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**State of food and agriculture in Asia and the Pacific region, including
future prospects and emerging issues**

Table of Contents

	Paragraphs
I. Current status of food and nutrition insecurity	1 – 3
II. Future outlook for global food and agriculture	4 – 8
III. Emerging challenges	9 – 31
IV. Conclusions and recommendations.....	32 – 34

I. Current status of food and nutrition insecurity

1. The Asia and Pacific region has witnessed very rapid economic growth over the past several decades. As a result, the proportion of people in the region's developing countries who are undernourished declined from 20 percent of the population from 1990-92 to 15 percent from 2006-08 (the most recent period for which complete country-level FAO data are available). More recently, the region recovered quickly from the economic crisis of 2009 and has generally grown more rapidly over the past two to three years than the rest of the world. Provided this growth continues to reach the poor (as it has in the past), food security will continue to improve.
2. Despite this economic performance, Asia and the Pacific has more undernourished people than any other region. As of 2010, FAO estimated that 578 million hungry people, or 62 percent of the world's undernourished population, live in this region. Poverty and food insecurity persist because of economic and household-level factors. At the macro level, these include: poor links to the non-agricultural economy or growth centres; a decline in the quality of natural resources; and shocks such as natural disasters. At the micro level, some important factors are: unequal access to productive assets; shocks such as the death of the family wage earner; and social exclusion as a result of gender, ethnicity, religion, social class or caste.
3. Undernutrition within the region is an insidious problem that requires strategic attention and urgent and sustained actions on multiple levels. For example, the rates of child stunting and wasting in South Asia are the highest in the world, despite strong economic growth in most countries of this region during the past decade. Thus, food insecurity for those who are outside the development mainstream and for whom rights-based entitlements¹ may be most appropriate also must be considered. In order to be cost effective, solutions to food and nutritional insecurity should integrate the gender dimensions of maternal and child health, women's labour force participation and migration and fertility rates.

II. Future outlook for global food and agriculture

4. One of the biggest challenges to further reducing food and nutrition insecurity is to make food available to the poor at affordable and stable prices. The Organisation for Economic Co-operation and Development (OECD)-FAO Agricultural Outlook 2011-2020 projects, however, that world prices for rice, wheat, maize and oilseeds in the five years from 2015/16 to 2019/20 will be higher in real terms by 40, 27, 48 and 36 percent, respectively, than in the five years from 1998/99 to 2002/03.²
5. Prices are generally expected to rise because of a number of factors. Continued population and economic growth and the anticipated increased use of biofuels (depending on biofuel policies and the price of oil) will put upward pressure on demand. On the supply side, agricultural production costs will increase if oil prices continue to rise, contributing to higher food prices. Natural resource constraints, especially climate change and the limited availability of productive land and water in some regions, also pose substantial challenges to producing food at prices that are affordable for the poor.
6. On a more positive note, there is significant potential for raising crop productivity through new technologies and improved extension, as well as for reducing losses in the supply chain. However, these gains will not materialize without increased investment. There also may be opportunity for further cropland expansion in Africa, Central Asia, Latin America and Ukraine, but again this will depend on appropriate investment. Furthermore, cropland expansion may have negative environmental consequences. And with the possible exception of Central Asia, very little of the land that is available for expansion is to be found in the Asia-Pacific region.

¹ Rights-based entitlements refer to support that may be needed for a longer period of time than provided by safety nets, which are used to deal with short-term shocks to food access.

² http://www.agri-outlook.org/pages/0,2987,en_36774715_36775671_1_1_1_1_1,00.html

7. There are compelling arguments suggesting that food commodity prices also will be more volatile in the future. If extreme climate events occur more frequently, so will production shocks, and this will increase the volatility of prices. Furthermore, biofuel policies have created new linkages between the price of oil and the price of food commodities. When oil prices increase, the demand for biofuels will increase, which will raise maize prices, and the opposite will happen when oil prices decrease. Higher maize prices can lead to higher wheat and soybean prices through substitution in production and consumption (e.g. less soybean area planted and more demand for wheat as feed), which can then feed through to rice prices as well through similar mechanisms. Thus, prices for staple grains are now more closely linked with oil prices. Because world oil prices have historically been more volatile than food prices, world food markets also may be subject to increased volatility. Another source of volatility could come from the increased participation of actors (e.g. pension funds) in financial markets that trade commodity index funds, although this is a hotly debated issue without a clear consensus.

8. Over the longer term, FAO projects that food production in developing countries will need to nearly double by 2050 in order to meet demand. Within the Asia and Pacific region, crop production (including all types of crops) is projected to grow by 1.3 percent per year in South Asia and 0.8 percent per year in East Asia.³ Asia is different than other regions, however, in that nearly all of the growth will need to come from yield increases or increased cropping intensity. While arable land expansion is projected to increase by 30 percent in Latin America and the Caribbean and 25 percent in sub-Saharan Africa between 2005/07 and 2050, the corresponding figures for South Asia and East Asia are just 5 and 2 percent respectively. Because of strong income growth and consumers' desire to diversify their diets, meat production will have to grow even more rapidly than crop production – for developing countries as a whole, meat production will need to grow by 132 percent.⁴

III. Emerging challenges

Increasing agricultural productivity

9. In order to improve poor consumers' and farmers' access to food, it is essential to increase agricultural productivity. Higher agricultural productivity means higher profits for poor farmers and lower prices for poor consumers, both of which promote food security and reduce vulnerability. Priority attention to the agricultural and rural sector also will reduce economic pressures fuelling the rural-urban migration that underlies worsening urban food insecurity.

10. Finding effective ways to raise productivity will need to consider emerging scarcities of labour and natural resources. For example, by 2050, 63 percent of the region's population will live in urban areas. The size of the agricultural labour force has already begun to decline in several countries in the region in absolute terms, and many regions are experiencing labour scarcity, so more knowledge and capital-intensive techniques will be needed to maintain production and provide food at affordable prices. This will require more investment, primarily by the private sector, in machinery and more private and public sector investment in training to upgrade farmers' skills. Research on crop varieties that are tolerant of stresses such as drought, submergence and salinity also will be critical, but research and extension must consider the input scarcities noted above.

11. Farmers and prospective farmers will invest in agriculture only if their investments are profitable, and this requires an appropriate policy and regulatory environment as well as supportive public investment in a wide range of public goods. These public goods include: (i) direct investment in agricultural research and development to increase productivity and to enhance the ability of agricultural systems, especially smallholder farms, to cope with climate change and resource scarcity; (ii) investments to link the primary agriculture sector with the sources of demand, including agricultural institutions, extension services, rural roads, ports, power, storage and irrigation systems; and (iii) non-agricultural investment to enhance the rural institutional environment and improve

³ Bruinsma J. 2009. The resource outlook to 2050. By how much do land, water use and crop yields need to increase by 2050? Available at <ftp://ftp.fao.org/docrep/fao/012/ak971e/ak971e00.pdf>.

⁴http://www.agri-outlook.org/pages/0,2987,en_36774715_36775671_1_1_1_1_1,00.html.

human well-being, such as investments in sanitation and clean water supply, health care and education, particularly for women.

12. These investments have had typically high rates of return, both in financial terms and in terms of reducing poverty. Investment to increase the productivity and resilience of agriculture in developing countries can contribute to improving food security in many ways. It can reduce food price volatility through increased productivity (e.g. irrigation) and improved technical management of production and risk, especially in the face of climate change. It can help farmers and households cope better with the effects of volatility once it occurs. It can also make food more affordable for poor consumers and increase the incomes of poor farmers. These investments will be more effective at reducing poverty if they are appropriate for small-scale farmers, who will account for a dominant share of production in the Asia-Pacific region for the foreseeable future. While urbanization may eventually lead to an increase in farm sizes, population densities are typically very high in most of the region, and it is unlikely that large farms like those in the Americas will become the norm in this region, at least not for many decades.

13. These types of investment in human capital, infrastructure and science are very basic, but they are nevertheless essential to enable the poor to lift themselves out of poverty. Food insecurity will not be reduced if such investments are not made. Just as important, development and uptake of technologies require an enabling environment of sound and effective policies, institutions, legislation, infrastructure and human capacity. Along with research, development and extension, these critical factors must be improved in a comprehensive and integrated manner to enhance and sustain investment in agriculture.

14. A critical constraint to improving food security in the region is stagnation of crop productivity, as reflected in yield plateaus for the major cereal crops in some parts of the region. The availability of cereal crops is important because these crops are the primary source of calories for the poor. Rice is particularly important because most of the world's supply is produced in Asia, and so regional trends in rice productivity will determine global trends as well. Further, because many of the poor and food insecure will escape poverty through employment in the non-farm sector, boosting productivity of rice and wheat should be emphasized to make these key staples more affordable. Because wages are determined in part by food prices, affordably priced basic staples help improve the competitiveness of labour-intensive manufacturing, which helps to increase the employment and income of the poor and improve their access to food indirectly. Thus, the competitiveness of manufacturing depends on a competitive agricultural sector.

15. Growth in production and consumption of cereals has been markedly outpaced by growth of dairy and meat products, and this trend will continue. Rapid economic growth in the Asia-Pacific region has fueled demand for livestock products, and so the livestock sector has emerged as one of the most dynamic components of the regional food economy. The sector has tremendous potential for supporting the goals of poverty reduction and food and nutritional security. However, this sector requires a supporting policy environment to enhance the ability of small-scale livestock producers to access expanding markets and cope with diseases that can threaten producer livelihoods and food safety. Since small-scale livestock in the region is often undertaken by women, supportive services and policies that enable their greater productivity would be a worthwhile investment.

16. Increased gender equity in access to resources, goods and services is another key path to increasing agricultural productivity, especially given the feminization of the agricultural labour force in some countries. Women often do not have the same access as men to land, livestock, labour, education, extension, financial services and technology, and this gap imposes costs on the economy. FAO has estimated that if women had the same access to productive resources as men, women could increase yields on their farms by 20–30 percent. This could raise total agricultural output in developing countries by 2.5–4 percent, which could in turn reduce the number of hungry people in the world by 12–17 percent.⁵

⁵ FAO, 2011. Women in Agriculture: Closing the Gender Gap for Development. State of Food and Agriculture. 2011. Available at <http://www.fao.org/publications/sofa/en/>.

17. Increased investment is crucial for increasing agricultural productivity. Most of the investment, both in primary agriculture and downstream sectors, already comes from private sources, and most of it will need to come from private sources in the future. Farmers must purchase implements and machinery, make investments to improve soil fertility and acquire knowledge to improve the management of their farms. Private-sector investment also needs to be encouraged at all stages in the value chain – upstream of the farm, in seed and fertilizer production and distribution, and downstream, in processing, marketing and distribution.

18. Finally, increased productivity at the farm level is not the only way to increase supplies and meet demand. An FAO-commissioned study recently estimated that 1.3 billion tonnes of food are lost or wasted globally each year.⁶ Most of the waste is in developed countries and most of the losses are in developing countries. The challenge is to find cost-effective ways to reduce such waste and losses. Thus, research, extension and investment in improved post-harvest management and logistics are important components of a broader agricultural development strategy.

Managing the natural resource base and climate change

19. The livelihoods of the poor and future increases in agricultural productivity are fundamentally dependent on the present and future natural resource base. Therefore, sustainable management of natural resources is crucial for food security, especially given the constraints on arable land that were mentioned earlier. Fortunately, there has been a growing appreciation of sustainable use and management of natural resources and their strategic contribution to meeting present and future food demand in the region; however, much remains to be done to make sure that further progress in reducing food insecurity can be sustained.

20. The seas in the Asia and the Pacific region are among the most intensively fished waters in the world, and this region is the world's largest producer in both capture fisheries and aquaculture. On the consumption side, fish are important for a healthy and balanced diet. As incomes increase, the increasing demand for fish can be handled by a highly resilient and productive ecosystem, but signs of overfishing are becoming increasingly apparent in the region's marine fisheries. The considerable mobility of regional fishing fleets has so far kept production high, but there are ever fewer unexploited areas.

21. Inland fisheries also provide significant and often overlooked contributions to nutrition and food security in several key areas of the region. The Asian region is responsible for more than 66 percent of global inland fisheries production. Pressures on water resources and transformation of habitats are threatening some of these key fisheries, and while overall production figures seems to be increasing, these increases hide serious declines in the diversity and production of some fisheries.

22. Aquaculture in the region has been experiencing sustained and considerable expansion, and it now produces more food fish than capture fisheries in the area. The region produces 89 percent of the world's food fish cultivated from aquaculture and nearly 79 percent of the value of food produced in this manner. Nevertheless, aquaculture faces constraints from land and water and from its dependence on marine fish meal for feed.

23. These risks to aquatic resources in both capture fisheries and aquaculture could be further aggravated by external threats such as climate change, pollution and increasing coastal area activities such as tourism and industrial development. In order to address these risks, it will be critical to promote participatory and inclusive strategies for ecosystem-based management of fisheries and aquaculture, so that policies are oriented towards providing sustainable social and economic benefits to stakeholders, as opposed to simply maximizing production. For example, it will be crucial to improve the regulatory setting to reduce the incidence of illegal, unreported and unregulated (IUU) fishing, and use the private sector to foster the adoption of best practices in aquaculture.

⁶ Gustavsson J., Cederberg C., Sonesson U., van Otterdijk R. and Meybeck A. 2011. Global Food Losses and Food Waste. Available at http://www.fao.org/fileadmin/user_upload/ags/publications/GFL_web.pdf.

24. Forests, particularly in mountainous areas, provide rural communities with firewood, timber, non-timber forest products (e.g. foodstuffs, medicinal plants, industrial raw materials and other marketable products) and an array of environmental services, including conservation of biodiversity (the benefits of which go well beyond rural areas). Coastal forests safeguard vast productive agricultural lands and aquaculture ponds that are threatened regularly by cyclonic storms, saline water intrusion, predation and soil erosion, all of which have adverse consequences for the livelihoods of the poor. While there have been some gains from afforestation, rehabilitation and protection of forest areas, severe stress on forest resources persists, exacerbated by a large and growing population, widespread poverty, ineffective governance, ambiguous property rights, weak institutions and inappropriate policies. Improved forestry management to rebuild the natural resource base and conserve existing resources has tremendous potential to generate income and thereby improve food security for local stakeholders. Many forestry activities (e.g. afforestation, reforestation, improved management of natural forests, conservation, watershed protection, agroforestry, urban forestry) also directly contribute to climate change mitigation and adaptation.

25. Because of rapid regional economic growth, there is faster growth in demand for water for industrial and domestic purposes than for agriculture. Thus, water is becoming an increasingly scarce resource in many parts of the Asia-Pacific region, yet it is critical for ensuring the high level of productivity needed to reduce food insecurity. At the same time, because agriculture is still by far the largest user of water in the region (indeed in the world), agricultural water use must become more efficient and productive. Groundwater is being withdrawn in many areas at rates that exceed the rate of natural recharge, lowering water tables and raising concerns over the long-term sustainability of water exploitation. In some cases, the excessive drawdown is driven by policies that subsidize electricity or fuel, and thus accelerate depletion. Surface irrigation systems need to be rehabilitated and modernized to sustainably meet the demands of agriculture, industry and households.

26. Climate change impacts the entire agricultural sector through shifts in agro-ecological zones, droughts, desertification, variations in hydrological cycles, rising sea levels and saline water intrusion. These developments could radically alter existing cropping patterns in the region, including aquaculture and livestock, and threaten *in situ* agricultural biodiversity. Increased severity and variability in weather patterns, rising sea levels and probably storm surges would greatly threaten coastal fisheries and aquaculture and their contributions to household food security and national economies, especially in low-lying islands and in the large delta areas. Those who are already food insecure and lack coping capacity are the most vulnerable. Funding for agricultural research to develop new crop varieties that are salt-, drought- and flood-tolerant is critically important, as is the development of new practices that make agriculture more resilient to climate change. Agriculture also has the capacity to contribute to climate change mitigation through practical improvements in crop, aquaculture and livestock production systems and practices that reduce GHG emissions.

27. As noted earlier, the livestock sector has contributed tremendously to improved food security and will continue to do so, but there are serious concerns regarding the environmental and public health implications of this growth, including its contribution to climate change. For example, the globalization of food systems has meant an increasing flow of technology, capital, people and goods, including live animals and products of animal origin, around the world. Increased trade flows, along with the growing concentration of animals, often in proximity to large human populations, have contributed to increased risks of spreading animal diseases and to a rise in animal-related human health risks globally. At the same time, inadequate coverage of and access to support services (e.g. disease surveillance and control, vaccination, curative veterinary services, advisory support) jeopardizes the livelihoods and development prospects of many poor livestock holders throughout the region.

Improving the response to food price volatility

28. Recent price fluctuations in world food markets have brought the issues of food price volatility and high food prices to the fore. When prices fluctuate substantially, even if they are tolerable on average, the short-term shocks make smallholder farmers and poor consumers vulnerable

to long-term poverty traps. In addition, smallholder farmers find it difficult to invest when price changes are unpredictable.⁷

29. The G20 Agriculture Ministers meeting, held on 22-23 June 2011 in Paris, adopted several recommendations put forward in a report coordinated by FAO and OECD on policy responses to price volatility in food and agricultural markets.⁸ One key recommendation was to implement a broad scope of actions to boost agricultural productivity growth, increase food production and strengthen the longer-term sustainability and resilience of the food and agriculture system, paying special attention to smallholders, especially women and young farmers. Such actions will include strengthening agricultural research and innovation and creating the enabling environment to encourage public and private investment in agriculture.

30. Another recommendation was to launch the Agricultural Market Information System (AMIS) to increase collaboration among international organizations, major food exporting and importing countries and the private sector with the objective of providing accurate and transparent information. AMIS is based on existing information mechanisms and housed in FAO. G20 governments also called for the establishment of a Rapid Response Forum within AMIS to enhance international policy coordination. The Rapid Response Forum will discuss appropriate policy responses when the market situation indicates a high risk of food insecurity and will work closely with the Committee on World Food Security (CFS) to promote greater international policy convergence.

31. Recognizing that some price fluctuations will still occur (even if they are reduced in frequency and severity), the G20 Agriculture Ministers called upon multilateral development banks and international organizations to develop risk management tools and help mainstream risk management, in particular for smallholders, and to further explore countercyclical mechanisms for vulnerable countries in the event of external shocks, including food price surges. The Ministers also supported initiatives to maximize efficient delivery of food assistance and strengthen supply chains against price and supply shocks, in particular through forward-positioning networks and mainstreaming risk management in international food assistance procurement. The G20 also agreed to remove export restrictions and extraordinary taxes for food purchased for non-commercial humanitarian purposes by the World Food Programme (WFP), and to not impose them in the future.

IV. Conclusions and recommendations

32. The region has made good progress in reducing poverty and improving food security and nutrition, but because many people are still food insecure, much remains to be done.

33. *The conference may wish to request member countries* to emphasize the importance of investment in agriculture to increase rural incomes and reduce rural-urban disparities, and to strive to increase the share of agriculture and rural development in budget expenditures to at least 10 percent, as encouraged at the World Summit of Food Security.⁹ This investment should include strong support for a wide range of activities, including upstream agricultural research and development, innovative gender-sensitive extension techniques and increased gender equity in access to productive resources, dissemination of indigenous knowledge and downstream development of value chains that can efficiently deliver produce from farms to retail markets. The focus of government actions should be spending on public goods that catalyse further investment by the private sector and developing a sound and transparent policy and regulatory environment.

⁷ See FAO (2011), State of Food Insecurity in the World.

⁸ The report is available at <http://www.fao.org/economic/est/volatility/en/>. The other agencies involved included the International Fund for Agricultural Development (IFAD), the International Monetary Fund (IMF), the United Nations Conference on Trade and Development (UNCTAD), WFP, the World Bank (WB), the World Trade Organization (WTO), the International Food Policy Research Institute (IFPRI) and the UN High-Level Task Force on Global Food Security.

⁹ Declaration of the World Summit on Food Security, World Summit on Food Security, Rome, 16-18 November 2009. Declaration available at http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf.

34. The Conference may request FAO to further assist member countries to:
- link agricultural research and extension by promoting partnerships among research institutions, extension agencies and other key stakeholders, and increasing the number of female extension workers.
 - develop better gender-disaggregated agricultural, fisheries and forestry statistics. Better data in this area are essential for improving the relevance of research and extension systems and for formulating better policies.
 - strengthen agricultural market information systems, including stronger links between the systems developed by regional organizations and the global interagency Agricultural Market Information Systems (AMIS) secretariat based in Rome. Improved data will better inform market participants and help avoid panic-induced price surges resulting from misinformation.
 - improve governance and regulation of the livestock sector in a manner that makes rapid growth environmentally sustainable and does not threaten human health. Urgent collaboration is needed for the prevention and control of transboundary animal disease (TAD), especially in the areas of epidemiology and economic research, surveillance for early warning, emergency preparedness and rapid response to disease outbreaks. Access to reference laboratories of accepted international standard is crucial in times of disease-related emergencies. The capacity of poorer countries to participate in the design of animal health and food-safety standards should be enhanced so that they are better able to improve their animal health and food-safety systems and gain greater access to markets for their livestock products.
 - develop forests and forestry as a means of sustaining livelihoods, generating income, reducing poverty, preserving cultural heritage and maintaining environmental and biodiversity values. Achieving these aims will require broader stakeholder engagement and support.
 - help countries further develop an ecosystems approach framework through which fisheries and aquaculture activities can be implemented. Such a framework will help improve governance and balance environmental well-being with human and social well-being.
 - support member states in adapting to and mitigating climate change through the creation of improved early warning systems and the development and dissemination of improved technologies and risk management tools.