

3 AGRICULTURE, RANGELAND AND FORESTS

The predominant aridity of the subregion has led to half the total land area's being used as rangelands. The subregion contains a significant number of pastoralists who move seasonally between low and high altitudes in mountainous areas and between wetter zones and dry steppes. The long history of human settlement, unequal access to land and increasing urbanization have led to serious degradation of land and forest resources in much of the subregion.

3.1 *Agricultural development*

Over the past few decades, many countries, especially in the Gulf region,² have been heavily subsidizing agricultural development in order to achieve self-sufficiency in basic food crops, regardless of the national natural resource base. Incentives include the setting of very low land and water prices for crop production and very high crop prices. Moreover, most countries have invested heavily in irrigation infrastructure. Agricultural development policies have resulted in the expansion of agriculture and especially of cultivated land.

Forests and rangelands are particularly vulnerable where the economy is not diversified and the population is constantly growing, for example Afghanistan and Yemen. The expansion of rain-fed mixed farming to uplands and the increasing pressure of livestock are major problems in Yemen, Turkey, Jordan, Syria, Iran and Iraq. Unless there is significant growth in non-agricultural sectors and a concomitant increased absorption of labour by such sectors, rangelands and forests will continue to be subject to grazing and agriculture.

Box 4 *Agricultural expansion in Saudi Arabia*

After the discovery of fossil fuel, the increase in its price during the second half of the past century and the accompanying economic development of Saudi Arabia, the agricultural sector has been heavily subsidized. Support has included the construction of dams, the allocation of arable land free of charge to investors for agricultural development, the setting of low prices for fodder to assist nomads to overcome drought effects, and the drilling of many deep boreholes. Approximately 6 000 specialized agricultural projects have been launched for a total of approximately US\$12 billion, and many shareholding agricultural companies have been created. The peak of agricultural development was reached in 1995 with a growth rate of 8.6 percent and a cultivated area of 1.7 million ha. However, the absence of regulations on environmental protection and poor environmental awareness have resulted in the deterioration of renewable natural resources. The huge agricultural expansion has been achieved at the expense of rangelands, forests and marginal areas, the intensive use of groundwater resources and the excessive use of pesticides and fertilizer.

Source: Saudi Arabia country report, 2005.

² Gulf Cooperation Council member countries: Bahrain, Kuwait, Qatar, Oman, Saudi Arabia and the United Arab Emirates.

3.2 Rangeland development

3.2.1 Changes in rangeland management

Animal husbandry has been an important source of income, contributing 30 to 40 percent to agricultural production. A large proportion of the people of West Asia is still dependent on rangelands for its livelihood, especially in Iran, Oman, Syria and Yemen (1.6 million households depend on rangeland in Iran), although urbanization has to some extent reduced the pressure on land. Very little information is available on the condition of these rangelands and on tree growth, but the general opinion is that they are deteriorating fast on account of increased pressure for fodder and woodfuel.

To some extent this deterioration can be attributed to changes in the responsibility for management. Nomadic communities, who owned and used rangelands, had developed control systems to prevent the overuse of rangelands. Over time, rangelands were brought under government ownership and control, but such changes did not improve governments' management capacities, a situation leading to degradation. In most cases rangelands are seen as free-access resources with no one taking responsibility for their effective management (Box 5).

Box 5 *Changes in livestock management in Oman and Saudi Arabia*

The traditional system of rangeland use in Oman played a major role in environmental conservation and natural resource management. Under this system, each tribe or group of tribes had a well-defined area. The right of control over the use of rangeland and water resources was vested in the tribe's members. In the case of scarcity of natural resources, members of neighbouring tribes were allowed to share the available pasture and water. The movement of nomads and livestock was organized according to defined routes and timings. Resources were efficiently managed and well protected, tribe members were committed to the management systems, conflicts were resolved and penalties against offenders defined. The change to public ownership of forest and rangelands has caused a break-down in the traditional management system. The absence of any alternative system guaranteeing the protection and conservation of natural resources and the lack of responsibility for the use of rangelands have led to land deterioration.

Source: Oman country report, 2005.

Protection is considered one of the most important and effective means of conserving natural rangeland and ensuring its development. This approach was practiced in the past in some areas of Saudi Arabia where traditional protection systems depended on tribal customs to identify area, utilization methods and beneficiaries. In the second half of the twentieth century, these systems were abolished for social and economic reasons, and grazing became a right for everybody in the country. Rangeland then suffered considerable deterioration owing to the large numbers of livestock, which exceeded the carrying capacity.

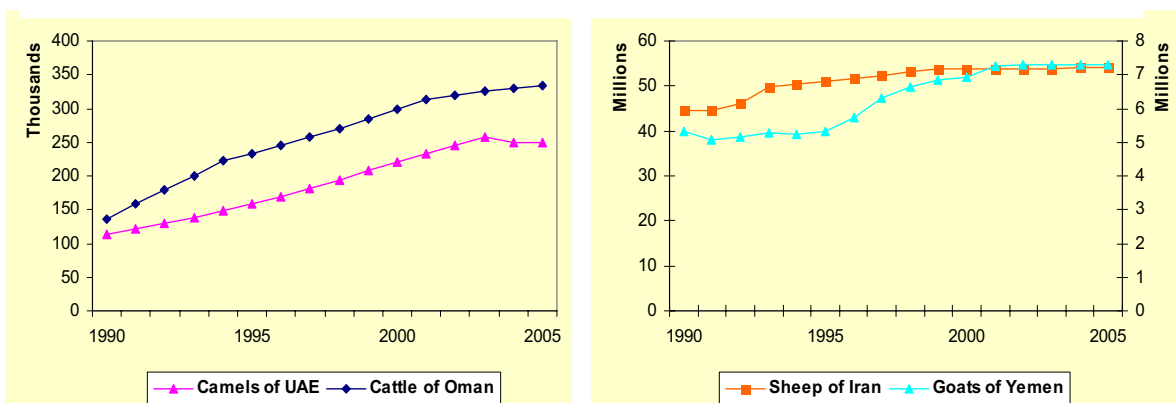
Source: Saudi Arabia country report, 2005

3.2.2 Increasing numbers of livestock

In most countries increased wealth and urbanization have resulted in a significant decline in the population of nomadic tribes. However, this has not always led to a decline in the numbers of livestock. In countries such as Saudi Arabia the pressure on rangeland has increased on

account of commercial-scale animal husbandry, with increased income enabling animals to be transported over longer distances to pastures and water sources.

Figure 4 *Increase of livestock in some West Asian countries*



Source: FAO STAT, 2006.

This situation along with a sharp increase in population in almost all the countries over the past thirty years has led to a significant increase in the demand for livestock products. Livestock numbers have therefore risen enormously, causing overgrazing of rangelands. Herder participation is obviously critical for rangeland management, but mechanisms for such participation are still inadequate. Countries have taken various measures to control livestock expansion, including the reduction of numbers by certain projects and the issuing of grazing licences. However, such measures have been very insufficient. The Camel Project, lasting two years for a total cost of US\$36.4 million, has the aim of reducing pressure from camels on rangelands in the Dhofar region of Oman, by purchasing camels from herders and selling them for meat. Camels are often bought at double the market price and then sold in United Arab Emirates markets at a very low price, an approach that is unlikely to prove successful and may even be counter-productive, inasmuch as the high price offered by the project becomes an incentive to increase herd sizes.

3.3 Challenges and prospects for forests and trees in relation to rangeland and agricultural development

One of the key challenges facing forests and trees is the steady conversion of rangelands and forests to cultivated land. For example, in response to government incentives in the United Arab Emirates, the number of agricultural farms has increased from 1 833 in 1988 (with 41 620 ha) to 38 239 in 2002 (with 270 941 ha), an increase achieved by reducing rangelands (United Arab Emirates country report, 2005). Some countries, for example Saudi Arabia, are also facing the problem of shifts in the location of agriculture: in line with the policy of conserving water resources, areas under cereals and fodder crops began to shrink in unforested zones, and there has been a trend toward intensive agriculture in watershed areas, including the southwest, where rainfall is fair and where most of the dams and seasonal water courses are found. Encroachment on forest land and shrinking of forest area will therefore increase in the future (Saudi Arabia country report, 2005).

However, most arable land is already being exploited and there is limited scope for further expansion (FAO and World Bank, 2001). Newly cultivated land will often face serious constraints owing to climate and poor soil. Access to land will become increasingly difficult and the anticipated increase in the cultivation of marginal land will lead to significant environmental degradation.

Rangeland degradation and desertification represent a major challenge to forests and trees. In some countries, forests have been converted to rangeland or used for livestock grazing, mainly as a result of rangeland degradation, overpopulation of livestock and the lack of regulations and management for both rangelands and forests. Forests and rangelands are also facing the challenge of conversion to other types of land for tourism or urban development.

With growing water scarcity, broad policy reforms and changing global trade policies, the old paradigm of food self-sufficiency is being replaced by efficiency and competitiveness, which could result in reduced subsidies to the agricultural sector. On the other hand, tariffs on agricultural products will be reduced as many countries join the World Trade Organization, and this will encourage imports of agricultural products, a development that would bring some advantages for forests, especially in the Gulf countries.

Afforestation and reforestation on rangelands are among the main forestry activities of the forestry departments of many countries as key measures in rehabilitating and restoring rangeland ecosystems and increasing their productivity. In Jordan, for example, forest land is composed of natural forests (25 800 ha), forest plantations (47 000 ha), forests on rangelands (30 000 ha) and bare land (13 200). Forests on rangelands thus account for 26 percent of the total, and forests and trees are therefore being restored with a view to rangeland development (Jordan country report, 2005).