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**World Water Day 2012. "Water and Food Security: The World is Thirsty Because We are Hungry"**

**Desiree Quagliarotti**

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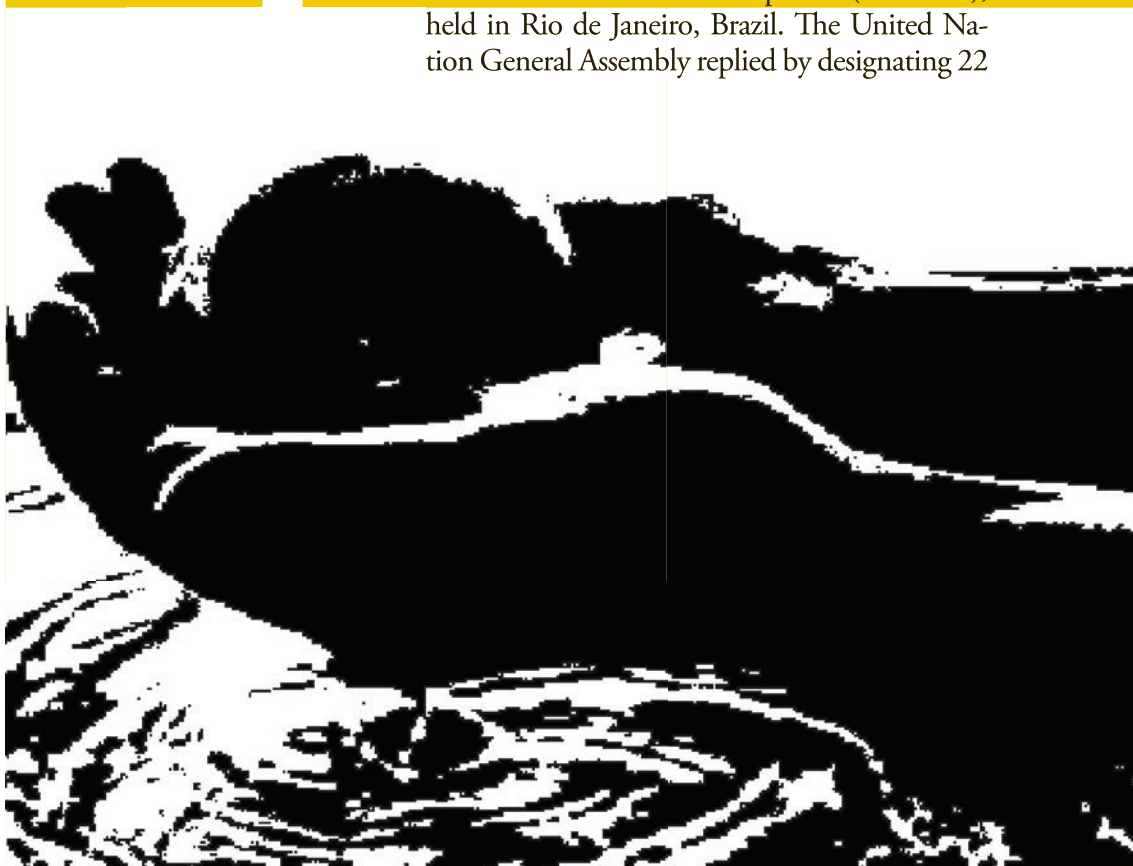
The World Water Day held in 2012 focused on the link between water use and food production. Today the challenge is to meet the nutritional needs of a growing world population in a context of natural resource scarcity. The world population is predicted to grow from 7 billion in 2011 to 8.3 billion in 2030 and 9.1 billion in 2050. Consequently, by 2030 food demand is predicted to increase by 50 percent. In this context, water is a strategic variable since it is an increasingly scarce resource and one of the fundamental input factors in food production. For example, the average person drinks about 2.5 litres of water a day, about 1500 litres of water are required to produce 1 kilogram of wheat, and 10 times more to produce 1 kilogram of beef. Producing feed crops for livestock, slaughtering and meat processing, and extracting and producing milk and other dairy products require large quantities of water. The booming demand for livestock products is increasing the demand for water at every stage along the livestock value chain. The aim of this year's World Water Day was thus to open an international debate in order to identify strategic choices capable of combining, globally and locally, the objective of food security with that of water resource protection.

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## **World Water Day 2012. “Water and Food Security: The World is Thirsty Because We are Hungry”**

**Desiree A.L. Quagliarotti**

**T**he World Water Day is held annually on March 22 as a means of focusing attention on the importance of freshwater and encouraging the sustainable management of the resource. The holding of this event was formally proposed in Agenda 21 of the 1992 United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, Brazil. The United Nation General Assembly replied by designating 22



March 1993 as the first World Water Day. Each year, the World Water Day highlights a specific aspect of freshwater, and one of the various UN Agencies involved in water issues takes the lead in promoting and coordinating international activities. Every year, UN-Water is responsible for selecting the theme and the UN Agency that is to lead the World Water Day. The following is a brief overview of the different themes that have been the focus of the World Water Day conferences over the years. This overview is intended as a means to highlight some of the principal issues regarding water resources at the global as well as the local level.

The theme of World Water Day 1994 was “Caring For Our Water Resources is Everyone’s Business”. In 1995, the World Day for Water was celebrated in Lesotho with the international theme “Women and Water”. The Department of Water Affairs set two main focuses, viz., water pollution and environmental degradation. The third annual World Water Day had the theme “Water for Thirsty Cities”, emphasizing the growing urban water crisis across the world, which is threatening the sustainability of social and economic development. The theme for 1997, “The World’s Water – Is There Enough?”, focused on water as a basic requirement for all life, and on the gap between the demand and supply of water, which increases competition among users. The United Nations Children’s Fund (UNICEF) and the United Nations Division of Economic and Social Affairs (UNDESA) took the lead in organizing the World Water Day in 1998, whose theme was “Groundwater – The Invisible Resource”. The relevance of this issue is related to the fact that underground water reservoirs are being impacted by what Spanish expert Ramon Llamas calls a “silent revolution”, that is, an intensive exploitation that often eludes all form of state control. That same year, sudden flooding of major rivers in the world caused great damage and thousands of deaths in China, Bangladesh, and India. Experts stressed that these events were not just the result of excessive rains, but also of constant human interference with river basins. These events made the world population realize that virtually everybody in this world lives downstream of something, and this new awareness inspired the theme of the seventh annual World Water Day, “Everyone Lives Downstream”. The United Nations Environmental Programme (UNEP) was the coordinating UN agency for that year. The United Nations Education, Science and Culture Or-

ganization (UNESCO) coordinated the 2000 World Water Day, whose theme was “Water for The 21<sup>st</sup> Century”. On that occasion awareness was raised about the fact that the availability and quality of water were increasingly under strain, and even if conditions remained constant in the near future, several countries would find themselves exposed to water-related crises. “Water for Health – Taking Charge” was the theme for 2001, with the World Health Organization (WHO) as the coordinating UN agency. The message was that several efforts were needed to provide clean drinking water and improve health conditions. The International Atomic Energy Agency was the coordinating UN agency for 2002 and the theme was “Water for Development”. The message in this case was that the deteriorating state of water resources in many parts of the world imposes the adoption of an integrated approach to water resource management. The United Nations Environmental Programme (UNEP) was the lead UN agency for World Water Day 2003. The theme “Water for The Future” called on everyone to maintain and improve the quality and quantity of freshwater available to future generations. The goal was to encourage political and community action and spread knowledge for more responsible water management.

The UN International Strategy for Disaster Reduction (UNISDR) and the World Meteorological Organization (WMO) were charged with coordinating events for World Water Day 2004. The theme was “Water and Disasters”, the message being that weather, climate and water resources can have a devastating impact on socio-economic development and the well-being of the world’s population. Weather and climate-related extreme events take an enormous toll in terms of human suffering, loss of life and economic damages. Monitoring and predicting such events can mitigate their negative impact on people and economic activities. The theme of World Water Day 2005 was “Water for Life 2005-2015”. This was in accordance with the proclamation of the years 2005 to 2015 as the International Decade for Action by the UN General Assembly at its 58<sup>th</sup> session, held in December 2003. The aim of the Water for Life decade is to achieve “a greater focus on water-related issues, while striving to ensure the participation of women in water-related development efforts and further cooperation at all levels to achieve the water-related goals of the Millennium Declaration”. The theme of

World Water Day 2006, led by UNESCO, was “Water and Culture”. It drew attention to the fact that there are as many ways of viewing, using and celebrating water as there are cultural traditions across the world. The growing problem of “Water Scarcity” was the topic for World Water Day 2007. The theme highlighted the increasing significance of water scarcity worldwide and the need for better integration and cooperation to ensure sustainable, efficient and equitable management of scarce water resources, both at the international and local levels. In 2008, the World Water Day coincided with the International Year of Sanitation, which called for action in order to mitigate a crisis affecting more than one out of three people on the planet. In 2009, the theme was “Shared Water, Shared Opportunities”, that is, transboundary waters, under the guidance of UNESCO with the support of the United Nations Economic Commission for Europe (UNECE) and the Food and Agriculture Organization of the United Nations (FAO). It was stressed that promoting a substantial cooperation in transboundary water management can help build mutual respect and promote peace, security and sustainable economic growth. World Water Day 2010 had “Communicating Water Quality Challenges and Opportunities” as its theme. The objective was to raise awareness about the importance of healthy ecosystems on human well-being, and improve the degree of water quality by encouraging governments, organizations, communities, and individuals around the world to actively engage in pollution prevention and the cleaning and restoring of water resources. The objective of World Water Day 2011, “Water for Cities”, was to focus international attention on the impact of rapid urban population growth, industrialization, climate change, conflicts and natural disasters on urban water systems.

In 2012, the World Water Day focused on the link between water use and food production, under the title “Water and Food Security: The World is Thirsty Because We are Hungry”. Food security has been foremost in the international political agenda following the peak prices of 2008 and 2011. Since then, rising commodity prices have been destabilising food availability in several countries. Today the challenge is to meet the nutritional needs of a growing world population in a context of natural resource scarcity. The world population is predicted to grow from 7 billion in 2011 to 8.3 billion in 2030 and 9.1 billion in 2050. Con-

sequently, by 2030 food demand is predicted to increase by 50 percent. In this context, water is a strategic variable, being an increasingly scarce resource and one of the fundamental input factors in food production.

It is well known that a mere 2.5 percent of global water resources is potentially available for human, animal and plant consumption; the remaining 97.5 percent resides in the oceans. Furthermore, freshwater is highly uneven in its spatial distribution: some regions, such as the more northern latitudes and wet tropics, have more than enough water, whereas the drier semi-arid and arid regions have too little. The increase in temperature due to global warming will reduce the amount of available water resources in the future, and will also reduce groundwater recharge, exacerbating the water crisis. Several regions are already facing absolute water scarcity, where renewable water resources are below 500 m<sup>3</sup> per person per year, chronic water shortage (500-1000 m<sup>3</sup>), or water stress (1000-1700 m<sup>3</sup>).

The production of all food requires water originating from precipitations (green water) or from withdrawals in watercourses, wetlands, lakes and aquifers (blue water). The agricultural sector as a whole has a larger water footprint than other sectors.<sup>1</sup> At the global level, 70 percent of blue water withdrawals go to irrigation.<sup>2</sup> More specifically, water withdrawal for agriculture accounts for 44 percent in Organisation for Economic Cooperation and Development (OECD) countries, but this rises to more than 60 percent within the eight OECD countries that rely heavily on irrigated agriculture. In the BRIC countries (Brazil, Russian Federation, India and China), agriculture accounts for 74 percent of water withdrawals, but this oscillates from a low 20 percent in the Russian Federation to 87 percent in India. In Least Developed Countries (LDCs) the figure is more than 90 percent.<sup>3</sup>

Agriculture's impact on water is thus high. Land use changes as a

<sup>1</sup> The water footprint is a way of measuring our direct and indirect water use. It is the total volume of water used to produce the goods and services consumed by an individual, a community or a business.

<sup>2</sup> Irrigated agriculture accounts for 20 percent of the total cultivated land but contributes 40 percent of the total food produced worldwide.

<sup>3</sup> The United Nations World Water Development, *Report 4*, Vol. 1, Unesco, Paris 2012, p. 46.

result of agricultural development have produced a wide range of effects on water quantity and quality. The way that water is managed in agriculture has caused wide-scale changes in ecosystems, and undermined the provision of a wide range of ecosystem services. Water management for agriculture has changed the physical and chemical characteristics of freshwater and coastal wetlands, as well as the quantity of available water, and has led to direct and indirect biological changes in terrestrial ecosystems. The external costs in terms of damage to people and ecosystems and clean-up processes in the agricultural sector are significant. In the United States of America, for instance, the estimated cost is US\$ 9-20 billion per year.<sup>4</sup> Diffuse pollution from agricultural land is a critical concern in many of the world's river basins. Eutrophication from agricultural runoff ranks among the top pollution problems in the USA and Canada, and in Asian and Pacific countries. Australia, India, Pakistan and many areas of the Middle East are affected by increasing salinization as a result of wrong irrigation practices. Nitrate is the most common chemical contaminant in the world's aquifers. Mean nitrate levels have increased by about 36 percent in global waterways since 1990. Over-abstraction of renewable groundwater resources and abstraction of fossil groundwater reserves in arid regions such as Northern Africa and the Arabian Peninsula, driven primarily by the agricultural sector, is putting further pressure on water resources.

Predicting future water demand for agriculture is very difficult, because it will be influenced by the demand for food, which in turn will depend on the number of people to be fed, and on what and how much they eat. The estimate is further complicated by seasonal climatic variations, efficiency of agricultural production processes, crop types, and yields. Although projections vary considerably according to different scenario assumptions and methodologies, future global agricultural water consumption (including both rainfed and irrigated agriculture) is estimated to increase by about 19 percent from 2008 to 2050. The FAO estimates an 11 percent increase in irrigation water consumption from 2008 to 2050, much of which will be in regions already suffering from water scarcity.

<sup>4</sup> Ibid.

The official ceremony of World Water Day 2012 started with a message from Un Secretary General Ban Ki-moon and short statements by FAO Director General José Graziano da Sila and other officials of international organisations such as the World Meteorological Organisation, the World Water Council, and the International Fund for Agricultural Organisation. These experts highlighted the challenges posed by the interrelations between water and food, such as the growth in food demand as the result of the combined effects of growing world population, rising incomes, and dietary changes towards higher meat intake; the effects of climate change on water resources; the increased competition for water among different economic sectors and users; and the degradation of land and water resources. The debate continued with the panellists representing different stakeholders' perspectives and expressing opposing views about the solutions needed to secure water and food security: innovation vs. tradition, intensification vs. greener agriculture, small-holder vs. large-commercial farming, food imports vs. self-sufficiency, increasing food production vs. reducing food waste and adopting sustainable diets. Particular emphasis was given to the problem of food waste. Experts argue that roughly 30 percent of the food produced for human consumption – about 1.3 billion tonnes – is lost or wasted globally every year along the whole supply chain, from initial agricultural production down to final household consumption stage. In developing countries, large shares of agricultural production are lost along the way from the farmer's field and the market due to poor storage and transportation facilities. The causes of food losses and waste in medium/high countries, instead, are rather related to consumer behaviour. On a per capita basis, much more food is wasted in the industrialized world than in developing countries. The per capita food waste of consumers in Europe and North-America is 95-115 kg/year, in Sub-Saharan Africa and South/Southeast Asia only 6-11 kg/year. This inevitably also means that huge amounts of the resources used in food production are used in vain. It is estimated that a 50 percent reduction of food losses and waste at the global level would save 1350 km<sup>3</sup> of water a year. For comparison, the storage capacity of Lake Nasser is just under 85 km<sup>3</sup>. The issues addressed by the speakers provided several discussion points for the audience, who intervened in the debate and enriched it. Two opposite positions emerged during the debate: that of international organisations



and that of representatives of the governments of developing countries. The approach mainly advocated by international institutions was to implement the objective of food security in a framework of increasing water scarcity through international trade – that is, by increasing virtual water flows among countries – and technological progress in areas such as agricultural and irrigation techniques or GM crops. Conversely, the vision of less developed countries was informed by a systemic approach focusing on sustainability of local ecosystems, social and cultural relationships, and economic security. The representatives of these countries argued that this agricultural model can be at least as productive as industrial agriculture, and has the potential for increasing food security in a sustainable, farmer-based way. Consequently, they argued that priority should be given to developing technologies based on the systemic principles of sustainable agriculture, that is, integrating biological and ecological processes – such as nutrient and water cycles, nitrogen fixation, soil regeneration and biodiversity – into production processes; minimizing the use of non-renewable inputs that cause harm to the environment or the health of farmers and consumers; and making productive use of the knowledge of farmers and their collective capacity to work together to solve common problems. What the governments of less developed countries emphasized is that international bodies acknowledge the importance of small farmers, but operate as if improving the technologies, trade regimes and value chains that are characteristic of industrial agriculture could achieve the same results in the local ecosystems and economies of these countries as they do in those of developed countries.

In addition to the UN member states, a number of NGOs promoting clean water and sustainable aquatic habitats have used the World Water Day as an opportunity to focus public attention on the critical water issues of our era. Every three years since 1997, for instance, the World Water Council has been organizing a World Water Forum during the World Water Day week. This is considered the largest international event in the field of water resources management and serves four main purposes: boosting the importance of water on political agendas; supporting debates towards the solution of international water issues in the twenty-first century; formulating concrete proposals and bringing their importance to the world's attention; and generating political commitment.