibre and fuel. As shown, the need to feed 9.2 billion people in 2050, most of whom will be located in urban areas, will require an increase in agricultural production of 70 percent from the average of the 2005–2007 triennium. New challenges to global food security and nutrition in the form of increased demand for bioenergy and climate change are also likely to put added pressure on global food systems. Trends in public investment for agriculture in critical sectors such as research, extension, infrastructure and biodiversity are lagging seriously behind. It is obvious that a more coherent and effective response is required to address challenges of such magnitude at the global level.

■ Addressing the challenges

The world has faced food security crises in the past. The crisis of 1973–1974 led to the establishment of a number of international institutional arrangements under the auspices of the UN system to mobilize and focus efforts on eradicating hunger and food insecurity. The proposal to create the CFS was put forward at the 1974

BOX 36

Iniciativa América Latina y el Caribe sin Hambre

The Hunger-Free Latin America and the Caribbean Initiative is a regional commitment to eradicate hunger and guarantee food security and nutrition for all, taking the fight against hunger one step further than the WFS and MDG targets. The Initiative was launched by the Governments of Brazil and Guatemala in 2005, and later endorsed by all countries at different regional gatherings, including the Latin America and the Caribbean Summit on Integration and Development and at FAO's Regional Conferences (in 2006, 2008 and 2010).

FAO supports the Hunger-Free Latin America and the Caribbean Initiative by working with governments to strengthen national and regional capacities to promote food security; to build and strengthen the institutional framework to guarantee the right to food; and to raise social awareness on the fight against hunger.

World Food Conference (UN, 1974) and it was established in 1975 by the FAO Conference (FAO, 1975) as an intergovernmental body to review and follow up policies concerning world food security and economic access to food. The CFS continued to carry out that mandate and, in 1996, following the World Food Summit, was given an additional task of monitoring implementation of the summit's Plan of Action.

A number of additional national and regional efforts have been developed to promote integration, coherence and consistency of national level efforts, such as African NEPAD/CAADP and the Hunger-Free Latin America and Caribbean initiative. The drive for greater coherence in policy and implementation was also evident in the efforts of donor countries through the Paris Declaration and the Accra Agenda for Action. The International Alliance Against Hunger was established after the World Food Summit: *five years later* as a multistakeholder mechanism to capitalize on experiences and reinforce initiatives at the national level.¹

A flurry of activities at the global level followed the spike in international food prices in 2008. A number of conferences and meetings were held to discuss the causes of the crisis and measures to deal with the consequences, as well as to mobilize resources. The UN High-Level Task Force (HLTF) on the Global Food Security Crisis was established in April 2008 to promote a comprehensive and unified response by UN bodies through a prioritized, Comprehensive Framework for Action (UN, 2010d).

¹ The name of the Alliance was changed to Alliance Against Hunger and Malnutrition (AAHM) in 2010, partially to better reflect the nutrition component: <http://www.theahm.org/home/en/>.

These initiatives resulted in some progress, such as increasing coherence among United Nations agencies and among groups of countries such as the G8. However, it remained evident that greater coherence in the global governance of food security was still needed to encourage convergence of policies and actions taken by all stakeholders – including governments, concerned national and international institutions, civil society groups, such as producer and consumer organizations, and other key players in the global food system. The role of the private sector should not be underestimated, particularly the food industry, which has large research and development capacity and extensive supply chains and market penetration. Working together, these stakeholders could contribute more effectively towards eliminating chronic hunger, food insecurity and malnutrition and preventing future food security crises from occurring.

It is precisely to achieve this that the challenge was taken up at the 2009 World Summit on Food Security where the participating heads of state and government, or their representatives, noted that:

“A sense of urgency and a commitment to solving the global food crisis have served as catalysts for strengthening international coordination and governance for food security through the Global Partnership for Agriculture, Food Security and Nutrition, of which the Committee on World Food Security (CFS) is a central component.”

(FAO, 2009n)

■ Reforming the CFS

In order to achieve the aim of the 2009 Summit, CFS has undertaken a reform process. Its goal is to become a key inclusive international and intergovernmental platform where a broad range of committed stakeholders work together to support country-led processes aimed towards eliminating hunger and ensuring food security and nutrition for all.

With the reform, the more inclusive CFS can promote greater policy convergence and coordination through the development of international strategies and voluntary guidelines on food security and nutrition based on best practices, lessons learned from local experience, inputs received from the national and regional levels, and expert advice and opinions from different stakeholders. The CFS will also provide support or advice at the request of countries or regional organizations in the development, implementation, monitoring and evaluation of their nationally and regionally owned food security plans of action, the achievement of food security and the practical application of the Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security.

Considerable progress has been made in implementing CFS reform and in a subsequent phase, the CFS will take on additional roles to:

- serve as a platform to promote greater coordination and alignment of actions in the field, encourage more efficient use of resources and identify resource gaps, through building on the work of the HLTF and key partners, including national mechanisms and networks for food security and nutrition, UN

PHOTO 27

The complex nature of the underlying causes of food and nutrition insecurity requires a multilevel approach.



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country teams and other bodies such as the AAHM and its National Alliances, food security thematic groups, regional intergovernmental bodies and a large number of civil society networks and private-sector associations operating at the regional and national levels;

- actively monitor implementation of the 1996 WFS Plan of Action, by helping countries and regions to address the questions of whether objectives are being achieved and how food insecurity and malnutrition can be reduced more quickly and effectively, by identifying common indicators, success stories and lessons learned;
- develop a Global Strategic Framework for food security and nutrition in order to improve coordination and guide synchronized action by a wide range of stakeholders, building upon existing frameworks such as the CFA, the CAADP, and the Right to Food Guidelines.

The CFS aims to become more inclusive, open and effective through new structures, new working methods and various outreach initiatives. These include an expanded Bureau, composed of 12 members and an Independent Chair, as well as an Advisory Group, including representatives from United Nations organizations and bodies, CSOs and NGOs, international agricultural research bodies, international financing and trade institutions, and private-sector and philanthropic foundations. The CFS is supported by a High-Level Panel of Experts (HLPE) on food security and nutrition that has a steering committee comprising 15 world-class experts in the field. The HLPE contributes to CFS debates to enable decisions based on sound scientific advice. Support to the Plenary, Bureau, Advisory Group and HLPE has been expanded through a CFS secretariat located at FAO headquarters in Rome, which includes staff members from both WFP and IFAD.

In addition to the annual plenary sessions, a CFS intersessional process addresses specific issues, to develop the plenary agendas and implement plenary decisions. In order to realize the new vision and goal and ensure better coordination, CFS members agreed on three key guiding principles for the reform – inclusiveness, strong linkages to the field to ensure the process is based on on-the-ground reality,

and flexibility in implementation so that the CFS can respond to a changing external environment and membership needs.

A platform for global governance

The success of the CFS in filling the gap in global governance of food security and nutrition depends on the extent to which all the relevant stakeholders can, or are willing to, contribute – not only to policy discussions and sharing of knowledge and experiences, but also to cooperate in abiding by their agreed priorities and to commit the resources necessary to implement the actions.

The complex nature of the underlying causes of food and nutrition insecurity requires a multilevel approach on multiple fronts. The depth and breadth of the steps that need to be taken to reduce and eliminate hunger indicate that some of the agreed targets are not likely to be met even by 2050. Even if all the necessary resources were available and the political will fully committed to achieve the targets now, it is not possible for the changes needed in economic, institutional, social and cultural processes to be made without a significant gestation period. The reality, unfortunately, is that the required resources are not available. Even when there have been agreements to commit a particular sum, delivery is too slow and meagre to make a significant dent in reducing the number of hungry. This means that actions have to be prioritized to make the greatest impact at the local level.

The reformed CFS can provide the platform for reaching a consensus on priorities and best practices and promote greater coordination and policy coherence. Effective food security and nutrition governance will require integration of what is agreed at the global level into national development priorities and strategies, including social protection programmes. Not only is coordination required among stakeholders that are now an integral part of the CFS, but also decisions need to be taken in the context of global and regional issues, such as climate change negotiations and trade agreements. The CFS will work to strengthen or establish links to relevant global and regional initiatives in areas related to its work. Regional and inter-regional arrangements are especially important, not only because they add value and support national efforts, but also because such cooperation provides a valid tool for sharing knowledge and best practices, as well as enhancing South-South Cooperation.

Conclusion

The vision of eradicating hunger once and for all is vivid. The world has come a long way in the past two decades in terms of understanding who the hungry are, how many there are, and where they are located. We understand in much greater detail the reasons why hunger and malnutrition are so persistent. We know what needs to be done to combat hunger at the national, regional and global levels. We know how much we have to increase agricultural production and productivity. We have examples to study of what works and what does not work. We appreciate the

vital role of women and the critical importance of a gender-based approach to development. And yet, the numbers of chronically hungry people remain stubbornly, and shamefully, high.

The challenges of the decades to come, while the world's population continues to increase to more than nine billion, include not only dealing with the problems we know and understand, but also new problems whose effects we can only estimate. These new challenges include the impact of climate variability and change, which will vary in different regions and countries, and even within countries, and may increase the frequency and intensity of weather-related natural disasters. There are the changing patterns of food consumption to consider and the impact they will have on demand for certain types of foods. There is the impact of continuing globalization of trade. There will be new technologies to absorb. There will be the need to resolve the growing competition between crops for food and crops for energy.

At least the past decades have seen the issue of food security and feeding the world's hungry move up the international agenda. Two decades ago, before the World Food Summit, the concept of food security was not widely understood. Today a Google search instantly yields more than 37 million results: food security has hit the mainstream. The summits and high-level meetings of the past decades, many of them convened by FAO, have pushed that process forward. Instead of being an issue simply related to agricultural production, the preserve of FAO and the other Rome-based food agencies, it is increasingly understood that hunger is a political and economic issue of global dimensions. It has engaged countries at the United Nations and is addressed in the first of the MDGs.

The commitments have been made; the declarations signed; the goals set and agreed. But one thing has been lacking to translate the aspiration, the vision, into effective action on the two fundamental issues that must be resolved if hunger is to be ended: investment and markets. And that single element is, and always has been, political will. Both in developing countries and the developed world, political will is required to identify investment resources needed to build a rural infrastructure that will enable farmers to get their produce to market and reduce the appalling level of post-harvest losses. It is also needed to bring fairness and equity to markets, so that farmers in both developed and developing countries have the incentive of fair prices for their produce that will encourage them to invest in their farms and produce what the world needs today, and is going to need in the future.

For FAO in the years ahead, a focus on the two issues of markets and investment will surely top the list of priorities – even while it continues to engage in many other areas, supplying vital services to its members. In support of its focus on these priorities, it will need to intensify its efforts to communicate with and engage political leaders, multiple stakeholders and the general public at large, and to support efforts to improve the governance of world food security and nutrition, through coordination of policies, promoting convergence and coherence and spreading awareness of best practices.

The experience of the past two decades and the analyses that have been undertaken lead to the inescapable conclusion: there is a need for improved governance

of food security and nutrition that brings coordination and coherence to the fight against hunger; there is a need for governance of global markets; and there is a need for significant and sustained investment in the agriculture sector on the part of developing country governments, international financing institutions, and donors. But, above all, there is a need for the political will to solve the problem – political will that goes beyond signing up to the resounding declarations of intent, and translates into concrete and effective action on the ground.

To respond to the challenges, and to help member countries respond, FAO has radically transformed itself over the period. From being a technical agency operating in a degree of isolation, it has reached out to multiple stakeholders, recognizing that broad partnerships are needed if the vision is to be realized. FAO has engaged enthusiastically in advocacy for the cause of eradicating hunger, backing the moral arguments with sound scientific and economic evidence. It has also recognized the critical importance of sharing knowledge more effectively with the people who really need it – the poor farmers in developing countries.

Real and lasting change will be driven by stronger – and sustained – capacities for agricultural development and food security. These must be enhanced across every level of government, in all agriculture sectors, in civil society and in the private sector. FAO and its members have always known this and together have made important progress. Food security is now an issue firmly fixed on the international agenda, and the advocacy campaign must be sustained to make sure it stays there, that the hungry people of this world are not forgotten – at least until the shameful scourge of chronic hunger and malnutrition is finally consigned to history.