
2. Current state of forests and forestry

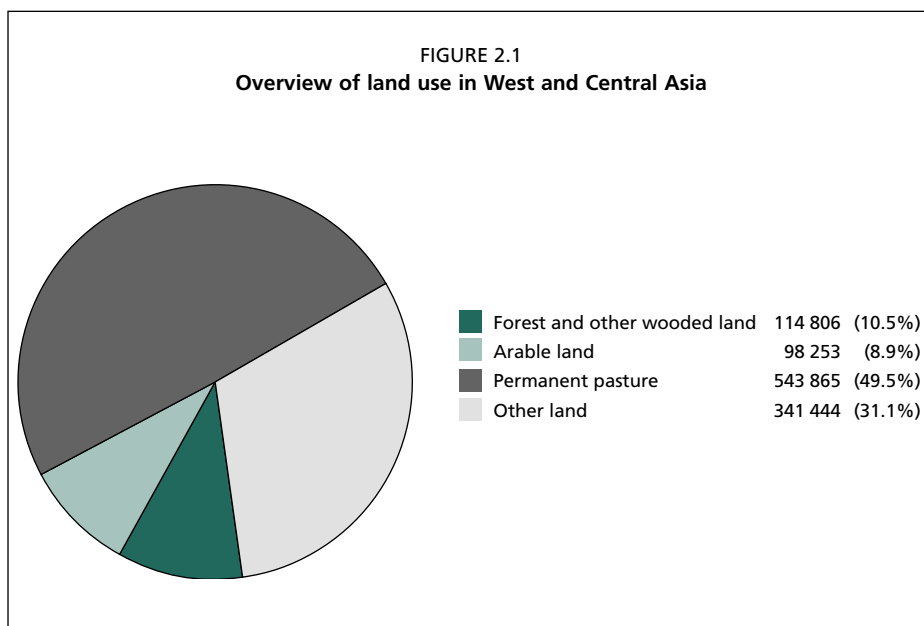
The West and Central Asia region dealt with in this study comprises 23 countries, stretching from Kazakhstan in the north to Yemen in the south, and Afghanistan in the east to Turkey in the west. Although mostly hyper-arid, arid and semi-arid (altogether accounting for more than 75 percent of the land area), the region also has a few areas, in the Islamic Republic of Iran, Georgia and Turkey, with annual rainfall exceeding 2 000 mm. Vast stretches of deserts are found in Central Asia – notably, the Kara Kum and Kyzyl Kum – and the Arabian Peninsula. Vegetation ranges from the mangrove forests on the Gulf coast to alpine meadows in the Central Asian countries. Extensive rangelands form a buffer between agriculture and forest land and absorb some of the pressures of agricultural expansion.

Regardless of the geographical contiguity, important economic, social, political, institutional and environmental differences exist among the countries and are mirrored in the forestry situation. Although generalizing is difficult, there are some common threads that suggest opportunities to learn from each other's experience and to pursue joint action to address some of the key problems. Ecological contiguity of the region, reinforced by shared watersheds and problems such as desertification, provide opportunities for joint action.

AN OVERVIEW OF LAND USE

Figure 2.1 presents an overview of land use in the West and Central Asia region (see Annex, Table 1 for country area details). Although the region's total land area is very high, the proportion of arable area is very low, varying from 0.1 percent in Oman to 33.7 percent in Turkey. Overall, the proportion of arable land for the whole region is only 8.9 percent of the land area. Permanent pastures account for nearly 50 percent of the land area.

Clearly, the region's adverse environmental conditions impose severe constraints on land use. Agricultural development is primarily dependent on improving irrigation through exploitation of surface and groundwater. Most of the important river systems have been harnessed to support agricultural development. Given the region's low and unpredictable rainfall, nomadic animal husbandry has been an important source of livelihood as it takes into account the seasonal changes in water and fodder availability. The rangelands occupy the transition zone between the cropped area and the woodlands and forests. In most countries, agricultural expansion has largely been achieved by converting rangelands and developing irrigation infrastructure.



The region's unfavourable climatic and soil conditions greatly influence forests and woodlands, including their composition and productivity. The uses of forests and woodlands differ significantly because of the differences in human pressures and, more importantly, the key actors' ability to invest in and manage the resources.

EXTENT OF FORESTS AND WOODLANDS AND IMPORTANT CHARACTERISTICS

Figure 2.2 shows the extent of forests and woodlands in the region,¹ with their overall distribution summarized in Table 2.1 (for country details, see Table 2 in the Annex).

The West and Central Asia region is estimated to have around 1.1 percent of global forest cover and around 5.2 percent of other wooded land. Together, the region accounts for about 2.2 percent of the global forest area and other wooded land (Figure 2.3). The region's territory accounts for about 8.2 percent of the world total.

¹ The Global Forest Resources Assessment 2005 (FRA 2005) uses the following definitions for "forest" and "other wooded land" (FAO, 2004):

Forest: Land spanning more than 0.5 hectares, with trees higher than 5 metres and a canopy cover of more than 10 percent or trees able to reach those thresholds *in situ*. It does not include land that is predominantly under agricultural or urban land use.

Other wooded land: Land not classified as forest, spanning more than 0.5 hectares, with trees higher than 5 metres and a canopy cover 5 to 10 percent, or trees able to reach these thresholds *in situ*; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.

For further explanation on the definitions, see: www.fao.org/forestry/site/13637

FIGURE 2.2
Forests and other wooded land in West and Central Asia

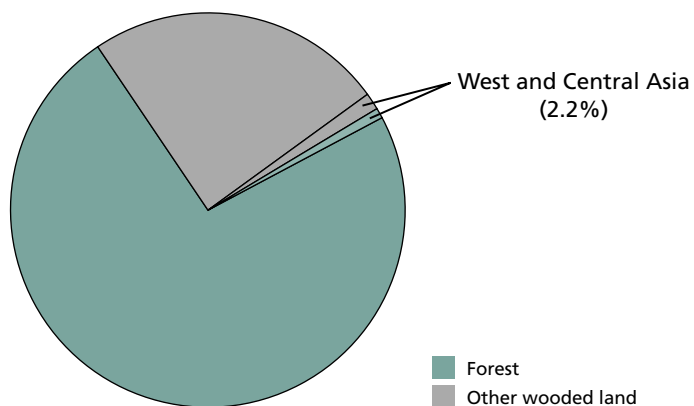


TABLE 2.1
Extent of forests and other wooded land, 2005

Region/subregion	Forests		Other wooded land		Land area
	Area (million ha)	% of land area	Area (million ha)	% of land area	
Central Asia and Caucasus	16.02	3.8	17.13	4.1	418.90
West Asia	27.39	4.0	54.23	8.0	681.07
Total West and Central Asia	43.40	3.9	71.36	6.5	1 099.97
Total world	3 952.02	30.3	1 375.83	10.3	13 418.52

Source: FAO, 2006a.

FIGURE 2.3
The region's share of the world's forests and other wooded land



Central Asia and the Caucasus

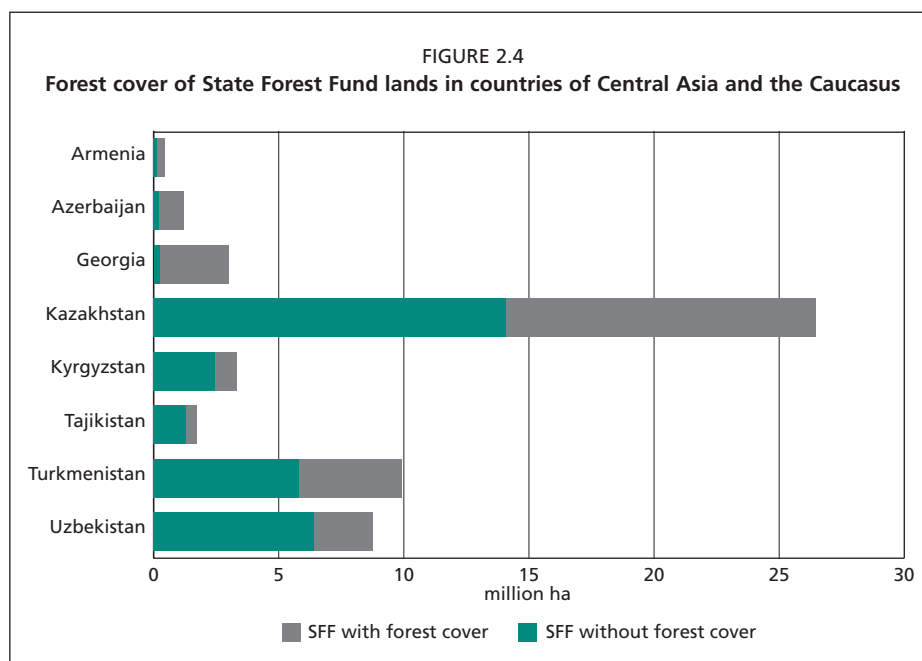
Forest cover. Forest cover comprises just about 3.8 percent of the land area in Central Asia and the Caucasus subregion, and even after including other wooded land accounts for about 8 percent of the land area. With some 40 percent of the land under forests, Georgia is the most forested country in the entire West and Central Asia region. Although Kazakhstan has the lowest proportion of land under forests (1.2 percent), it has more than 3.3 million hectares of forests. If discrepancies in classification are taken into account and an area of about 15.6 million hectares of other wooded land mainly comprising saxaul (*Haloxylon* spp.) forests is included, Kazakhstan's forest cover increases to about 7 percent of the land area.²

The overlap between ownership and ecological groupings is a major cause of discrepancy in forest area statistics of the Central Asia and Caucasus countries. Since the Soviet period, all Central Asia and Caucasus countries have been using the land classification "State Forest Fund" (SFF). Invariably, the area under SFF exceeds what is reported as forest cover (see Figure 2.4). In addition, the proportion of land covered by forests in the SFF varies considerably among the countries, from about 24 percent in Tajikistan to 92 percent in Georgia. Lands classified as State Forest Fund are not always used for forestry despite the intention at the time of such groupings. Often these lands are allocated to agricultural enterprises for cultivation and grazing (see Box 2.1).

Composition. The region has considerable variation in species composition and other characteristics of the forest, reflecting the differences in climate and topography. In the Caucasus, the dominant vegetation consists of broadleaves, especially oaks, beeches and hornbeams, which make up 80 percent of the forests. A limited number of conifers grow, which include pines, firs and spruces. Relatively few broad-leaved species grow in Central Asia. Saxaul (*Haloxylon* spp.) and other bushes are commonly found in deserts and semi-desert areas of Kazakhstan, Turkmenistan and Uzbekistan. In Kazakhstan and Kyrgyzstan (the mountainous areas of Tien Shan), thickets of trees such as birch, firs and aspens grow in the northern and eastern parts. Flood plain "tugai" forests are found in the drylands of Central Asia and in small areas of Azerbaijan.

Growing stock. The differences in the species composition and growing conditions are reflected in the growing stock and increment (see Annex, Table 3). Forests in

² The national data provided from Turkmenistan for FRA 2005 indicate that the dominant species in the area classified as forests is saxaul (*Haloxylon* spp.), and furthermore the growing stock per hectare is very low. This indicates that part of the area classified as forest may actually be other wooded land according to the FRA 2005 definition. Similarly, for Uzbekistan large inconsistencies in the national classification of original data provided for FRA 2005 for the period 1990 to 2004 prevent reclassification based on the FRA 2005 definition. A decline in forest area in Azerbaijan was reported without detailed information, and therefore the same area figure was used for all the periods (see www.fao.org/forestry/fra).

**BOX 2.1****State Forest Fund for pasture use in Tajikistan**

By governmental decision, 1.08 million hectares, or more than 60 percent of Tajikistan's State Forest Fund, are allocated for long-term use as pasturelands to agricultural enterprises. These areas are rich in forest and grass vegetation and were traditionally used as distant pasturelands in past decades. Although overgrazing and degradation of grass and forest vegetation have been observed in these areas, particular measures have not been taken for conservation and/or restoration of degraded vegetation. The remaining 40 percent of the State Forest Fund of 642 000 hectares is of little use for forest development. The land is not suitable for afforestation and it is difficult or even impossible to grow trees.

Source: FAO, 2006a.

the Caucasus and Kazakhstan have relatively high growing stock, varying from 109 m³ per hectare in Kazakhstan to about 167 m³ per hectare in Georgia. In contrast, the growing stock is low in the remaining four Central Asian countries, ranging from about 4 m³ per hectare in Turkmenistan to 34 m³ per hectare in Kyrgyzstan. It must, however, be borne in mind that these figures are based on inventories that were carried out years beforehand. More recent inventories have not been undertaken mostly because of institutional weaknesses, especially since

the break up of the Soviet Union in 1991. Misclassification is another problem that makes intercountry comparisons difficult. For example, low productivity desert woodlands in Turkmenistan and Uzbekistan are counted as forests, while similar areas in Kazakhstan are grouped as wooded land. Such misclassifications have produced large discrepancies in the estimates of growing stock.

West Asia

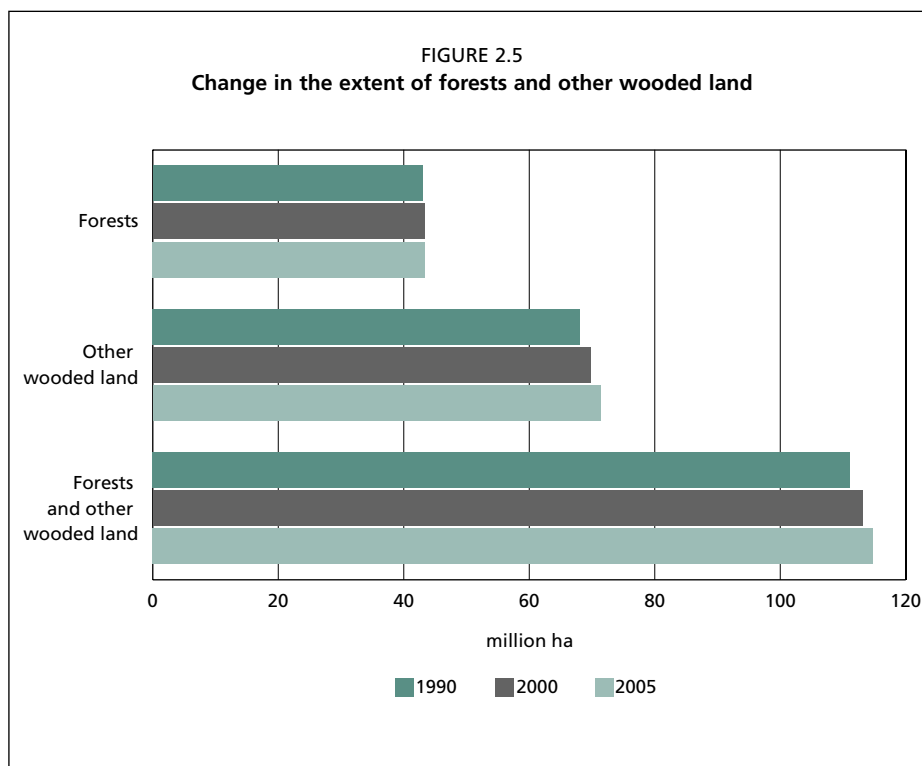
Forest cover. The total forest cover West Asia is estimated at 27.4 million hectares, or about 4 percent of the land area. The Islamic Republic of Iran, Saudi Arabia and Turkey account for almost 88 percent of the forest cover in the subregion (see Annex, Table 2). Only three countries have more than ten percent of their area under forests: Cyprus with 18.9 percent, Lebanon 13.3 percent and Turkey 13.2 percent. In addition to forests, most of the countries also have a large extent of other wooded land. For example, Saudi Arabia has about 34.2 million hectares of other wooded land, and if this area were included in the estimate, the area under forests would amount to 17 percent of the total land area. Other countries that have significant extent of wooded land are Turkey (10.7 million hectares), Iran (5.3 million hectares), Yemen (1.4 million hectares) and Oman (1.3 million hectares). Several countries also have wooded land exceeding the extent of forests, Cyprus and Iraq, for example.

Composition. The predominant species in the West Asia region are pines, oaks and acacias, with patches of mangroves along the Red Sea and Gulf Coast. Hilly areas in the Arabian Peninsula, especially along the Red Sea coast, support woodlands consisting predominantly of junipers. Afforestation receives substantial attention in the region, and the species mostly planted are eucalypts, pines and acacias. Date palm is another highly preferred species for the Arabian Peninsula countries.

Growing stock. Because of the extreme ecological conditions, forest productivity in the subregion is low and, apart from Turkey and certain areas of Iran, timber production potential is extremely limited. The growing stock in Iran is estimated to be about 48 m³ per hectare, while Turkey's stands at 138 m³ per hectare and results from the high stock of the Caspian forests. The growing stock in many of the other countries is low, usually below 20 m³ per hectare, and reflects the unsuitable growing conditions.

FOREST COVER CHANGE

The change in the extent of forest cover and other wooded land for the region between 1990 and 2005 was insignificant (Figure 2.5 and see Annex, Table 4 for the details of changes in each of the countries in the region). Aggregated figures, however, mask the intercountry differences in area change. For example, Armenia's forest cover declined from about 305 000 ha in 2000 to about 283 000 ha in 2005 (see Annex, Table 4). During the same period, Uzbekistan's forest cover registered an increase from 3 212 000 ha to 3 295 000 ha, which was mostly due



to classification changes. There were also changes in the extent of other wooded land, with Kazakhstan registering a significant increase of over 800 000 ha between 2000 and 2005 as a result of afforestation. However, caution is needed in interpreting the data and drawing conclusions, especially when recent inventory information is not available.

The forest cover for most of the countries in the West Asia region has been relatively stable, and apart from Afghanistan there has been an upward trend in the area under forests. In addition to afforestation to enhance protective functions, there have been instances of secondary forests recolonizing abandoned agricultural land, as in Cyprus and Lebanon. Turkey accounts for a substantial increase as it increased its forest cover by more than 123 000 ha. In contrast, Afghanistan's forest cover declined by 148 000 ha between 2000 and 2005. Changes also occurred in the extent of other wooded land, with Iraq's wooded land area declining about 106 000 ha. As shown in Annex, Table 4, there are several cases where forest cover remains unchanged, for example in Georgia, Turkmenistan, Iran, Saudi Arabia and Yemen. However, here again, caution is needed in reaching optimistic conclusions, for the following reasons:

- In a number of countries the forest cover is extremely low and leaves little scope for further decline. Because of the low base figures, even a slight increase due to afforestation or reforestation would indicate a significant jump in the percentage growth rates.

- The reliability of information remains a basic problem. As indicated earlier, country capacity for regular monitoring and reporting of changes in forest cover and tree growth is limited. This is especially true for the countries of Central Asia and the Caucasus, where institutional capacity declined after the collapse of the Soviet Union and regular inventories were no longer undertaken. For instance, the most recent inventories for Turkmenistan and Azerbaijan were carried out in 1988 and that for Armenia in 1993.
- Resource assessments, especially using broad groupings based on crown cover, fail to capture degradation processes. In fact, degradation remains the most critical problem, but insufficient efforts have been made to systematically monitor the changes, largely because of limited financial and institutional capacity. Although the causes of degradation vary among countries, illegal collection of woodfuel (including charcoal production) grazing and fire remain the most important causes.

GENERAL TRENDS IN FOREST MANAGEMENT

The overall direction of management is determined largely by ownership of forests, the objectives of management and, most importantly, the technical and financial capacity of the owners. Although most forests are under public ownership, there are some important differences in management that can be partly attributed to the differences in the political histories of the countries. This is particularly important for the Central Asian and Caucasus countries, which had been part of the Soviet Union until 1991.

Central Asia and the Caucasus

Forest management in the subregion is largely based on the Soviet approach, as many concepts and practices that had evolved prior to independence still are followed. The concept of “State Forest Fund” (*Goslesfund* – the land managed by state forest authorities) developed under the Soviet Union has not changed. Generally, forests were centrally managed by the State Committee on Forestry (*Goskomles*). Since the 1930s, field-level management of forests has been undertaken by state forestry enterprises (*leskhoz*es), with some forests allocated to collective farms (*kolkhoz*es) and state farms (*sovkh*ozes).

A forest classification system introduced in 1943 grouped forests into three functional categories (see Table 2.2). Group I forests were primarily designated for environmental protection, and most of the forests in Central Asia were placed under this category. This classification resulted in improved protection and increased investments in afforestation. Forests in the Caucasus were initially subjected to intensive harvesting in view of their better stocking and access, but since the 1970s they have been included in Group I, which bans commercial felling and increases afforestation and reforestation efforts. During the Soviet period, the Central Asia and Caucasus countries were supplied with wood from Siberia and from the central and northern parts of the former Soviet Union. Since the collapse of the Soviet Union, subsidized supplies have stopped. Import of wood from the Russian Federation has become costly in view of the long distance.

TABLE 2.2
Forest classification system of the former Soviet Union

Forest class	Location	Logging restrictions
Group I: State forest nurseries, protective forests. (e.g. shelterbelts and green zones), steppe forests, national parks, state reserves, etc.	Predominant in central and southern regions of the Soviet Union	Clear cutting prohibited, restricted felling (e.g. regeneration felling, silvicultural thinning, selective cutting of overmature trees)
Group II: Forest of sparsely forested areas (forest steppes), forests belonging to collective farms; forests in populated areas	Central regions	Principally clear cutting, but not exceeding annual growth
Group III: All other exploitable forests	Northern regions of the European part, Taiga zone, Siberia, Far East	All kinds of logging permitted

Political and economic changes have influenced forest management in all the countries. For example, although all forests in Tajikistan belonged to the state until 1997, according to a new governmental decision on the reorganization of collective and state farms, some forests within these farms were assigned for long-term use by the farmers. About 50 000 ha, or approximately 12 percent of the State Forest Fund, have been brought under collective farm management.

The new Forest Code of Armenia, which was approved in 2005, envisages long-term leases of forest land to communities and the private sector. SFF privatization is currently under consideration in Georgia. Kyrgyzstan is in the forefront of adopting participatory approaches and in 1998 introduced Collaborative Forest Management. However, the area with community involvement remains very limited. While it may take years before the approach is tested, refined and applied on a large scale, the fact that efforts are being made to involve communities in resource management is a very positive development. Forests in other countries such as Azerbaijan, Turkmenistan and Uzbekistan are largely under public-sector control and there is considerable reservation with adopting participatory approaches, reflecting the overall political environment in these countries. The negative perception of the Soviet period collective management of forests has adversely affected the wider adoption of community initiatives (see Box 2.2).

Current objectives of and approaches to forest management are rooted in the Soviet management system and most of the forests have been earmarked to fulfil the functions of conservation and protection. Commercial logging is prohibited in most of the countries in Central Asia and the Caucasus and forest management is focused on the provision of environmental services, recreation and wildlife management. Substantial efforts are being made to green urban centres and this receives high-level political support in some countries (see section on urban forestry).

West Asia

Notwithstanding the diverse history of the countries in West Asia, most forests in West Asia are also under public ownership, with some exceptions being Lebanon and Cyprus for example. Lebanon's private forests, which account for

BOX 2.2

Collective versus individual forest management in Tajikistan

People in the former Soviet Union republics sometimes have negative sentiments with regard to “collective” management of forests. This tendency is likely to be rooted in the previous experiences during the Soviet era, when many engaged in “collective” farming under *kolkhoz/sovkhoz*. For example, in Tajikistan, an NGO’s support to collective forest management at the village level has turned out to be ineffective because cooperative management is lacking, whereas individual forests seem to be more successful as they promise future benefits and clearly defined ownership. Another attempt revealed that people prefer to plant fruit trees because they provide immediate benefits.

The negative perception of collective management is largely an outcome of the Soviet approach to collectivization, where large extents of forests (especially those producing fruits and walnuts) were managed collectively by villagers. In order to collect usufructs, forests were divided into individual family plots, but management was done jointly. Such joint management existed in Kyrgyzstan, Tajikistan and Uzbekistan. Negative sentiment also results from the state takeover of collectively managed land for protective functions without giving any consideration to local communities.

about 60 percent of the total forest area, are well managed, although government regulations prohibit the removal of timber. In Cyprus, the extent of private forests is reported to be about 40 percent of the total forest area. These forests are primarily enclosures within government forests and are often abandoned agricultural land. Yemen also has a substantial extent of “private” forests, estimated at about 80 percent of the forest land. However, the precise nature of ownership is unclear because of the absence of proper surveys and mapping and, even more important, an effective legal system that protects ownership rights.

Most forests in the region are managed for their multiple functions with protection being an important objective. Management of protected areas or national parks has gained importance in countries such as Cyprus, Iran, Jordan, Lebanon Saudi Arabia and Turkey. Protective and amenity planting – especially as windbreaks and shelterbelts and green spaces in urban areas – is also receiving considerable attention. Pine nut production is a major objective in the management of forests in Lebanon and Turkey. Similarly, much of the tree planting in Saudi Arabia and the United Arab Emirates has been focused on date palm, which is improving the environment while increasing the production of dates.

A number of countries that had earlier depended on their forests for wood production have over time reduced the level of harvesting as the emphasis is now on improving the provision of environmental benefits. For example, annual timber production from Cyprus’s production forests (about 43 500 ha) has declined

from about 50 000 m³ in the 1980s to about 10 000 m³ in recent years (FOWECA country outlook paper, Cyprus). Currently, one-third of the Troodos forest is managed as a forest park and receives about one million visitors annually. In Iran, the Caspian forests are considered to be commercially important because of their high growing stock and productivity, but environmental considerations have led to scaling down timber production, from 840 000 m³ in 1993 to about 600 000 m³ in 2003 (FOWECA country outlook paper, Islamic Republic of Iran).

REFORESTATION AND AFFORESTATION

Table 2.3 provides an overview of the extent of plantations in the West and Central Asia region (for country details, see Annex, Table 5). In 2005 the total area of plantations in the region was estimated to be about 5 million hectares, or about 3.6 percent of global plantations.

Planted forests in the region account for just about 11 percent of the forest cover (7.3 percent for Central Asia and the Caucasus and 13.9 percent for West Asia). These forests, however, are unevenly distributed, with a small number of countries accounting for most of them. For example, Kazakhstan has almost 78 percent of the plantations in Central Asia. In West Asia, Iran and Turkey account for 83 percent of the plantations.

In Central Asia, the majority of plantations have been established for protective functions, while West Asia has established their plantations primarily for production (about 67 percent). Obviously, most production plantations are found in Turkey and Iran, especially in areas with higher wood productivity. Lebanon also has a high proportion of plantations, primarily established for the production of pine nuts (*Pinus pinea*). Uzbekistan implemented a state programme for growing poplars around villages and farms to increase the supply of construction timber, which has now become an important source of wood supply.

The poor information that is available warrants caution in interpreting plantation area estimates. The available data, however, suggest a slow pace of their expansion. Adverse growing conditions and the high costs of establishment and management limit the scope for commercial ventures, and hence efforts to promote private-sector involvement, as in Turkey (see Box 2.3), have not been effective. Almost all planting is undertaken by governments, and the pace is highly dependent on government priorities and budget allocation. Technical and financial constraints limit the scaling up of plantation efforts, even when their importance is recognized.

TABLE 2.3
Area of forest plantations ('000 ha)

Subregion/region	1990	2000	2005
Central Asia and Caucasus	1 274	1 323	1 193
West Asia	2 938	3 529	3 803
Total West and Central Asia	4 212	4 852	4 995
Total World	101 284	125 525	139 466

Adverse growing conditions, especially aridity, significantly enhance the cost of establishing and managing plantations. For example, all the plantations in the United Arab Emirates that extend over an area of more than 300 000 ha have been established through irrigation, and so have more than half of the areas of plantations in Iraq. A number of countries – Cyprus, Iran, Jordan, Oman, Saudi Arabia and Turkey – have developed and improved irrigation regimes and use treated sewage water for irrigating plantations. Obviously, the high investment requirement arising from the necessity to irrigate the plants is an important constraint in expanding plantation programmes.

BOX 2.3

Private plantations in Turkey

The government of Turkey has been promoting private plantations since the last decade. A total of 47 000 ha of land have been allocated for private plantations. Different incentives, including loans with low interest rates and land at low prices, are provided to increase plantations. Recent policy measures also include incentives to encourage private nurseries. However, the development of private plantations has not picked up because it is viewed as a commercially unattractive investment dependent on government funding.

Source: FOWECA country outlook paper, Turkey.

BOX 2.4

Some trends in reforestation and afforestation efforts in Central Asia and the Caucasus

- In the last decade before independence, the State Forest Fund in Georgia was undertaking reforestation at the rate of about 10 000 ha a year, but since then reforestation has been scaled down drastically and in 2004 the area reforested through NGOs was about 114 ha.
- The annual rate of reforestation/afforestation in Armenia was about 6 000 to 7 000 hectares between the 1960s and the 1980s. Since independence, the rate has declined dramatically, and in 2004 the extent of reforestation was only 644 ha.
- Annual reforestation in Tajikistan during the Soviet period was about 4 500 hectares; currently it amounts to no more than 2 200 ha.
- Although between 1968 and 1988 more than 15 000 field protection forests were established in Turkmenistan, since 1993 forestry activities have not been undertaken as the forestry sector lacks funds. Moreover, after 2000 a self-financing scheme was introduced, but protective measures that do not generate income have been completely neglected.

The improvement of the environment is a major objective in reforestation and afforestation programmes for almost all the countries. In many West Asian countries, degraded natural forests are being reforested not only to improve productivity but also to enhance ecological functions. Sand-dune fixation is another important thrust in most countries of the two subregions. Here again the differences in the political histories of the countries have influenced the pace of efforts. Prior to their independence, most countries in Central Asia and the Caucasus had a well-planned afforestation/reforestation programme with sufficient allocation of funds from state budgets, but once these countries became independent, programmes were scaled down because of insufficient financial, human and technical resources (Box 2.4). Although some countries are making efforts to improve the situation, many are finding it difficult to increase the scale of reforestation and afforestation.

URBAN FORESTRY

As the pace of urbanization accelerates, countries in West and Central Asia are paying increasing attention to urban forestry (Akerlund, 2005). During the Soviet period, city greening, or urban forestry, was well integrated with urban development in most Central Asia and Caucasus countries. Green zones were developed in and around the capitals of all the countries and were managed by the respective municipal authorities or state agencies. However, the economic decline after independence adversely affected the protection and management of the green zones. For example, the Yerevan forest belt in Armenia, which had encompassed an area of more than 1 370 ha, has decreased substantially because of urban expansion.

Recent years have, however, witnessed renewed efforts to improve the urban environment. Especially where governments are facing less resource constraints, urban forestry is receiving substantial attention. Political support for urban greening is strong in a number of countries, in Kazakhstan and Turkmenistan for example (see Box 2.5).

West Asian countries are also giving considerable attention to urban greening. The growth of some cities in West Asia as major centres of international tourism, trade and finance has encouraged greening efforts. Urban and peri-urban forests are playing an important role in protecting habitations from dust storms and improving amenity and recreation. Parks and gardens have been established at high costs to enhance the attractiveness of important urban centres in Bahrain, Kuwait, Oman, Saudi Arabia and the United Arab Emirates (Box 2.6). The extent of green space in Iran has increased from 6 000 ha in 1987 to about 14 000 ha at present. The Syrian Arab Republic also has undertaken a vigorous urban forestry programme, and forest plantations near cities have been transformed into recreation sites.

The management of urban forests and parks is primarily the responsibility of city administration. Urban forestry in most countries requires high investment, primarily because of the need for irrigation. However, the financial commitment

of municipal authorities is not always stable. Cyprus levies special taxes earmarked entirely to finance urban forestry. A number of countries are using wastewater to develop urban green spaces.

As tourism is now a major source of income, improving the urban environment is receiving high priority. In countries where governments (especially municipal administrations) have limited resources, urban forestry is mainly dependent on international support. Other than financing, a significant obstacle for the development and management of urban green spaces is the lack of specific laws

BOX 2.5

Greening of the capitals of Kazakhstan and Turkmenistan

In December 1997, the capital of Kazakhstan was transferred from Almaty to Astana. In 1998, city greening activities were introduced in the new capital, and by 2005 a total of 25 000 ha of green areas had been established by *Zhasyl Aymak* and its former body, a state organization specialized in greenbelt establishment for Astana. The greenbelts are managed by the municipal government and function as windbreaks and recreational spaces for residents. A total of 75 000 ha are expected to be planted by 2015.

Greenbelts around Ashgabat, the capital of Turkmenistan, have also been increasing since the late 1990s. More than 50 million seedlings were planted during the 1998–2004 period under the Greenbelt Programme, including 30 million seedlings planted in some 25 000 ha in and around Ashgabat. *Gok Gushak* (Joint-Stock Forestry Company) establishes an annual forestry plan, produces and sells seedlings and monitors the implementation of afforestation activities in collaboration with the Ministry of Nature Protection.

BOX 2.6

Urban forestry in the United Arab Emirates

The urban environment in all cities of the United Arab Emirates has been greatly enhanced by planting schemes, turning roadsides into gardens and roundabouts into mini-parks. In addition, there are extensive recreation parks where the shade from trees creates a pleasant environment, especially during the summer. In 1974, Abu Dhabi had only one public park, with very little greenery, but today the number of parks has increased to about 40 and they cover an area of more than 300 ha. The expansion of green areas in the United Arab Emirates is in line with the department's goal of extending the greenery cover to 8 percent of Dubai's total urban area. During 2003, another 30 ha were added to Dubai's greenbelt. At present, the planted area amounts to about 3.2 percent of the land area, or 2 200 ha.

Source: UNEP, 2002.

and regulations. There are also situations (e.g. Iran and Saudi Arabia) where urban expansion has adversely affected existing forests and plantations as they have been cleared for constructing roads and buildings.

TREE RESOURCES IN RANGELANDS

As shown in Table 1 of the Annex, there are extensive areas of range- and pasturelands with scattered tree growth in the West and Central Asia region. Rangelands occupy about 50 percent of the total land area in West Asian countries. Very little information is available on the condition of tree growth in these rangelands, but the perception is that the rangelands are deteriorating fast because of the increased pressure for fodder and woodfuel (see Box 2.7). The decline in traditional community management arrangements is an important contributing factor. Nomadic communities, which had owned and used rangelands, had set up management systems that prevented their overuse. However, subsequent government takeovers have undermined such community arrangements, and governments themselves have not been able to develop viable systems of management. Rangelands have thus become free access resources with no one taking responsibility to manage them. Although pastoralists are becoming increasingly dependent on purchased feed, mainly on imported barley and fodder grown under irrigated conditions, the increase in the livestock numbers has led to continued degradation of rangelands. The proportion of the nomadic population has declined because of the various efforts to settle them; increasingly immigrant workers are being hired to manage livestock.

BOX 2.7

Rangelands in West Asia

Rangelands occupy about 50 percent of the total area in West Asia. The vegetation cover is characterized by low tolerance, low plant density and coverage, and low species variability and plant productivity per unit area. Drought, overgrazing, uprooting of woody species for use as fuel, tillage and mismanagement of water resources are the principal causes of rangeland deterioration. It is estimated that about 90 percent of the rangelands are degraded or vulnerable to desertification. More than 30 percent of grazing land in Saudi Arabia is degraded. Deterioration of rangelands has also been reported in several other countries in West Asia.

The grazing intensity in most West Asian countries has more than doubled over the past four decades, mainly as a result of subsidized feeding, provision of water points and mechanization. Sheep density on some rangelands is more than one mature head per hectare – some four times the natural carrying capacity. It is estimated that the grazing capacity in the rangelands of the West Bank is exceeded by a factor of 5.7.

Source: UNEP, 2002.

Differing trends are seen in Central Asia and Caucasus countries and no definitive conclusions can be drawn because of poor data availability. With the collapse of Soviet Union, many of the large livestock collectives in Central Asia that supplied dairy products to other parts of the Soviet Union also collapsed, reducing the livestock population maintained in the collectives in some of the countries. There are also instances where livestock numbers have increased, adversely affecting certain areas, particularly those with high population densities where people maintain large herds for economic and social reasons. Overgrazing in these areas is a major cause of rangeland degradation.

WILDLIFE MANAGEMENT

Wildlife is another important natural resource in the region, but so far the resource has been used unsustainably in many of the countries (Czudek, 2005). Socio-economic problems in the Central Asian and Caucasus countries during the post-independence period have particularly undermined protection and management. The decline in wildlife is mainly due to two factors: increased hunting and the loss of habitat due to agricultural expansion. The main effort to improve the situation has been the establishment of protected areas. The region has about 3 percent of the land designated as protected areas and the current state of management of wildlife varies considerably.

Countries in the Central Asia and the Caucasus inherited the system of protected area management from the Soviet period. A large increase in the number and extent of protected areas in the region took place in the 1960s and up to the disintegration of the Soviet Union, except for Tajikistan where more than 60 percent of the country's protected areas was established in 1992. This enabled the conservation of a number of threatened species (such as the Persian gazelle, Markhor, Bukhara deer and the snow leopard) and ecosystems. The prevailing model for protected areas in many of these countries is the centrally controlled strict nature reserves (*zapovedniks*).

With the break up of the Soviet Union in 1991, the financial mechanism that supported the nature reserves and national parks collapsed. The collapse of the Soviet system also exposed the weakness in its approach of excluding local people from conservation efforts. Economic decline has particularly given nature protection a low priority. Threatened and endangered species that were strictly protected prior to 1991 are now being subjected to illegal exploitation. Trophy hunting has also increased, but weak regulations and institutional capacity to enforce rules limit the potential benefits – neither local communities are benefiting nor are conservation standards improving (see Box 2.8).

Countries in West Asia are making substantial efforts to protect and manage wildlife, especially by establishing a system of protected areas. Concerted efforts, through institutional arrangements with substantial support from various political levels, have helped to enhance the population of important species whose numbers had declined drastically due to hunting. For example, in Saudi Arabia, the National Commission for Wildlife Conservation and Development (NCWCD), established

in 1986, is responsible for managing most protected areas. The NCWCD is assisted by its two prominent research centres: the King Khalid Wildlife Research Centre and the National Wildlife Research Centre. The reintroduction of the Arabian Oryx, Sand Gazelle and Houbara Bustard are notable successes of the NCWCD. In some cases, non-governmental organizations (NGOs) are spearheading conservation efforts (see Box 2.9).

Following the ratification of the Convention on Biological Diversity, most countries have prepared National Environmental Action Plans (NEAPs) or National Biodiversity Strategy and Action Plans (NBSAPs). Although priorities may differ between countries, most of these programmes and plans adopt a common framework with considerable emphasis on awareness generation, assessment of the status of biodiversity and improvement of institutional capacity. In most cases, such initiatives are undertaken with financial and technical support from bilateral and multilateral organizations and international NGOs. Without external assistance many countries would have found it difficult to formulate national strategies and action plans. However, there is concern about the sustainability of these initiatives, especially because of resource constraints in translating strategies and plans into action. Implementation failures are also due to their inappropriateness to the local economic, social and political conditions.

In addition to participating in the global conventions, some of the countries are also signatories to regional and subregional strategies and priorities. Accessing external resources and enhancing collaboration, especially to address transboundary issues, are some of the objectives of the regional and global initiatives. The

Box 2.8

Trophy hunting in Central Asia

A recent study by TRAFFIC, a wildlife trade-monitoring network (Hofer, 2002), reveals that hunting tourism in Central Asia is evolving. Increasing numbers of foreign sport hunters hunt in the Central Asia region since the collapse of state-regulated markets, but little information exists about the level of reinvestment of these funds in conservation and local development. It has often been reported that few of the funds generated by foreign trophy hunting are actually spent on the conservation schemes for which they were intended. According to the author of the TRAFFIC study "Foreigners hunting highly prized and rare species such as wild sheep and goats present a potential source of foreign exchange income to remote and poor regions in Eurasia. Insufficient documentation reduces trophy hunting's potential benefits for conservation and to regional sustainable development. Without a clear understanding, motivation for law enforcement staff and incentives for enhancement of wildlife management systems remains limited" (Hofer, 2002).

Source: Czudek, 2005.

BOX 2.9

The Royal Society for the Conservation of Nature, Jordan

The Royal Society for the Conservation of Nature is an independent voluntary organization established in 1966 with the mission of protecting and managing Jordan's natural resources. The Society has been instrumental in establishing protected areas, captive breeding of endangered species and setting up nature conservation clubs in schools helping to enhance awareness about environmental conservation.

Source: Royal Society for the Conservation of Nature, Jordan, 2005.

dependence of these initiatives on external support is a major concern for their sustainability. No doubt biodiversity conservation is recognized as important, but in the context of overall resource constraints governments are unable to allocate adequate resources to improve management.

POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

Although most forests are publicly owned and managed, there are differences in policy and the legal and institutional frameworks, largely reflecting the differences in the political history of the countries.

Central Asia and the Caucasus

All the countries in Central Asia and the Caucasus have developed appropriate legal frameworks for forests after their independence. The basic laws are either the Forest Code or the Law on Forests. Some of the early legislation has already been revised (Armenia, Kazakhstan and Kyrgyzstan); are currently in the process of being revised (Georgia and Turkmenistan); or are in the pipeline for revision (Uzbekistan, for example, is establishing a new code). However, poor implementation of policies and legislation remains the fundamental problem, which largely stems from weak institutional capacity.

As most forests in the subregion are publicly owned, the government is the key actor influencing forest management, and what happens is largely determined by its overall ability to formulate and implement the various policies. Management is still largely centralized, with institutions such as *leskhoz*es (state forestry enterprises) having responsibility for implementing management plans. However, they face severe financial and technical problems and are yet to adapt to larger economy-wide changes. Since independence, most countries have attempted to restructure the state forest administration or the former State Committee on Forestry. Broadly, the institutional changes in forestry involve:

- integration of the functioning of the State Committee of Forestry in the relevant ministry (ministry of environment or ministry of agriculture);

- restructuring of the State Committee on Forestry as autonomous or semi-autonomous bodies responsible for all forestry activities (for example, Gok Gushak in Turkmenistan).

Frequent reorganizations, particularly changes of the controlling ministry, have created instability and in many cases the benefits have not been commensurate with the costs (see Box 2.10). The control of forestry agencies has shifted from agriculture to the environment ministry and back, causing instability and uncertainty in their functioning. Often these types of reorganizations also involve changes in leadership resulting in programme discontinuities and loss of institutional memory, thus weakening the overall technical and managerial capability. Another key institutional issue is that policy and management functions are not separated. Most forestry agencies continue to be responsible for both, and this has often led to conflicts of interests. Moreover, activities that generate income in the short term (including exploitation of wood and the use of state forest funds for agriculture) are given priority over conservation and rehabilitation.

The fragmented management responsibility between different agencies is another major problem in some of the countries. For example, in Tajikistan the Agency of Forestry and Hunting Facilities is responsible for forest management, while the State Directorate of Protected Areas “Tajik National Park”, under the same committee, is responsible for the management of protected areas. In Uzbekistan, protected areas are managed by several agencies – the main Forestry Department is responsible for several strict nature reserves and Zaamin National Park; the State Committee on Nature Protection for one reserve, an ecocentre and *zakazniks*; the local administration for several reserves, *zakazniks* and Ugan-Chatkal National Park; and the Committee of Geology for one nature reserve.

BOX 2.10

Institutional instability in Georgia

Insufficient financial resources due to economic hardship and inadequate human capacities are among the major obstacles to sustainable forest management in the region. In Georgia’s case, in addition to widespread obstacles, another challenge prevails after independence, in particular following the Rose Revolution. In the past few years, the turnover in personnel in Georgia’s state forest administration has been too frequent resulting in discontinuities in policy and programme implementation.

Some of the reasons for such frequent changes include removal of those employees involved in corruption, unattractive wages for professionals, lack of leadership and the changing of the political environment. Institutional instability makes it difficult for employees to carry out their activities and for external supporters to assist in forestry activities effectively.

Under this arrangement, coordination of protected areas becomes extremely difficult.

Increasingly, other government agencies also play an important role in promoting forest management, particularly the agencies in charge of agriculture, economy, education and statistics. For instance, recently the Kazakh Ministry of Education is promoting students' engagement in tree planting under the state programme *Zhasyl el* (Green Nation) in collaboration with the Ministry of Agriculture. In Turkmenistan, all the state agencies have to shoulder the responsibility (including provision of resources) for the green zone development in the country, which is based on the plan developed by Gok Gushak and the Ministry of Nature Protection.

West Asia

Policy and legal framework. The legal framework for forestry in the West Asia region varies among the countries. Forest legislation in Cyprus dates back to 1939 and has been periodically updated. Currently, efforts are under way to align it with European Union rules and regulations. Turkey also has a long history of legislation aimed to protect the forests from overexploitation. However, frequent changes in legislation, especially relating to ownership, have led to a number of problems, especially in demarcating forest boundaries (see Box 2.11). The government is currently preparing a reform package within the framework of European Union adaptation and is hoping to achieve more stability. Iran's forestry laws also have been in place for some time, since 1968, and have been amended

BOX 2.11

Legal and ownership changes in Turkey

- Turkey's first forest law was enacted in 1917.
- Forest Law No. 3116 enacted in 1937 established the first legal definition of forests and introduced the first set of forest policies.
- Forests were nationalized in 1945 to prevent their destruction by national and foreign contractors.
- Following the 1950 election, nationalized forests were restituted to their former owners.
- All forests, state and private, were brought under state supervision as per the provisions in the second constitution, adopted in 1961.
- A 1970 amendment to the constitution excluded forest land that had lost forest characteristics before 1961.
- The third constitution (now in force) broadened the criteria for exclusions and extended the cutoff date for exclusion from 1961 to 1982.

Source: FOWECA country outlook paper, Turkey.

several times since. All these countries have had a long history of forest protection through legislation that has been developing ever since they were established.

Laws regulating forest management in some countries, for example Jordan, focus mainly on prohibitions and limitations. Planning, management and development issues often receive insufficient attention. Lebanon has more specific legislation within its forestry sector. Under the Forest-related Regulations, for example, a natural protected area – Al Shouf Cedars – was established to preserve forest, plant and animal wealth; in addition charcoal production was banned, except for controlled production under certain conditions (this amendment was made to cater to poor communities that are dependent on charcoal).

In countries that have the least forest cover, forest legislation is limited to general environmental protection laws (Bahrain, Kuwait, Qatar and the United Arab Emirates); grazing regulations (Kuwait and Oman); and designations of protected areas for mangroves (Bahrain and Qatar). As for Saudi Arabia, its Forest and Rangeland Regulations have been in effect since 1978 and deal with the protection of vegetation, forests and rangelands, and the regulations for their use. The Saudi Arabia legal system is based on the Shariah, and provides a good foundation for sustainable development based on the wise use of all natural resources.

In the remaining countries, the legislative framework is either weak or not properly enforced. Yemen's Forestry Law has been in draft form since 1990 and the current environmental protection law only tackles forestry in general terms. In Afghanistan and Iraq, forestry laws exist, but current instability limits their implementation.

Institutional arrangements. In most countries of the region, forest land is state property, and public forest services and institutions have been responsible for their management. The Ministry of Environment and Forestry is responsible for all forestry activities in Turkey, while the forestry department of the Ministry of Agriculture is responsible for forestry activities in many of the other countries. Although the central government of the United Arab Emirates does not have a forestry department, there are forestry departments in the emirates of Abu Dhabi and Al Ain. Kuwait and Bahrain do not have any designated authorities responsible for forestry.

The recent trend in many countries is to transfer the responsibility of forest management to environment ministries. This reflects the growing concern for the provision of environmental services and the declining importance assigned to their productive functions. However, the lack of a clear mandate for different institutions in managing forest and rangeland resources is a major problem in most countries. Competition, the duplication of efforts and lack of cooperation are some of the main institutional challenges facing a number of countries.

NGOs are playing an increasingly important role in environment and forestry issues in many countries of West Asia. Generally, NGOs are active in areas that are not covered by governmental institutions or the private sector. NGOs

are more active in such countries as Cyprus, Jordan, Lebanon, the Syrian Arab Republic, Turkey and Yemen. Support received by the NGOs varies, and many of them depend on governments or international NGOs for financing their activities. There are also, however, independent NGOs addressing environmental and social issues.

Involvement of the private sector in forest management is limited and largely due to two factors: ownership issues, and the low productivity and poor commercial viability. The private sector is mostly involved with management tasks on a contract basis, such as forest protection. The private sector is of course the lead player in forest industries and in the trade of forest products.

There is also greater recognition of the role of local communities in decision-making relating to forests and woodlands, although many of the existing laws are yet to accommodate this. As noted earlier, before the advent of government control, communities were responsible for management of forests and pasturelands and they had workable arrangements that prevented overexploitation. These systems have disappeared. In most cases, government control through legislation undermined community management; however, at the same time, governments have not been able to provide an effective mechanism to manage the resources sustainably, particularly catering to local needs.

STATUS OF FORESTS AND FORESTRY: AN OVERVIEW

West and Central Asia is a low forest cover region; in 17 of the 23 countries forests cover less than 10 percent of the land area. The region accounts for around 1.1 percent of global forest cover. Productivity is extremely low because of the harsh environmental conditions and the preponderance of arid and semi-arid lands. Apart from a few countries, forest area is reported to be stable, although absence of reliable data makes it difficult to draw definitive conclusions. There are also differences in the definitions of forests and woodlands, and the classification system based on ownership adopted by the Central Asia and Caucasus countries – the State Forest Fund – seldom provides an indication of the actual ecological status or the way the land is used.

Most of the countries in the West and Central Asia region have extensive rangelands with scattered tree growth; however, information on their status is limited. Agroforestry is practiced quite extensively, especially by establishing windbreaks and shelterbelts in order to protect agriculture lands from desiccating winds. The region accounts for about 5 million hectares of planted forests, but much of this area is concentrated in a few countries with most of it established to fulfil environmental functions. Arid and semi-arid conditions make irrigation imperative for the success of afforestation and reforestation and urban forestry. A number of countries are using treated wastewater for establishing urban green spaces. The high costs of establishment and low productivity make industrial wood production uneconomical.

Policies and institutions in the forest sector have been largely geared to the provision of environmental services; however, the economic and social conditions

prevailing in most countries impose severe constraints on the institutions and in many cases the full potential of the available resources are not fully captured. While a number of countries are able to import most of the wood and wood products required, there are others that continue to depend on domestic supplies.