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Policy options and actions for expediting progress in implementation: Agriculture

Report of the Secretary-General

Summary:

Advancing the implementation of agricultural development agenda requires renewed commitment and a new vision for global cooperation to implement policies that simultaneously aim at increasing agricultural productivity, creating fair trade regimes, conserving natural resources, and investing in agricultural-related infrastructure. Towards this aim, an integrated and coordinated response is needed from all stakeholders ranging from multilateral donors to local level farmers. Targeted investments will be needed to bridge the gaps in agricultural research and technology transfer. Public and private investments in the agriculture sector need to increase manyfold. Improved land and water management programs and sustainable farming system practices can make notable contributions towards enhancing agricultural productivity. A thriving agriculture sector underpinned by improved productivity will stimulate economic growth in rural areas and influence poverty reduction and food security.

¹ E/CN.17/2009/1.

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I. Introduction

1. At its sixteenth session – the review session of the third implementation cycle 2008-2009 – the Commission on Sustainable Development (CSD) conducted an evaluation of progress achieved in the selected cluster of issues of “Agriculture, Rural Development, Land, Desertification, Drought and Africa,” as contained in Agenda 21, the Program for the Further Implementation of Agenda 21 and the Johannesburg Plan of Implementation. The Commission identified constraints and obstacles as well as new challenges and opportunities to implementation in the selected thematic cluster of issues.

2. At its seventeenth session – the policy session of its current implementation cycle – the Commission will take decisions on policy options and practical measures to expedite implementation in the selected cluster of issues. The Commission’s session will be preceded by its intergovernmental preparatory meeting that will prepare a draft negotiating document for consideration by the Commission.

3. The present report is a contribution to the discussions at the intergovernmental preparatory meeting on policy options and practical measures to expedite progress in agriculture for sustainable development. The cross-cutting issues, including the means of implementation, identified by the Commission at its eleventh session are addressed throughout the report.

4. The report benefited from inputs received from the UN organizations, in particular FAO, IFAD, WFP and the UN regional commissions, as well as from country and national assessments submitted by the governments to the CSD Secretariat. Contributions from major groups are also taken into account. Finally, the report benefited from the analysis and conclusions presented in the Comprehensive Framework for Action developed by the United Nations High-Level Task Force on the Global Food Crisis (2008); the State of Food and Agriculture 2007 by FAO; and the World Bank’s World Development Report 2008.

5. The report should be read in conjunction with the Secretary General’s reports on land, rural development, desertification, drought, and Africa, which will also be before the Commission’s intergovernmental preparatory meeting. Where necessary, cross-references are made to these reports.

II. Policies for Sustainable Agricultural Development

6. The Johannesburg Plan of Implementation adopted at the 2002 World Summit on Sustainable Development reaffirmed the crucial role that agriculture plays in meeting the needs of the poor in developing countries and achieving the Millennium Development Goals (MDGs) of halving poverty and hunger by 2015.² The Chairman’s Summary adopted at the sixteenth session of the Commission

² Johannesburg Declaration on Sustainable Development and Plan of Implementation of the World Summit on Sustainable Development, United Nations, 2003, paragraph 40.

on Sustainable Development pointed out that neglecting agriculture has not only led to the current food crisis, but will have serious implications for poverty eradication and food security.³

7. Concern about the neglect of agriculture led to calls for implementing actions that will promote an integrated approach to sustainable agricultural development. Such an approach need to have special focus on enhancing agricultural productivity in an environmentally sustainable manner, reversing the declining trend in public sector finance for sustainable agriculture and promoting private sector investment, making the multilateral trading system more supportive of sustainable agricultural development, strengthening national research and extension services, and enhancing the role of women in sustainable agricultural development and food security.

8. In the coming decades, in an effort to meet the MDGs on poverty and hunger, the agriculture need to develop and grow at an unprecedented absolute rate involving intensification of crop and animal production. While this growth must target the needs of increasing population, it will certainly put an extra pressure on agricultural lands and will have to be achieved against reduced water availability, in particular in the agriculture-based economies.

9. In addition, global agriculture must cope with the burden of climate change. Climate change is predicted to increase the frequency and severity of extreme weather events such as droughts and floods, while climate change polices place additional upward pressure on the agricultural sector for energy crops. These longer-term factors pose serious challenges to the global food and agriculture system. (*See SG Report on Drought*)

A. Promoting sustainable agricultural practices

10. During the past decade, agricultural sectors and food economies have undergone rapid and fundamental structural changes in Africa, Asia and Latin America. Growing urban populations, expanding per capita incomes, changing lifestyles, maturing agribusiness markets, and emerging mass media and communication systems are altering food consumption, production and distribution patterns. More than two decades of policy, market and institutional reforms have contributed directly to these profound changes, resulting in an increasingly modernizing and globally integrated rural economy.

11. Throughout the developing world, agri-business chains are evolving in response to rapid economic and income growth, urbanization, and globalization. Dietary changes away from staples and increasingly towards livestock and dairy products, vegetables and fruit, and fats and oils are also being registered. Paralleling these shifting diet patterns are emerging trends in resource use, emphasizing sustainable agricultural development and its goals of economic efficiency, environmental protection and social equity. Agriculture has broaden its role well beyond increasing productivity, expanding export earnings and enhancing rural incomes to

³ Chairman's Summary (Parts I and II) adopted at the sixteenth session of the Commission on Sustainable Development, 5-16 May 2008.

include evolving concepts of managing ecological processes and providing environmental services.

Box 1: Promoting an agriculture-for-development approach

While learning from the past experiences and appreciating new opportunities, the World Bank has called for promoting an agriculture-for-development approach. This approach urges balancing multiple policy objectives, differentiating across country types, requiring environmental sustainability and being feasible to implement. Four elements key to stimulate agricultural growth in the new global context include: (a) improving producer incentives; (b) providing core public goods and a better climate for private investment; (c) building effective institutions; and (d) ensuring sustainable use of natural resources.

Source: World Development Report 2008: Agriculture for Development. IBRD/The World Bank, Washington, D.C., October 2007.

12. Good farming practices follow ecosystem-based approaches designed to improve sustainability of crop-livestock production systems, aiming to meet consumer needs for high quality, safe products produced in an environmentally and socially responsible way. Evidence suggests that market incentives and the right mix of policy instruments can improve sustainable farming practices and farmers' incomes. For instance, as is increasingly common in global value chains, contracts with farmers for export quality produce require high production standards related to a variety of characteristics including the quality of the product (color, size, variety, etc.), ethical standards (no use of child labor), and employment practices. Potential externality benefits for farmers participating in these contracts can have a spill over effect to other crops. In Madagascar, for example, 93% of the farmers working with export firms to produce beans reported that they changed the way they cultivate their other off-season crops. Rice productivity is 64% higher on plots with a contract compared to those plots without a contract and off-season crops, and rice yields increase from 3.6 to 6.0 ton per hectare. Small farmers who participate in these contracts have higher welfare, more income stability and shorter lean periods.⁴

13. Some of the ecosystem-based production practices used include Conservation Agriculture, integrated rice management systems such as the System of Rice Intensification, Integrated Pest Management for plant and animal diseases, Integrated Production and Pest Management, Integrated Plant Nutrition Systems, and Integrated Weed Management. Farmer Field School approaches, as, for example, advertised and implemented by FAO, are complementary to ecosystem-based approaches, providing effective linkages to the farming communities for participatory testing and learning, and for farmer empowerment. National development policies in general and agricultural policies in particular need to enable the mainstreaming of ecosystem-based principles and technologies along with other complementary practices in all types of rain-fed and irrigated agricultural systems including the various forms of organic and mixed farming systems.

⁴ Minten, B., L. Randrianarison, and J. F. M. Swinnen. 2007. Global Retail Chains and Poor Farmers: Evidence from Madagascar. In *Global Supply Chains, Standards and the Poor*, edited by J. F. M. Swinnen: CAB International.

14. The livestock sector is characterized by a pronounced dichotomy of two disparate but co-existing systems. The first system is made up of smallholders and pastoralists production, supporting numerous family livelihoods and household food security and contributing to rural food security. The other system is commercial production, supporting the international food chains and providing employment to producers and others in associated processing, distribution, marketing and support services. In the absence of viable economic alternatives, traditional livestock systems sustain a large number of poor rural households.

15. The “middle-ground” of mid-size market-oriented family farms is still growing in importance in many places, but requires policy support to avoid being squeezed out of markets and to resist disease shocks. National policies should enable the integration of livestock with crop systems where possible, and pastoralist should be provided with policy and institutional support so that they are not excluded from the growing domestic and global markets. In addition, national policies should favour local breeds which are generally well adapted to low-external input systems. National policies at present rather favour exotic breeds which require high-external inputs and pose high risks to smallholders.

16. Governments should consider promoting organic farming systems. Organic agriculture has a smaller footprint on the natural resource base and the health of agricultural workers than conventional agriculture. In addition, it provides for an environmentally sound and affordable way for smallholders to intensify production in marginal areas and offers promising export opportunities for developing countries which have in many cases an inherent comparative advantage due to relatively abundant labour supply and relatively low use of agro-chemicals. Several studies show that the use of organic methods of farming by small producers in developing countries can lead to an increase in crop yields and thus enhance food security among the poor.⁵

17. Some governments, mostly in Europe, offer financial incentives to farmers to convert to organic farming on the basis that there are externalities not captured in the market. In addition, governments in Europe have increased R&D in organic systems and in some cases there are public procurement policies in place favouring the purchase of organic food.⁶

18. In the case of developing countries however, market forces drive the development of the organic food sector. Although the market for organic produce is growing fast and expansion is likely to be enhanced, the ability to enter these profitable markets presents significant challenges for developing countries, including the fact they are relatively small in terms of traded volumes and that they require substantial investments in developing certification

⁵ WTO (2006), “Environmental requirements and market access – recent work in OECD and UNCTAD”, Note by the Secretariat, WT/CTE/W/244. See also Altieri, M.A., Rosset, P. and Thrupp, L.A. (2001), “The potential of agroecology to combat hunger in the developing world”, Ch.19 in *The unfinished agenda – Perspectives on overcoming hunger, poverty, and environmental degradation*, eds. Pinstrup-Andersen, P. and R. Pandya-Lorch, IFPRI, 302 pp.

⁶ OECD (2004), *Agriculture and the environment: lessons learned from a decade of OECD work*.

bodies.⁷ Foreign organic production systems are typically not recognized in developed country markets, and thus organic products must be re-certified in order to be sold as such, entailing significant costs.⁸ In addition, organic agriculture is fairly knowledge-intensive and training small producers in remote areas is expensive. Overcoming these challenges will require implementing policies and actions aimed at raising awareness about the benefits of organic agriculture, strengthening research systems to make organic agriculture more competitive, establishing certification standards together with necessary regulatory and enforcement mechanisms, and implementing targeted training programs for the farmers.

B. Enhancing agricultural productivity

19. The majority of future increases in food and agricultural production in developing countries (some 80%) will come from more intensive production systems based on higher yields and multiple cropping. Such production intensification will continue to rely on the use of adapted integrated crop-livestock systems involving improved and traditional varieties and animal breeds, combined with soil, crop and animal husbandry practices that can make the most efficient and optimal use of production inputs while protecting the supporting ecosystem services and biodiversity. The integration of bio-fuel cropping into the existing food production systems should be guided by careful policy analysis ensuring that local and national food security is not jeopardized and natural resources are not subject to degradation.

20. Intensification of crop and animal production cannot be achieved based on improved seeds, breeds and fertilizer alone. While these are important ingredients for production intensification, other aspects such as increased utilization of organic fertilizers and new, environmentally friendly ways of pest control, improved water and soil conservation, industrial treatment of organic waste (e.g. manure waste from large poultry and livestock operations), and crop diversification are equally important. Additionally, institutional reforms, investments in research and development, and participatory innovation and learning are important drivers of agricultural productivity growth.⁹

21. Improved water and soil conservation techniques and technologies that have the potential to increase crop production are available. Transferring these technologies at a faster rate and scaling up of good practices is required. In India, the introduction of soil conservation technologies and techniques, such as timeliness and precision in sowing crops, contour farming, and use of low-to-moderate levels of fertilizer has significantly improved soil fertility

⁷ Rodrigues, M. and M. Torres (2003), La competitividad agroalimentaria de los países de América Central y el Caribe en una perspectiva de liberalización comercial, Serie Desarrollo Productivo No. 139, 64 pp.

⁸ See García M., M. y F. Bañados, (2004), Impact of EU organic product certification legislation on Chile organic exports, *Food Policy*, 29 (1); Gómez T., L., L. Martin, M.A. Gómez Cruz and T. Mutersbaugh (2005), Certified organic agriculture in Mexico: market connections and certification practices in large and small producers, *Journal of Rural Studies*, 21, 461-474; Basu, A. and U. Grote (2006), China as a standard-setter – the examples of GM cotton and ecological and food safety standards, Paper presented at the Pre-conference Workshop (Seventh Annual Global Development Conference) on Asian and other drivers of global change, St. Petersburg, January 18-19, 2006.

⁹ FAO. 2008 Food Outlook, Rome, November 2008.

resulting in crop productivity growth. The introduction of a legume component in the cropping system has provided much-needed nitrogen.¹⁰

22. Public investments and incentives targeting small-scale producers increase the level playing field, allowing smallholders to realize their comparative advantages in agricultural production.¹¹ Well-targeted interventions need to ensure urgent access to agricultural inputs (i.e. seeds, fertilizers, and water), rehabilitation of infrastructure, and better practices to decrease post harvest losses. Such efforts boost yields and increase rural household welfare as well as aggregate local food supply. In several East Asian countries, rice yields could increase significantly by shifting fertilizer subsidies from urea to potassium and post-harvest losses could be lowered by 25% through better use of post-harvest technology and infrastructure.¹²

23. Governments can direct public investments, institutional reforms, and development programs towards smallholders in ways that encourage further public and private agricultural and rural development investments. For example, local government in China supported a group of small-scale growers to register a brand name for their watermelons, with production standardized through coordinated planting, quality inspection, and packaging.¹³ The higher quality brand received a higher price than other watermelons, increasing farmer incomes and allowing the cooperative to expand membership and invest further into improving food safety and quality.

24. Investments in agriculture development and incentives provided to local farmers must be complemented by macro-economic policies to ensure sustainability. Actions need to be aligned and adapted to national and local conditions, taking into account global climate change and poverty reduction initiatives and include coordinated efforts by key stakeholders, particularly national governments, civil society and the private sector. In addition, appropriate market regulations, improved information systems, and security of tenure and access rights to natural resources motivate farmers' investments in soil and water conservation. In Mexico, for example, strengthened land property rights and the introduction of major grants and subsidized credit-based programs assisted the agricultural sector's transition toward greater efficiency and competitiveness.¹⁴

25. Investments in core public goods, science, infrastructure, and human capital, combined with better policies and institutions, are major drivers of agricultural productivity growth. When core public goods are available, institutional reforms become a major source of agricultural productivity growth. In addition, appropriate market regulation, improved

¹⁰ Jagarlapudi Venkateswarlu, Sustainable Agricultural Systems for the Development of Arid and Semi-Arid Areas in India. In: ATAS, issue 7, United Nations, New York, 1992, pp.139-142.

¹¹ Comprehensive Framework for Action High-Level Task Force on the Global Food Security Crisis, United Nations, New York, July 2008.

¹² Zaman Hassan, Christopher Delgado, Donald Mitchell, Ana Revenga, 2008. Rising Food Prices: Are there right policy choices? Development Outreach, World Bank Institute, October 2008.

¹³ World Development Report 2008. IBRD/The World Bank, Washington, D.C., October 2007.

¹⁴ World Development Report 2008. IBRD/The World Bank, Washington, D.C., October 2007.

information systems, secure property rights for land and water are examples of reforms that motivate private investment in agriculture, especially investments with a longer term payoffs. Evidence suggests that collective actions by farmers may lead to reducing transactions costs, connecting farmers to markets and, improving their bargaining position in those markets.

26. Enhancing the role of women in sustainable agricultural production requires gender-responsive interventions across all policy and institutional domains. Women have traditionally been excluded from many avenues of governance, whether in local user groups, producer organizations, local councils, or national government. Women need to be engaged at far more senior levels than is generally the case, in scientific research, in ministries of agriculture, in local government, and in farmers' organizations. Governments should ensure that legislation does not discriminate against women in areas such as inheritance, wages, property ownership, divorce, and contracting. *(See SG report on rural development)*

27. An NGO in Bangladesh, for example, implemented a gender-mainstreaming policy, hiring women for 30-50% of technical assistance teams and targeting both men and women to improve rice-fish production. Productivity increased by up to 40% and incomes by 50% as gender disparities in education, labour allocation, food provision and family decision-making decreased.

28. Some developing countries have successfully implemented agricultural training programmes. In Brazil, the National Service for Rural Education trains rural entrepreneurs. One of its most successful features is the integration of occupational training and social promotion. The learning process is related to rural work and living conditions. Rural women are given preference for social promotion programs, including training in protection against toxic products used in agriculture. In Mali, an agricultural research organization (Institut d'Economie Rurale) and a higher education institution (Institut Polytechnique Rurale) have joined to establish the Mali Agribusiness Incubator, which helps agricultural entrepreneurs integrate modern technologies into local agricultural systems. In Chile, Management Centers run by farmer organizations support decision-making and the development of entrepreneurial and managerial capacities among individual family farms and market-oriented producer organizations.¹⁵

29. Training programs for firms in niche markets with good growth prospects have raised the productivity and income of enterprises by upgrading technology and managerial skills. In Madagascar, training is targeted to small suppliers of intermediate goods for processing and exporting. Other examples include the Tanzania Integrated Training for Entrepreneurship Promotion and the Ghana Opportunities Industrialization Council.¹⁶

¹⁵ Ibid.

¹⁶ Ibid.

C. Enhancing food security and averting food crisis

30. Since 2007, at least 40 governments imposed emergency measures to control surging food prices in an effort to protect vulnerable households and safeguard social cohesion. The policy initiatives include food price controls, export restrictions and expanded safety nets. Some of these policy measures designed to protect consumers from higher prices, such as export controls further destabilize world food markets. For example, export restrictions by major food-exporting countries starting in mid-2007 are estimated to have had a particularly strong effect on rice prices, accounting for about half of the overall price increase.¹⁷

31. According to FAO, since 2007 many countries adjusted trade and consumption policies with a view to mitigating the impact of higher prices on consumers. Trade policies are among the most-used measures: 18 countries reduced import tariffs on cereals and 17 imposed export restrictions. Fourteen of the countries using export restrictions placed quantitative restrictions or outright bans on exports. Consumption policies included reducing food taxes (11 countries) and providing consumption subsidies (12 countries). An additional 8 countries adopted price controls. Of these measures, export bans and price controls have proven to be most disruptive to markets and are likely to suppress incentives to producers to increase production.¹⁸

32. An IMF survey examining the policy responses of 161 countries to the food and fuel crisis concluded that: (i) expenditure measures were more prominent in the case of fuels, and revenue measures dominate food policy responses. More than half the countries reduced food taxes and less than one-fifth increased food subsidies, (ii) exporting countries used both tax and regulatory measures to contain increases in domestic food prices: export taxes, the introduction of export quotas, and the imposition of outright bans on certain exports. Export bans and export taxes were imposed by key exporters of major cereals, and (iii) about a quarter of the surveyed countries increased financing for more targeted transfer programs, and 15 countries increased public sector wages and pensions partly in response to the price increases.¹⁹

33. Important lessons emerging from the policy analysis included the following. First, removing export bans (imposed by some 28 countries) could have dramatic, positive effects on international food markets, lowering prices and easing volatility. Second, export restrictions in terms of export bans, quotas, or taxes on key staples have a limited impact on domestic price levels, a significant negative effect on the earnings of domestic producers and exporters, and leads to higher prices in countries that depend on grain imports.²⁰ Third, the incomplete pass-through of international to domestic commodity prices distorts incentives for domestic consumers and producers and ultimately reinforces global price pressures. Finally price subsidies are a fiscally costly approach to protecting poor household welfare--this because a

¹⁷ See: FAO, State of Food and Agriculture 2008 and International Monetary Fund, Financial Stress, Downturns, and Recoveries, World Economic Outlook, October 2008.

¹⁸ FAO, 2008 Food Outlook, Rome, November 2008.

¹⁹ International Monetary Fund, Financial Stress, Downturns, and Recoveries, World Economic Outlook, October 2008.

²⁰ Zaman Hassan, Christopher Delgado, Donald Mitchell, Ana Revenga, 2008. Rising Food Prices: Are there right policy choices? Development Outreach, World Bank Institute, October 2008.

high proportion of the benefits from low food and fuel prices accrue to higher-income groups, reflecting the higher shares of these groups in total consumption.

Box 2: Providing a strategic framework for improving food security

The twin-track approach can provide an overall strategic framework for improving food security. This framework includes equally critical and mutually reinforcing short-term and long-term measures and is highly relevant in the current context of high food prices. One track aims to promote the supply response of the agricultural sector, particularly amongst smallholders, and the development of rural areas through appropriate incentives and investments in public goods. The objective is to increase food supplies and to enhance the income-generating capacity of agriculture and the rural economy as a means of promoting overall rural development. The other track aims to ensure immediate access to food by the poor and vulnerable in both rural and urban areas by providing safety nets and social protection measures.

Source: FAO, Food Outlook 2008, Rome, November 2008.

D. Establishing social safety nets

34. Social safety nets play an important role in forestalling increases in poverty, helping households maintain access to food, energy, and essential services. Countries with existing, well-targeted safety net systems can react more quickly to rising food and fuel prices by increasing the value and/or coverage of benefits. Scaling up existing food assistance, nutrition interventions, school feeding and job creation programs are among the most cost effective short term measures to assist vulnerable populations. Regular collection of household survey data is important to develop targeting indicators, track the effectiveness of safety net programs and measure the impacts.

35. Successful examples of countries scaling up safety net programs to address the food and fuel crisis include Brazil increasing the benefits of the Bolsa Familia conditional cash transfer, Chile increasing the level of the winter heating allowance, the Kyrgyz Republic increasing the benefits of its Unified Monthly Benefit cash transfer program, Yemen doubling the value of its cash transfer benefit, and Egypt increasing the ration of food it subsidizes, as did some states in India.²¹

36. Investing in sound safety net programmes is good protection from the food and fuel crisis and from all types of shocks even in fast-growing economies. Many countries without social protection programs tend to use more regressive and more expensive measures, including general price subsidies, export restrictions, or tax cuts. Countries may want to consider

²¹ The World Bank, Rising Food And Fuel Prices: Addressing The Risks To Future Generations, Washington, D.C., October 12, 2008; The World Bank, Human Development Network (HDN) Poverty Reduction and Economic Management (PREM) Network, Washington, D.C., 2008.

initiating or reforming existing programs, developing practical systems for household targeting, payments, management and monitoring. Yemen, for example, established a new proxy means testing system to underpin improvements in the targeting and benefit level of its cash transfer program. Liberia is experimenting with non-governmental organizations, small private firms and larger community based organizations to organize labour-intensive public works projects. Togo is issuing students vouchers that can be used to purchase school lunches from local vendors.²² Regular collection of household survey data is important to develop targeting indicators, track the effectiveness of safety net programs and measure the impacts.

37. Experience suggests that within the range of possible social protection responses and given the importance of choosing policy responses based on country context, some programs offer distinct advantages over others.²³ Targeted cash transfers, for example, are preferable to in-kind programs because they have lower administrative costs, are more amenable to payment systems that guard against diversion of benefits, and allow consumers to choose. ‘Near cash’ instruments such as food stamps or transport vouchers can be politically popular but have higher administrative costs than cash. Food stamps have been successful in most of the small number of countries where they have been tried. In-kind food distribution is appropriate where markets are functioning, where foreign assistance is only available in-kind, or where strategic grain reserves need to be rotated.

38. Evaluation lessons can provide guidance on when to use cash, ‘near cash’ or in kind. In areas where markets are functioning poorly, it may be more cost effective to provide food or inputs directly to families. Where markets are in-place but private suppliers are unwilling to invest in distribution infrastructure, voucher based systems can be effective in providing incentives for greater private investment. In Malawi, a program called Inputs for Assets distributes vouchers only to those who participated in a public works project.²⁴ This approach provides some self-targeting because wealthier farmers were less likely to participate in these projects. Vouchers were redeemable with local input suppliers, strengthening effective demand for inputs and increasing sales and profits of private distributors.

39. On the other hand, in areas where markets and financial systems are operating reasonably well with an outreach to people even in remote areas, cash transfers may be the preferred option given their generally lower administrative costs. In some cases, local food procurement can link food aid with development of local agricultural production and marketing capacities. Local procurement should be based on a market risk assessment so as to exclude negative impacts on local food availability and price structures. Local food procurement experiences in Ethiopia, Nepal and Uganda benefited the private sector. For example, the Ethiopian case reported increased entry of private traders and increased competition, while the Nepalese case produced improved milling and related processing facilities.²⁵

²² Ibid.

²³ The World Bank, The World Food Programme, FAO and the International Food Policy Research Institute offer extensive reviews.

²⁴ The World Bank, New Approaches to Input Subsidies, Agriculture for Development Policy Brief, Washington, D.C., 2008.

²⁵ FAO, State of Food and Agriculture 2006.

40. Although higher prices for agricultural commodities constitute an immediate threat to food security, in the longer run they represent an opportunity for agricultural development. This opportunity can be realized only when and where the agriculture sector has the capacity to respond to the price incentives and poor farmers are able to participate in the supply response. Expanding demand for bio-fuels may reverse the long term decline in real agricultural commodity prices that, for decades, has discouraged public and private investment in agriculture and rural areas in many developing countries. Policies must be aimed at grasping the potential opportunities offered by bio-fuels, while carefully managing the indisputable risks they present.²⁶

41. Policies regulating the distribution of food, supporting the development of certification bodies and labelling standardization (which is a major barrier for developing country producers), or promoting innovations in public food procurement can play a major role in creating the demand for more sustainably produced agricultural products.

E. Protecting natural resources

42. Sustainable crop and livestock systems provide ecosystem services that restore productivity, conserve soil, water and biodiversity, sequester carbon, regulate climate and provide landscape and cultural values. Policies that address the drivers of land degradation and build capacities at all levels for sustainable land use and wide adoption of sustainable land management practices need to be developed and adapted to local circumstances. It is equally important to provide incentives for producers to encourage sustainable farming practices and investments in soil conservation and water use efficiency.

43. Land tenure policies have important impacts on land users' capacity to manage soil, water and biological resources and maintain vital ecosystem services. With insecure land tenure, farmers and pastoralists have less incentive to invest in sound land management practices, since they risk not being able to benefit from future rewards. Improved land governance and policies that promote tenure security tend to encourage investments leading to sustainable land management practices. (*See SG reports on Land and Desertification*)

44. In recent years there have been significant advances in enhancing water productivity in agriculture. Policies in many developing countries favour improvements in the performance of existing agricultural water management schemes while constructing new systems in some areas still remain important. This is considered important to reduce the water losses in poorly maintained water delivery systems. With the establishment of water user associations, and implementation of demand management measures, including rationalization of water charges to ensure optimal maintenance of the irrigation systems have proven effective measures in improving water productivity in agriculture sector in many parts of the world. .

²⁶ Ibid.

45. Institutional and market-based instruments have been combined with promoting dialogue between competing water users in order to achieve successful results. Measures being applied included the allocation of property rights to water consuming agents, water banking to support economically beneficial re-allocations in times of water scarcity, tradable permits, and salinity control and drainage management (e.g. the re-use of drainage water on salt-tolerant crops and drainage water treatment).²⁷

46. The introduction of a combination of resource-conserving management practices, such as integrated pest and nutrient management, conservation tillage and agro-forestry, was found to provide a notable improvement in water productivity, especially for rainfed agricultural systems. Average increases in water productivity ranged from 16 percent for irrigated rice and 29 percent for irrigated cotton to 70 percent, 102 percent and 108 percent for rain-fed cereals, legumes, and roots and tubers, respectively.²⁸

47. Several studies have established the positive impact of zero tillage on water infiltration capacity, soil moisture content, soil erosion and water-holding capacity. In the United States of America, for example, no-till systems were found to reduce water runoff by 31 percent, increase water infiltration, depending on soil type, by between 9 percent and 100 percent, and reduce soil erosion by up to 90 percent, which in turn reduced sediment loads in rivers and pollutants in water bodies. In various Brazilian locations, soil losses were reduced by up to 87 percent under conservation agriculture, while runoff was reduced by up to 66 percent under wheat–soybean rotations.²⁹

48. Improving water quality through changes in agricultural production systems has, for example, been achieved through the improvement of nutrient-use efficiency by matching more closely the application of fertilizers with the capacity of plants for nutrient uptake. Soil testing and improved timing of fertilizer application, as well as the use of cover crops and reduced tillage, have also been found useful for this purpose. Measures to improve the management of livestock waste can also contribute to enhanced water quality. Such measures include changes in the production process (feed management) and the collection, storage, processing and utilization of manure.³⁰

49. Impact of livestock on the environment is substantial. For instance, 26% of the earth's terrestrial surface is used for livestock grazing, and this pasture use is associated with substantial greenhouse gas emissions, and with land and habitat degradation. Policies to support good practices of pasture-livestock systems, including those integrated with crops in conservation agriculture systems, can reduce pressure on forest invasion, enhance carbon sequestration and other ecosystem services, and reduce water pollution in areas of high animal densities. An example is the Integrated Silvo-

²⁷ Msangi, S., C. Ringler and M. Rosegrant, *The Future of Agriculture and Water: Market and policy-based strategies for sustainability – What can the developing world learn from North America?*, in *Water and agriculture: sustainability, markets and policies*, OECD, 2006.

²⁸ *The State of Food and Agriculture 2007*, Food and Agriculture Organization of the United Nations, Rome, 2007.

²⁹ *Ibid.*

³⁰ *Ibid.*

pastoral Approaches to Ecosystem Management project in Costa Rica, Colombia and Nicaragua which pays livestock producers who enhance environmental services with silvo-pastoral systems.

50. Adapted local breeds in marginal production systems may contribute to seed dispersal and maintain rangeland ecosystems. Livestock production can impact negatively the environment, but it also offers great potential for high-return investments in mitigation that can achieve simultaneously substantial social benefits. Mitigation policy options include land use changes, manure management, increased livestock productivity and feed efficiency.

51. A combination of regulations, charges and environmental taxes, incentive payments, standards, awareness-raising, research, and institution and capacity building have been deployed in OECD countries to promote the protection of ecosystem services. Direct payments for ecosystem services are the most common, with governments around the world paying rural landowners to steward their land in ways that will generate ecosystem services while at the same time promoting rural development. Taxes and charges to directly integrate the environmental costs of agricultural activities into farmers' production decisions have been less used in agriculture than in other sectors, reflecting logistical difficulties and poorly defined property rights.

Box 3: Promoting the protection of ecosystem services in the agricultural sector: country examples

The Conservation Reserve Program in the United States compensates farmers in exchange for their protection of endangered wildlife habitat, open space and/or wetlands. China has a similar program in place to fund erosion control. Colombia, Ecuador, Mexico and South Africa target their payments toward stewards of watershed services. Other examples include payments for protection of a wide range of eco-system services (biodiversity, watersheds, carbon sequestration) in Costa Rica, payments for preserving semi-natural pastures in Sweden, and ecological payments for extensive meadows and animal welfare in Switzerland.

Source: OECD (2004), Agriculture and the environment: lessons learned from a decade of OECD work;

http://ecosystemmarketplace.com/pages/static/about.conservaion_backgrounder.php.

52. More recently, the contribution of the agricultural sector to climate change has been highlighted. Agriculture is a major source of emissions of methane from animal production and nitrous oxide from fertilizer, which contribute to the greenhouse effect. The expansion of the agricultural lands through deforestation is a major contributor to CO₂ emissions. There is, however, significant potential for GHG mitigation in agriculture through promotion of conservation tillage, reduction of nitrogen fertilizer use and of livestock methane emissions, and aforestation of agricultural land. Promoting market-based trading systems such as the

Clean Development Mechanism, supporting the transfer and diffusion of new and improved crop management and livestock feeding technologies, and promoting organic farming are among the policy options that could be considered.³¹

III. Strengthening the Enabling Environment for Implementation

53. The international development community has a fundamental role in progressing the agriculture for development agenda, including creating fair trade rules, conserving genetic resources, controlling the spread of pandemic diseases, and managing climate change. The global agricultural agenda requires a mix of global institutions to coordinate and integrate agricultural sector concerns into the broader development and environmental agenda, react to emergencies and meet the challenges of equity and justice between North and South and between present and future generations.

54. Multilateral efforts take on particular importance in current economic circumstances, including contributions to designing, funding and coordinating policy initiatives and practical measures to remedy the financial turmoil, alleviate capacity constraints of commodity markets, support low-income food deficit economies, promote sustainable smallholder agriculture for poverty reduction and ensuring access to food by the poor and vulnerable.

55. To achieve agreed outcomes, actions need to be more coordinated and less conflicting at local, national, regional and global levels. Social and agricultural inputs made available to local farmers and other vulnerable populations must be complemented by macroeconomic policies to ensure sustainability. Actions need to be aligned and adapted to national and local conditions, while coordinated efforts by key stakeholders, particularly national governments, civil society and the private sector are vital to make progress.

A. Investing in sustainable agricultural development

56. In developing countries, recent decades have been marked by a lack of investment in agricultural and rural development. This lack of investment may have contributed to the threats of increased hunger due to the current food and fuel crisis. The recent adverse developments reflect a failure to give these matters sufficient attention in the past.³²

57. Capital investments and their efficient and effective use are major determinants of sustainable agriculture and agricultural productivity growth. Sizeable and long-term capital investments are required in all kind of asset development - natural, physical, social, scientific, in education and training of farmers as well as in the better functioning of agricultural value chains.

³¹ Wood, R., M. Lenzen, C. Dey and S. Lundie (2006), "A comparative study of some environmental impacts of conventional and organic farming in Australia", *Agricultural Systems*, 89, 324-348.

³² The Millennium Development Goals report 2008, United Nations, New York, 2008.

Box 4: Agricultural development strategies: country experiences

China and India are taking the lead among developing countries investing in their agricultural sectors. In 2007, India established its National Agricultural Development Plan, spending US\$6.1 billion over the next four years to increase irrigation investment by about 80% in 2008–09. India aims to raise rice production to 10 million metric tons, wheat to 8 million tons, and pulses to 2 million tons by 2011–12. China too is increasing its budgetary spending on agriculture by 20% in 2008. And in the 1999 Maputo Declaration, African governments committed themselves to spending 10 percent of their budgets on agriculture, but to date only four countries, Chad, Guinea, Madagascar, and Mali have reached this target.

Source: Benson, Todd, Nicholas Minot, John Pender, Miguel Robes, and Joachim von Braun, *Global Food Crisis: Monitoring and Assessing Impact to Policy Reform Responses*, 2008.

58. Public investment in rural infrastructure (irrigation, roads, transport, power, and telecommunications), markets, research and extension, and natural resource management are important for long-term sustainable agricultural development and to take advantage of trade reforms. The World Development Report 2008 noted that public spending has often been diverted from these needed long-term investments to agricultural subsidies. Where long-term capital investments have been made, too few resources are allocated to operations and maintenance to ensure the sustainability of these investments.³³

59. Creating a favourable climate to attract public and private capital investments to raise agricultural production and bring about the needed structural and organizational changes should be a major policy goal. This should be fostered through national policies and strategies for long-term development of large agro-ecological areas, thus offering investment opportunity in linking good production practices and their technical considerations to stakeholder engagement from public, private and civil sectors.

60. As agricultural development and support to small farmers are back on the international agenda, greater investments for development can be expected to flow into the agriculture sector. Some of the new investments need to be directed towards policy support and technical assistance for national capacity-building for mainstreaming sustainable production practices. Such support should focus on research and technology development for ecosystem-based approaches, and, where possible, on identifying opportunities for rewarding producers for enhancing ecosystem services such as carbon sequestration, rainfall harvesting, and agro-biodiversity stewardship.

³³ World Development Report 2008. Part II, Chapter 4. IBRD/The World Bank, Washington, D.C., October 2007.

B. Reforming trade policies

61. The estimated impacts of full trade liberalization are substantial for developing country trade and agricultural output growth. Full trade liberalization is expected increase international commodity prices by 5 percent on average, developing-country share in global agricultural trade by about 9 percentage points, and agricultural output growth in developing countries on average by about 0.3 percent a year.³⁴

62. Recent policy reforms have improved price incentives for agricultural producers in developing countries. Uganda's agricultural and macro-economic reforms, for example, had a significant impact on agricultural export prices. During the 1990s, the Mexican government implemented wide-ranging agricultural market-oriented policy reforms, which fundamentally assisted in the transition of the agricultural sector towards greater efficiency and global competitiveness.³⁵

63. The liberalization of the export crop³⁶ sector has been an important component of most structural adjustment programmes in sub-Saharan Africa. The transfer of export crop marketing responsibilities from the state to the private sector has been a core feature of liberalization processes in most sub-Saharan countries. Available information suggests that farmers have, generally, benefited from liberalization. Producer returns have generally been higher and payments more prompt. The liberalization of the export crop market has also a generally positive impact on production levels, although farmers in remote areas have experienced difficulties in selling their crops.³⁷

64. While liberalization experience has been generally positive in Africa as a whole, this has inevitably not been achieved without significant problems. Supply input remains a major issue. Under state-controlled marketing, inputs were often supplied free of charge as the state marketing boards were secure in the knowledge that they would be able to obtain repayment for this credit when they marketed the crop. Private traders who now supply inputs have no such guarantees with regard to credit repayment and, consequently, input use for cash crops has reportedly dropped significantly; this is said to be also a major reason for the decline in crop quality.³⁸

65. Export crop processing is another issue of concern. In Tanzania, for example, private-sector buyers of coffee and cotton experienced considerable short-term problems when they found that cooperatives denied them access to their processing facilities. Companies in Africa who process products beyond the usual export stage (textile mills, cocoa butter and chocolate

³⁴ Ibid.

³⁵ Ibid.

³⁶ According to FAO, export crops are defined here as those cash crops which are often traded on international commodity markets and/or are grown primarily for export markets.

³⁷ Andrew W. Shepherd and Stefano Farolfi, *Export crop liberalization in Africa: a review*. FAO Agricultural Service Bulletin 135, Food and Agriculture Organization of the United Nations, Rome, 1999.

³⁸ Andrew W. Shepherd and Stefano Farolfi, *Export crop liberalization in Africa: a review*. FAO Agricultural Service Bulletin 135, Food and Agriculture Organization of the United Nations, Rome, 1999.

factories, instant coffee factories) have also experienced difficulties. Under past arrangements they were guaranteed a raw material supply (which was often subsidized) by the state. They now have to compete with export buyers for their supplies.³⁹

66. Access of farmers to markets for agricultural export crops helps realize the gains from trade. A 2007 research study of the Cambridge-based National Bureau for Economic Research found that market availability leads to increased participation of farmers in export cropping. Conversely, the marketing costs that emerge when the commercialization of export crops requires intermediaries can lead to lower participation of farmers into export cropping. The research study also found that farmers living in villages with fewer outlets for sales of agricultural exports are likely to be poorer than farmers residing in market-endowed villages.⁴⁰

67. Increasing demand for what are now niche markets can help to alleviate the poverty impacts of low commodity prices in developing countries. Production of energy crops, especially sugar and palm oil for the bio-fuel industry could represent an alternative for farmers and simultaneously help reduce dependence on imported fossil fuels. Governments have a major role to play in creating markets for modern biomass-derived energy sources, as the experiences of Brazil in the case of ethanol and Malaysia in the case of palm oil fuel blend have shown. However, opting for such policy choices must be guided by careful analysis of trade-offs between national economic and social objectives.

68. A well-functioning market information system has an important impact on the efficiency of market operations, competitiveness and the reduction of losses and risks. It links farmers to market, so as to be able to stay informed about changes in consumer choices and market and price fluctuations. Building on advances in communication technology, several innovative approaches are being piloted. In India, for example, the Ministry of Agriculture operates AgMark Net, which collects price information from wholesale markets nationwide and disseminates it through the Internet. In West Africa, a public-private partnership set up TradeNet, a trading platform that allows sellers and buyers to get into contact over the Internet and by cell phones. Market information systems also disseminate price information in Kenya, Mozambique, and Senegal, using a mix of Internet, short message service, voicemail, radio, and market chalkboards.⁴¹

69. Exchange-rate policy has a significant role to play in the recovery of the agricultural sector's export performance. It can provide a strong incentive to exporters. Exchange-rate policy is most effective in a context where stabilization measures and other trade policy reforms are being implemented.⁴²

³⁹ Ibid.

⁴⁰ Jorge Ballat, Irene Brambilla, Guido Porto, Realizing the gains from trade: export crops, marketing costs and poverty. National Bureau for Economic Research, Working Paper No. 13395, Cambridge, Massachusetts, September 2007.

⁴¹ World Development Report 2008, IBRD/The World Bank, Washington, D.C., October 2007.

⁴² Andrew W. Shepherd and Stefano Farolfi, Export crop liberalization in Africa: a review. FAO Agricultural Service Bulletin 135, Food and Agriculture Organization of the United Nations, Rome, 1999.

IV. The Way Forward

70. Increasing needs for food and agriculture in developing countries will have to be met through more intensive production systems based on higher yields and multiple cropping. In this regard, gains already made need to be further complemented by aspects such as improved and adapted seed varieties, increased utilization of organic fertilizers, environmentally friendly ways of pest control, improved water and soil conservation, industrial treatment of organic waste and crop diversification. Given the success of resource-conserving management practices, such as integrated pest and nutrient management, conservation tillage and agroforestry, the need for integrating ecosystem-based principles and technologies in agricultural development policies can hardly be overemphasized.

71. Other measures that may help in attaining increased yields and rural household welfare include: providing easy access to agricultural inputs, rehabilitating irrigation and marketing infrastructure, promoting practices to decrease post harvest losses, and strengthening capacities of research, extension and marketing systems and further developing agro processing. Enhancing the role of women in sustainable agricultural production will require gender-responsive interventions across all policy and institutional domains. Policies aimed at livestock development will benefit from ensuring compatibility with the cropping systems. Governments may as well wish to consider providing incentives to encourage organic farming systems, as well as institutional and technical support to certification of organic products.

72. Improving the performance of existing water management programs by assigning a greater role to water users groups in the decision-making process can help in overcoming the dual challenge of overcoming water scarcity and increasing food production. In addition, institutional and market-based instruments and demand management measures that are successfully being applied, such as allocation of property rights to water users, rationalization of water charges, tradable permits, and re-using drainage water for growing salt-tolerant crops etc. should be encouraged and promoted. Land policies should target at providing land tenure security; this will encourage the farmers to invest in integrated land and water management practices.

73. Agricultural and structural reforms have assisted in improving the efficiency and competitiveness of the agricultural export sector in many developing countries. This reinforces the need for fair international trade regimes that will equally benefit the farmers and producers of developing countries. In this context, achieving a breakthrough in the agricultural negotiations under the Doha Round of Trade Negotiations is crucial.

74. Countries having in place sound safety net programs can react more quickly to rising food and fuel prices. Policy measures such as direct food assistance, nutrition interventions, school feeding and job creation programs are among the most cost effective short term measures that have successfully been used to assist the vulnerable populations. Also, experience suggests that easing export restrictions could have dramatic, positive effects on international food markets, lowering prices and easing volatility.

75. Although higher prices for agricultural commodities constitute an immediate threat to food security, in the longer run they represent an opportunity for agricultural development. This opportunity can be realized only when and where the agriculture sector has the capacity to respond to the price incentives and poor farmers are able to participate in the supply response. In grasping the potential opportunities offered by biofuels, for example, policies need to carefully manage the indisputable risks they present.

76. Substantial investments will be required to bridge the existing gaps in agricultural research, irrigation, education facilities, rural finance, information systems, and physical and market infrastructures. For this purpose, Governments need to mobilize funding from all possible sources, including implementation of policies to attract private capital in support of agricultural development.

77. Agreed outcomes can be achieved by mainstreaming agricultural and rural development policies into national development frameworks. Productive inputs made available to local farmers must be complemented by supportive macroeconomic and trade policies to ensure sustainability. Actions need to be aligned and adapted to national and local conditions.