Western and Central Asia

Western and Central Asia, consisting of 25 countries and areas (Figure 44), is the least forested region in the world, with only 4 percent forest cover (1.1 percent of the global forest area) (Figure 45). A few countries account for most of the forest area; 19 countries have less than 10 percent forest cover. About 75 percent of the region is arid, with low biomass productivity. Vegetation ranges from desert scrub in Central Asia and the Arabian Peninsula to pockets of mangrove forests on the Persian Gulf coast and alpine meadows in Central Asia. In view of the low forest cover, trees outside forests, especially on farms and in other wooded land, have important productive and protective functions.

DRIVERS OF CHANGE

Demographics

Western and Central Asia's population is expected to increase from 371 million in 2006 to 479 million in 2020 (Figure 46). Population in the region is projected to grow at an annual rate of 2 percent between 2005 and 2020. While Armenia, Azerbaijan, Georgia and Kazakhstan have low to negative growth rates, several countries – for example Afghanistan, Qatar, the Syrian Arab Republic, the United Arab Emirates and Yemen – have growth rates exceeding 2.5 percent. A high proportion of the population is less than 14 years old, implying considerable growth in the working-age population in the next two decades and a consequent need for more jobs, housing and amenities. Intensifying this need is the high rate of urbanization; in Western Asia, for example, 78 percent of the population is forecast to be urban by 2020. Urbanization is also increasing the demand for green spaces, bringing about important changes in forest policies (Amir and Rechtman, 2006).

Economy

Economic growth in the region has been robust in the past decade (IMF, 2008), largely because of the rising price of fossil fuels. Continued global demand will keep energy prices high, sustaining a high rate of income growth in the next decade and beyond (Figure 47). With the exception of a small number of non-fossil-fuel-producing countries, per

FIGURE 44 Subregional breakdown used in this report

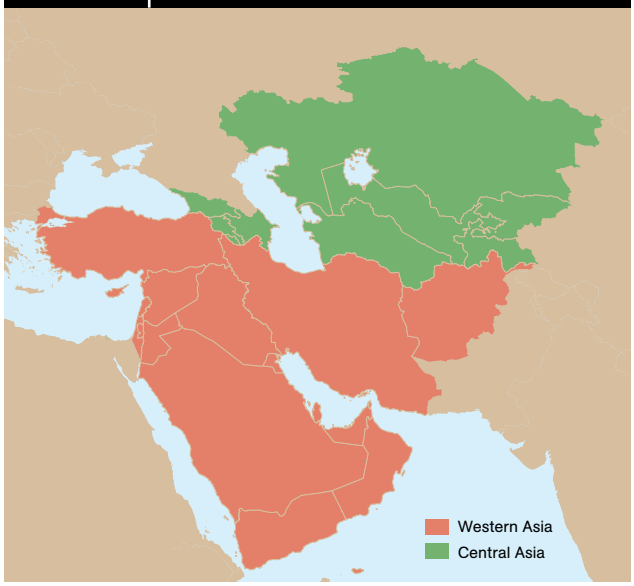
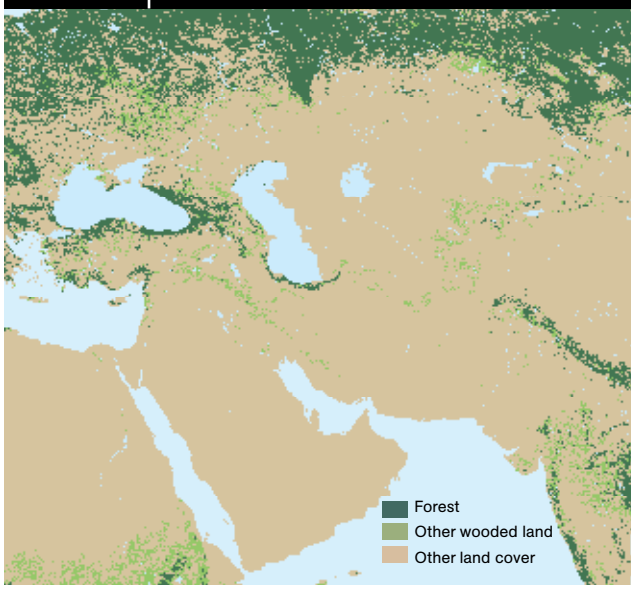
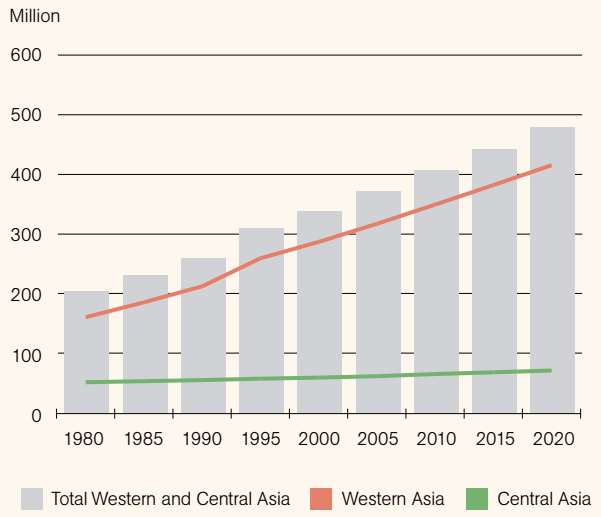


FIGURE 45 Extent of forest resources



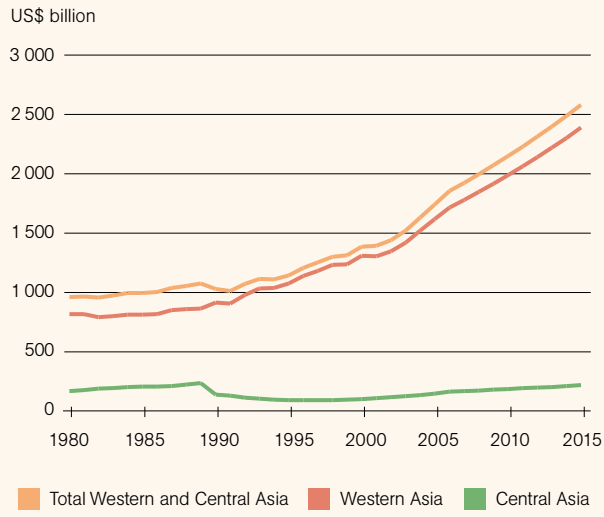
NOTE: See Annex Table 1 for list of countries and areas by subregion.

FIGURE 46 Population



SOURCE: UN, 2008a.

FIGURE 47 Gross domestic product



SOURCES: Based on UN, 2008b; World Bank, 2007a.

capita incomes will continue to increase, although income distribution may remain skewed.

However, non-fossil-fuel-producing and less diversified economies, such as Afghanistan, Kyrgyzstan, Tajikistan and Yemen, face a number of challenges. While some have benefited from the spill-over effects of the high income of the wealthier fossil-fuel-producing countries (especially through employment, markets for products and tourism), poverty remains high in these countries, as does dependence on agriculture.

The region also has a number of high- and middle-income countries with highly diversified economies including agriculture, manufacturing and a vibrant services sector. For example, Israel is among the most innovative countries in agriculture and high-technology manufacturing.

Realizing that dependence on fossil fuels creates vulnerability, most countries that produce them are diversifying their economies through investment in agriculture, industries and the services sector, including tourism. The recent rise in food prices has encouraged some of the Gulf Cooperation Council (GCC) countries to invest in agricultural projects in countries outside the region where land and water are more available.

Although agriculture and animal husbandry account for a declining share of GDP in correspondence with the expansion of other sectors such as fossil fuels and minerals, industries and services (FAO, 2007b), they remain vital for most countries, including those that have alternative sources of income. In some countries, for example Saudi Arabia, a reduction in subsidies for high-input agriculture in dry areas has resulted in a shift of agriculture to areas with a more favourable climate, including forested zones, resulting in forest clearance.

In most countries, livestock numbers have increased substantially, largely to cater to the increasing demand for meat. Higher incomes have enabled herders to transport livestock over long distances and to new grazing areas, and even to transport water. While traditional nomadic livestock management ensured sustainability of rangelands, the new practices and the increased numbers of animals have accelerated the degradation of forests and

rangelands (FAO, 2008f). In some of the fossil-fuel-rich countries, former herders and farmers who have moved to urban areas employ migrant workers to take over their former occupation; hence, the pressure on forests and rangelands continues.

Policies and institutions

Policies and institutions in and beyond the forest sector are changing at different paces depending on the larger political framework in the countries. For example, the collapse of the Soviet Union brought major transformations in Central Asia that have had direct and indirect impacts on the forest sector. Institutional capacities have declined, and forest policies, legislation and institutions have not yet been adapted to address new challenges in a decentralized framework. In some areas, conflict-related instability is undermining institutional capacity.

Historically, local community institutions had a key role in resource management, but the advent of government control undermined traditional management systems, often resulting in unregulated resource use (Government of Oman, 2005). While some countries have attempted to broaden participation (Box 26), participatory approaches have not yet taken root in most countries. However, where democratic processes are well established (e.g. Cyprus), forest policies and institutions are responding to society's changing needs, for example, by moving the focus of forest management from wood production to the provision of environmental services and by encouraging participatory approaches.

Private-sector involvement in forest management is limited, largely because most land is publicly owned, and more importantly because productivity and commercial viability are poor. However, in most countries, the private sector is dominant in forest industries and trade in forest products.

BOX 26 Village cooperatives in Turkey

Turkey has about 5 000 agricultural village cooperatives with a total of more than 680 000 members. About 3 200 of these cooperatives are in forest villages. Forest laws have granted special rights and privileges to forest village cooperatives since the 1970s, including priority in undertaking forest harvesting operations and eligibility to take a share of the wood they harvest at reduced rates. More than 2 100 village cooperatives carried out forestry operations in 2000, harvesting about 60 percent of the country's total wood production.

SOURCE: FAO, 2008f.

Science and technology

From 1997 to 2002, average R&D expenditure in the region remained below 0.5 percent of total GDP (FAO, 2007c), significantly lower than the world average even for developing countries. However, the number of Internet users is rising, indicating that access to information is increasing. Most countries in Central Asia benefited from the large science and technology infrastructure base of the Soviet Union, and the scientific capacity of these countries has declined since its collapse. Limited resources, a top-down approach to R&D and the loss of competent scientists through emigration have affected the scientific and technological capabilities of most countries in the region, with the exception of a few such as the Islamic Republic of Iran and Turkey. Overall, forestry has low priority in the region and the sector receives minimal investment. The areas receiving most attention are forest conservation and environmental services.

OVERALL SCENARIO

Three broad patterns of development can be identified in the region, with differing implications for forests and forestry.

A number of non-fossil-fuel-producing, low-income countries will continue to depend on agriculture and animal husbandry as a main source of livelihood (with remittances from citizens employed in fossil-fuel-producing countries also becoming an important source of income). The outlook for forests and woodlands will depend on diversification of the economy – which will depend in turn on political stability, institutional development and investment in human resources. Tourism offers potential for diversification.

Countries that depend on fossil fuels for their growth and prosperity also need to diversify. Several realize the long-term vulnerability of dependence on fossil fuels and are investing in manufacturing and building up human resources. Many of these countries have neglected sectors other than energy, including agriculture and forestry; thus, despite high national income, forestry may face severe financial constraints and forestry institutions may be weak. Improving institutional frameworks is likely to remain a major challenge.

Some countries (both fossil-fuel-producing and non-fossil-fuel-producing) have made substantial progress in diversifying their economies and drawing advantage from globalization through investments in manufacturing, trade, commerce and tourism. Several are emerging as important regional and global financial centres. In these countries, increasing attention is being paid to environmental issues, including urban greening.

OUTLOOK

Forest area

Forest area increased between 1990 and 2005 (Table 18). This trend is likely to continue except in the low-income agriculture-dependent countries. As the importance of agriculture (including animal husbandry) declines and wealthier countries invest in afforestation and urban greening (Box 27), the overall forest area is expected to increase. In countries with low forest cover, rapid urbanization and constraints on agricultural expansion (especially water scarcity), forest area is likely to stabilize. Afforestation efforts, although limited, will help to reverse forest loss. A notable exception to this trend is a continuing decline in forest area in those countries where armed conflict has destabilized forest management.

Rangelands and pasturelands with scattered tree growth account for more than half the region's land area and are the main source of fodder and woodfuel in addition to a number of non-wood tree products. These lands are rapidly becoming degraded in the absence of any management (Box 28).

In addition to difficult-to-quantify but important trees outside forests and in agroforestry systems, the region has about 5 million hectares of planted forests. This is less than 2 percent of the global planted forest area (Table 19). Half of these planted forests are for environmental protection. The annual rate of planting has been rather modest at about 80 000 ha. The decline in the extent of planted forests in Central Asia between 2000 and 2005 was mainly in Kazakhstan and was largely the result of forest fires (FAO, 2006d). Half the region's planted forests are in Turkey, where 75 percent are for production and the rest for protection. The Islamic Republic of Iran and Turkey are the only countries reporting planted forests for production.

TABLE 18

Forest area: extent and change

Subregion	Area (1 000 ha)			Annual change (1 000 ha)		Annual change rate (%)	
	1990	2000	2005	1990–2000	2000–2005	1990–2000	2000–2005
Central Asia	15 880	15 973	16 017	9	9	0.06	0.06
Western Asia	27 296	27 546	27 570	25	5	0.09	0.02
Total Western and Central Asia	**43 176**	**43 519**	**43 588**	**34**	**14**	**0.08**	**0.03**
World	**4 077 291**	**3 988 610**	**3 952 025**	**–8 868**	**–7 317**	**–0.22**	**–0.18**

NOTE: Data presented are subject to rounding.
SOURCE: FAO, 2006a.

BOX 27 Tree planting in the United Arab Emirates

The United Arab Emirates is an extremely arid and urbanized (over 80 percent) country. The government encourages greening and tree-planting activities, which are increasingly supported by the people.

Urban planting schemes enhance microclimate, mitigate air pollution, beautify roadsides and provide recreational areas. Abu Dhabi, which had only one public park in 1974, now has about 40, covering an area of more than 300 ha.

Outside cities, trees are planted:

- in green belts to combat desertification and sand movement;
- to protect farms, agricultural areas and rangelands;
- to provide natural sanctuaries for the breeding and conservation of gazelles, bush rabbits, birds and other animals.

Ninety percent of treated wastewater is used for irrigation of these planted areas.

SOURCE: FAO, 2005c.

BOX 28 Rangelands in West Asia

Rangelands occupy 52 percent of West Asia's land area. Up to 90 percent of these lands are degraded or vulnerable to desertification. Grazing, a principal cause of land degradation in the subregion, has more than doubled in the past four decades, mainly because of subsidized feeding, provision of water points and mechanization. Sheep density has reached four times the sustainable carrying capacity in some areas. Overgrazing and fuelwood collection have reduced rangeland productivity by 20 percent in Jordan and 70 percent in the Syrian Arab Republic.

Centralized control of rangelands has undermined traditional nomadic herding systems, which managed the land carefully to prevent overuse. Most rangelands in the subregion are free-access resources, lacking clear responsibilities for their protection.

SOURCES: FAO, 2007c; UNEP, 2007.

TABLE 19
Planted forests

Subregion	1990	2000	2005
	(1 000 ha)		
Central Asia	1 274	1 323	1 193
Western Asia	3 022	3 623	3 895
Total Western and Central Asia	**4 295**	**4 946**	**5 089**
World	**209 443**	**246 556**	**271 346**

NOTE: Data presented are subject to rounding.
SOURCE: FAO, 2006b.

Forest management

Except in Cyprus, Lebanon and Yemen, most of the forests in the region are publicly owned. However, political and historical differences among the countries have resulted in considerable differences in how they have been managed and used.

In the Soviet period, most of the forests and woodlands in Central Asia were set aside for environmental protection with a total ban on logging – a policy encouraged by the low forest cover and limited scope for commercial use of forests. Strict enforcement of rules and regulations by the well-organized state forestry administration enabled comprehensive forest protection. However, after independence, a reduction in wood and fuel supplies from the Russian Federation increased the pressure on forests and the ban on logging became ineffective. While most of the forests officially remain protected areas, institutional weaknesses and the rising demand for wood have resulted in increases in illegal logging. Greater investment will be needed if problems such as forest fires are to be prevented from worsening.

In Western Asia too, most forests have been set aside as protected areas. A number of countries that previously depended on forests for wood production have reduced harvesting in order to enhance environmental benefits.

The region's adverse climate and soil conditions and low productivity make forest plantation activities expensive, implying limited private-sector involvement and, thus, a high reliance on public funding. The changing needs of society have influenced the management of planted forests; some originally established for wood production are now managed for amenity values (Box 29).

In most countries in the region, trees grown on farms in various agroforestry systems are a source of income and, more importantly, fulfil protective functions as windbreaks and shelterbelts. Establishment of windbreaks is an integral part of farming practices in most countries. Date-palm cultivation in several Western Asian countries has turned deserts into oases. In the United Arab Emirates, extensive date plantations have improved the landscape while generating substantial income (FAO, 2008f). Fruit trees are also a source of wood.

The high costs of improving policy and institutional arrangements and technical capacities may continue to limit the ability of many countries in the region to implement sustainable forest management. Furthermore, much of the region's forest is located in conflict zones. Conflict-related instability is a major factor undermining sustainable forest management, especially where forests straddle national borders (FAO, 2008g).

Wood products: production, consumption and trade

Because of the unfavourable growing conditions and emphasis on protection, production of wood products is low, and the region depends substantially on imports to meet demand. Imports of wood products increased from about US$5.6 billion in 1995 to US$13.5 billion in 2006 and accounted for more than half of consumption. Afghanistan, Georgia, the Islamic Republic of Iran, Kazakhstan and Turkey account for most of the region's wood production.

Consumption of wood products is forecast to increase across the region with growth in population, urbanization and income. Annual growth in the consumption of sawnwood, wood-based panels, and paper and paperboard is projected to be 2.5, 4.5 and 4.0 percent, respectively, in the next 15 years (Table 20). Growth is expected to be fastest in the Central Asian countries as they recover from the post-1990 economic slump. The region will remain a major wood product importing region because of its limited natural resources and growing demand.

The Islamic Republic of Iran and Turkey, with large domestic markets, inexpensive labour and a stable investment climate, have invested in forest industry development (furniture, paperboard and medium-density fibreboard), largely based on imported raw materials. With the declining profitability of the wood industry in Europe, these industries could expand further. Saudi Arabia and

BOX 29 Changing objectives of forest plantation management in Cyprus

In Cyprus, 94 village plantations on about 1 580 ha were established during the Second World War to supply woodfuel to local communities. By the time the plantations were mature, incomes had increased and commercial fuels had become available and affordable, so the demand for woodfuel had declined considerably. However, the demand for recreation areas had grown. Hence, these plantations were transformed into recreation areas, enhanced by the planting of ornamental trees.

SOURCE: Government of Cyprus, 2005.

TABLE 20
Production and consumption of wood products

Year	Industrial roundwood (million m^3)		Sawnwood (million m^3)		Wood-based panels (million m^3)		Paper and paperboard (million tonnes)	
	Production	Consumption	Production	Consumption	Production	Consumption	Production	Consumption
2000	14	15	6	10	3	6	2	6
2005	17	19	7	13	5	9	3	8
2010	17	21	8	14	6	12	4	10
2020	15	22	10	18	11	18	6	14

SOURCE: FAO, 2008c.

the United Arab Emirates produce paper and paperboard (mainly tissue paper and corrugated carton) almost entirely using imported pulp and locally collected wastepaper. However, the competitiveness of the industry is in question because of the high production costs, especially arising from the high water demand (Mubin, 2004).

Woodfuel

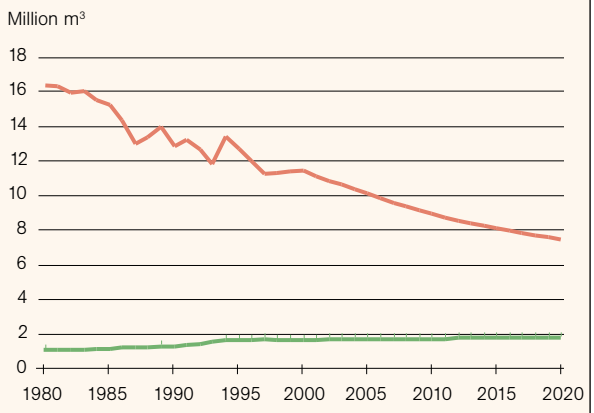
At the aggregate level, woodfuel consumption will continue to decline in the next 15 years (Figure 48). However, consumption trends differ considerably among and sometimes within countries. Turkey, with its diversified economy, has seen a significant reduction in woodfuel use largely because of the availability of commercial fuels, and this trend is likely to continue. However, in low-income countries, commercial fuels are unavailable and the use of woodfuel has increased. For example, woodfuel accounts for almost 85 and 70 percent of household energy needs in Afghanistan and Yemen, respectively (FAO, 2007c). Woodfuel use is also high in some of the Central Asian republics (Tajikistan and Uzbekistan). In these countries, total consumption is projected to rise, which will put additional stress on the low-productivity forests and wooded lands.

In most of the other countries, especially in Western Asia, fuelwood consumption is declining but charcoal use is increasing, particularly in restaurants and homes. In Saudi Arabia, an attempt to conserve the resource by banning charcoal production and encouraging imports was not successful, as people without alternative income opportunities continued to produce charcoal as a source of livelihood.

Non-wood forest products

As in other regions, the pattern of NWFP use consists of many subsistence products and a few commercially important ones, many of which are domesticated and cultivated systematically (FAO, 2006e; FAO, 2007c). Subsistence use of and trade in NWFPs are particularly significant for low-income rural communities. In many countries, NWFPs provide more income than wood production.

FIGURE 48 Woodfuel consumption



SOURCE: FAO, 2003b.

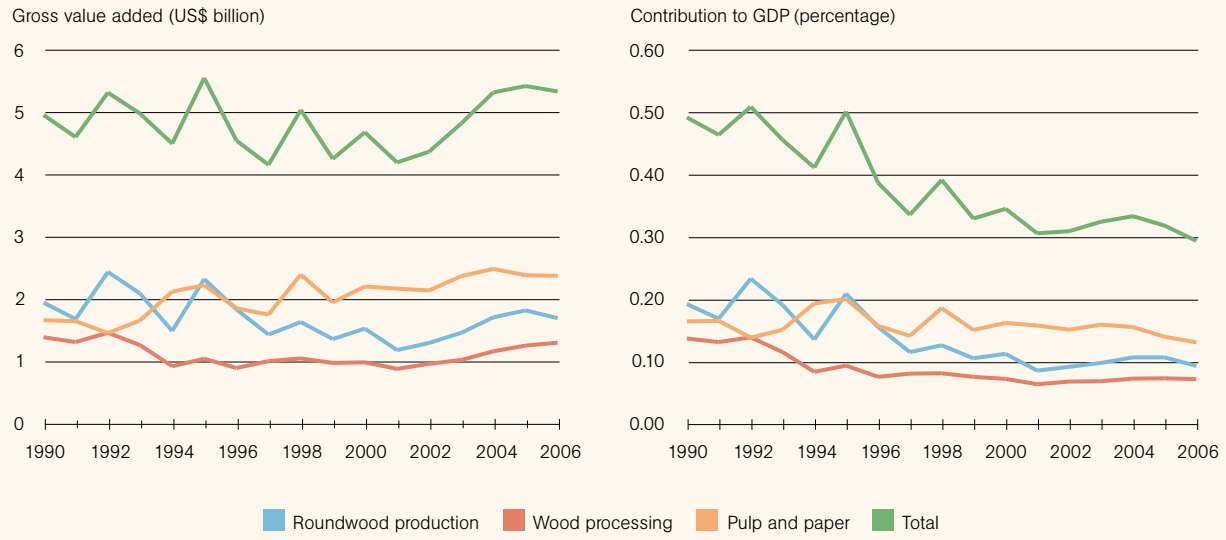
Commercial products include honey, mushrooms, medicinal plants, pine nuts, walnuts, pistachio nuts, bay leaves, thyme and fodder. In the more diversified economies, commercially important NWFPs have been systematically developed with private-sector involvement. Lebanon's privately owned pine (*Pinus pinea*) plantations are managed primarily for nut production. The production and processing of, and trade in, bay leaves from Turkey have improved largely because of private-sector investments.

No major changes are expected in the pattern of NWFP use. The main challenge will be to improve the production and value addition of less commercialized products, to develop markets and, thus, to enhance income opportunities for low-income households.

Contribution of forestry to income and employment

The gross value added by the forestry sector registered a slight increase from about US$4.9 billion in 1990 to about US$5.3 billion in 2006 (Figure 49). Most of the increase was in the pulp and paper sector, largely because of expanded paperboard production. Employment in the sector has registered an upward trend since 2000 following

FIGURE 49 Value added in the forestry sector



NOTE: The changes in value added are the changes in real value (i.e. adjusted for inflation).
SOURCE: FAO, 2008b.

a slight decline, but is essentially stable. However, estimates are imprecise because of incomplete national accounting of value added and employment, especially for the informal sector.

Environmental services of forests

Considering the limited potential of commercial wood production, the provision of environmental services – especially arresting land degradation and desertification, protecting water supplies and improving the urban environment – will remain the principal function of forests and woodlands in Western and Central Asia. Environmental protection and provision of environmental services are largely driven by the public sector through supportive policy measures, with varying levels of participation by civil-society organizations, the private sector and communities.

Five areas in the region have been identified as biodiversity hotspots for their biological richness and threatened ecosystems (Conservation International, 2005). For example, the forests in the Central Asian mountains are the centre of origin of cultivars of apple, pear and pomegranate. To date, biodiversity conservation efforts have focused on designating protected areas, which by 2007 comprised about 114 million hectares or about 10 percent of the region's land area (UN, 2008c).

In low-income agriculture-dependent countries with high biodiversity (e.g. Afghanistan, Kyrgyzstan, Tajikistan and Yemen), conservation may remain difficult because of the pressure on land and other resources and the inability of governments to invest adequately in effective management of protected areas. Weaknesses in policies and institutions, including fragmented responsibilities, are impediments to protected area management even in some countries with relatively high incomes. Illegal hunting is a major problem in some protected areas.

Desertification and land degradation are problems throughout the region, especially in Western Asia where all countries are in the arid or semi-arid zone and three-quarters of the land is desert or desertified (FAO, 2007c). The causes include extreme climate conditions and human activities, such as expansion of agriculture, intensive grazing, continued removal of vegetation for fuel and fodder and deficient irrigation practices. Forests and trees contribute directly to controlling desertification risks and maintaining suitable conditions for agriculture, rangelands and human livelihoods. However, as trees also consume water, the water balance needs to be taken into account when tree planting is considered; in Israel, it was observed that planting trees on farms may yield more benefits than large-scale afforestation programmes (Malagnoux, Sène and Atzmon, 2007).

Integrated land and water management could prevent human-induced desertification. However, most attention has been focused on remedial measures. Low-income agriculture-dependent countries have relatively poor prospects for dealing with land degradation and desertification. More improvement is envisaged in countries where dependence on land is declining and opportunities for improving policies and institutional framework are greater.

Climate change is expected not only to accentuate desertification but also to affect water supply because of the shrinking of glaciers in the Central Asian mountains.

Water is probably the most critical natural resource in the region. Watershed degradation is a threat to water supply for drinking, irrigation and power generation. Forests and trees have an important role in watershed improvement. The transboundary nature of most of the major watersheds in the region complicates the institutional arrangements for watershed management, including sharing costs and benefits. Water sharing among the countries is a politically sensitive issue and a primary cause of conflicts in the region.

Unspoilt landscape, including mountains and deserts, is attracting an increasing number of domestic and international tourists to the region, creating opportunities as well as challenges. Increasing investment in infrastructure – for example, construction of the New Silk Road – is opening up the hitherto less-visited Central Asian countries. While many of the diversified economies have been able to take advantage of ecotourism (Box 30), several others, especially in Central Asia, have been unable to tap the potential because of limited infrastructure and security issues. Most low-income countries lack the institutional arrangements to ensure that income from ecotourism accrues to the poor.

The main challenge of nature-based tourism is to manage it sustainably. Increased tourism (including domestic tourism) to a small number of prime locations (e.g. the Azir region of Saudi Arabia) challenges existing institutional capacity to do so. Opening the region to nature tourism is also paving the way for illegal trophy hunting, especially where law enforcement capacity is poor (FAO, 2005d).

BOX 30 Ecotourism development in Tajikistan

In the Murgab District in the Eastern Pamir mountains of Tajikistan, where living conditions deteriorated after the collapse of the Soviet Union, the Murgab Ecotourism Association is promoting sustainable ecotourism with a focus on conservation of natural and cultural resources and local income generation. The Murgab Ecotourism Association was established in 2003 by the Agency for Technical Cooperation and Development with assistance from the United Nations Educational, Scientific and Cultural Organization (UNESCO). Since 2005, it has been a legally registered national association. The number of tourists using its services (which include organization of rafting and camelback tours and accommodation in yurts and local homesteads) grew from 25 in 2003 to 601 in 2005. Profits for local tourism operators increased tenfold. Future plans include the establishment of a nationwide ecotourism network, expanded support to the handicraft production chain, collaboration with large-scale commercial tourism providers and the government, and regional links with northern Afghanistan and southern Kyrgyzstan.

SOURCE: ACTED, 2006.

Most Western and Central Asian countries invest substantially in creating green spaces to improve the quality of life of the burgeoning urban population (FAO, 2005c). In most Central Asian countries, the significant attention given to urban forestry during the Soviet period declined following independence, but it is picking up again, especially in the fossil-fuel-rich countries. As illustrated in Box 27, several GCC countries have embarked on ambitious greening programmes in conjunction with the expansion of urban centres.

Urban green spaces in the region will undoubtedly increase in varying measure depending on the financial and institutional capacity of the countries and the extent to which urbanization is planned. Unplanned urbanization (especially where rural populations are compelled to move to urban centres because of conflict) tends to result in destruction of urban green spaces.

SUMMARY

The outlook for forests and forestry in Western and Central Asia is mixed. Income growth and urbanization suggest a stable or improving forest situation in some countries, but this will elude a number of low-income agriculture-dependent countries. Forest degradation may also persist in some countries that are relatively well off but have weak institutions.

Adverse growing conditions in most of the region's countries limit the prospects for commercial wood production. Rapidly increasing income and high population growth rates suggest that the region will continue to depend on imports to meet the demand for most wood products. Provision of environmental services will remain the main justification for forestry, especially arresting land degradation and desertification, protecting watersheds and improving the urban environment. Institution building, particularly at the local level, is needed to facilitate an integrated approach to resource management.