

**Food Security 2009: Achieving long-term solutions**  
**Session Six**  
**Use of Resources**

**{Water-Security-Food Security-Climate Change} Nexus**

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Introduction

It is a great pleasure to be here with you today. I come to you from a “sister” sector in the family of those devoted to working to reduce poverty, support growth and socio-economic development. I have listened with great interest to the presentations, speeches and discussion of yesterday and this morning about the importance of technology, R & D, land, soils, infrastructure and other issues for achieving food security. We, in the water community are working hard towards a water secure world. I want to ask you to work in partnership with the water community as you tackle the issue of food security, because water is such a crucial part of achieving the food security goal. I will share some thoughts with you that I hope will help to explain why it is important for us to work together.

**01. Despite noteworthy advances in food production, the war on hunger is far from being over.** Progress in enhancing food security has been slow and has been seriously undermined by the drastic rise in world prices from 2007 to mid-2008 and the global financial crunch which unfolded in the second half of 2008. The number of hungry people in the world rose by more than 115 million bringing the total number of people suffering from chronic hunger to more than one billion people or 15% of the world population. Social protests and unrest occurred in a number of countries and cities around the world. The seriousness of these events is suggestive of what might occur, possibly on much larger scale, in the event of exacerbated future food shortages. This crisis should, thus, be treated as an early warning sign of what is to come.

**02. Finding the water to grow food and feeding the world’s growing population continues to be a basic and sizeable challenge.** In the first half of this century, as the world’s population grows to around 9 billion, global demand for food, feed and fibre will nearly double. Traditional and new demand for agricultural produce will put growing pressure on already scarce water resources. Combined with that is the change in settlement patterns and competing demand for water from other sectors as governments find ways to ensure continued growth.

**03. Sustainable water management and related environmental issues have been the subject of increasing concern and debate in the last two decades.** Water-related challenges and the urgency to resolve them have been acknowledged widely and at the

highest levels. These challenges include: meeting basic water needs; securing food supply; protecting ecosystems; sharing and allocating water resources; managing risks; valuing water; and governing water wisely. The World Food Summits, the Millennium Summit, the World Summit on Sustainable Development and the World Water Forums have made significant headway to build momentum for required action.

**04. The message highlighted by all these efforts is that the growing water scarcity and poor management of fresh water pose serious threats to sustainable development.** The consensus is also that improved development and management of water is essential for achieving the MDGs addressing poverty, hunger, gender equality, health, education and environmental degradation. Furthermore, many countries, mainly in Sub-Saharan Africa and Asia are still not on track to reach the targets of the MDGs, threatening their medium and long term sustainable development, in part, because they are not water secure. It is also widely accepted that the main reasons for water problems are lack of highest level political commitment and targeted investment, insufficient human capacity, ineffective institutions and poor governance.

**05. Many countries are experiencing serious and worsening water scarcity.** Fresh water supplies are already fully taxed as urban, rural, industrial, agricultural and environmental demands for water escalate. As competition, conflict, shortages, waste, overuse and degradation of water resources grow, agriculture is perceived as the system's safety valve. Agriculture is not only the world's largest water user in terms of volume (65 to 70% of total withdrawals), it is also a relatively low-value, low efficiency and highly subsidized water user. These facts are forcing the need to rethink the economic, social and environmental implications of agricultural water use. Meeting the ever rising demand for food, feed and fiber while at the same time increasing farmer incomes, reducing poverty, and protecting the environment, all from an increasingly constrained water resource base, is a major challenge facing agriculture.

06. Without further improvement in water productivity – or major changes in where and how agricultural production takes place – the amount of water required for food production will increase by anywhere from 60 to 90%, depending on population and income growth and on assumptions for the water requirements of livestock and fisheries. Demand will become even greater if there is significant growth in biofuel production, which competes with food and feed production.

**07. Climate change will affect all facets of society and the environment, directly and indirectly, with strong implications for water and agriculture now and in the future.** The IPCC reports show that climate is changing at an alarming rate, causing temperature rise, shifting patterns of precipitation and more extreme events (droughts and floods). Agriculture in the subtropics – where most poor countries are situated- will be affected most.

08. The rising awareness, even though late, of the seriousness of the impacts of climate change on our planet has suddenly challenged our optimistic vision of continuing progress in development, as well as the relevance of the ongoing world economic model.

We have come to realize that the earth's resources cannot, in the long run, meet the demand of the world's population following the model of industrialized societies. We have also become conscious of the immense risks associated with the negative impacts of climate change on the sustainability of the world's natural resources and of the world's economy as well as on political stability. In addition, the lasting consequences of the financial and economic crises have precipitated the global economy into thinking about long term risks. The issues of the economic model and natural resources degradation are coming together in a way that creates unprecedented opportunities for fundamental economic, institutional, technological, social and political changes. The "water security-food security-climate change" nexus, which I chose as the title of my contribution, is at the heart of this debate.

**09. Water use has been growing globally at more than twice the rate of population increase in the last century**, and an increasing number of regions are reaching the limit at which water services can be sustainably delivered. Rivers such as the Nile, the Jordan, the Yangtze and the Ganges are already overtaxed. Water tables are falling at an alarming rate putting at risk a significant portion of the world's harvest mainly in Asia. The greatest demand for water as we all know comes from agriculture. One liter of water produces one calorie on average: while it takes 4-5 liters of water to satisfy daily drinking needs and 20-300 liters for domestic purposes, it requires 3000 to 3500 liters to produce food for daily dietary requirements. Population growth, rising per capita incomes and urbanization will lead to dietary changes and a demand more water for consumption and other purposes.

**10. Managing water resources challenges is compounded by climate change and uncertainty.** Floods, droughts, shifting rainfall and river-flow patterns are already affecting crop yields and challenging existing farming practices. In Kenya, flood and drought alone have cost the country more than 10 percent of annual GDP. Furthermore, many developing countries have limited artificial water storage, making them even more vulnerable to water-related shocks. For example, Ethiopia has 30 cum/capita artificial storage compared to 6000 cum/capita in North America. As the world works to mitigate against climate change, it also has to adapt. A major way in which the people will feel the impact of climate change is through water. Adapting to climate change will mean understanding the role that water plays in the global economy, development, and the health and wellbeing of people everywhere. Adapting will also mean acting to ensure that measures are taken to make all sectors including agriculture, more resilient and robust. Investment in national water resources management capacity, institutions and infrastructure must become today's early response priority. Investing in water is sustainable development financing that will deliver substantial adaptation benefits and help build more resilient societies. Water security provides a focus for adaptation strategies and a framework for action. Adaptation responses to climate change must therefore converge on the goal of water security for all - which, broadly defined, means harnessing water's social and productive potential and limiting its destructive force.

**11. Global agriculture will have to cope with growing water resource constraints, brought about by climate change.** The impacts of climate change on agriculture have been documented in great detail in many reports. Most of them conclude that the global

food production potential is expected to contract severely and yields of major crops like wheat and maize may fall globally. The declines will be particularly pronounced in lower-latitude regions. In Africa, Asia and Latin America, for instance, yields could decline by 20-40 percent. In addition, severe weather occurrences such as droughts and floods are likely to intensify and cause greater crop and livestock losses. Recent IFPRI analyses suggest that, calorie availability will not only be lower than in the no-climate-change scenario- it will actually decline relative to 2000 levels throughout the developing world. Climate change will also result in additional price increases for key crops - rice, wheat, maize and soybeans.

12. The implications are that food security for the chronically poor will be deteriorating in all its four dimensions: (1) **availability of food** will decrease due to scarcity arising from declining water resources, global population increase, worsening climatic conditions, changing food demands and a shift from food to biofuel production; (2) **poor people's access to food** will decline due to worsening terms of trade between wages and food costs; (3) **stability of supply** is threatened due to increasing prevalence of disasters, uncertainty regarding food prices, and national protectionism and (4) **safe and healthy use of food** will deteriorate as the poor switch to diets lacking essential micronutrients increasing child malnutrition. Increasing food insecurity might lead to more competition over water resources, migration, difficulties of supplying cities and ultimately state failures and international conflicts.

13. It is clear, in this context, that today's water management challenges –and tomorrow's- differ greatly from those of recent decades. Although the situation is bleak, there are reasons for guarded optimism, as there is a growing realization that water, a vital resource, is being widely misused and degraded. **Water resources management policies are the result of a complex interplay among influences inside a society.** The understanding of water cycle related linkages among different societal sectors is necessary. The fundamental trade-offs need to be clarified, in particular between water use for expanded food production needs on the one hand and water requirements of other sectors, downstream societies and aquatic ecosystems on the other.

14. An important resolution at the 2002 World Summit on Sustainable Development was that all countries should draw up integrated water resource management and water efficiency plans. Many countries have done this, although implementation remains weak. Many others are yet to develop these sustainable water management plans and integrate them into national development agendas. Others have tackled the issue of sustainable water management at the local and inter-basin level. The IWRM approach calls for integration of actions affecting all the water use sectors, (drinking water supply and sanitation, agriculture and irrigation, hydropower and other energy production, industry, tourism, etc) as well as work to maintain environmental water flows, protect ecosystems and sustain groundwater supplies. The approach recognizes the interconnectedness of water resource issues from promoting wise management and uses of water that preserve long-term sustainability, to arranging for fair and economical sharing of scarce resources among competing users and, it leads toward the recognition that water policy is bound together with government policies on security, economic development and food security,

public health and other essential governance missions. There is no common solution for all, but it is important for the key actors and stakeholders in each country to come together to think through the issues and from their different perspectives and agree on necessary actions.

15. Indeed, in order to meet the acute fresh water challenges facing humankind over the coming decades, we need a collective new approach; an approach that allows sustainable agricultural processes, systems, and technologies to be established, while also allowing sustainable use of water by other sectors and; an approach that should provide a framework for the integration of relevant parts of policies (macroeconomic policies, agricultural policies, water supply and sanitation policies, trade policies, rural development policies, environmental policies etc...), institutional changes and infrastructure investments - all towards achieving a common goal. For food security, we need to to achieve efficient outcomes in all aspects of agricultural water management from modernization of large-scale irrigation systems to enhancing water management in rainfed agriculture and better linking livestock and fishery practices to water management. The water-use sectors (including agriculture) that drive poverty reduction, economic growth and development need to talk and to work together and there needs to be high political ownership for that to happen.

16. Water security is the gossamer that links together food, energy, climate, economic growth and human security challenges that the world faces over the next four decades. Achieving a water secure world requires:

- Water policies and plans to be incorporated into national and international development processes;
- World leaders and funding agencies to appreciate that, in the long term, investment in water, is an opportunity rather than a problem.
- Partnerships for action and innovation at all levels among communities, nations, river basins, and globally;
- Going beyond what is normally considered “water business”. This will entail major changes in the way that sectors (e.g. water supply and sanitation, agriculture, energy, industry) and human settlements are managed;
- Balancing social, environmental and economic priorities as well as balancing “soft” (institutional and “hard” (infrastructure) solutions such as investments, small and large scale, in storing and transporting water.

17. I would like to leave you with one final thought. The drive towards food security will have a better chance of success if the water security challenge is addressed, and this can only be done working in partnership.

Thank you.