



## Agriculture

Agriculture plays a crucial role in sustainable development and in hunger and poverty reduction. Yet many current agricultural practices threaten long-term sustainability - leading to land degradation, stressed water sources, and habitat loss. The challenge for sustainable development is to enhance agricultural productivity while maintaining the natural resource base; safeguarding and increasing rural incomes; generating employment and promoting the nutrition and food security status of households and individuals. Leading up to the 2002 World Summit on Sustainable Development (WSSD), United Nations (UN) Secretary General Kofi Annan proposed the WEHAB Initiative, highlighting Water and sanitation, Energy, Health, Agriculture and Biodiversity and ecosystem management as five key areas where concrete results are both necessary and attainable.<sup>1</sup> Political will, continued commitment and increased capacity at all levels will be essential to achieving results.

### Hunger and Poverty Reduction

Agricultural productivity growth can bring significant opportunities for reducing poverty and hunger. Some 70 percent of the poor in developing countries live in rural areas and depend directly or indirectly on agriculture for their livelihoods. Rural women in particular are responsible for half of the world's food production and bear most responsibility for household food security in developing countries. While rural women are assuming an increasingly prominent role in agriculture, they remain among the most disadvantaged groups.<sup>2</sup> Agricultural productivity growth - when based on efficiency, sustainability and gender equity - promotes income growth for households and communities, improving livelihoods and lifting not only farmers but also entire communities out of poverty.

Growth in agriculture productivity can reduce malnutrition and improve health outcomes. Over the past 30 years, agricultural productivity growth tripled food production in developing countries and contributed to a decline in the proportion of undernourished people from 35 to 17 percent. Increased food availability is central to reducing child morbidity and mortality, as malnutrition is a factor in more than half of the deaths of children under five in developing countries.<sup>3</sup> Food security through increased agricultural outputs also improves maternal health as malnutrition can increase women's risk of infection and anaemia, compromised immune functions and maternal death.

### Environmental Costs

Agricultural growth - while a vehicle for sustainable hunger and poverty reduction - can, if mismanaged, result in the depletion or degradation of the natural resource base, such as:

#### **Land Degradation**

Land degradation affects as much as two-thirds of the world's agricultural land. Soil erosion is responsible for about 40 percent of land degradation worldwide, while 20-30 percent of irrigated land in developing countries has been damaged by waterlogging or salinization. Pesticides and fertilizers can also poison soil and render it unusable, and cause significant human health problems.

Land degradation and erosion lead to declines in agricultural productivity. Yield growth, which contributed more than 70 percent to crop production increases in the last four decades, slowed during the 1990s while environmental stress increased.<sup>4</sup> Future increases in agricultural productivity will need to rely on long-term investments in order to improve knowledge on land degradation status, impacts and causes; promote soil fertility replenishment practices such as crop rotation, agro-forestry and integrated crop-livestock systems; and encourage research and development and technology transfers on methods to raise agricultural productivity.

1 UN Secretary General, "Towards a Sustainable Future" 14/05/2002.

2 Food and Agriculture Organisation (FAO) *Gender and Food Security* accessed online at [www.fao.org/gender](http://www.fao.org/gender)

3 WEHAB Working Group, *A Framework for Action on Agriculture* (Geneva: UN, 2002).

4 WEHAB Working Group, *A Framework for Action on Agriculture*.

### **Stressed Water Sources**

Most agriculture is rainfed, but irrigated land accounts for about one-fifth of the total arable land in developing countries.<sup>5</sup> Irrigation dominates water consumption - accounting for 70 percent of all worldwide freshwater withdrawals.<sup>6</sup> This amount is expected to increase as the area of irrigated land expands to meet future needs. Most irrigation systems are highly inefficient, with up to 60 percent wasted due to evaporation or return flow to groundwater aquifers or rivers.

The agriculture sector must become more responsive to water resource use while maintaining levels of irrigation production to meet food demands. Strategies to accomplish this include: greater efficiency in irrigation; wastewater recycling; watershed restoration and rainwater irrigation; and the regulation and taxation of groundwater overpumping to slow aquifer depletion.

### **Diminished Biodiversity**

Agriculture currently takes up more than one-third of the earth's land area and is the largest threat to biodiversity. The loss of wetlands has negative effects on water quality; increases the likelihood of water-borne diseases; and worsens vulnerability to natural disasters such as droughts, landslides, and floods. Agricultural expansion has contributed to global habitat loss, including more than half of the world's wetlands.

Management of biodiversity in agricultural ecosystems is a necessary component of any overall approach to conservation. Strategies to conserve biodiversity include: the establishment of protected areas near farmlands; methods to minimize agricultural pollution; and research and development and technology transfers on methods to raise agricultural productivity.

### **International Commitments**

Major UN conferences over the past decades - including the 1992 Earth Summit, the 1996 World Food Summit, the Millennium Summit, and the 2002 WSSD and other meetings on pesticides, desertification and persistent organic pollutants - have addressed food and water security, natural resource management and sustainable agriculture. Recommendations from these conferences formed the basis of the 2000 Millennium Development Goals (MDGs). The role of agriculture within the context of MDGs is clear: agriculture is the cornerstone for poverty reduction and food security and is key to economic growth and rural development. Similarly, women are an integral part of agricultural growth in developing countries, so promoting gender equality and empowering women is important to achieving sustainable agriculture.

### **UNESCO's Role: Agriculture and Education for Sustainable Development**

World leaders have agreed at several international meetings that education can improve agricultural productivity; improve women's status; enhance environmental protection; and generally raise the standard of living. Literacy and numeracy enable farmers to adapt to new agricultural methods; gain title to their land; and apply for credit at banks and other lending institutions.

Education for Sustainable Development (ESD) builds on and reorients basic education toward a vision for society that is not only ecologically sustainable but also socially, economically and politically. ESD takes an integrated approach that not only focuses on production but also on social aspects such as land tenure and economic aspects such as marketing agricultural products. ESD also addresses the cultural component of agriculture to ensure the survival of proven traditional and/or indigenous food production systems and practices.

UNESCO has a dual role in relation to ESD. First, as a substantive implementer of ESD - accelerating education reforms and coordinating activities of multiple stakeholders to implement ESD at international, regional, and country levels. Second, UNESCO also acts as the lead agency in the promotion of the Decade on Education for Sustainable Development (2005-2014). The Decade offers an opportunity for UNESCO and its partners to advance progress made in human resource development, education and training to improve the efficiency of agricultural productivity and food security while ensuring environmental sustainability for generations to come.

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<sup>5</sup> UN *World Water Report 2003* (Geneva: UN, 2003.)

<sup>6</sup> S. Wood et al, *Pilot Analysis of Global Ecosystems: Agroecosystems* (Washington, DC: International Food Policy Research Institute and World Resources Institute, 2000).

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