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People and the River

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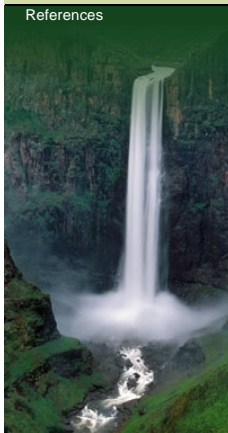
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Food security is defined as "when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern." (FAO 2001).

Malnutrition

The World Health Organisation recommends a minimum dietary consumption of 2 100 kilocalories per day, including daily protein intake of 56 g and 48 g for the average adult man and woman respectively. The Food and Agriculture Organisation (FAO) defines **undernourishment** as food consumption of less than about 1 900 kilocalories per day (FAO 1996). Undernourishment may lead to malnutrition, which reduces human well-being by impairing physical functioning, the ability to work and learn, and processes such as growth, pregnancy, lactation and resistance to disease (SAfMA 2004). **Malnutrition** is defined by the World Health Organization as "the cellular imbalance between supply of nutrients and energy and the body's demand for them to ensure growth, maintenance, and specific functions".

Food security in sub-Saharan Africa is compromised by declining household incomes, changes in land tenure and market access, and HIV/AIDS (SAfMA 2004).

Food Security in the Orange-Senqu River basin

Although there is enough food produced in the Orange-Senqu River basin to sustain the entire population, poorer inhabitants still suffer from undernourishment and even malnutrition because of social inequalities and disparities in income distribution (SAfMA 2004).

According to the FAO publication "The State of Food Insecurity in the World" (2009) the undernourishment rates for the four basin countries during the period of 2004-6 were: Botswana: 26%, Lesotho: 15%, Namibia: 19%; estimates for South Africa are around 5%.

On average, livestock farming in the Orange-Senqu River basin provides enough meat to supply sufficient dietary protein for a population three times its current size as estimated from livestock biomass (SAfMA 2004). This does not mean that there is sufficient protein available, as livestock are in many cases seen as social assets rather than production assets (SAfMA 2004). Export opportunities mean that red meat is largely unaffordable, particularly to the poor.

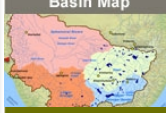
A similar trend has been observed for cereal. Although the Orange-Senqu River basin produces 20% more cereal than is required by its population, half of the cereal produced in the agriculturally intensive "maize belt" is either exported or used as fodder in areas of surplus, and not sufficiently distributed to areas of deficit in the basin (SAfMA 2004). Erratic rainfall, a characteristic of southern Africa, prohibits extensive crop production in most of the basin. As a result many households still rely on produce purchased from urban markets (WRC 2005). For example, in Lesotho although 46% of households list subsistence farming as their primary source of income, 95% of those households can not meet their own food requirements (Mphale *et al.* 2003). South Africa is the only Orange-Senqu River basin country that generally meets food demand through domestic production. Namibia, Botswana and Lesotho regularly have to import maize to meet annual demands. In an average year, Namibia produces approximately 50% of its cereal crop requirements domestically (Namibia Early Warning and Food Information Unit 2006).

The following map illustrates the extent of irrigated cultivation within the Orange-Senqu River basin. Due to the scale of the map, it does not clearly illustrate the localised irrigation activities along the Lower Orange River. For more information and maps related to these areas, please refer to the [Irrigation](#) section of the [Water Infrastructure](#) chapter in the [Resource Management](#) theme.

As seen in the 2002 southern African Food Security Emergency, erratic rainfall combined with an economic downturn, ineffective government policies, poverty and the HIV/AIDS pandemic can result in devastating food shortages. In order to avoid future food emergencies, such as the one experienced in 2002, the Southern African Development Community (SADC) has developed a Regional Early Warning System through the Food, Agriculture and Natural Resources Department. This early warning system is part of the USAID-funded [Famine Early Warning Systems Network](#) (FEWS NET), a collaborative activity designed to provide early warning about food security issues. Every six months, reports are published about food crop yields, supplies and requirements for the SADC countries.

Interactive


Basin Map



Explore the sub-basins of the Orange-Senqu River

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Video Tour



Tour video scenes along the Orange-Senqu River related to People and the River

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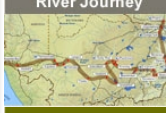
Timeline



View a historical timeline of Orange-Senqu countries, including water agreements & infrastructure construction

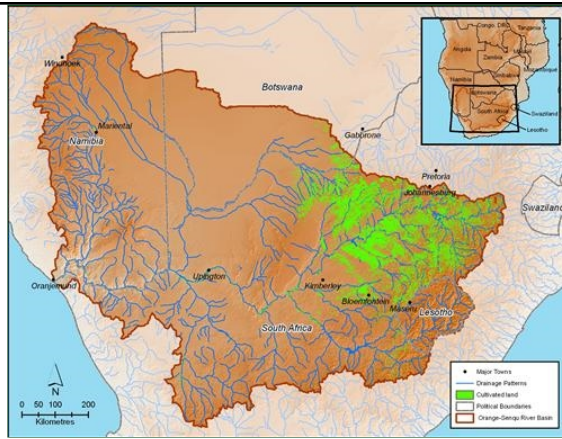
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River Journey



Journey along the Orange-Senqu River through images and interviews

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Extent of cultivated land in the Orange-Senqu River basin.

Source: Hatfield 2009 after Terralimage 2008

(click to enlarge)

Vulnerability

Poverty and vulnerability are frequently associated and closely linked. Vulnerability includes both the likelihood of exposure to stresses, as well as sensitivity, which is the capacity to cope with such stresses (Watts and Bohle 1993). Poor people expend most of their resources on purchasing or producing food for subsistence. Pursuit of food security frequently involves trade-offs, such as reduced expenditure on healthcare and education. This in turn further undermines the capacity of individuals to improve living conditions or increase their resilience to stress and shock; thus increasing their vulnerability. Enabling communities to break this cycle of poverty is the key to addressing food security over the long term.

[Next: The Health Situation](#) ►