

WATER SECURITY REQUIRED FOR FOOD SECURITY

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**“WATER IS THE
CONNECTING
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Above: In South Asia, 85 per cent of water goes to irrigation in agriculture, such as rice cultivation

Over page: Dr Ania Grobicki

Recent events have placed food security at centre stage. Unprecedented rising of food prices since 2007, the financial crisis of 2008, the growing awareness of the impact of climate change on food production and concern about the effect of political turmoil in the Middle East on energy supplies have all put pressure on food resources. Fundamental to this drama in many countries, but not receiving the attention it deserves, is the quantity and quality of water available for agriculture.

When world food prices increase, the poor suffer the most. The hardest hit regions are South Asia and sub-Saharan Africa where 95 per cent of the world's poverty and hunger reside. Many factors influence food security: farming practices, irrigation schemes, soil fertility, transport, trade, etc. But looking at the challenges faced by these two regions shows how water and food are intricately connected.

In South Asia, an overwhelming 85 per cent of water goes to irrigation in agriculture. This high consumption is caused by inefficient practices, making water productivity, measured as “crop per drop”, one of the lowest in the world and depriving other sectors of water use. In contrast, in sub-Saharan Africa, 97 per cent of agricultural production is dependent on rainfall and only three per cent of the cultivated area is under irrigation.

Pressure on water resources stem from other dynamics as well: rapid population growth, urbanisation and economic growth are causing changes in food preferences that require more water-intensive crops, meats, fish, fruits and vegetables. Yet the context is vastly different from nation to nation because of differences in natural resource endowments, stages of

development and the extent of population pressure on the land. These local realities must be understood if governments are to find credible solutions.

Then there is the threat of climate variability and climate change. Greater frequency of extreme weather events, warmer temperatures, increased incidence of temperature-related diseases and pests, and increased uncertainty from temperature and precipitation variability are already evident.

In South Asia, severe flooding in 2007 along the Ganges and Brahmaputra rivers affected over 13 million people in Bangladesh and the cost was over US\$1 billion; flooding in Pakistan in 2010 along the Indus River severely affected 20 million people and the cost was nearly US\$10 billion. India suffered numerous events of extreme rainfall, flooding and droughts. Sea level rise hurts the sustainability of human settlements in low lying areas in Bangladesh and Sri Lanka.

Sub-Saharan Africa already has increased temperatures and evaporation rates, greater rainfall variability and higher incidences of pests and diseases. Mozambique, Uganda, Kenya and South Africa experienced extreme flooding in 2000 and 2001, with drought thereafter. In several African countries (e.g., Ethiopia, Kenya, Zimbabwe), GDP and rainfall are closely related, with GDP falling dramatically in drought years as well as in flood years.

The long-term effects of climate change are not yet known, but in all likelihood they will compound existing problems by increasing the difficulty of managing water resources development and water services. Climate change will amplify the need for groundwater to protect agriculture against drought while simultaneously heightening the threat to the resource: aquifer levels are already dropping rapidly. Growing variability in precipitation will intensify the unreliability of irrigating from surface reservoirs.

The likely effects include abandonment of cultivable areas, forced changes in cropping patterns to less water-intensive crops, forced changes in food production locations, higher food imports and greater vulnerability of the poorest households – mostly women and children. A recent McKinsey report noted that some solutions will require potentially unpopular policy changes and the adoption of water-saving techniques and technologies by millions of farmers.

The human suffering is, and will be, tragic. Millions of tonnes of food production are lost, adding an unknown number of food security-related deaths to the thousands of deaths already from flooding and its aftermath, including the spread of disease.

The Global Water Partnership urges, together with many of its partners, a set of practical steps to help ►

countries manage their response to achieving both food and water security:

INFORMATION

- Greatly expand location-specific weather, soil and water-related information on a timely, reliable and sustained basis; promote its rapid and wide dissemination to vulnerable populations using modern technology;
- Redouble national efforts to address the risk to small farm agriculture, and to better prepare for climate resilience by improving the knowledge and information base on natural resources, especially soil and water;
- For disaster risk management, improve the understanding of the variability and reliability of water resources (e.g., by enhancing water resources assessment);
- Monitor water resources availability in time and space (e.g., by enhancing hydro-meteorological capacity and networks);
- Monitor water use and the efficiency and effectiveness of such use.

INVESTMENT

- Promote investments to support climate-resilient agriculture;
- Place long-term strategies for the sustainable and equitable use of water at the heart of climate adaptation investment;
- Invest in preparedness for water related disasters – current and future, e.g., from the ineffective, costly and inefficient surface irrigation systems and from the “tragedy of the commons” that causes rapid depletion of aquifers;



- Reduce complexity and increase flexibility in developing countries' access to adaptation funds among the myriad of climate-related funds by creating standard, easy-to-follow requirements for borrowing countries.

INFRASTRUCTURE

- Evaluate the appropriateness and need for large, small and natural water storage infrastructure, both above and below ground, in order to ensure access to water for multiple uses in an efficient, equitable and sustainable way.

INSTITUTIONS

- Develop regulatory frameworks that support the implementation of both climate mitigation and climate adaptation strategies and actions;
- Develop institutions that can manage inter-sectoral disagreements;
- Promote regional integration, including trade in food, energy and water that will increase regional security (e.g., through hydroelectric power and its trade across borders);
- Improve policies for pricing of electricity, water, and food procurement and distribution to protect vulnerable groups, while providing incentives to increase agricultural production and productivity among small farmers.

Water is the medium that links food security, energy security, climate change, economic growth and human livelihoods. Making water security a top development priority is one sure way to reduce countries' social, economic, political and environmental vulnerability. ■

This article was prepared with the help of members of the Technical Committee of the Global Water Partnership, an international network of 13 Regional and 79 Country Water Partnerships, and more than 2,300 institutional partners in 157 countries. The GWP network is committed to the sustainable development and management of water resources at all levels.

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