

People, Forests and Trees
in the West and Central Asia:
The Outlook for 2020

**FINAL REPORT ON
THE FORESTRY OUTLOOK STUDY
FOR WEST AND CENTRAL ASIA (FOWECA)**

Draft for discussion

FAO, Forestry Department
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TABLE OF CONTENTS

EXECUTIVE SUMMARY	V
1 INTRODUCTION.....	1
1.1 BACKGROUND.....	1
1.2 STRUCTURE OF THE REPORT.....	3
2 CURRENT STATE OF FORESTS AND FORESTRY	5
2.1 INTRODUCTION.....	5
2.2 AN OVERVIEW OF LAND USE.....	5
2.3 FOREST AND TREE RESOURCES.....	6
2.4 GENERAL TRENDS IN FOREST MANAGEMENT.....	12
2.5 PROVISION OF GOODS AND SERVICES FROM FORESTS.....	22
2.6 ECONOMIC SIGNIFICANCE OF FORESTRY.....	38
2.7 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK	40
2.8 SUMMARY OF KEY FORESTRY ISSUES.....	44
3 FACTORS IMPACTING FORESTS AND FORESTRY	47
3.1 INTRODUCTION.....	47
3.2 INTERNAL DRIVING FORCES.....	48
3.3 POLITICAL DEVELOPMENTS, POLICIES AND INSTITUTIONS	68
3.4 TECHNOLOGICAL CHANGES.....	75
3.5 CHANGES IN THE EXTERNAL ENVIRONMENT.....	76
3.6 SUMMARY OF KEY CHANGE DRIVERS.....	79
4 THE FUTURE OF THE FOREST SECTOR.....	83
4.1 INTRODUCTION.....	83
4.2 APPROACH TO DEFINING SCENARIOS	84
4.3 PROBABLE SCENARIOS IN THE REGION	89
4.4 OVERALL FORESTRY SITUATION IN THE REGION IN 2020	96
4.5 OVERVIEW OF SCENARIOS AND THEIR IMPLICATIONS.....	100
5 BUILDING UP A FUTURE: PRIORITIES AND STRATEGIES.....	103
5.1 DEFINING PRIORITIES AND STRATEGIES.....	103
5.2 IDENTITY OF OBJECTIVES AND APPROACHES	103
5.3 SCENARIO SPECIFIC STRATEGIES.....	106
5.4 SUMMARY OF PRIORITIES AND STRATEGIES.....	111
6 SUMMARY AND CONCLUSIONS	113
6.1 KEY FINDINGS	113
6.2 PRIORITIES AND STRATEGIES.....	116
6.3 FOLLOW UP WORK	119
REFERENCES	121

LIST OF TABLES

Table 2-1	An overview of land use	6
Table 2-2	Extent of forests and other wooded land in 2005.....	7
Table 2-3:	Growing stock in the forests and woodlands in West and Central Asia.....	9
Table 2-4	Change in extent of forest and other wooded land 1990 - 2005 (in 000 ha).....	11
Table 2-5	Planted forests in the West and Central Asia region	15
Table 2-6	Extent of terrestrial protected areas (IUCN categories I-IV Areas).....	20
Table 2-7	Production, consumption and trade of important wood products – 2004 (in 000 m ³ / tonnes)	22
Table 2-8	Production and consumption of industrial roundwood*	24
Table 2-9	Production and consumption of wood based panels*	26
Table 2-10	West and Central Asia - Major Watersheds.....	32
Table 2-11	International tourist arrivals in some of the countries in West and Central Asia.....	35
Table 2-12	Tourism in West and Central Asia – Strengths, Weaknesses, Opportunities and Threats	36
Table 3-1	Potential impact of demographic variables on forests and forestry	49
Table 3-2	Population change in the West and Central Asia Region	50
Table 3-3	Growth rate of population	51
Table 3-4	Age class distribution of population in the WECA region.....	55
Table 3-5	Potential impact of important economic variables on forests and forestry.....	57
Table 3-6	GDP per capita in the West and Central Asia Region	59
Table 3-7	Ownership of Forest and Other wooded land 2000	72
Table 3-8	Indicators of innovation and its diffusion	75
Table 4-1	Possible direction change under different scenarios	96
Table 5-1	Priorities and strategies.....	111

LIST OF BOXES

Box 1-1	Countries covered by FOWECA	1
Box 2-1.	State forest fund for pasture use in Tajikistan.....	9
Box 2-2.	USSR forest classification system	13
Box 2-3.	Collective vs. individual forest management in Tajikistan.....	13
Box 2-4	Private plantations in Turkey:.....	16
Box 2-5	Some trends in reforestation/ afforestation efforts in Central Asia and the Caucasus	17
Box 2-6.	Greening of the capitals of Kazakhstan and Turkmenistan	17
Box 2-7	Urban Forestry in United Arab Emirates	18

Box 2-8	Rangelands in West Asia	19
Box 2-9	Trophy hunting in Central Asia.....	21
Box 2-10	Wood industry in West Asia	23
Box 2-11	Changes of wood industry in Cyprus	25
Box 2-12	MDF Consumption in Iran and imports from Turkey.....	26
Box 2-13	Double hardships—limited legally-harvested fuelwood and decreased energy supply.....	27
Box 2-14	Decrease in woodfuel consumption in Iran.....	28
Box 2-15	Pistachio forests in Turkmenistan	29
Box 2-16	International trade of NWFPs from West Asia	30
Box 2-17	Biodiversity hotspots in West and Central Asia.....	30
Box 2-18	Agriculture expansion: a threat for biodiversity conservation.....	31
Box 2-19	Desertification in West Asia.....	33
Box 2-20	Human induced desertification is the Aral Sea	34
Box 2-21	Institutional instability in Georgia.....	41
Box 3-1.	Urbanization in Kazakhstan	54
Box 3-2	Jordan – Resource constraints	60
Box 3-3	Kazakhstan: The next Asian Tiger	60
Box 3-4	Poverty in Yemen and Turkey.....	62
Box 3-5.	Yemen: Impact of growth	63
Box 3-6	Shifts in the location of agriculture areas:	64
Box 3-7	Change in livestock management in Saudi Arabia	66
Box 3-8	Declining income from agriculture in the Balkans and Central Asia	67
Box 3-9	War, agriculture production and illegal logging	68
Box 3-10	Political transition in Central Asia and the Caucasus.....	68
Box 3-11	Political Participation in Arab countries.....	69
Box 3-12	Legal framework for public participation in forest management in Central Asia*.....	70
Box 3-13	VILLAGE COOPERATIVES IN TURKEY.....	71
Box 3-14.	Turkmenistan and Georgia: Contrasting economic systems	72
Box 3-15	The Royal Society for the Conservation of Nature, Jordan.....	73
Box 3-16	State of civil society development in Arab countries.....	73
Box 3-17	Afghanistan -Instability and weak institutional framework.....	74
Box 3-18	The Pan-European Biological and Landscape Strategy	78
Box 4-1	Scenarios - Definition	83
Box 4-2	Arab Human Development Scenarios.....	84
Box 4-3	Key characteristics of the scenario “Reshaping-the-future”	90

LIST OF FIGURES

Figure 2-1 State Forest Fund and its forest cover	8
Figure 2-2 Trends in the production and consumption of sawnwood.....	25
Figure 2-3 Production and consumption of paper and paper board (in 000 tonnes).....	27
Figure 2-4 Contribution of forestry sector to GDP (including furniture)	38
Figure 2-5 Trends in employment in the forestry sector (including furniture)	39
Figure 2-6 Employment in the forest sector (including furniture) as proportion of total labour force	40
Figure 3-1 State of forests	47
Figure 3-2 Urbanisation	52
Figure 3-3 Population and urbanization in 2005 and 2020.....	53
Figure 3-4 Real GDP change in the West and Central Asia Region.....	58
Figure 4-1 Possible Scenarios.....	95
Figure 4-2. Trends in the consumption of key forest products in the WECA region	98
Figure 4-3 Trends in Wood fuel Consumption 1980-2020	99

EXECUTIVE SUMMARY

INTRODUCTION

1. The Forestry Outlook Study for West and Central Asia (FOWECA) is one among the FAO's regional outlook studies undertaken to provide a long term perspective of changes in the forest sector. FOWECA was initiated in 2004 in response to the recommendations of the 15th Session of the Near East Forestry Commission. Implemented in partnership with the countries, this outlook study covers 23 countries, in Central Asia, the Southern Caucasus and West Asia. Using 2020 as the reference year, FOWECA aims to provide a long-term outlook for the development of the forest sector in the region.

STATE OF FORESTS AND FORESTRY IN THE REGION

Forest cover and changes thereof

2. The extent of forests and wooded lands in the West and Central Asia region is relatively limited compared to other regions of the world. Excepting in a few countries, the overall environmental conditions in the region are unfavourable to tree growth. The region accounts for about 1.1 percent of the global forest cover and about 5.2 percent of other wooded land cover. Seventeen out of the 23 countries have forest cover less than 10% of their land area

3. Planted forests in the region accounts for just about 11.6 percent of the forest cover (7.3 percent in the case of Central Asia and the Caucasus and 13.9 percent in the case of West Asia) in the entire Region. However, they are unevenly distributed with a small number of countries accounting for most of the planted forest area.

4. The area under forests and wooded lands has remained rather unchanged in the region during 1990 to 2005 and in some countries there has been a marginal increase. However, caution needs to be exercised in interpreting information, especially in the absence of any recent efforts to undertake detailed inventories. Further, most of the countries have a very low base figure and stability of this should not be seen as a positive aspect.

Wood and non-wood forest products

5. The current level of production of industrial roundwood and wood products is very limited and there is high dependence on imports. Higher the degree of value addition, greater the dependence on imports. The per capita consumption of wood and wood products is substantially lower than that of the global consumption. In view of the low domestic production, West and Central Asia region is the largest net importer of wood and wood products in world with an import bill of US\$ 7.0 billion in 2004.

6. Despite holding nearly two-third of the global fossil fuel reserves, woodfuel still forms an important source of household energy for a large proportion of people. This is particularly so in the non-oil producing countries. Illegal removal of firewood and charcoal is widespread and is an important factor contributing to degradation of forest and rangelands.

7. Non-wood forest products (NWFPs) are important source of livelihoods in all the countries in the West and Central Asia region. They range from products used for local consumption to products which are traded in the international markets. However, insufficient information, especially on account of the unorganized nature of collection, processing and trade, makes it difficult to assess their overall contribution.

Environmental services

8. Forests and woodlands in the West and Central Asia region provide a number of environmental services, like conservation of biological diversity, protection of watersheds and arresting land degradation and desertification. In many countries, there is increasing emphasis on the recreational and amenity functions of forests and woodlands and substantial investments are being made to establish and manage urban and peri-urban forests. Environmental services provided by forests are probably more important than their productive functions for most countries in the region.

9. The region has about 2.9 percent of land under protected areas (IUCN category I to IV) and some impressive efforts have been made to protect unique ecosystems and species, including through capture breeding. However, the overall state of management of protected areas requires substantial improvement. Loss of habitat, especially on account of agriculture expansion and hunting are the main factors contributing to the decline of wild life in most countries in the region.

10. Forest based ecotourism is an important environmental service that is gaining prominence in many countries. Increasing income has led to a rapid expansion of tourism that in some countries are having adverse impacts on the vegetation, especially in view of the limited management capacity.

11. As the pace of urbanisation accelerates, many countries are paying increasing attention to urban forestry. Green zones have been developed in and around important urban centres. There are however situations where existing forests, including planted forests, have been cleared to make space for urban expansion.

Role of forests in the national economies

12. In view of the poor growing conditions, the direct economic contribution of trees and forests to the national economies is negligible in most countries, except Turkey and Georgia. In 1990 value added generated by the forestry sector in the Region was about US\$ 3.5 billion and this has by 2003 increased to about US\$ 4.0 billion. However, the relative share of the forest sector in the GDP has declined from 0.6% in 1990 to about 0.4% in 2003

13. Availability of resources for forest management remains a key issue for most countries. The focus on the provision of environmental services and the limited opportunity to earn income from the provision of such services makes it imperative for continued public funding for forestry, although the resource situation in many countries imposes severe constraints for such support.

FACTORS IMPACTING FORESTS AND FORESTRY

14. The state of forests and forestry and the flow of goods and services from forests and woodlands are affected by the actions of a multitude of actors/ stakeholders, especially, governments, private sector, farmers, communities, non-governmental organizations, etc. These actions will be influenced by the collective impact of a number of internal (pertaining to the situation within the country) and external factors (regional and global developments).

Demographic changes

15. Demographic changes in conjunction with other factors tend to have direct and indirect impacts on land use in general and forests in particular. Some of the important demographic factors that could have direct and indirect impact on forests and forestry are:

- Between 1980 and 2005, the population in the region has registered an increase from about 207 million to 361 million. Estimates based on projections indicate an average annual growth rate of about 2 percent, resulting in a total population of 487 million by 2020.
- Current trends of urbanization will persist and intensify in the next 15 years. Central Asia will still be largely rural with about 51 percent of the population living in rural areas, whereas West Asia will be primarily urban with 78 percent living in urban centres.
- In view of the high proportion of population in the age group 0 – 15 now, the next two decades will see a substantial increase in the proportion of people in the working age. Finding remunerative employment and addressing the needs and aspirations of a generation with differing values will be a major challenge.

Economic changes

16. Much of the economic vibrancy of the region depends on the rapid growth of income from the exploitation of oil and natural gas and the primacy of oil as the most important source of energy is unlikely to be affected in the next 15 years, helping to sustain high growth rates of the oil producing countries. The situation of other countries will however be very different.

17. Apart from increase in income and changes in its distribution, the sectoral shifts will probably be more important in the context of forest and tree resources management. As opportunities improve, cultivated area is likely to decline in a number of countries, improving the opportunity for forest recovery.

Political and institutional changes

18. The WECA Region has witnessed profound changes in the political situation during the last two decades. These changes, in particular the emergence of democratic governments coupled with the increasing role of private sector, local communities, civil society organizations and other stakeholders will have a profound impact on the management of forest and tree resources.

19. One of the most important factor that will influence the overall social, economic and political environment in the West and Central Asia region is the regional and global economic and political situation, reflected in the (a) rapidly evolving geopolitics and (b) the pace of globalisation. Both the sub-regions are in the centre-stage of global geopolitics on account of its vast fossil fuel resources.

20. A key factor that affects forests and forestry is the continuing conflicts in a number of countries in the region. Forested regions are particularly prone to this. For example, insecurity in some of the areas in Afghanistan has virtually prevented any management, encouraging illegal logging. Conflicting claims between Armenia and Azerbaijan on the vast tracts of forests and other land bordering the two countries has led to neglect of management, exposing the forests to illegal extraction. Extensive areas of tree growth in Iraq has been destroyed or deliberately removed to deny cover to insurgents.

Changes in the external environment

21. Although there is considerable uncertainty, a number of external factors including the changing global geopolitics, the pace of globalization, international and regional agreements relating to economic cooperation, environment, etc. will have direct and indirect impacts on land use in general and forests in particular. Especially the membership of countries in regional economic cooperation arrangements will have profound impact on policies and institutions, as is already evident in the case of the current and prospective member countries of the European Union.

PROBABLE SCENARIOS AND THEIR IMPLICATIONS

Scenarios

22. Evidently the diversity of forestry situation now will persist in view of the differences in the impact of various driving forces. To understand the differences in the paths of development and to indicate the appropriate interventions, the study adopts a scenario planning approach. Combining the current and anticipated changes in the economic situation and the probable direction of institutional development, the study has identified three probable scenarios of development. These scenarios are:

- Strong diversified economies and well developed institutional arrangements: **“Reshaping- the- future”** ;
- Economies growing rapidly, but institutional development lagging behind: **“Living-in the-present”**; and
- Weak economies and poorly developed institutions **“Struggling –with- the –past”**.

Implications of scenarios

23. Table below summarises the likely impact of the different scenarios on key indicators of forest management.

Possible direction of change under different scenarios

Indicators	Reshaping the future	Living in the present	Struggling with the past
Forest cover	↗	↔	↘
Degradation/ desertification	↘	↔	↗
Biodiversity	↗	↘	↘
Forest health	↗	↔	↘
Wood production	↘	↘	↘
Industrial wood demand	↗	↔	↔
Woodfuel demand	↘	↘	↗
Recreational services/ecotourism	↗	↔	↘
Urban forestry	↗	↔	↘

Overall situation in the regionForest cover, degradation and ability to implement sustainable forest management

24. Extent of forests and woodlands is expected to increase in most countries largely on account of the decline in the importance of agriculture (including animal husbandry) as the main source of income and employment. Increasing urbanization and development of the manufacturing and services sectors could see a reversal of agriculture expansion. There will also be some increase in afforestation/ reforestation that will help to compensate the loss of forests, although not the loss of biodiversity. Most of the afforestation efforts will be focused on environmental improvement, especially through establishment of shelterbelts and wind breaks and the creation of urban green spaces.

25. Degradation will remain a major problem that several countries – forested as well as low-forest cover – have to confront. In a number of countries where substantial forest cover exists now, an increase in timber exploitation – both legal and illegal – could be anticipated.

26. Although there may be some increase in the forest cover, the ability of the countries to implement sustainable forest management will remain limited. This will require substantial efforts in the policy and institutional fronts. Problems like forest fire are expected to worsen.

Demand for wood and wood products

27. Growth in population, increases in income and the changes in lifestyles, especially on account of urbanisation will alter the level of wood products consumption. During the next 15 years consumption is expected to grow at an average annual rate of 3-4% in the case of sawnwood and 4-5% in the case of wood-based panels and paper and paper board. Faster growth (in relative terms) is expected in Central Asia, whose economies are

on the path of recovery. The value of forest products imports is likely to double in the next 15 years (from the 2004 level of US\$ 7.0 billion) making it the most important net global forest products importing region.

28. The scope for enhancing industrial wood supplies from within the region is extremely limited and most of the demand will be met by increased imports from outside the region. Some of the countries that are strategically located and have a large domestic market (for example Iran and Turkey) will be in a better position to develop forest industries based on imported industrial roundwood. Declining profitability of wood industry in Europe could further speed up relocation of industries, to the advantage of some of the countries in the WECA region with low labour costs, stable investment climate and ability to import industrial wood and other raw materials.

Demand for environmental services

29. Considering the general upward trend in income in most countries, an increase in the demand for environmental services is inevitable. Improvement in transport (for example the revival of the Silk Road) and communications coupled with political stability and improved security are expected to boost international and internal tourism in the WECA region. Urban forestry is another area that will witness substantial expansion, as some of the countries diversify their economic base by expanding banking, trade, tourism and other service sectors. However, forests and woodlands close to urban areas will be subjected to intense pressures for conversion and for recreation.

30. The demand for protection of agriculture land and habitations from desertification and land degradation will also increase, resulting in higher investments in the establishment of shelterbelts and windbreaks. Much of this will however depend on ability of the key players, namely governments and farmers, to make such investments.

PRIORITIES AND STRATEGIES

31. The priorities and strategies will differ across the countries depending on the current and emerging economic and institutional scenarios. As the overall economic and institutional environment changes, the demand forest products and services as also the ability of the society to meet them will undergo changes. However, in view of the broad similarities of the environmental and socio-economic conditions, it is possible to identify some common priorities and strategies as indicated below.

Common priorities

Emphasis on environmental services

32. Considering the current environmental situation in the region – the arid and semi-arid conditions, the high level of desertification, declining agricultural and range productivity on account of land degradation, loss of biodiversity, increasing water stress, etc.,- provision of environmental services will be the most important concern for almost all countries. Use of forests for recreational uses in the form of eco-tourism is another growth area, especially in view of the growth of domestic and international tourism.

Integrated approach to resource management

33. Addressing the problems of provision of environmental services and production of wood and other products requires policies and strategies that cut across the different land uses and sectors. Often addressing such problems requires a landscape approach. This would imply that forestry will not be able to exist as a distinct sector, but forestry concerns are well integrated with other land uses, mainstreaming aspects like growing/ managing trees into all land uses.

Policy and institutional changes

34. The focus on provision of environmental services and the need to adopt an integrated approach to resource management would necessarily imply substantial improvements in the policy framework and institutional arrangements relating to land use in the region. Traditionally forest policies have largely focused on areas that are under the control of public sector forestry agencies (State Forest Funds as in the case of many former Soviet Republics). Adoption of an integrated land use approach requires going beyond the traditional domain of foresters, requiring more broad-based approaches and attendant skills.

35. Formulation and implementation of policies for integrated land use management also requires more broad-based institutions than what most countries currently have. Revamping public sector forestry agencies, which currently play a dominant role, will require a re-examination of the core values, functions and structures and to make appropriate changes. Increasing role of private sector, community groups and civil society organizations provides new opportunities for the production of forest products and environmental services. In some cases this would require substantial re-invention of existing institutions.

Sub-regional, regional and international collaboration

36. Common history, economic interdependence and ecological contiguity of countries in the region underscore the importance of inter-country collaboration at different levels. Sharing of information and technology and undertaking joint initiatives are particularly important to reduce costs and more importantly to enhance the effectiveness of resource management initiatives. Sub-regional and regional collaboration is particularly important in addressing problems like fire and pest and disease management. Management of trans-boundary protected areas is another area where inter-country collaboration is particularly important, or even a necessity. Resource assessment, education, research and training are other areas that could significantly benefit (especially by way of reducing costs) from sub-regional and regional collaboration.

Scenario-specific strategies

37. Differences in the current and emerging economic and institutional environment necessitates that countries fine-tune their priorities and strategies to make them relevant to the specific scenarios.

Struggling with the past

38. There are a number of countries that are currently with poorly developed economies and weak institutional capacities, confronting the scenario “Struggling with the past”. Priorities and strategies to address forestry issues will have to take cognizance of the severe financial and human resource constraints and forestry is unlikely to receive high priority. Under such a situation the emphasis should be on less resource demanding options largely relying on local/ traditional institutions, or to “Build up from the base”. Interventions should thus emphasize on:

- Meeting basic needs of the people sustainably;
- Building up local institutional capacity;
- Improving/ adapting local level technologies and upgrade skills; and.
- Focus on less resource demanding investment options

Living in the present

39. Although the resource situation is less precarious under this scenario the rapid growth of a dominant sector (that generates most of the economic surpluses) undermines the economic viability of most other traditional sectors. A major problem is that while production aspects of forests and forestry are unlikely to get much political attention, they are also less economically viable, especially in view of low productivity and the high real costs of inputs like water. Priorities and strategies will have to be designed taking this into account. The overall approach of “Improve fundamentals and change direction” would involve the following components:

- Encourage pluralistic institutional arrangements;
- Improve the role of public sector agencies as facilitator in support of development of other institutions; and
- Upgradation of technologies and skills.

Reshaping the future

40. Countries in this scenario are in a relatively better position on account of their balanced economic and institutional development. However, they operate in a highly globalised situation in that their economies are closely intertwined with that of other countries. Policy processes and legislation will have to comply with regional and international agreements as also take into account the perception of stakeholders outside the country. Especially participation in regional economic cooperation bodies like European Union implies the need to be more competitive and efficient. Policies relating to energy, agriculture, environment, etc. at the regional level will have significant impacts and it will be necessary for countries to adjust/ adapt to the changing policies and legislation in these areas. Strong external linkages also increase competition in both domestic and external markets and this would necessitate continuous scaling up of the quality of products and services provided. The overall approach under this scenario could be summarised as “Keep moving forward” and the focus will be on the following:

- Maintain vibrancy of institutions and their adaptability;
- Invest in human skills to improve efficiency and competitiveness; and

- Focus on unique/ high value products and services

FOLLOW UP

41. The next 15 years are likely to witness significant political, economic, social and environmental changes in the region, especially as the countries become more integrated into the world economy and new opportunities and challenges emerge. The broad priorities and strategies outlined under different scenarios are indicative, and they need to be elaborated for specific situations based on more in-depth assessment of the situation. This is a task that needs to be pursued at the country level. Some of the areas for follow up are indicated below:

Mainstreaming FOWECA findings in the national forest programmes

42. The Forestry Outlook Study for West and Central Asia provides a broad indication of the emerging opportunities and challenges and outlines the overall context of forestry development. These need to be taken on board in developing and refining the national forest programmes.

Institutional adaptation/ reinvention

43. FOWECA has clearly indicated the need for substantial strengthening of institutions dealing with forests and forestry in the region. In many cases existing institutions have failed to adapt to the overall changes and thus their ability to address current and emerging issues has been undermined significantly. There is therefore a strong case to review the institutional framework and where necessary to reinvent them to address the emerging challenges.

Capacity building in strategic planning

44. Although forestry is a long term investment, the ability to develop and implement long term strategic plans in the sector in the FOWECA countries is poorly developed. Substantial country level efforts are required to improve the capacity to undertake strategic planning, taking into account intersectoral linkages and visualising the long term changes outside the sector. This is all the more important in the context of adopting an integrated approach to land and natural resources management.

Review and updating

45. A major challenge for all outlook studies is the change in the various assumptions that form the basis of the analyses. A number of internal and external factors influence the forest sector and often the ability to foresee changes and to assess their consequences is limited. There is therefore a need to assess the changes regularly and analyse the implications to make appropriate adaptations of priorities and strategies.

Improving the information base

46. A related issue is the poor state of information on forests and forest products and services. Most countries in the region have not been able to provide recent information on

the area under forests and other wooded lands, the condition of forests, growing stock, etc. Same is the case with regard to production, consumption and trade of forest products. Although environmental services from forests are becoming important, here again information on bio-physical and economic aspects of their provision is very poor. Weaknesses in this regard make it extremely difficult to undertake any meaningful planning. There is therefore an urgent need to develop strengthen the information base in support of strategic planning.

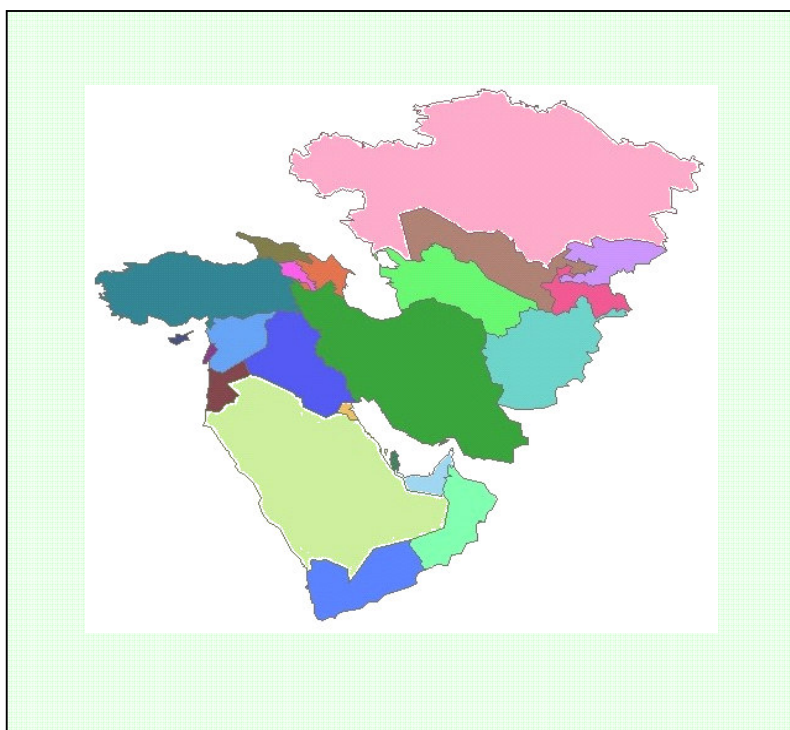
1 INTRODUCTION

1.1 BACKGROUND

1. The West and Central Asian and Caucasus countries have relatively limited extent of forests and trees in comparison with countries in to other regions of the world. Excepting in a few countries, the environmental conditions in the region, largely arid and extreme temperature variation, are unfavourable to tree growth. Consequently the direct economic significance of forests and forestry through production of wood and wood products (including income generation and employment) is generally insignificant in the region. However, growing concern about environment, especially desertification, water scarcity, loss of biodiversity and the need to improve the environment, especially in the urban areas, is giving an impetus to forests and forestry.

2. The significance of forests and trees in protecting the natural and human environment and supporting the livelihood has been well recognized in the region, such as preventing desertification, protecting watersheds, conserving soils and providing fodder to livestock. However, such functions have increasingly come under threat, especially in Central Asia and the Caucasus after the collapse of the Soviet Union. Subsequent economic hardships brought various challenges to the forest sector, including a decline in state funding and human resources to manage forests and other wooded lands, a substantial increase in uncontrolled harvesting, and the inability to pay for imported timber.

Box 1-1 Countries covered by FOWECA



3. In West Asia, the increasing demand on environmental services from forests and trees is the common trend in every country. Countries with strong economy have implemented a number of afforestation and reforestation programmes. Further, urbanization is increasing the demand for green spaces and urban greening is an important function of city administrations. Production of wood, including woodfuel, has been scaled down or in some cases banned completely, especially in

countries which are able to import them. However, there are others with low incomes and high levels of poverty with high dependence on forests and other lands for woodfuel, often with very little management and thus resulting in degradation. Also, rangeland degradation is a critical problem in many countries.

FORESTRY OUTLOOK STUDY FOR WEST AND CENTRAL ASIA (FOWECA)

4. Almost all countries have ongoing programmes in support of forests and forestry. However, the level of efforts differs depending on the nature of problems and the capacity of the different stakeholders to address them. Understanding the emerging issues and assessing changes in broader context are critical to provide a better outlook and to prioritise interventions. Especially with the increasing interaction among countries, what happens at the regional and global level will have direct and indirect impacts on the forest sector at the national level. It is in this context that the Food and Agriculture Organization of the United Nations (FAO) initiated the Forestry Outlook Study for West and Central Asia (FOWECA) in response to the recommendation of the 15th Session of the Near East Forestry Commission. Implemented in partnership with the countries, this outlook study covers 23 countries, in Central Asia, the Southern Caucasus and most of the countries in West Asia. (Box 1-1).

Objectives of FOWECA

5. FOWECA aims to provide a long-term perspective of the development of forest sector in the region, taking into account the wider economic, social, institutional and technological changes. Using 2020 as a reference year, FOWECA analyses the trends and driving forces that will shape the sector in the future. Alternative paths of possible developments are identified and their implications examined. Based on the analyses, it identifies policies, programmes and investment options to enhance the sector's contribution to sustainable development. In the process, the study aims to answer a number of key questions relating to the development of the forest sector (see box below). FOWECA is designed to complement other forest-related strategic planning initiatives, in particular, national forest programmes.

FOWECA Questions

- What roles do we expect the forests and trees to play in the region?
- What changes do we foresee in the next 15 years in forest resources?
- What factors will bring about such changes?
- How should the forest sector respond to such changes?
- How are the demands for forest goods and services likely to change in the next 15 years?
- How the demand for forest goods and services will be met?
- What are the options available to improve the forest situation in the region?

Process of implementation and outputs

6. FOWECA has been implemented as a consultative process involving key stakeholders, especially the countries in the Region. Of the 23 countries, 20 have nominated focal points to coordinate the provision of country inputs. They established country working groups and undertook analyses of developments in the sector involving as many stakeholders as possible. Discussions and analyses at the country level led to the production of country outlook papers. During the process FAO assisted the countries in

their analyses through regular communication, country visits, and a series of workshops. The focal points have participated in the sub-regional workshops held in their respective regions, initially for planning the study and subsequently to review the draft country reports. These sub-regional workshops also helped to enhance interaction between the country focal points and to build up an informal network enabling exchange of information.

7. In addition to the country outlook papers, FAO also commissioned a series of reports/ studies on thematic issues. These addressed some key issues in the Region's forest sector, including (a) policy and institutional changes and land use dynamics, (b) urban and peri-urban forestry, (c) watershed management, (d) environmental aspects of forests and trees, (e) wood energy, (f) forestry and poverty alleviation, (g) wildlife management and (h) wood consumption trends. They provide focused analyses on specific forest-related issues common to some countries in the Region.

8. Based on the information from the country outlook papers, the thematic studies and information from several other sources (including those collected by FAO staff during visits to the countries) a draft regional report was prepared and presented for discussion during the FOWECA regional workshop held at Istanbul in December 2005. Almost all the national focal points or their representatives participated in the regional workshop. The draft report was reviewed thoroughly and the workshop participants made a number of suggestions for improvement. Several workshop participants provided written comments subsequently. The current draft incorporates all the relevant suggestions as also additional information gathered since the Istanbul workshop.

9. The main outputs of FOWECA are two sub-regional reports and a regional outlook report. This regional report outlines the region-wide situation and outlook, and provides an indication of where the Region's forestry stands in the global context. The sub-regional reports will provide in-depth analysis of the current and emerging issues taking into account the economic, social, environmental and policy/institutional situation in the two sub-regions, Central Asia and the Caucasus, and West Asia.

1.2 STRUCTURE OF THE REPORT

10. Chapter 2 describes the key features of the forest sector in the Region, including the state of forest resources and their management, the provision of goods and services, and the policy and institutional framework. Chapter 3 outlines the factors influencing the forest sector and their implications for the future. Considering the potential impact of various factors, Chapter 4 discusses the probable scenarios on the future of forests and forestry during the next 15 years. The implications of the different scenarios for forestry, especially on the states of resources and the provision of goods and services during the next 15 years, are also discussed in Chapter 4. Chapter 5 identifies the priorities and strategies for the forest sector taking into account the differing development scenarios that countries in the region are likely to witness. The concluding chapter summarises the key findings and recommendations.

2 CURRENT STATE OF FORESTS AND FORESTRY

2.1 INTRODUCTION

1. The West and Central Asia Region (WECA) dealt with in this study covers 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 (which together accounts for over 75% of the land area), the region has also some areas with an annual rainfall exceeding 2000 mm (in some areas in Georgia and Turkey). Vast stretches of deserts are found in Central Asia (the most notable being the Kara Kum and Kyzyl Kum) and the Arabian Peninsula. Vegetation ranges from the mangrove forests in the Gulf coast to alpine meadows in the Central Asian countries. Extensive rangelands form a buffer between agriculture and forest land and absorbs some of the pressures of agriculture expansion.

2. Notwithstanding the geographical contiguity, there are important economic, social, political, institutional and environmental differences between the countries with their attendant differences mirrored in the forestry situation. These also impose some difficulties in providing a general overview of the forestry situation, and generalisations could mask country specific situation. There are, however, some common threads that suggest opportunities to learn from the experience in different countries and to pursue joint action in the context of common problems. Ecological contiguity of the region reinforced through the existence of shared watersheds and problems like desertification provide opportunities for such joint action.

2.2 AN OVERVIEW OF LAND USE

3. Table 2-1 gives an overview of land use in the West and Central Asia region. It may be noted that although the total land area is very high, the proportion of arable area is very low varying from 0.1 percent to 33.7 percent in Oman and Turkey respectively. For the entire region the proportion of arable land is only 8.9 percent of the land area. Permanent pastures account for almost 50 percent of the land area.

Table 2-1 An overview of land use

Country, Subregion and Region	Land Area	Arable Land		Forest and other wooded land		Permanent Pasture	
	1000 ha	1000 ha	% of total land area	1000 ha	% of total land area	1000 ha	% of total land area
Armenia	2,820	495	17.6	365	12.9	835	29.6
Azerbaijan, Republic of	8,260	1,783	21.6	990	12.0	2,683	32.5
Georgia	6,949	799	11.5	2,810	40.4	1,940	27.9
Kazakhstan	269,970	21,535	8.0	18,959	7.0	185,098	68.6
Kyrgyzstan	19,180	1,345	7.0	1,182	6.2	9,365	48.8
Tajikistan	13,996	930	6.6	552	3.9	3,198	22.8
Turkmenistan	46,993	1,850	3.9	4,127	8.8	30,700	65.3
Uzbekistan	41,424	4,484	10.8	4,199	10.1	22,219	53.6
Central Asia and the Caucasus	409,592	33,221	8.1	33,184	8.1	256,038	62.5
Afghanistan	65,209	7,910	12.1	867	1.3	30,000	46.0
Bahrain	71	2	2.8	0	0.0	4	5.6
Cyprus	924	72	7.8	388	42.0	4	0.4
Iran, Islamic Rep of	163,620	15,020	9.2	16,415	10.0	44,000	26.9
Iraq	43,737	5,750	13.1	1,749	4.0	4,000	9.1
Jordan	8,893	295	3.3	135	1.5	742	8.3
Kuwait	1,782	13	0.7	6	0.3	136	7.6
Lebanon	1,023	170	16.6	242	23.7	16	1.6
Oman	30,950	38	0.1	1,305	4.2	1,000	3.2
Qatar	1,100	18	1.6	1	0.1	50	4.5
Saudi Arabia	214,969	3,600	1.7	36,883	17.2	170,000	79.1
Syrian Arab Republic	18,378	4,593	25.0	496	2.7	8,338	45.4
Turkey	76,963	25,938	33.7	20,864	27.1	13,167	17.1
United Arab Emirates	8,360	75	0.9	316	3.8	305	3.6
Yemen	52,797	1,538	2.9	1,955	3.7	16,065	30.4
West Asia	688,776	65,032	9.4	81,622	11.9	287,827	41.8
Total FOWECA region	1,098,368	98,253	8.9	114,806	10.5	543,865	49.5

Source: FAO Stat 2002, FAO 2006

4. Obviously, the current state of land use reflects the harsh environmental conditions and how people have attempted to overcome them. Much of the emphasis in agricultural development has been to improve irrigation through exploitation of underground water and construction of reservoirs and most of the important river systems have been harnessed to support agricultural development.

5. The low rainfall, and more particularly its uncertainty, has led to the development of nomadic grazing that takes into account the seasonal changes in water and fodder availability. In fact permanent pastures account for over 80% of the agriculture area in many countries, especially in Central Asia and the Caucasus and in most countries in the Arabian Peninsula. These range lands occupy the transition zone between the cropped area and the woodlands and forests. In most countries agriculture expansion has largely been based on the conversion of pasture land, and development of irrigation infrastructure. Water is the most important limiting factor in agriculture expansion.

2.3 FOREST AND TREE RESOURCES

6. The adverse climatic and soil conditions in the region have significant influence on forests and woodlands, including their composition, productivity, etc. Further the use of forests and woodlands differs significantly on account of the differences in human pressures and most important the ability of the key actors to invest in and manage the resources.

Some aspects of resource use are discussed below:

Extent of forests and woodlands and important characteristics:

7. Table 2-2 indicates the situation as regards forests and woodlands in the region¹. The West and Central Asia region accounts for about 1.1 percent of the global forest and about 5.2 percent of other wooded land cover. When these two are added up, the Region accounts for about 2.2 percent of the global forest and other wooded land cover, while the region's territory accounts for about 8.2 percent of the world total.

Table 2-2 Extent of forests and other wooded land in 2005

Country/area	Forest		Other wooded land		Total area 1000 ha
	1000 ha	% of land area	1000 ha	% of land area	
Armenia	283	10	45	1.5	2,980
Azerbaijan	936	11.3	54	0.6	8,660
Georgia	2,760	39.7	50	0.7	6,970
Kazakhstan	3,337	1.2	15,622	5.7	272,490
Kyrgyz Republic	869	4.5	313	1.6	19,990
Tajikistan	410	2.9	142	1.0	14,255
Turkmenistan	4,127	8.8	0	0.0	48,810
Uzbekistan	3,295	8	904	2.0	44,740
Central Asia and the Caucasus	16,017	3.8	17,130	4.1	418,895
Afghanistan	867	1.3	-	-	65,209
Bahrain	n.s.	0.6	0	0.0	71
Cyprus	174	18.9	214	23.1	925
Iran	11,075	6.8	5,340	3.2	164,820
Iraq	822	1.9	927	2.1	43,832
Jordan	83	0.9	52	0.6	8,921
Kuwait	6	0.3	0	0.0	1,782
Lebanon	136	13.3	106	10.2	1,040
Oman	2	n.s.	1,303	6.1	21,246
Qatar	n.s.	n.s.	n.s.	n.s.	1,100
Saudi Arabia	2,728	1.3	34,155	15.9	214,969
Syrian Arab Republic	461	2.5	35	0.2	18,518
Turkey	10,175	13.2	10,689	13.8	77,482
United Arab Emirates	312	3.7	4	0.0	8,360
Yemen	549	1	1,406	2.7	52,797
West Asia	27,390	4.0	54,231	8.0	681,072
Total FOWECA	43,408	3.9	71,361	6.5	1,099,967
Total World	3,952,025	30.3	1,375,829	10.3	13,418,518

Source FAO 2006

¹ The FAO Forest Resource Assessment 2005 (FRA 2005) employs following definitions for "forest" and "other wooded land". For further explanation on the definitions, see FRA 2005 Terms and Definitions, Working Paper 83/E or visit its website at: <http://www.fao.org/forestry/foris/webview/forestry2/index.jsp?aiteld=4261&sitetreeid=13629&langid=1&geold=0>

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 – 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.

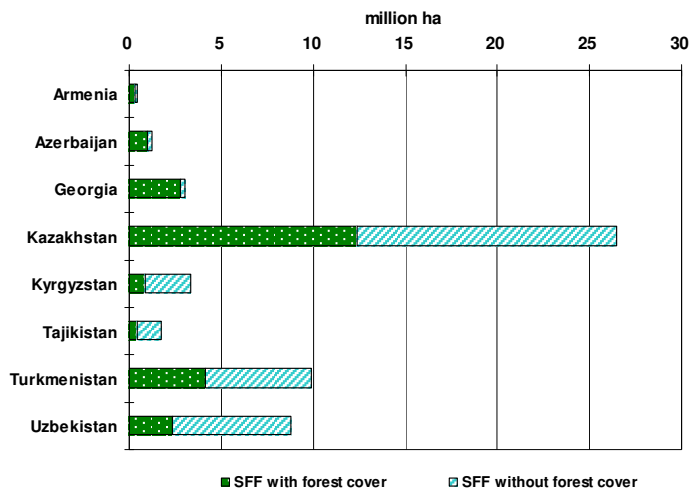
8. Some of the specific features of the forest cover situation in each of the region are discussed below:

Central Asia and the Caucasus:

Forest cover

9. For the region as a whole the forest cover is only about 3.8 percent of the land area, and even the total including other wooded land accounts for about 8 percent, while globally these figures are significantly higher. In Central Asia and the Caucasus Georgia has a high percentage – about 40% - of land under forests. Although Kazakhstan has the lowest proportion of land under forests (1.2%) it has over 3.3 million ha of forests. When the discrepancy of mis-classification is taken into account and the area of over 15.6 million ha of other wooded land, mainly comprising of saxaul, is also included, the forest cover of Kazakhstan increases to about 7% of the land area².

Figure 2-1 State Forest Fund and its forest cover



10. The overlap between ownership grouping and ecological grouping is a major cause of discrepancy in the area statistics in Central Asia and the Caucasus. All the countries in Central Asia and the Caucasus have been employing a land classification “State Forest Fund” (SFF) since the Soviet period. Invariably the area under SFF exceeds significantly from that is reported as forest cover. Also the proportion of land covered by forests of the total SFF varies considerably among the countries from about 26% (Kyrgyzstan, Tajikistan and Uzbekistan) to more than 70% (Armenia, Azerbaijan and Georgia). Although the lands are classified as State “Forest” Fund, the land may be utilized to meet other needs of society, not necessarily for forestry purposes (see Box 1-1 and Figure 2-1).

² The national data provided for the Forest Resource assessment 2005 from Turkmenistan indicate that “the dominating species in the area classified as forests are Saxaul (*Haloxylon spp*) and furthermore the growing stock per hectare is very low. This indicates that part of the areas classified as forest may actually be other wooded land according to FRA 2005 definition. Similarly for Uzbekistan large inconsistencies in the national classification of original data for the period 1990 – 2004 provided by FRA 2005 does not allow 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 (FRA 2005 country reports of Azerbaijan, Turkmenistan and Uzbekistan).

Box 2-1. State forest fund for pasture use in Tajikistan

By governmental decision, 1.08 million hectare or more than 60% of the Tajikistan's state forest fund is allocated for long-term use as pasture lands by agricultural enterprises. These areas are rich in forest and grass vegetation and were traditionally used as distant pasture lands in the past decades. While overgrazing and degradation of grass and forest vegetation have been observed there, no particular measures have been taken for conservation and/or restoration of degraded vegetation. The remaining 40% of state forest fund of 642 thousand hectares is of little use for forest development. The lands are not suitable for afforestation and it is difficult or even impossible to grow trees.

Composition

11. Considerable variation is noticed in species composition and other characteristics of the forests primarily reflecting the differences in climate and topography. In the Caucasus the dominant vegetation consists of broadleaves, especially oaks, beeches, and horn-beans, covering 80 percent of the forests. A limited number of conifers also grow, which include pines, firs and spruces. Relatively few broad-leafed species are found

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, thickets of trees such

as birch, pines and aspens grow in the northern and eastern parts. Flood plain "tugai" forests are found in the dry lands of Central Asia and in small areas in Azerbaijan.

Table 2-3: Growing stock in the forests and woodlands in West and Central Asia

Country/area	Forest				Other wooded land			
	Area	Growing stock			Area	Growing stock		
		By area	Total	of which is commercial		By area	Total	
1000 ha	m ² /ha	M m ²	%	1000 ha	m ² /ha	M m ²		
Armenia	283	125	36	-	45	22	1	
Azerbaijan	936	136	127	20.4	54	-	-	
Georgia	2,760	167	461	26.2	50	20	1	
Kazakhstan	3,337	109	364	0	15,622	1	17	
Kyrgyzstan	869	34	30	0	313	-	-	
Tajikistan	410	12	5	0	142	0	0	
Turkmenistan	4,127	4	14	0	0	-	0	
Uzbekistan	3,295	7	24	0.1	904	-	-	
Central Asia and the Caucasus	16,017	66	1,061	14	17,130		19	
Afghanistan	867	16	14	40	-	-	-	
Bahrain	n.s.	-	-	-	0	-	-	
Cyprus	174	46	8	39	214	-	-	
Iran (Islamic Republic of)	11,075	48	527	78.9	5,340	-	-	
Iraq	822	-	-	-	927	-	-	
Jordan	83	30	2	-	52	-	-	
Kuwait	6	-	-	-	0	-	-	
Lebanon	136	36	5	-	106	9	1	
Oman	2	-	-	-	1,303	-	-	
Qatar	n.s.	-	-	-	n.s.	-	-	
Saudi Arabia	2,728	8	23	0	34,155	5	171	
Syrian Arab Republic	461	-	-	-	35	-	-	
Turkey	10,175	138	1,400	86.6	10,689	-	-	
United Arab Emirates	312	49	15	0	4	-	n.s.	
Yemen	549	9	5	-	1,406	9	12	
West Asia	27,390				54,231			
Total FOWECA	43,408	70						
Total World	3,952,025	110						

Source: FAO, 2006.

Growing stock

12. The differences in the species composition and growing conditions are reflected in the growing stock and increment (see Table 2-3). Forests in the Caucasus and Kazakhstan have relatively high growing stock, varying from 109 m³/ ha in Kazakhstan to about 167 m³/ ha in Georgia. In contrast, the growing stock is rather low in the remaining four Central Asian countries, ranging from about 4 m³/ ha in Turkmenistan to 34 m³/ ha in Kyrgyzstan. It must however be borne in mind that these figures are based on inventory carried out many years ago. In addition, low productivity desert woodlands in Turkmenistan and Uzbekistan are also counted as forests, while similar areas are grouped as wooded land in Kazakhstan. This difference in classification results in such large Table discrepancy in the estimates of growing stock. After independence in 1991, the institutional capacity of most countries has declined preventing updating of inventory and other information.

West Asia

Forest cover

13. The total forest cover in the region is estimated as 27. 4 million ha, or about 4 percent of the land area. As indicated in Table 2-2, three countries (Iran, Saudi Arabia and Turkey) account for almost 88 percent of the forest cover in the West Asia region. In terms of percentage of land area covered by forests, there are only three countries that have more than ten percent of the area under forests (Cyprus: 18.9 percent, Lebanon 13.3 percent and Turkey 13.2 percent). In addition to what has been defined as forests, most of the countries also have a large extent of other wooded land. For example Saudi Arabia has about 34.2 million ha of other wooded land, and if this is also taken into account the area under forests and wooded lands will be about 17 percent of the land area. Other countries that have significant extent of land grouped as other wooded land are Turkey (10.7 million ha) Iran (5.3 million ha), Yemen (1.4 million ha) and Oman (1.3 million ha). Though small several other countries have other wooded land exceeding the area categorised as forests (for example Cyprus and Iraq).

Composition

14. Predominant species in the West Asia region is pines, oaks and acacias, in addition to patches of mangroves along the Red sea and Gulf coasts. Substantial efforts have been made for afforestation and the most important species used is Eucalypts, Pines and Acacias. In most of the Gulf countries, date palm is the most preferred species.

Growing stock

15. The severe ecological conditions limit the extent of forests and forest productivity in the region. The potential for timber production is negligible, except in Turkey and a small part of Iran. The growing stock in the case of Iran is estimated as about 48 m³/ha while that of Turkey it is 138m³/ ha largely on account of the high stocking in the Caspian forests. Growing stock in most other countries is low, most often below 20m³/ha reflecting the less favourable environment for wood production.

Forest cover changes in the Region

16. The change in the extent of forest cover and other wooded land for the region between 1990 and 2005 is summarized in Table 2-4.

**Table 2-4 Change in extent of forest and other wooded land 1990 - 2005
(in 000 ha)**

Country/area	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
	1000 ha	1000 ha	1000 ha	1000 ha	1000 ha	1000 ha
Armenia	346	305	283	45	45	45
Azerbaijan	936	936	936	54	54	54
Georgia	2,760	2,760	2,760	53	51	50
Kazakhstan	3,422	3,365	3,337	13,049	14,765	15,622
Kyrgyz Republic	836	858	869	283	303	313
Tajikistan	408	410	410	142	142	142
Turkmenistan	4,127	4,127	4,127	0	0	0
Uzbekistan	3,045	3,212	3,295	-	-	904
Central Asia and the Caucasus	15,880	15,973	16,017	13,626	15,360	17,130
Afghanistan	1,309	1,015	867	-	-	-
Bahrain	n.s.	n.s.	n.s.	0	0	0
Cyprus	161	173	174	-	214	214
Iran (Islamic Republic of)	11,075	11,075	11,075	5,340	5,340	5,340
Iraq	804	818	822	1,245	1,033	927
Jordan	83	83	83	55	54	52
Kuwait	3	5	6	0	0	0
Lebanon	121	131	136	-	117	106
Oman	2	2	2	1,303	1,303	1,303
Qatar	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Saudi Arabia	2,728	2,728	2,728	34,155	34,155	34,155
Syrian Arab Republic	372	432	461	35	35	35
Turkey	9,680	10,052	10,175	10,905	10,728	10,689
United Arab Emirates	245	310	312	4	4	4
Yemen	549	549	549	1,406	1,406	1,406
West Asia	27,132	27373	27390	54,448	54,389	54,231
Total FOWECA	43,013	43,346	43,408	68,074	69,749	71,361
Total World	4,077,291	3,988,610	3,952,025			

Source FAO 2006

17. As can be seen, the change in the area under forests and woodlands in the region has been rather insignificant. Aggregated figures however mask the differences in area change between countries. For example, forest cover in Armenia has declined from about 305,000 ha in 2000 to about 283,000 ha in 2005. During the same period the extent of forest cover in Uzbekistan registered an increase from 3,212,000 ha to 3,295,000 ha. There have also been some changes in the extent of other wooded land, with Kazakhstan registering a significant increase of over 800,000 ha between 2000 and 2005. However, caution needs to be exercised in interpreting the data and drawing conclusions, especially in view of the absence of recent inventory information.

18. In the West Asia region also the forest cover has been relatively stable and increased slightly during the last 15 years. In almost all countries, excepting Afghanistan, there is an upward trend in the forest cover. The increase in forest area and other wooded land reflects both the achievements of afforestation and tree planting even if the scale of efforts is limited and the natural expansion of forest (e.g. forest succession in abandoned agricultural lands in Cyprus and Lebanon on account of the migration to urban areas). Turkey accounts for a significant increase, with an addition of over 123,000 ha. In contrast

Afghanistan registered a decline in forest cover to the extent of 148,000 ha during 2000 and 2005. There has also been change in the extent of other wooded land, with Iraq accounting for a decline to the tune of about 106,000 ha. As can be seen from Table 2-3, there are several cases where forest cover remains unchanged (for example Georgia, Turkmenistan, Iran, Saudi Arabia, and Yemen) and this could be due to lack of reliable information than actual stability of the area³.

19. The change in the area of forests and woodlands reflect the differences in pressures as also the extent to which the countries, in particular key players like governments, have invested in conservation and management. Although the extent of forests and woodlands has remained stable, caution needs to be exercised in drawing optimistic conclusions on account of the following:

- In several countries the forest cover is extremely low and probably leaves very little scope for further decline. From the low base figures, even a slight increase on account of afforestation and reforestation would indicate a significant jump in growth rates.
- The more fundamental problem is the reliability of information. As indicated earlier country capacity for regular monitoring and reporting of change in forest cover as also the state of tree growth is limited. This has been particularly the case with countries in Central Asia and the Caucasus, which suffered a significant decline in the capacity to undertake regular inventories after the collapse of the Soviet Union.
- Further, the area figures seldom provide an indication of degradation, which is often a slow and less obvious process. The causes of degradation vary between countries; in many instances illegal collection of woodfuel, including charcoal, grazing and fire are important factors.
- In situations where there are major land use changes, especially through conversion of forests to crops or pasture, they are easily monitored. This is not the case in most of West and Central Asia where agriculture expansion has been largely through expansion into pasture areas, while increased pressure and degradation on account of grazing and woodfuel collection is not easily measurable.

2.4 GENERAL TRENDS IN FOREST MANAGEMENT

20. The overall direction of management is determined largely by ownership of forests, the objectives of the owners and most importantly the technical and financial capacity of the owners. In Central Asia and the Caucasus, the importance of forests for their protective role has been already recognized during the Soviet period. Widespread recognition of the protective functions of forests has led to a change in the management objective away from production of woodfuel, poles etc, although countries are at different stages of such transition. Most forests in the region are under public ownership, although

³ Many countries in Central Asia and Caucasus use old inventories due to lack of capacity and resources to undertake regular inventories. For instance, the last inventory was carried out in Turkmenistan and Azerbaijan in 1988 and in Armenia in 1993.

there are some important differences that can be attributed to differences in the political history of the countries. This is particularly important in the case the Central Asian and Caucasus countries which were part of the Soviet Union until 1991.

Central Asia and the Caucasus

21. Present forest management in the sub-region is largely based on the Soviet forest management and many of the concepts and practices evolved prior to independence still persist. The concept of “State Forest Fund” (Goslesfund - the land managed by the state forest authorities) developed then persists unchanged. Generally forests were centrally managed by the State Committee on Forestry (Goskomles). Since the 1930s field level management of forests was undertaken by state forestry enterprises (leskhozoes), collective farms (kolkhozoes) and state farms (sovkhozoes).

Box 2-2. USSR forest classification system

	Forests	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 region of the USSR	Clear cutting prohibited, restricted felling (e.g. regeneration felling, silvicultural thinning, selective cutting of over matured trees)
Group II	Forest of sparsely-forested areas (forest steppes), forests belonged to collective farms. Forests in populated areas. Central regions of the USSR.	Principally clear cutting, but not exceeding annual growth.
Group III	All other exploitable forests. Northern regions of European part, taiga zone of Siberia, Far East	All kinds of loggings permitted.

22. A forest classification system was introduced in 1943 under which forests were grouped into three functional categories (see Box 2-2). Group I forests were primarily designated for environmental protection and most of the forests in Central Asia were included under this. Better stocking and access, led to intensive harvesting of forests in the Caucasus. However since the 1970s, they were included under

Group I, banning commercial felling and increasing afforestation/ reforestation efforts. As part of the Soviet Union, wood was supplied from Siberia and central and northern parts of USSR. However, since the collapse of the Soviet Union subsidised supplies dried up and the newly independent countries were unable to import large quantities of wood from Russia incurring high transport costs over long distances.

Box 2-3. Collective vs. 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 unconstructive experiences during the Soviet time, where 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 not to be very effective due to a lack of cooperative management, whereas individual forests seem to be more successful with a promise to future benefits and a clearly-defined ownership. Another attempt revealed that people prefer to plant fruit trees, which provide an immediate benefits.

23. With gradual changes in the economy and political system, new tendencies on management responsibilities have been emerging in some countries. For example, although all forests in Tajikistan belonged to the state until 1997, according to a new governmental decision on reorganization of collective and state farms, some forests in the territory of these farms

were acknowledged for long term use by the farms. Thus, about 50,000 ha or approximately 12% of the State Forest Fund are brought under collective farm management. In addition Tajikistan has also transferred forests outside the purview of the SFF to private control, primarily for use as pastures.

24. The new Forest Code of Armenia, approved in 2005, envisages long-term lease of forest lands to communities and private sector. SFF privatization is currently under consideration in Kazakhstan and Georgia. Kyrgyzstan is in the forefront of adoption of participatory approaches, and in 1998 introduced Collaborative Forest Management, although the extent of area under CFM and the nature of community involvement remain very limited at present. Since it is still in the early stages of development, it is difficult to make an objective assessment of its performance. Other countries like Azerbaijan, Turkmenistan and Uzbekistan are largely in the public-sector control mode, emphasizing caution on participatory approaches, which to some extent reflects the overall political environment in these countries. Given the negative perception of collective management during the Soviet period, there is some reluctance to pursue community initiatives (see Box 2.3).

25. Current objectives 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 provision of environmental services, recreation, wildlife management and afforestation/ reforestation. Substantial efforts are being made to green urban centres and this often receives strong political support from the highest level in some countries (see the section on Urban Forestry).

West Asia

26. Notwithstanding the diverse history of the countries in West Asia, most forests in West Asia are also under public ownership, with some exceptions as in the case of Lebanon and Cyprus. Lebanon's private forests, which accounts for about 60% of the total forest area, are well managed though government regulations prohibit the removal of timber. In the case of Cyprus, the extent of private forests is reported to be about 40% of the total forest area. These are primarily found as enclosures within the government forests and are often abandoned agriculture lands. Yemen also has a substantial area of forests defined as "private", accounting to about 80% of the forests. However, the precise nature of ownership is rather unclear, especially due to the absence of proper surveys and mapping and, more importantly, an effective legal system that protects the ownership rights.

27. Most forests in the region are managed for their multiple functions with protection as one of the important objective. Increased attention is being paid to conserve biological diversity and the development of tourism. Management of protected areas or national parks has gained importance in many countries such as Cyprus, Iran, Jordan, Lebanon Saudi Arabia and Turkey. Protective and amenity planting – especially as wind breaks and shelter belts and green spaces in urban areas – is receiving considerable attention. Pine nut production is a major objective of management of forests in Lebanon and Turkey. Similarly, much of the tree planting in UAE and Saudi Arabia has been focused on date palm, improving the environment, and at the same time increasing the production of dates.

28. A number of countries that earlier depended on their forests for wood production have over time reduced the level of harvesting and greater attention is being paid to manage the forests for their environmental benefits. For example, annual timber

production from the Troodos forests (about 36,000 ha) in Cyprus has declined from about 50,000 m³ in the 1980s to about 1,000 m³ in the recent years (Forestry Department, Cyprus 2005). Currently one-third of the area is managed as a forest park, receiving about 1 million visitors per annum. In Iran the Caspian forests are considered to be of commercially important with high stocking and productivity. However, environmental considerations have led to scaling down timber production from 840,000 m³ in 1993 to about 600,000 m³ in 2003 (Government of Iran, 2005).

Reforestation and afforestation

29. Table 2-5 below gives an overview of the extent of planted forests in the West and Central Asia region. It may be noted that the total area of planted forests in the region is about 5 million ha, or about ...percent of the global planted forests.

Table 2-5 Planted forests in the West and Central Asia region

Country/ Area	Area of planted forests (in 000 ha)		
	1990	2000	2005
Armenia	14	11	10
Azerbaijan	20	20	20
Georgia	54	60	60
Kazakhstan	1,034	1,056	909
Kyrgyzstan	46	59	66
Tajikistan	76	66	66
Turkmenistan	-	-	-
Uzbekistan	30	51	61
Total Central Asia and Caucasus	1,274	1,323	1,192
Afghanistan	-	-	-
Bahrain	n.s	n.s	n.s
Cyprus	3	3	5
Iran	616	616	616
Iraq	15	15	13
Jordan	40	40	40
Kuwait	3	5	6
Lebanon	-	-	8
Oman	2	2	2
Qatar	-	-	-
Saudi Arabia	-	-	-
Syria	175	234	264
Turkey	1,839	2,304	2,537
United Arab Emirates	245	310	312
Yemen	-	-	-
Total West Asia	2,938	3,529	3,803
Total West and Central Asia	4,212	4,852	4,995

Source: FAO 2006

30. Planted forests in the region accounts for just about 11 percent of the forest cover (7.3 percent in the case of Central Asia and the Caucasus and 13.9 percent in the case of West Asia) in the entire Region. However, they are unevenly distributed with a small

number of countries accounting for most of the planted forest area. For example, in Central Asia, Kazakhstan accounts for almost 78 percent of the planted forests. Similarly, Turkey and Iran account for about 83 percent of the planted forests in West Asia. In Central Asia a majority of the plantations has been established for protection, while in West Asia the proportion of plantations established for production is about 67 percent. Obviously most of the production plantations are found in Turkey and Iran, especially in the areas with higher wood productivity. Lebanon also has a high proportion of plantations established with the objective of production of pine nuts (from *Pinus pinea*).

31. While caution needs to be exercised in interpreting the estimates of planted forest area (especially in view of the weaknesses of reporting systems), available information indicates a slow pace of their expansion in the region. Adverse growing conditions and the high costs limit the scope for commercial ventures and hence efforts to promote private sector involvement, as in the case of Turkey (see Box 2-4), have not been very effective. Hence almost all planting is undertaken by governments, and its pace is very much dependent on government priorities and resource situation. Technical and financial constraints limit the scaling up plantation efforts even when its importance is recognised.

Box 2-4 Private plantations in Turkey:

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

Source: FOWECA Country Report - Turkey

32. The cost of establishment and management of plantations is high as plants have to be irrigated in view of the prolonged dry conditions. For example, all the plantations in UAE extending over an area of over 300,000 ha have been established through irrigation. So is the case with more than half of the area of plantations in Iraq. A number of countries – for example Jordan, Oman, Cyprus, Turkey, Iran and Saudi Arabia - have developed and improved irrigation regimes and use treated sewage water for irrigating plantations. Obviously the high investment requirement, particularly stemming the need to irrigate the plants, is an important constraint in expanding the area under plantations.

33. Improvement of environment is a major objective of reforestation/ afforestation programmes in almost all the countries. In many West Asian countries reforestation is undertaken in degraded natural forests to improve productivity as also to enhance their ecological functions. Sand dune fixation is another important thrust in most countries in the two sub-regions. Here again the differences in the political history have influenced the pace of efforts. Prior to independence most countries in Central Asia and Caucasus had a well planned afforestation/reforestation programme with sufficient allocation of funds from the state budget. However, after independence this was scaled down drastically on account of insufficient financial, human and technical resources stemming from the overall decline of the economic situation of the countries (see Box 2-5). Although some countries

are making an effort to improve the situation, many are finding it difficult to make any significant progress in increasing the scale of reforestation/ afforestation⁴.

Box 2-5 Some trends in reforestation/ afforestation efforts in Central Asia and the Caucasus

- In the last decade before independence, the SFF in Georgia was undertaking reforestation at the rate of about 10,000 ha per year. This has been scaled down drastically and in 2004 the area reforested through non-governmental organizations was about 114ha.
- The annual rate of reforestation/ afforestation in Armenia was about 6000 to 7000 ha during the 1960s to the 1980s. Since independence this has declined drastically and in 2004 the extent of reforestation was only 644 ha.
- Annual reforestation in Tajikistan during the Soviet period was about 4,500 ha and currently it is no more than 2,200 ha.
- During 1968 -1988 more than 15,000 field protection forests were established in Turkmenistan. However, no forestry activities have been undertaken after 1993 due to lack of funds to the forestry sector. More over by switching to a self-financing scheme after 2000, protective measures, that generate no income, have been completely neglected.

Urban forestry

34. As the pace of urbanisation accelerates, countries in West and Central Asia are paying increasing attention to urban forestry, especially through establishing green spaces (see Akerlund 2005). In Central Asia and the Caucasus city greening or urban forestry was a common practice during the Soviet period, especially in the context of well planned city development. Green zones have been developed in and around capitals of all the countries, which were managed by the respective municipal authorities or the state agencies. However, economic and social decline that most of the countries suffered during the post Soviet period affected the protection and management of the green zones. For example the Yeravan forest belt in Armenia which extended over an area of over 1,370 ha now shrunk to about 150 ha.

Box 2-6. Greening of the capitals of Kazakhstan and Turkmenistan

The capital of Kazakhstan has been transferred from Almaty to Astana in December 1997. Since 1998, city greening has started in the new capital. Up to 2005, a total of 25,000 hectares of green areas has been established by *Zhasyl Aymak* and its former body, a state organization specialized in greenbelt establishment for Astana. The greenbelts, managed by the municipal government, function as a windbreak and as recreational space for the residents. A total of 75,000 ha are expected to be planted by 2015.

Greenbelts around Ashgabat, capital of Turkmenistan, are also increasing since the late 1990s. More than 50 million seedlings have been planted during 1998-2004 under the Greenbelt Programme, including 30 million seedlings planted in over 25 thousand hectares 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.

35. Nevertheless, recent years have witnessed renewed efforts to improve the urban environment and this has received substantial political support. Especially in countries where governments are facing less resource constraints, urban forestry is receiving

⁴ In Georgia artificial planting is not a priority since natural regeneration is adequate in view of the highly favourable environmental conditions.

substantial attention. This is particularly so in the case of the capitals of Kazakhstan and Turkmenistan (see Box 2-6).

36. Urban forestry is receiving considerable attention in the West Asian countries, especially in the Gulf region. With economic growth centred on the rapidly expanding urban areas, greening of urban centres has received particular attention. Growth of some of the cities in West Asia as major centres of international tourism, trade and finance, has further encouraged the greening efforts. Urban and peri-urban forests are playing an important role in the protecting habitations from sand and dust storms and in amenity and recreation. Parks and gardens have been established at high costs to enhance the attractiveness of important urban centres in United Arab Emirates (see Box 2-7), Kuwait, Oman, Bahrain and Saudi Arabia. The extent of green space in Iran has increased from 6000 ha in 1987 to about 14,000 ha now. Syria has also undertaken a vigorous programme of urban forestry and forest plantations near cities have been transformed to recreation sites.

Box 2-7 *Urban Forestry in United Arab Emirates*

Urban environment in all cities in the United Arab Emirates have 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, even during the summer. The rate of change in United Arab Emirates is reflected in these city beautification projects. In 1974, there was only one public park in Abu Dhabi, with very little greenery, but today the number has increased to about 40, covering an area of more than 300 ha. The expansion of green areas in the 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 or 2 200 ha.

37. Management of urban forests and parks is primarily the responsibility of city administration. Urban forestry in most countries requires high investment and this largely comes from the governments. However, the financial commitment of municipal authorities is not always stable. Cyprus has put in place special taxes earmarked entirely to finance its urban forestry. As tourism is the most important sources of income, improving urban environment is receiving a high priority. In countries where the resource situation of the governments is poor, urban forestry is mainly dependent on international support. Other than financing, a significant obstacle to development and management of the urban green resource is the lack of specific laws and regulations. There are also instances, for example in the case of Iran and Saudi Arabia, where urban expansion has adversely affected existing forests and plantations.

Tree resources in range lands

38. As indicated in Table 2-1 there are extensive areas of range/ pasture lands 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. However, very little information is available on the condition tree growth in these range lands. However, the perception that these range lands are deteriorating fast on account of increased pressure for providing fodder and woodfuel persists (see Box 2-8). Largely this is attributed to a decline in the traditional community management arrangements. Nomadic communities, who owned and

used the range lands, had put in place management systems, preventing their over use. Government take over undermined this, but at the same governments were unable to implement any management. Range lands have thus become free access resources with no one taking responsibility to manage them. However, there are also situations where grazing pressure has declined, notwithstanding an increase in the number of cattle. Largely this is on account of increased use of purchased fodder and cattle feed⁵. There are indications that this may help in the natural recovery of rangeland vegetation.

Box 2-8 Rangelands in West Asia

Rangelands occupy about 50 per cent 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 per cent of the rangelands are degraded or vulnerable to desertification. More than 30 per cent of the grazing land in Saudi Arabia is degraded (Shorbagy 1986, Al- Hassan 1991) and deterioration of rangelands has also been reported in several other countries of West Asia (Al-Kuthairi 1992). 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 heads per hectare - some four times the natural carrying capacity (Le Houerou 1995). It is estimated that the grazing capacity in the rangelands of the West Bank is exceeded by a factor of 5.7 (Palestinian Authority 2000).

Source: GEO3

39. The Central Asia and Caucasus situation also indicates differing trends, although no definitive conclusions can be drawn on account of poor data availability. With the collapse of Soviet Union, many of the large live-stock collectives in Central Asia that supplied dairy products to other parts of Soviet Union have collapsed, resulting in a reduction in the livestock population. This would

imply reduced pressure on the pastures. Consequent improvement in pasture conditions has been reported, for example, from Kyrgyz Republic. However, there are also instances of increase in the livestock numbers with its consequent adverse impacts, as in the case of Turkmenistan.

Wildlife management

40. Wildlife is one of the important natural resources in the region. However, so far the resource has been used unsustainably in the majority of the countries (Czudek, 2005). Socio-economic problems in the Central Asian and Caucasus countries during the post-independence period have particularly undermined the level of protection and management. Loss of habitat, especially on account of agriculture expansion and hunting are the main factors contributing to the decline of wild life in most countries in the region. Although efforts have been made to improve the situation, especially through the establishment of protected areas, persistence of institutional weaknesses has failed to stem the decline. Table 2-6 provides an indication of the proportion of protected areas in the different countries in the Region.

⁵ For example in Saudi Arabia increasingly livestock owners are dependent on imported barley as also on fodder that is grown under irrigated conditions.

Table 2-6 Extent of terrestrial protected areas (IUCN categories I-IV Areas)

Country or Area Name	Terrestrial Protected area IUCN categories I-IV	
	Area (Ha)	Percentage of land
CENTRAL ASIA		
Kazakhstan	7,741,945	2.8
Kyrgyzstan	608,290	3.0
Tajikistan	2,602,925	18.2
Turkmenistan	1,883,220	3.9
Uzbekistan	2,050,293	4.6
TOTAL CENTRAL ASIA	14,886,673	3.7
CAUCASUS		
Armenia	299,107	10.0
Azerbaijan	393,651	4.5
Georgia	290,276	4.2
TOTAL CAUCASUS	983,034	5.3
WEST ASIA		
Afghanistan	218,629	0.3
Bahrain	800	1.1
Cyprus	75,957	8.2
Iran (Islamic Republic of)	10,373,294	6.3
Iraq	541	0.0
Jordan	913,300	10.2
Kuwait	250	0.0
Lebanon	3,500	0.3
Oman	22,000	0.1
Qatar	50	0.0
Saudi Arabia	3,923,000	1.8
Syrian Arab Republic	0	0.0
Turkey	804,312	1.0
United Arab Emirates	40	0.0
Yemen	0	0.0
TOTAL WEST ASIA	16,335,673	2.4
TOTAL WECA region	32,205,380	2.9

Source: United Nations Environment Programme - World Conservation Monitoring Centre (UNEP-WCMC), 2004

41. The extent of protected areas (IUCN categories I to IV) in the West and Central Asia and Caucasus is about 16.3 million hectares and 15.9 million hectares respectively accounting for about 2.9 percent of the entire land area of the WECA region. In the case of West Asia, Iran and Saudi Arabia account for 94% of the protected area, while in Central Asia and the Caucasus, Kazakhstan alone accounts for about 49% of the protected areas. In terms of the proportion of land area covered, Tajikistan has about 18.2% of its area as protected. Other countries with a high proportion of area under protection are Armenia (10%), and Cyprus (8.2%). In addition to these, there are other areas that are declared as protected, but not falling under IUCN categories I to IV. Saudi Arabia is an example of this, and when such areas are also included, the extent of protected areas in the country increases from 1.8 percent to about 38 percent of the land area.

Box 2-9 Trophy hunting in Central Asia

A recent study by TRAFFIC (Hofer, 2002) reveals that hunting tourism in Central Asia is evolving. Increasing number 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 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: Zudek, 2005

42. Countries in the Central Asia and the Caucasus inherited a protected area system from the Soviet period. A large increase in the number and extent of protected areas in the region took place in the 1960s and upto the disintegration of the Soviet Union, except for Tajikistan where more than 60 percent of the country's protected areas was established in 1992. The prevailing model for protected areas in many of these countries is centrally-controlled, strict nature reserves (Zapovedniks) from the Soviet time. Following independence from Soviet Union in 1991, the financial mechanism that supported the nature reserves and national parks collapsed, leaving the countries to struggle to manage these areas with very limited resources. Economic decline has led to relegating nature protection to the background. In all countries threatened and endangered species that had been strictly protected prior to 1991 have began subjected to illegal commercial exploitation. Trophy hunting has also increased, but weak regulations and institutional capacity to enforce rules limit the potential benefits and neither local communities benefiting nor conservation standards are improving.(see Box 2-9).

43. Following the ratification of the Convention on Biological Diversity most countries have prepared National Environmental Action Plans (NEAP) or National Biodiversity Strategy and Action Plans (NBSAP). 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, improvement of institutional capacity, etc. In most cases such initiatives are undertaken with financial and technical support from bilateral and multi-lateral organizations and international non-governmental organizations. But for such assistance, many countries would not have been in a position to develop national strategies and action plans. However, this raises the question of long term sustainability, especially when resource availability for implementation is limited and preparation of plans just amounts an initial step which becomes meaningful only if concrete action is pursued.

44. In addition to global conventions, some of the countries are also signatories to regional and sub-regional strategies and priorities. Accessing external resources and enhancing collaboration, especially to address trans-boundary issues, are some of the objectives of participation in regional and global initiatives. To some extent this has resulted in programmes and activities that are important from the perspective of the donors, but not necessarily of high priority for governments and other national level stakeholders. No doubt biodiversity conservation is recognized as important, but most countries are unable to allocate adequate resources, especially in the context of other economic and social priorities.

2.5 PROVISION OF GOODS AND SERVICES FROM FORESTS

Industrial roundwood and other wood products

45. The current level of production of wood products is rather very limited and most of the countries are highly dependent on imports, including sawnwood, wood based panels and paper and paper products. Widespread unrecorded wood removals is a major problem in assessing the actual level of wood production from forests. Although officially logging has been banned in many countries (except Turkey, Iran, Georgia and Cyprus) or harvesting is limited to sanitary fellings, substantial quantities are removed illegally, and sometimes this is many fold of what is legally permitted.

46. Agroforestry planting, especially of fast growing species like poplars and eucalypts, outside the state forests form an important source of wood supply. For example annual wood production from such plantations in Turkey is estimated to be about 3.5 million m³. Iran, Iraq, Syria and Kazakhstan are some of the other countries with substantial potential for wood production under agroforestry. In Iran about 58 percent of the annual production of wood (estimated at 1 million m³) is from plantations and trees in orchards.

47. Table 2-7 below gives an overview of production, imports, exports and trade of the most important products for the region during 2004. Caution needs to be exercised in interpreting the information, in view of the data limitations (especially on account of unrecorded production and consumption) and what is given at best represents a partial picture of the situation.

Table 2-7 Production, consumption and trade of important wood products – 2004 (in 000 m³/ tonnes)

Product		West Asia	Central Asia	Total for WECA	Per capita consumption in WECA	Per capita global consumption
Industrial roundwood (in m ³)	Production	13,845	161	14,005		
	Imports	2,137	401	2,538		
	Exports	121	58	179		
	Consumption	15,861	503	16,364	0.047	0.258
Sawnwood (in m ³)	Production	6,718	339	7,057		
	Imports	4,709	942	5,651		
	Exports	81	186	267		
	Consumption	11,347	1,095	12,442	0.035	0.065
Wood-based panels (in m ³)	Production	4,579	23	4,602		
	Imports	3,821	1,489	5,310		
	Exports	460	6	466		
	Consumption	7,940	1,506	9,446	0.027	0.036
Paper and paperboard (in tonnes)	Production	2,146	222	2,368		
	Imports	3,884	277	4,161		
	Exports	365	6	371		
	Consumption	5,665	492	6,158	0.018	0.055

Source: FAOSTAT

48. Although the figures in the tables may not fully capture the actual situation (largely due to the discrepancies arising from the absence of an effective reporting system), the following observations can be made:

- In view of the high population, West Asia accounts for a major share of the consumption of all forest products. In 2004 West Asia accounted for 80 percent of the population in the region, but it consumed about 97 percent of the industrial roundwood, 91 percent of sawnwood, 84 percent of wood based panels and 92 percent of the paper and paper board.
- As the degree of processing increases, the extent of dependence on imports increases. Thus in 2004, the WECA region imported about 15 percent of the industrial roundwood consumed, but the share of imports in consumption was 45%, 56% and 68% for sawnwood, wood based panels and paper and paperboard respectively.
- Per capita consumption of most products is far below the global per capita consumption and this may be due to a number of factors. It is also partly due to the drastic decline in the consumption in Central Asia and the Caucasus, when they became independent and supplies from the Russian part of Soviet Union declined drastically.

49. In West Asia Turkey is a major producer of wood products. The overall situation with regard to wood industries in West Asia is summarised in Box 2-10.

Box 2-10 Wood industry in West Asia

Based on the limited forest resources, the region produces a small quantity of different types of wood products. Turkey has been dominating the production of all wood products in the region, and produces about 80 to 90 percent of the region's total production. Industrial roundwood and sawnwood production have relatively stagnated. Iran, Afghanistan, Cyprus, Iraq and Syria produces, to a less extent, some industrial wood products and sawn wood as well. This trend reflects the availability of resources, increased awareness of environmental issues, the competition from imported products and the development of technology (MDF and OSB production in Turkey). The production of wood based panels and paper and paperboard has expanded considerably in the past decade. This is mainly driven by the increase in the production of Turkey while production in other countries (Iran, Iraq, Jordan and Lebanon) has stagnated. In recent years Turkey has significantly increased its production of MDF and paper and paperboard. However, all the countries in the region, including Turkey, are net importers of industrial wood products. Many countries are entirely dependent on imports to meet their domestic consumption.

Industrial roundwood

50. Table 2-8 gives an indication of the trends in the production and consumption of industrial roundwood in the region. For the region as a whole, the 2004 level consumption is significantly lower than the 1990 level, largely due to a drastic decline (estimated as about 95 percent) of production and consumption in the Central Asian and Caucasus countries. Prior to 1991, Central Asian countries were primarily dependent on supplies from other regions of the Soviet Union, and this which dried up after their independence. The two countries that accounted for most of the consumption of industrial roundwood in Central Asia and the Caucasus are Kazakhstan and Uzbekistan. In 1990 their consumption accounted for about 70 percent of the Central Asia consumption and

although the consumption has declined, their share still remains above 70 percent of the regional consumption.

Table 2-8 Production and consumption of industrial roundwood*

Region	Production and consumption (in 000 m3)				
	1980	1990	1995	2000	2004
West Asia	12,293 (12,692)	8,465 (9,376)	13,695 (14,498)	13,369 (14,962)	13,845 (15,861)
Central Asia	2,063 (9,645)	1,931 (9,512)	594 (817)	315 (346)	161 (503)
Total WECA	14,356 (22,337)	10,396 (18,888)	14,288 (15,315)	13,684 (15,309)	14,005 (16,364)

* Figures in parenthesis are estimated consumption

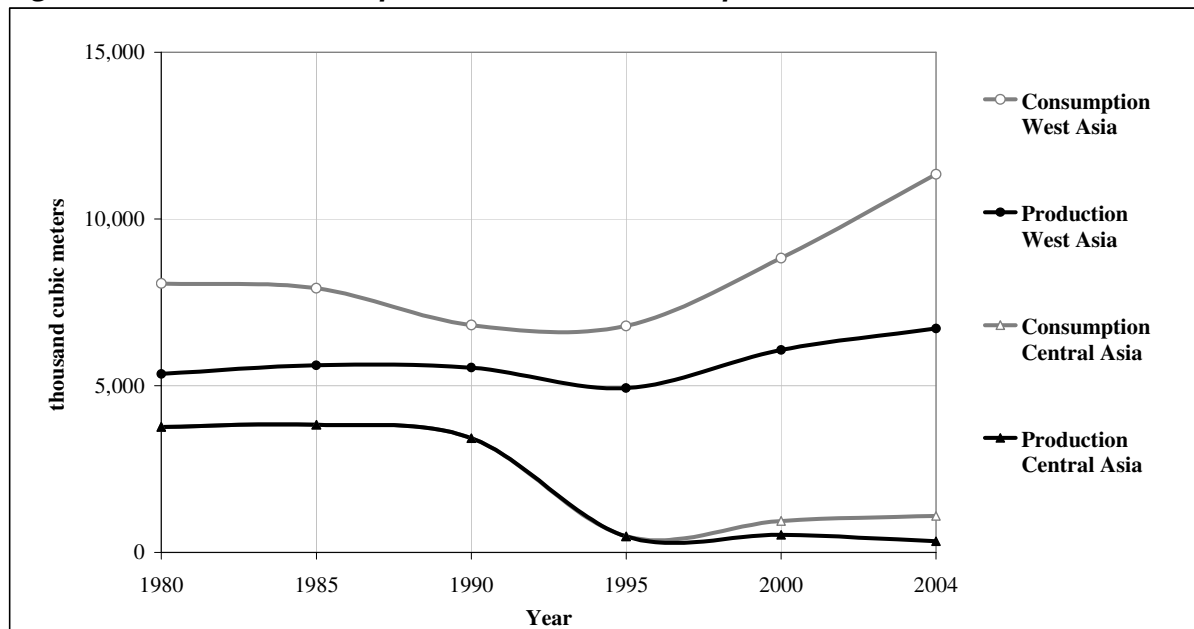
51. In West Asia, Afghanistan, Turkey and Iran are the most important producers and consumers of industrial roundwood, and together they accounted for about 98 percent of the consumption in 2004. These three countries have more or less maintained their high share in the sub-regional and regional production and consumption. West Asia is a net importer of industrial roundwood, and most of this destined to Turkey and a limited quantity goes to Iran, Saudi Arabia, and United Arab Emirates.

52. There are several countries where industrial roundwood production is extremely negligible and this stems from the low productivity of forests as also due to the setting aside of most of natural and planted forests to fulfil protective functions.

Sawn wood

53. Figure 2-2 provides an indication of the trend in the production and consumption of sawnwood in the two sub-regions. The production of sawnwood in West Asia seems to be levelling off, while consumption has increased, indicating increasing reliance on imports. Most of the sawnwood production in West Asia is accounted by Turkey, while a major share of the imports is by Saudi Arabia, Iran and United Arab Emirates. In countries like Cyprus, declining wood production has affected the wood supply to sawmilling industry, resulting in the closure of mills (see Box 2-11).

Figure 2-2 Trends in the production and consumption of sawnwood



54. As in the case of other products, Central Asia registered a drastic decline in production and consumption in the post 1990 period and the consumption in 2004 is only about 16 percent of the 1990 level. Even if an allowance is given to the unrecorded production and consumption, it will be still far lower than that in the pre-independence period. Although still small, there seems to be some marginal increase in the consumption in the post 1995 period in some of the countries, especially in Azerbaijan, Georgia and Armenia and Uzbekistan.

Box 2-11 Changes of wood industry in Cyprus

The main company which operates in the wood industry sector is the Cyprus Forest Industries Ltd (CFI). It was established in 1970 and the major shareholder is government with 51% of the capital share. It used to have a unit for producing particle boards and sawn timber by using local pine wood, which has been closed down due to the lack of raw material. The major products has shifted to the secondary processing products, e.g. the dressing of imported particle boards and medium density fibreboards (MDF) with veneer sheets and the plywood by using imported wood.

Source: Cyprus country report

The Kambos village is located in the state forest area. The village used to depend on timber production before 1995. The sharp decrease of timber production in this area has resulted in some negative impacts to the village. Three sawmills out of five in the village closed due to shortage of raw material. Furthermore, logging costs are growing because of insufficient log production. In one surviving small sawmill, imported roundwood supplies more than 50 percent of raw material consumption for the sawnwood production, six foreign workers out of the total of 15 workers are employed to reduce the production cost.

Source: Travel report

Wood based panels:

55. Table 2-9 provides the trends as regards production and consumption of wood based panels in the FOWECA region.

Table 2-9 Production and consumption of wood based panels*

Region	Production and consumption (in 000 m3)				
	1980	1990	1995	2000	2004
West Asia	610 (1505)	1,159 (1,889)	1,945 (3,168)	2,876 (4,680)	4,579 (7,940)
Central Asia	...	...	0 (4)	55 (394)	23 (1,506)
Total WECA	...	...	1,945 (3,173)	2,931 (5,074)	4,602 (9,446)

* Figures in parenthesis are estimated consumption

56. Although the figures need to be treated with caution in view of unrecorded production, the overall trend is evidently upward. This is particularly the case with West Asia, where production and consumption have registered an annual increase of 21 percent and 23 percent respectively during the period 1990 and 2004. Both production and consumption of panel products declined drastically in Central Asia during the post 1990 period and recovery started after 1995 only.

57. In West Asia Turkey, Iran, Lebanon and Syria are the only producers of wood based panels and almost all others are dependent on imports to meet their domestic needs. The rapid growth of import of wood based panels since 1980 is largely in response to the increasing demand from the construction and furniture sectors. Rapid urbanisation and the consequent construction boom will continue to fuel the demand for panel products. Key producer countries, especially Iran and Turkey with significant domestic demand, have invested in additional capacities, especially for production of medium density fibreboard (see Box 2-12).

Box 2-12 MDF Consumption in Iran and imports from Turkey

“Between 1996 and 2003 the entire MDF consumption in Iran was supported by imports and in 2004, in spite of the production in Iran, most of the consumption was still reliant on imports... Countries which export MDF to Iran include Turkey, Malaysia, UAE, Russia, Germany, Italy, Spain, Romania, France and Belgium among others. Turkey supplies about half of the imported board. The proximity of Iran and Turkey – and the existence of fast and cheap connections such as railway and road, cheaper transportation and a long history of commercial exchange between these countries on the one hand and the over capacity of MDF in Turkey and the competitive prices – are good reasons that encourage the Iranian consumer to import MDF from Turkey”

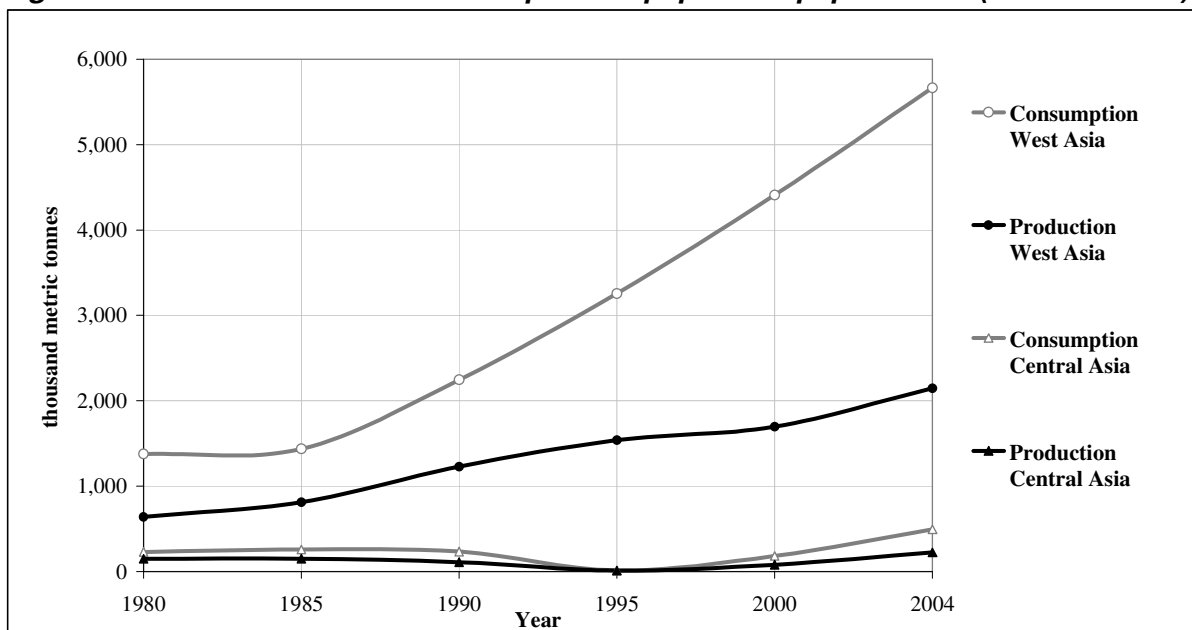
Source: <http://www.wbpionline.com/story.asp?sc=36446&ac>

Paper and paper products

58. Paper and paper board is one of the most important items of forest products imported by the countries in the Region. Since 1990 the volume and value of imports of paper and paper board has steadily increased, and currently the Region imports paper and paper products worth of about US\$ 3.2 billion. Turkey is the only country that has substantial production capacity and still in 2003 production was adequate to meet about 66 percent of the consumption. Most others are dependent on imports to meet the domestic demand for printing and writing paper. In a number of countries, especially in the GCC, there have been a large expansion of production especially of tissue paper and corrugated cartons. (Mubin, 2004).

59. Figure 2-3 gives an indication of the trends in production and consumption of paper and paper board in West Asia and Central Asia separately.

Figure 2-3 Production and consumption of paper and paper board (in 000 tonnes)



60. Paper and paper board production in the West Asia region has increased substantially, especially in the post 1990 period. Production capacity has however grown much slower, resulting in increased imports.

61. In the case of Central Asia, production and consumption declined in the post 1990 period and since 1995 there has been some upward trend. Yet in 2003 consumption has remained below the 1980 and 1990 levels. With improvement in the economic situation, future increase in consumption could be expected.

Box 2-13 Double hardships—limited legally-harvested fuelwood and decreased energy supply

During the Soviet time, some harvesting was carried out in the forests of Azerbaijan. For enhancing environmental function of forests, in 1991, the Government of Azerbaijan has decided to ban industrial felling. At the same time, the break-up of the integrated Soviet economy resulted in a disruption of 1.2-1.5 million m³ of timber annually imported from Russia. Since only maintenance and sanitary felling have been officially permitted, fuel wood volume obtained from legal harvesting has become limited.

Extensive power and gas networks from the Soviet time were capable of delivering electricity and gas of acceptable quality to almost the entire population. Yet, after the independence, lack of investment and limited maintenance have resulted in significant deterioration in these networks.

Subsequent loss of access to energy has forced people to cut trees for fuelwood to sustain their livelihood, most of which were illegal under the government decision.

No matter whether there is logging moratorium or not, insufficient supplies of fuelwood and other energy sources have resulted in similar consequences in the region except for Turkmenistan.

Source: FAO, 2006b, World Bank, 2004.

Wood fuel

62. Although there are concerted efforts to switch over from wood fuel to other commercial fuels, rural people in some of the countries are dependent on wood as the main source of domestic energy, especially for cooking and heating. Since most of woodfuel harvesting takes place outside the domain of what is legally allowed, reliable data on production and consumption are not available.

63. With the exception of Turkmenistan (where the government provides all the population with gas, electricity and water free), in most other Central Asian and Caucasus countries the demand for woodfuel has increased since independence, primarily due to a decrease in supply of accessible and affordable alternative energy supplies (see Box 2-13). In Tajikistan and Georgia more than 80 percent of the rural people are dependent on woodfuel as the main source of household energy. The recent disruption of gas supplies demonstrates the vulnerability of countries like Georgia and its possible impact on woodfuel demand.

64. The woodfuel situation in the West Asian countries is very similar to that in Central Asia and the Caucasus and the importance and the extent of use of woodfuel varies considerably depending upon a number of factors. For example, woodfuel provides almost 85 percent and 70 percent of household energy needs in Afghanistan and Yemen respectively. Especially in the case of Afghanistan, consumption of woodfuel has increased in the wake of the prolonged conflict, which disrupted the supply of commercial fuels. Iraq has also been experiencing such a situation as people switched over to charcoal when fossil fuel supply was affected by war.

65. In several countries – for example Cyprus, Lebanon, Oman, Iran, Syria, Turkey, Saudi Arabia and UAE – dependence on woodfuel has declined largely on account of the growth in income, increased urbanisation and access to commercial fuels (see Box 2-14). There are exceptions to this trend; for example in the case of Jordan woodfuel production and consumption have increased during the last 15 years, partly due to the greater use of charcoal, especially in restaurants. A number of countries in West Asia import charcoal to meet the growing demand from affluent consumers, as an increase in income encourages reverting to traditional methods of cooking using charcoal, often as a status symbol.

Box 2-14 *Decrease in woodfuel consumption in Iran.*

During the recent years Iran has made a concerted effort to reduce the dependence on woodfuel for meeting the household energy needs. Woodfuel production from Caspian forests was reduced from 771,000 m³ in 1979 to about 379,000 in 2003. Fossil fuel supply has been expanded rapidly during the period especially through laying gas pipelines even to remote areas.

Source: FOWECA Country Outlook Paper - Iran, 2005

66. In order to protect forest and tree resources from over exploitation, some of the countries have formulated rules and regulations to control fuelwood collection and

charcoal production. For example, in 2000 Saudi Arabia imposed a ban on wood collection and charcoal production for a period of five years and permitted the import of fuelwood and charcoal to meet domestic demand. Syria has adopted a system of licensing charcoal production from forests and fruit trees. Such restrictions have not always helped to deal with the problem, especially due to the limited institutional capacity to enforce the regulations. Existence of sale outlets for domestically produced charcoal (often by illegal immigrants) in countries like Saudi Arabia indicates the persistence of demand and the difficulties in enforcing legislation.

Non-wood forest products

67. Non-wood forest products (NWFPs) are important source of livelihood in all the countries in the West and Central Asia region. They range from subsistence items to products traded in the international markets. However, insufficient information, especially on account of unorganized collection, processing and trade, makes it difficult to assess the precise nature of their contribution. Often the information available is general and rather qualitative.

Box 2-15 Pistachio forests in Turkmenistan

Pistachios grow individually or in small thickets in southern Turkmenistan. A total area of natural pistachio forests in Turkmenistan reaches more than 80 thousand ha. Their high oil containing fruits have been used for food and food processing and their tannin and gum for lacquer production. They provide a significant sum of income to those who grow and sell the products. Disease and dry-wind resistant, pistachios also serve as fodder for animals. Pistachio is very precious for dry horticulture in Turkmenistan.

Source: FAO, 2006.

68. Important non-wood forest products in the Central Asia and the Caucasus include nuts, berries, honey, medicinal plants and wildlife (see Wildlife management). Many of them are of particular importance at the local level. For example, in southern Kyrgyzstan, walnuts are the most important NWFP as a major source of cash income for the local population, especially during the year of good harvest (Fisher et al. 2004). In most cases,

people are allowed to collect them free of cost. In Kyrgyzstan, collectors have to pay the leskhozoes a fee when collecting above an allowable amount. Excepting the case of a few limited items (as in the case of Pistachio forests in Turkmenistan – Box 2-15), NWFPs do not significantly contribute to incomes for rural people (Asanbaeva, 2005).

69. Most of NWFPs support local economies, providing the base for small-scale, household-based enterprises. Some forestry enterprises (leskhozoes) in Central Asia employ local people for collection and processing of NWFPs and thus provide employment opportunities, although the income from such employment varies considerably (CAREC 2006).

70. The main non-wood forest products in West Asia include medicinal and aromatic plants, herbs and spices, gums, resins, tannins, mushrooms, honey and fruits and nuts. In some cases fodder is also considered as non-wood forest products as a large number of livestock population depends on fodder availability in the forests and woodlands. NWFPs are more valuable than wood products in some countries (for example in Lebanon, Oman and Saudi Arabia) in the West Asia region. However, information on production, processing and marketing and trade is very weak in most countries. NWFPs usually are produced in informal sector, with no regulations relating to harvesting and trade. This has also resulted in over exploitation of resources in some areas.

71. Several of NWFPs, like Bay leaves in Turkey are important commercially. The production of Bay leaves has increased about 6 times, from 1062 tones in 1989 to 6626 in 2002. This development has been mainly due to private investments in processing and marketing of NWFPs. Technology such as fresh-keeping technique contributed to this development as well. The export of Thyme and Bay leaves has increased from US\$ 21.0 million in 2002 to US\$ 29.0 million in 2004.

Box 2-16 International trade of NWFPs from West Asia

The UN COMTRADE data gives a general indication of the increasing importance of some of the non-wood forest products from the West Asia region. In 2003 Iran exported 185 million kg of Pistachios, whose export value is estimated as US\$ 680 million, accounting for 2 percent of the total national export. With 76 percent of the global exports in 2003, Iran is the biggest exporter of Pistachios in the world. Afghanistan is another important exporter of Pistachios with an export volume of 513,000 kilograms earning an income of US\$ 1.9 million in 2002. Turkey is the largest exporter of Thyme and Bay leaves, earning an income of US\$ 29 million in 2004. Turkey is also the fifth largest chestnut exporter, exporting 8 million kg earning an income of US\$12 million in 2003. Turkey, Iran and Yemen are the main exporters of natural honey in the region.

A number of countries in the West Asia region have emerged as major exporters of non-wood forest products (see Box 2-16).

Environmental services

72. Forests and woodlands in the West and Central Asia region provide a number of environmental services, like conservation of biological diversity, protection of watersheds and arresting land degradation and desertification (see Boulay & Nair, 2006). In many countries, there is increasing emphasis on the recreational and amenity functions of forests and wood lands and, as discussed earlier, substantial investments are being made to establish and manage urban and peri-urban forests. Environmental services provided by forests are probably more important than their productive functions for most countries in the region.

Conservation of biological diversity

73. The wide range of topographic, soil and climatic conditions in the West and Central Asia region has resulted in highly diverse ecosystems ranging from coastal mangroves to alpine forests and deserts to humid forests. Of the 32 global biodiversity hotspots 4 are in the region (see Box 2-17).

Box 2-17 Biodiversity hotspots in West and Central Asia

Conservation International has identified the following 4 biodiversity hotspots in the West and Central Asia:

- **Mountains of Central Asia:** The hotspot's ecosystems range from glaciers to desert, and include a highly threatened type of walnut-fruit forest.
- **The Caucasus hotspot:** The deserts, savannas, arid woodlands, and forests that comprise the Caucasus hotspot contain a large number of endemic plant species.
- **The Irano-Anatolian hotspot:** Forming a natural barrier between the Mediterranean Basin and the dry plateaus of Western Asia, the mountains and basins that make up the Irano-Anatolian hotspot contain many centres of local endemism. The greatest threat to the Turkish part is the development of irrigation schemes for agriculture and associated infrastructure, such as dams.
- **The Mediterranean Basin:** It has 22,500 endemic vascular plant species. Tourism development has placed significant pressure on coastal ecosystems.

Source: Conservation International, 2005

74. The mountains of Central Asia are of particular significance as regards their biodiversity value. Due to their location and several altitude belts, they are characterized by high diversity at the ecosystem, population and species levels (see Magin, 2005). Mountain ecosystems serve as a place of origin of many cultivated plants and animal breeds and a refuge for several globally important species. Considerable areas in the Central Asian mountains are under wild fruit-bearing forests, and represent the genetic centres of origin of cultivated varieties of apple, pear, pomegranate, etc. The Caucasus is also characterized by a high level of endemism (UNEP, 2002).

75. Almost all countries are signatories to the Convention on Biological Diversity and are making efforts to protect and manage important biomes and ecosystems. Most countries have prepared national biodiversity action programmes – often with external support - and much of the efforts are directed to establish and manage protected areas. Protected areas do not represent all the critical biomes. The existing protected area system encompasses some of the ecosystems and eco-regions, but others –notably steppes, deserts and semi-deserts– are poorly represented. Temperate grasslands typical of Central Asia are poorly protected. Further, the value of some of the protected areas for biodiversity conservation is rather limited, especially as some of them have been established for purposes of recreation and tourism.

Box 2-18 *Agriculture expansion: a threat for biodiversity conservation*

In Kazakhstan, agriculture is one of the main threats for the ecosystems. In the 50's, more than 90% of the area of regular chernozems and around 60% of dry steppes were ploughed. This led to serious wind erosion, and dust storms became common. The steppe areas that remained are considerably modified because of overgrazing.

In Turkey, in the eastern part of the ecoregion, agriculture is so extensive that, except in the hilly areas, all the natural vegetation has been converted to fields. Even in the hilly areas, natural communities are highly degraded as a result of overgrazing.

Economic and socio-cultural changes are causing a decline in environmental quality in the Caucasus. Urban and rural development have converted most of lowland forests to agricultural and development lands.

Source: WWF, 2005

76. The extent of efforts to manage biodiversity varies enormously. Some of the protected areas are highly degraded receiving little or no protection. Boundaries are often not clearly marked and local people may not be aware of the status of such areas. Park boundaries often omit areas of high biodiversity value that are just beyond the boundary, while large-scale farming areas and high-intensity tourism sites are included. Poor infrastructure, limited staff and absence of financial support undermine the efficacy of protection. Agriculture expansion has been one of the major factor contributing to biodiversity loss (see Box 2-18). Other issues that affect conservation of biological diversity in the West and Central Asia area region include:

- Inter-sectoral issues have not been addressed effectively and most often key departments or ministries responsible for land use – agriculture, forestry, animal husbandry – are not involved in the process. In many countries coordination of biodiversity conservation is the responsibility of environment department and the limited resources constrain their ability to undertake the tasks assigned to them.
- Discontinuities in the policy and institutional environment are a major problem in the conservation of biological diversity. In many countries, there have been too frequent institutional changes that have undermined continuity of initiatives.

- Often the National Biodiversity Action Plans tend to be a wish-list of projects, primarily aimed to secure external funding. Very few of them have concrete proposals for mobilizing internal resources and how biodiversity conservation aspects could be incorporated into various land uses.

Watershed values

77. Water is one of the most critical natural resources in West and Central Asia and the Caucasus and is a key concern of national and regional security. Almost all countries in the region face high water deficit, which is expected to worsen accentuating social, economic and political problems. Most of the important river systems have been subjected to major modifications, especially for irrigation and power generation. Sharing of water between different countries and sectors remains a contentious issue, and as elsewhere, most conflicts in the region have some link to securing and protecting water supplies.

78. Many rivers in Central Asia, Caucasus and West Asia traverse more than one country and managing demand and supply between countries faces economic, social, institutional and political problems. The role of forests in regulating water flow needs to be seen in this context. Table 2-10 gives the extent, number of countries covered, population and the land use in the major trans-boundary watersheds in the West and Central Asia.

Table 2-10 West and Central Asia - Major Watersheds

Major watersheds in the region	Watershed area (km ²)	Countries within the watershed	Population density (per km ²)	Percent of watershed that is:				Large dams in progress	Percent of protected area
				Crop-land	Forest	Grass-land	Arid area		
Amu Darya	534,739	5	39	22.4	0.1	57.3	72.0	2	0.7
Euphrates & Tigris	765,742	5	57	25.4	1.2	47.7	90.9	19	0.4
Kizilirmak	122,277	1	55	38.0	1.6	52.0	84.9	9	0
Kura & Araz	205,037	5	75	54.0	7.1	30.6	25.4	4	4.3
Lake Balkhash	512,015	2	11	23.2	4.0	61.1	91.6	0	7.2
Ob	2,972,493	4	10	36.9	33.9	16.0	42.5	0	1.9
Syr Darya	782,617	4	28	22.2	2.4	67.4	88.5	4	1.0

Source: World Resources Institute, 2005 (Earth trends)

Amu Darya: Turkmenistan + Uzbekistan + Tajikistan + Afghanistan + Kyrgyzstan

Kizilirmak: Turkey

Kura & Araz: Armenia + Azerbaijan + Georgia + Iran + Turkey

Lake Balkhash: Kazakhstan + China

Ob: Mongolia + Kazakhstan + Russia + China

Syr Darya: Uzbekistan + Kazakhstan + Kyrgyzstan + Tajikistan

Tigris & Euphrates: Turkey + Iran + Iraq + Syria + Saudi Arabia

79. As can be seen, the extent of forest cover in all the important watersheds in the region, excluding that of the Ob River (whose catchment largely falls in China, Mongolia and Russia) is rather negligible, varying from 0.1% in the case of Amu Darya to about 4% in the case of Lake Balkhash. In the case of Syr Darya the forest cover is only 2.4% (see Table 2-10). The Kura & Araks watershed has higher forest cover (7.1%) especially in view of the high forest cover in Georgia, the most forested –country in the Caucasus.

Box 2-19 Desertification in West Asia

Land degradation and, at its extreme, desertification, continue to be the most significant environmental issues in West Asia (CAMRE, UNEP and ACSAD 1996), especially in countries where the agricultural sector makes a significant contribution to the national economy. There is extensive desert in the region, ranging from 10 per cent in Syria to nearly 100 per cent in Bahrain, Kuwait, Qatar and the United Arab Emirates. Desertification has also affected wide areas of rangelands in Iraq, Jordan, Syria and the countries of the Arabian Peninsula. The causes include a combination of climate, high population growth rates and intensive agriculture. Poverty and inappropriate government policies exacerbate the problem. Geopolitical instability in and around the countries of West Asia has persuaded governments to adopt policies aimed at achieving national food security. These policies have been accompanied by agricultural protectionism, the erection of trade barriers and government subsidies for agricultural inputs. Subsidies, together with free or cheap irrigation water, have had severe impacts on land and water resources, and have contributed to the unsustainability of agriculture in the region (UNESCWA 1997). As a result, land degradation has become widespread, and it has accelerated as more rangelands were reclaimed and put under cultivation (CAMRE, UNEP and ACSAD 1996).

Source: World Bank and UNDP, 1998

80. Since the predominant land use in almost all the watersheds is grass lands and crop lands, how these are managed is more critical as regards watershed values. Considering the complex nature of hydrology and the multitude of factors that affect quantity and quality of stream flow, afforestation as a means of regulating water flow is unlikely to make a dent on the water crisis in the region. Given the preponderance of arid and semi-arid land, afforestation is more likely to enhance water loss on account of increased evapo-transpiration. More importantly, afforesting the degraded pasture and agricultural lands may face significant economic constraints.

81. The regulatory functions of forests and woodlands seem to be more important in the case of small watersheds. In many cases, although the rainfall is low, it is often very intense, resulting in high levels of surface run-off. Much of the problem stems from changes in land use, especially when wood lands are cleared for high tillage uses without adequate efforts to adopt soil and water conservation measures. Increased grazing, far beyond the carrying capacity, resulting in soil compaction is another factor that reduces infiltration and enhances run-off. Increased urban build up and infrastructure development (especially roads) have reduced the proportion of water that seeps into the soil, resulting in increased peak flows and reducing the duration of stream flow.

82. Several instances of adverse impacts on stream flow on account of forest clearance have been reported from the region. Deforestation and over-grazing have led to erosion causing high turbidity of water in many countries. For example the Araz River in Azerbaijan is reported to be one of the most turbid rivers in the world (United Nations, 2004). High turbidity increases the cost of drinking water and Azerbaijan faces serious problems with water quality especially as it is at the end of the Kura basin. This is all the more so in countries whose economic situation is unsatisfactory and where most of the population is rural. Grazing and woodfuel collection (especially production of charcoal) are the important in causing land degradation, undermining watershed values.

Desertification

83. Desertification, which is defined as the decline in productivity and degradation of land in the arid and semi-arid zones, is another major environmental problem facing almost all countries in West and Central Asia. Almost all countries (except Cyprus) in the FOWECA region are affected by desertification and in 9 out of the 23 countries, drylands account for over 90% of the land area. All West Asian countries are located in the arid and semi-arid zone and about 79 percent of land is desert or desertified. Further, another 16 percent is vulnerable to desertification. This is strongly linked to the preponderance of arid and semi-arid areas, poor management of water resources, including excessive extraction of ground water resulting in lowering of water tables (which in many coastal areas results in salt water intrusion) and land use practices far beyond the carrying capacity (see Box 2-19).

Box 2-20 Human induced desertification is the Aral Sea

The Soviet practice of indiscriminately exploiting natural resources to feed its industrial machine had devastating consequences for the Aral Sea region. In 1959, the waters of Syr Darya and Amu Darya rivers, the Aral Sea's two main feeders, were diverted to irrigate newly planted cotton fields in Uzbekistan. With the diversion of two of its feeding rivers, evaporation took its toll on the Aral Sea. Further the pesticides used to accelerate cotton growth heavily polluted the water system. Moscow's attempt to transform one of its republics into a major agricultural center was a shortsighted project and was abandoned within a decade. But the environmental effects were not so transient: the Aral Sea has lost three-fifths of its water in the past 40 years, and its shoreline has at some areas receded more than 60 miles. What remains of the sea is salty and polluted.

Source: Schaar, 2001

84. Forestry is one of the components for combating desertification and focuses on both preventive and remedial measures, although most attention hitherto has been on the latter, especially when the adverse effects become very evident. Like what happens in the case of agriculture and range management, unfavourable policy, institutional and economic environment result in the neglect of preventive actions. Governments find them particularly difficult, if more comprehensive approaches require significant policy and institutional changes. Key areas of forestry interventions include:

- Improved management of vegetation (which involves a large array of policy, institutional, legal and technical interventions) including addressing the problem of forest fires, which is a key factor contributing to land degradation;
- Remedial measures, particularly afforestation of degraded areas to stabilize soil and to prevent further erosion through wind and water and protective measures to maintain productivity of agricultural and other land through establishment of shelterbelts and wind breaks. Fixation of sand dunes is a thrust area in several countries in the region. Most countries are also establishing "green belts" to improve the micro-climate and enhance the recreational values in urban areas.

85. Forestry interventions have largely focused on technical aspects, especially to plant species that are well adapted to the adverse environmental conditions, producing sufficient number of seedlings to meet the demands from government organizations (including that of the forestry departments) and farmers, adoption of appropriate techniques for planting and aftercare. Also considerable efforts have been made to develop appropriate design of

shelterbelts and wind breaks and various techniques for sand dune stabilization. In almost all cases, establishment of shelterbelts and wind breaks and other amenity planting requires irrigation, especially in the first few years. In the extremely arid and semi-arid conditions this is critical to success of any planting. Substantial efforts have been made to:

- Economize water use especially through drip irrigation; and
- Use of treated waste water, especially to establish green belts and other amenity planting in urban areas.

86. A number of countries in West Asia have pursued the above line of action, especially in the context of urban greening initiatives. Costs of such planting are extremely high and hence their wider adoption largely depends on resource availability. At best such an approach may be adopted in a limited area, especially in the case of cities that are emerging as important commercial and tourist centres.

87. Afforestation of the exposed Aral sea bed is a major joint initiative of a number of countries. In fact the drying up of the Aral Sea and its consequence on extensive agriculture areas on account of deposition of toxic salts is a major environmental problem affecting a number of Central Asian countries. (see Box 2-20). Some of the countries in Central Asia have in the past attempted afforestation through aerial seeding. Efficacy of this approach has been at best mixed and its eventual impact as regards re-vegetation of the area depends on several factors, more particularly climatic and soil conditions that determine the survival of seedlings.

Forest based ecotourism

88. Forest based ecotourism is another important environmental service that is gaining prominence in many countries. In most West and Central Asian countries, where the

Table 2-11 International tourist arrivals in some of the countries in West and Central Asia

Region	Tourist arrivals (*1000)					
	1990	1995	2000	2002	2003	2004
CENTRAL ASIA		346	1,836	3,304	2,889	3,552
CAUCASUS		190	1,113	1,294	1,533	1,980
WEST ASIA	13,306	19,829	31,289	40,716	41,121	47,016
TOTAL WECA region	13,306	20,365	34,238	45,314	45,543	52,548
TOTAL WORLD	441,033	538,062	680,562	700,427	689,689	763,235
Percent of tourists in WECA region	3.0	3.8	5.0	6.5	6.6	6.9

Source: World Tourism Organization, 2005.

scope for wood production is limited, recreational use could partly help to enhance the economic viability of forest management. International tourism has grown rapidly during the last few years (see Table 2-11) and the West and Central Asia region has increased its share in the world tourism. This trend is likely to persist, excepting in the event of political instability and insecurity. Especially with increased investments in infrastructure (for example the Silk Road project) tourism could become a major source of income. Forests and forestry could significantly contribute to the growth of tourism. Countries like Cyprus

(see Box 2-20) have been able to take advantage of the recreational use of forests, supporting the overall tourism development in the country. In fact wood production is becoming less important than the recreational use of forests.

89. There are however others where, notwithstanding the presence of assets like attractive landscapes, biodiversity, wildlife and historical and cultural sites, tourism remains undeveloped yet. Similar differences could also be seen within countries, depending on site specific factors. The situation is however expected to change rapidly, providing important opportunities for the forest sector. Much will depend on moving up the value chain through investments in infrastructure and other facilities and enhancing the overall attractiveness (see Horak, 2004). Several countries are competing to get a larger share of the tourism market, and only a few countries have been able to take advantage of the potential. Important strengths, weaknesses, opportunities and threats as regards eco-tourism are indicated in Table 2-12.

Table 2-12 Tourism in West and Central Asia – Strengths, Weaknesses, Opportunities and Threats

<p>Strengths</p> <ul style="list-style-type: none"> • A wide range of ecological, social and cultural environment. • Rather unknown in comparison with other sites and thus has some novelty. • Expansive wilderness, especially in some of the Central Asian countries. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Poorly developed infrastructure, especially roads and other access and hotels and such facilities. • Cumbersome travel formalities, especially for obtaining visa. • Conflicting objectives of different agencies involved in tourism development. • Poorly developed institutional capacity. • Lack of information in potential markets. • Political conflicts and security concerns. • In some of the countries, tourism is generating adverse environmental impacts and has reached saturation stage.
<p>Opportunities</p> <ul style="list-style-type: none"> • Situated close to a rapidly developing market and the volume of tourism to grow very rapidly. • Increased interest for a different kind of tourism focusing on local cultures and lifestyles. • Increasing income in the region that may help to boost domestic and outbound tourism. 	<p>Threats</p> <ul style="list-style-type: none"> • Political instability and frequent changes in institutions that undermine consistency in management. • Unmanaged rapid expansion of tourism could undermine the basic resources like flora and fauna and the landscape through congestion and environmental degradation. • Local communities may not be able to gain significantly from the growth of tourism. • Rapid growth of investments and very severe competition, that reduces the profit margins considerably.

Carbon sequestration

90. An important environmental service provided by forests and trees relate to the sequestration of carbon and thus its potential to contribute to climate change mitigation. Forests form an important terrestrial carbon sink and land use changes (deforestation/afforestation) could significantly alter the carbon balance, changing what is retained in the biomass and in the atmosphere. In the context of growing concern about climate change, there is some recognition of the potential of afforestation and reforestation for carbon sequestration.

91. With the ratification of Kyoto Protocol, the potential for investing in reforestation/afforestation under the Clean Development Mechanism has increased significantly. While all afforestation/ reforestation projects as well as improved management of natural forests do help to sequester carbon, projects under the Clean Development Mechanism of the Kyoto Protocol are of rather limited scope. It is intended primarily for allowing industrialized member countries to meet their green house gas reduction obligations through offset projects in developing countries. It is in this context that the potential of the West and Central Asia Region to sequester carbon and to take advantage of new resources for afforestation and reforestation are to be considered.

92. Carbon sequestration initiatives in the forest sector could be broadly grouped into (a) externally funded afforestation and reforestation projects where carbon sequestration is one of the objectives, and (b) projects within the framework of CDM, driven by demand for credits – certified emission reductions – from private and public entities in developed countries. Within the WECA region, there is no afforestation/ reforestation projects in the latter category and what is now being implemented in some of the countries are primarily forestry projects where carbon sequestration is one of the several, often incidental, objectives.

93. Recently a pilot afforestation project has been initiated in Iran, funded by the Global Environmental Facility with the objective of carbon sequestration. This is a 6 year project aimed to demonstrate that desertified rangelands can be cost-effectively reclaimed for the benefit of the local community, but at the same time benefiting the global community through carbon sequestration. The project has adopted a community based approach through the establishment of village development groups, who take the responsibility for managing the afforested areas.

94. Studies have also been carried out on the carbon sequestration potentials of afforestation and forest conservation in Kazakhstan. In the non-power sector afforestation and reforestation is considered as a priority area for carbon sequestration and the programme “Forests of Kazakhstan” has been recommended to increase the forest cover to 5.1% by 2020 from 3.7% (9.6 million ha) in 1990 or about 3.8 million ha additionally. Annual CO₂ sequestration on account of this is expected to increase by about 6 million tones and the total investment is estimated as about US\$ 3.5 billion. Implementation of this largely depends on resource availability and the institutional capacity.

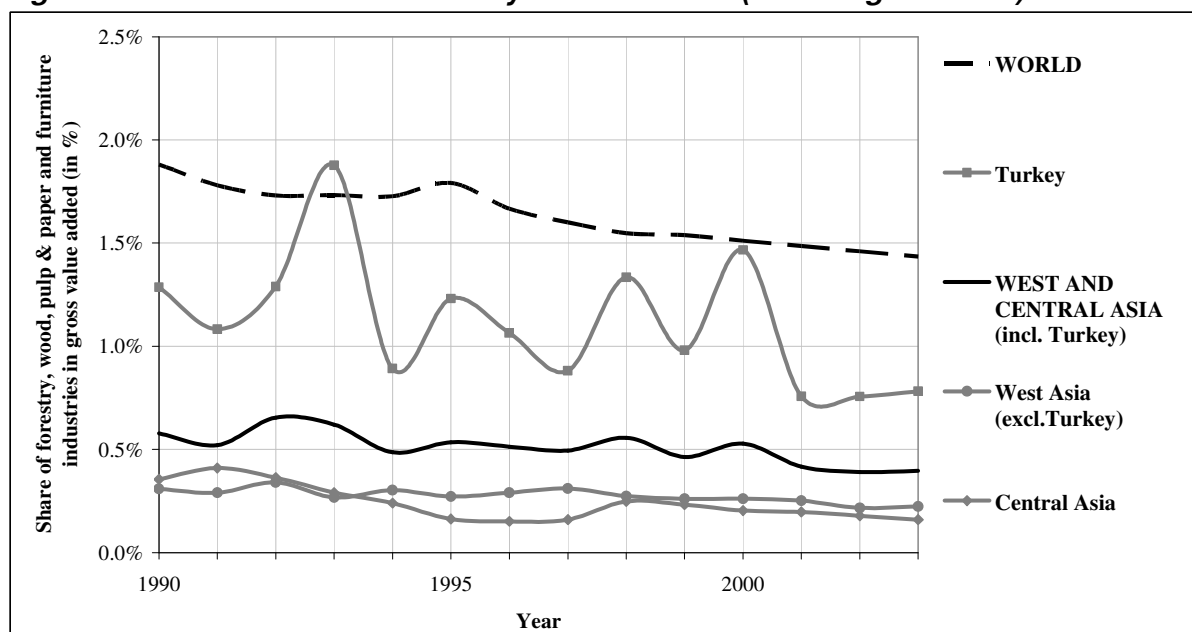
95. Although forests and woodlands are important as carbon sinks, the scope for taking advantage of the CDM facility in the West and Central Asia region is limited. Most CO₂ sequestration projects now implemented in the region are outside the CDM framework of Kyoto Protocol, although there are a number of externally funded afforestation/ reforestation projects where CO₂ sequestration is accomplished incidentally. As such there are no CDM projects in any of the countries in the region. Inherent low biomass productivity is a major limiting factor in taking advantage of the CDM facility. Since CDM is a market-based mechanism, most resources may flow to those countries that are able to sequester carbon competitively. There are also a number of other stipulations that many countries may not be able to fulfill, not just for afforestation/ reforestation projects, but for all CDM projects.

2.6 ECONOMIC SIGNIFICANCE OF FORESTRY

Contribution to gross domestic product

96. In view of the poor growing conditions, the direct economic contribution of trees and forests to the national economies is negligible in most countries, except Turkey and Georgia (see Lebedys, 2004). Based on the national income accounts, FAO has updated the long term trends in the contribution of the forest sector to gross domestic product during the period 1990 – 2003. In absolute terms, value added by the forestry sector increased in the Region, mainly due to the expansion of paper and furniture industries in West Asia. In 1990 value added generated by the forestry sector in the Region was about US\$ 3.5 billion and this has by 2003 increased to about US\$ 4.0 billion. However, as shown in Figure 2-4 proportionately the share of forestry has been on a long term decline. This is nothing particular to forestry, but applicable to all other primary sectors, including agriculture.

Figure 2-4 Contribution of forestry sector to GDP (including furniture)



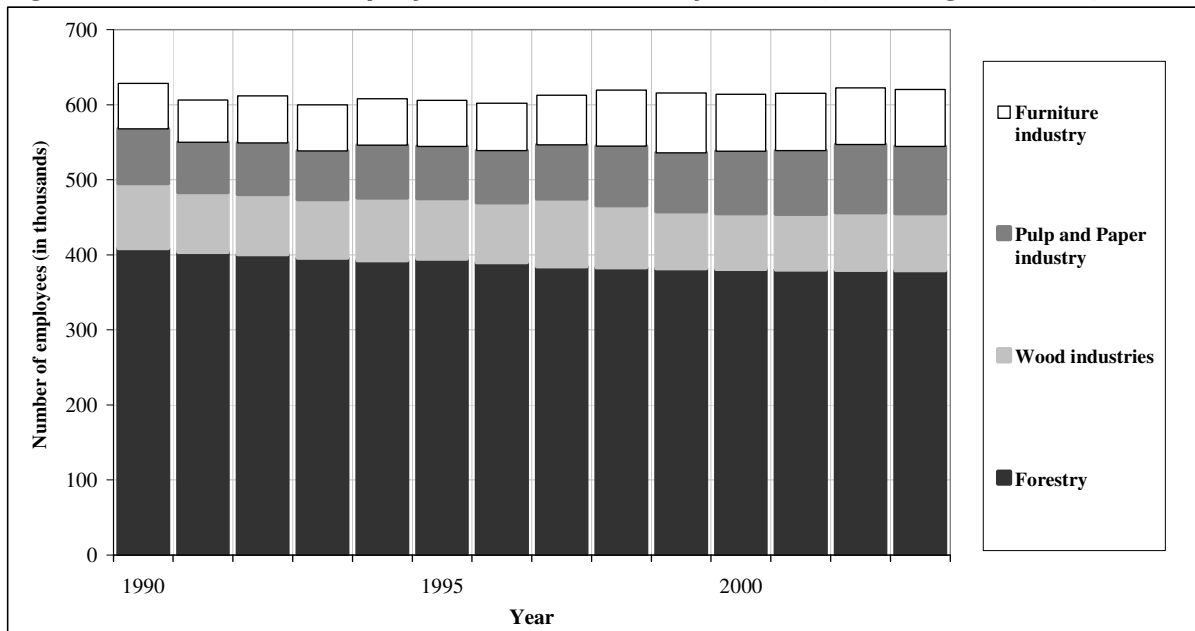
97. Globally, the share of the forestry sector (including furniture) has declined from about 1.9% in 1990 to about 1.5% in 2003, largely due to the faster growth of other sectors. Within the FOWECA region, it has declined from 0.6% in 1990 to about 0.4% in 2003 and for reasons that are obvious, the share of forest sector in West Asia is consistently higher than that of Central Asia. In view of Turkey's well developed forest sector, especially wood industries and pulp and paper industry, the sector's contribution to its GDP is significantly higher than in most countries.

Employment in the forestry sector

98. Analysis of national employment statistics indicates that in 2003 about 545 000 people were employed (full employment equivalent) in the forestry sector (excluding the

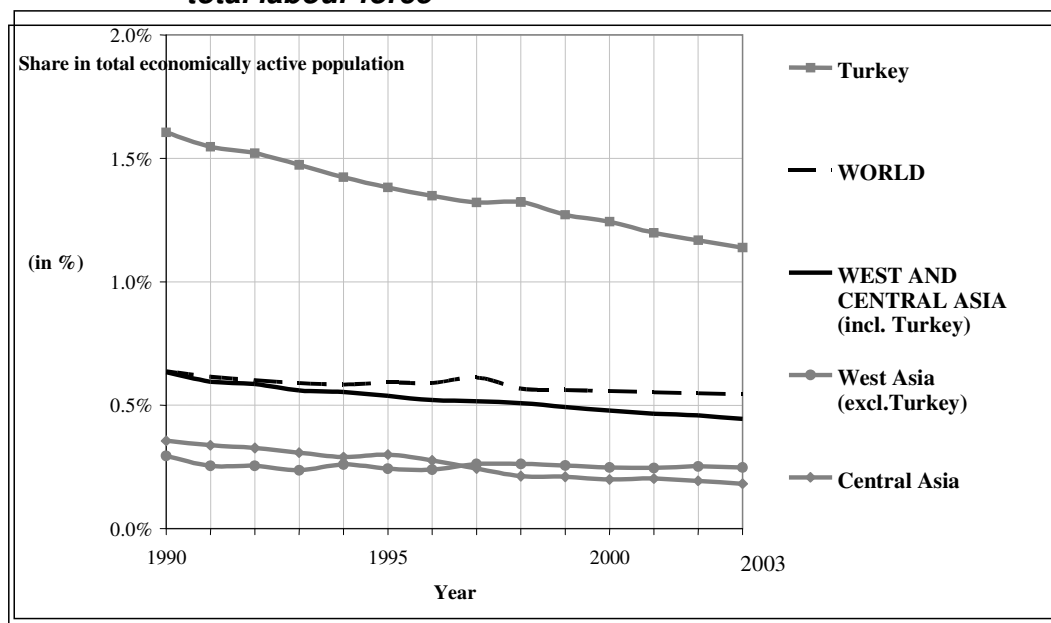
furniture industry) in the West and Central Asia region. Including furniture industry the total full time employment in the region in 2003 was 620,000 persons. Overall employment level in forestry sector has remained stable in comparison with the level of employment in 1990 (when the total number of persons employed was 628,000). The structural change within the sector is obvious - number of employed in forestry has declined, but in other sub-sectors (industries) it increased. Figure 2-5 gives an indication of the number of persons employed (full time equivalent) in the forestry sector.

Figure 2-5 Trends in employment in the forestry sector (including furniture)



99. Since the absolute number of people employed in the forestry sector remained unchanged, the relative contribution of the sector to employment has declined over time (see Figure 2-6).

Figure 2-6 Employment in the forest sector (including furniture) as proportion of total labour force



100. In view of the relatively better developed forest industries, Turkey has a higher proportion of labour force employed in the forestry sector in comparison with the rest of the region. Turkey accounts for 60% of forestry sector employment in the region. In line with global trends, forestry's share of employment in the region is on the decline. Although in the region there has been some employment increase in wood processing, the long term prospects of such employment growth is limited in view of advancements in technologies.

2.7 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

101. Despite the dominance of public ownership of forests and woodlands in the region, there are differences in the policy, legal and institutional framework, largely reflecting the differences in the political history of the countries. An overview of the policy, legal and institutional framework relating to forests and forestry is given below for the two sub-regions.

Central Asia and the Caucasus

102. Most of the countries in Central Asia and the Caucasus have developed appropriate legal framework on forests after their independence. The basic laws are either the Forest Code or the Law on Forests developed after independence. Some of the early legislation have already been revised (for example Armenia, Kazakhstan and Kyrgyzstan), are currently in the process of revision (as in the case of Georgia and Turkmenistan) or in the pipeline for revision (as in the case establishing a new code in Uzbekistan). Several forestry-related legislations and regulations have been developed in accordance with the Forest Code or Law on Forests. However, the fundamental problem of weak implementation of policies and legislation remains, and this largely stems from weak institutional capacity.

Box 2-21 Institutional instability in Georgia

Insufficient financial resources due to the economic hardship and inadequate human capacities are among the major obstacles to sustainable forest management in the region. In the case of Georgia, in addition to such widespread obstacles, there prevails another challenge after the independence, in particular after the Rose Revolution. In the past few years, the turn over of 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 involved in corruption, unattractive wages for professionals, lack of leadership and changing overall political environment. The institutional instability makes it difficult for the employees to constantly carrying out their activities as well as for external supporters to effectively assist forestry activities in the country.

103. As most forests in the sub-region are under public ownership, the government is the most important player in the management of forests. Management is still largely centralised with local level institutions like state forestry enterprises ("leskhozoes") or similar institutions taking the responsibility for local level implementation of management plans. However, they have been facing severe financial and technical problems and are yet to adapt to the larger economy-wide changes. In almost all the countries efforts have been made or under way to bring about institutional changes.

104. Since independence restructuring or changes in the state forest administration or the former State Committee on Forestry have been observed in all the countries. Broadly the institutional changes in forestry relates to:

- Integration of the functioning of the Committee of Forestry in the relevant ministry (ministry of environment or ministry of agriculture)⁶;
- Restructuring of the State Committee on Forestry as autonomous or semi-autonomous bodies responsible for all forestry activities (for example "Gok Gushak" in Turkmenistan).

105. An important problem with regard to institutional arrangements for forestry is the too frequent reorganization (see Box 2-21), in particular, changes in the controlling Ministry. Forestry has been moved from agriculture ministry to environment and then back to agriculture and sometimes such shifts have caused substantial instability and uncertainty in the functioning of the state forestry agencies. Often these changes also involve changes in the leadership causing programme discontinuities and loss of institutional memory weakening the overall technical and managerial capability.

106. The responsibility for protected area management is under the same state agency/department responsible for forest management in some countries, while it is separated in others. For example, the Forestry and Hunting Committee of the Kazakh Ministry of agriculture is responsible for overall forest management of the country as well as the management of all protected areas. In Tajikistan the Agency of Forestry and Hunting Facilities is responsible for forest management, the State Directorate of Protected Areas "Tajik National Park" under the same Committee is responsible for protected area management. In Uzbekistan, specially protected territories are managed by the Main Forestry Department of the Ministry of Agriculture and Water Resources and the State Committee on Nature Protection.

⁶Only in Kyrgyzstan the State Forest Service remains not attached to any particular ministry, but under the direct control of the President.

107. Often other government agencies also play an important role in promoting sustainable forest management, such as those 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 Turkmenistan, all the state agencies have to participate and take part of the responsibility for the massive green zone development in Turkmenistan.

West Asia

108. The legal framework for forestry in the West Asia region varies between the countries. Forest legislation in Cyprus date back to 1939, have been periodically updated, and currently efforts are under way to make them in line with the European Union rules and regulations. Turkey's forestry laws have been in force since 1956 with a special Law on Development of Forest Villages. The numerous changes made to these laws are considered by foresters to be an important problem for forestry in the country. Nevertheless, the government is currently preparing a reform package within the framework of EU adaptation and is hoping to achieve more stability in that sector. Iran's forestry laws have also been in place for a long time, since 1968, and have been amended several times since. All these countries have had a long history of forest protection through legislations that have been developing ever since their establishment.

109. Laws regulating forest management in some countries, especially in Jordan, focus mainly on prohibitions and limitations, while planning, management, and development issues receive insufficient attention. Lebanon has more specific legislations on forestry sector, named Forest-related Regulations, including establishing a Natural Protected Area "Al Shouf Cedar" to preserve forest, plant and animal wealth in the area. Charcoal production is banned, except for controlled production under certain conditions (this amendment was made to cater for poor communities dependent on charcoal). Even though policies in these countries constantly emphasize the importance of increased public participation and decentralization, forest laws in force seldom accommodate this.

110. In countries, which have the least forest cover in the region, forest legislations are limited to general environmental protection laws (Bahrain, Kuwait, Qatar, and U.A.E.), grazing regulations (Kuwait and Oman) and designation 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 protection of vegetation, forests, and rangelands, as well as regulate their use. In addition to these laws, religious edicts also play an important role in the protection of forest resources. The Saudi Arabia legal system subscribes to the Shariah, which is both a state and religious law and provides a good foundation for sustainable development based on the wise use of all natural resources.

111. In the remaining countries, the legislative framework is either weak or not properly enforced, such as in Yemen, where the Forestry Law has been in the draft form since 1990 and the environmental protection law in force only tackles forestry in general terms. In Afghanistan and Iraq, forestry laws exist, but considering the political situation in these countries, the ability of the authorities to enforce them is quite limited.

112. In most countries of the region, the majority of forest land is state property, and public forest services/institutions traditionally have been responsible for the management

of this land. The Ministry of Environment and Forestry is responsible for all forestry activities in Turkey. The forestry department of the Ministry of Agriculture is responsible for forestry activities in most of the rest countries. Although there is no forestry department in the central government of the UAE, there is forestry department conducting forestry activities in the emirates of Abu Dhabi and Al Ain. Kuwait and Bahrain have no designated authorities responsible for forestry.

113. The recent trend in many countries is to transfer the responsibility of forest management to environment ministries. This reflects the growing concern for environmental conservation and the potential role of forests in meeting the environmental objectives 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. Competitions, duplications of efforts, lack of cooperation are some of the main institutional challenges facing a number of countries.

114. NGOs are playing an increasingly important role in environment and forestry issues in many countries of West Asia. Generally, NGOs are active in the areas that are covered neither by governmental institutions nor by the private sector. NGOs are more active in the countries such as Turkey, Lebanon, Cyprus, Syria, Jordan 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 rather independent NGOs addressing environmental and social issues. .

115. Involvement of the private sector in forest management is very limited largely due to (a) ownership issues and (b) the low productivity and poor commercial viability. Their involvement is often limited to taking up management tasks on a contract basis (including for example forest protection). Private sector is of course the lead player in forest industries as also in the trade of forest products.

116. There is also greater recognition of the role of local communities in decision making relating to forests and woodlands, although many of the existing legislation are yet to accommodate this. As discussed earlier, before the advent of government control communities were responsible for management of forests and pasture lands and they had workable arrangements that prevented over-exploitation. However, in due course these systems have become weaker, partly due to government interventions.

2.8 SUMMARY OF KEY FORESTRY ISSUES

117. Forest cover in most countries in the Region is very limited and of the 23 countries covered by this study 17 are low forest cover countries with less than 10% of the land area under forests. However, most countries do also have land that is classified as other wooded land and pastures with sparse tree growth. In view of the severe climatic conditions growing stock and productivity of wood are extremely low in most countries. The exception to this is forests in Georgia, Turkey and parts of Iran adjoining the Caspian Sea. In comparison with the rest of the world, the region accounts for only 1 percent of the forests. Since the extent of forests and woodlands is very low, forest cover decline, an issue of wider global concern, has not been a major issue in most countries. Taking into account the limited area of forests and woodlands, most countries have initiated efforts to increase in forest cover, through afforestation/ reforestation and protection of existing forests.

118. Forests management for industrial wood production is limited to a few countries, particularly Georgia, Iran and Turkey. Although Cyprus had a long history of management for wood production, over the years this has declined significantly. Most of the forests are now set aside for recreational purpose, supporting the rapidly growing tourism industry. Most countries are dependent on imports, especially of higher value added products like wood based panels and paper and paper board. As the degree of processing increases, the extent of dependence on imports increases.

119. Forests and other woodlands form an important source of woodfuel, especially for the rural communities. Excepting in highly urbanised countries where fossil fuel provides most of the domestic energy needs, woodfuel still remains an important source of household energy need, both for heating and cooking. Forest management has not

accommodated this and most often woodfuel needs are met through “illegal” collection. There are also situations – like that in some parts of Yemen -where charcoal production for urban consumption is an important source of income to rural communities. A major problem in assessing the impact of woodfuel consumption is the absence of information. It is hence extremely difficult to indicate the long term trends and to what extent forests and woodlands are affected.

120. Forest management in almost all countries is giving increasing attention to the environmental functions of forests. Most planted forests in Central and West Asia have been established to fulfill environmental protection, especially as wind breaks and shelterbelts around farms and as green belts around urban centres. In fact substantial investment has been made by city authorities to create green spaces to improve the urban environment. With tourism becoming an important industry, most countries have made changes in the objectives of management. Increasingly management of recreation, very different from what most foresters have been trained, is becoming an important function of forestry organizations.

121. Availability of resources for forest management remains a key issue for most countries. In view of the low productivity of forests, most of the countries will not be in a position to make production forestry a commercially viable option. This also limits the scope for private commercial involvement. Since most of management is focused on provision of public goods and the limited opportunity to mobilise income through payment for environmental services make it imperative for continued public funding.

122. There are some clear differences in the evolution of forests and forestry between the countries in the region, reflecting the differences in history and the emerging pattern of development. Central Asian and Caucasus countries have a common history upto 1991, but since their independence the pattern of development has become more divergent largely reflecting the economic, social and political and institutional changes. West Asian countries have however had very diverse situation, however, there are considerable similarities in the overall pattern of development of the forest sector. Chapter 3 discusses the key driving forces that shape forests and forestry in the region.

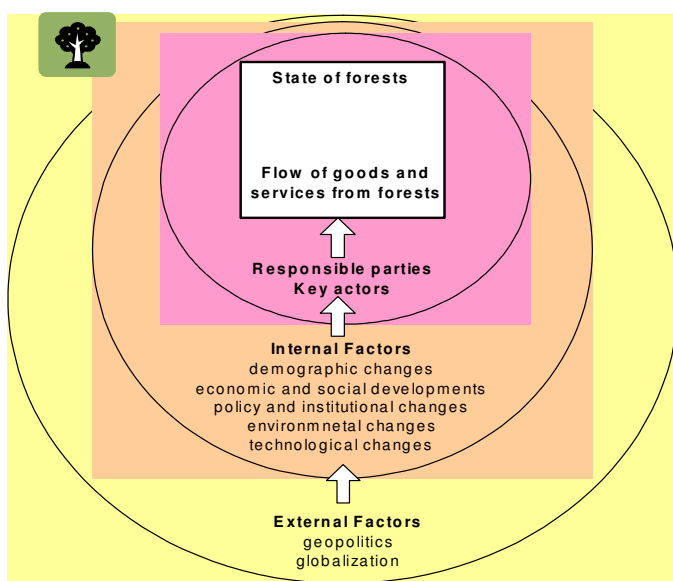
3 FACTORS IMPACTING FORESTS AND FORESTRY

3.1 INTRODUCTION

1. The forestry situation described in the previous chapter is an outcome of a number of factors, some within the sector and others outside. As one of the natural resources, how forests future is shaped by the perception and ability of the multitude of actors to directly and indirectly influence the use of forests. The society forest relationship is evolving continuously and the state of forests and forestry reflects the overall state of societal development, including what goods and services are required, how they are produced, the state of the economy, social organization of production and consumption, technological development, etc. Although some broad patterns can be identified, diversity of the situation, in particular the difficulty in identifying probable social, economic, political, institutional, cultural and environmental changes makes it extremely difficult to precisely indicate what may actually happen. All the more so when dealing with long time horizons that significantly increases the uncertainty.

2. As elsewhere in the world, the West and Central Asian countries manifests significant diversity as regards the state of forests and wood lands, the production of various goods and services, the pattern of demand and the extent of dependence on domestic production *vis a vis* imports. For example, in some of the countries forests and woodlands are important as a source of woodfuel, whereas in others they are valued for their recreational and environmental benefits. Similarly, while some of the high income countries have been creating green belts around urban centres to provide a better environment, there are situations where peri-urban forests and woodlands continue to be exploited for timber and woodfuel. Demography, state of the economy, policy and institutional arrangements, technical knowledge, etc. collectively impact forests and

Figure 3-1 State of forests



forestry. This chapter analyses some of these factors or driving forces that influence the forest situation in the region and their probable changes in the next 15 years.

3. Several factors directly and indirectly influence the evolution of society – forest relationship. The multitude of linkages and the complex feed back loops make it difficult to assess the collective impact of the driving forces. Some directly affect the forest situation – forest cover, density, quality, production, demand for products and services, etc. - while others

are indirect, and affects forestry through affecting sectors like agriculture, industry, etc. Figure 3-1 provides an overview of the variables that affect the forest situation in the West and Central Asia region.

Box 3.1 Cyprus: The main driving forces.

The main driving forces that are likely to affect forestry until the year 2020 are the increasing importance of environmental services, the social demand for forest conservation and protection, recreational and tourist services. Further more, the compliance with EU and contemporary international trends and obligations in forest management as well as technological developments are of great importance. From the institutional and structural perspective further decentralization, integration and coordination with the relevant sectors and policies, holistic and multipurpose management, public participation, transparency and accountability need to be improved. Private forestry is expected to have an updated role in the future due to the significance given to it by the rural development policy, which is under implementation.

Source: Cyprus – FOWECA Country Outlook Paper 2005

4. The state of forests and forestry and the flow of goods and services from forests and woodlands, are affected by the actions of a multitude of actors/ stakeholders, especially, governments, private sector, farmers, communities, non-governmental organizations, etc. These actions – efforts to manage the resources, exploitation of wood and wood products, conversion of forests and woodlands into other uses and demand for products and services – will be influenced by the collective impact of a number of internal (pertaining to the situation within the country) and external factors (regional and global developments) (see Box 3-1):

- Internal factors include demographic changes, the pace of economic and social development, political and institutional evolution, environmental changes and the developments in science and technology.
- Regional and global developments will also impact the domestic social and economic situation and thereby the state of forests and forestry. Growing linkage between countries in the context of globalisation will have an impact on many of the internal factors. Increased regional integration will be of particular significance in the West and Central Asia region. Further, many of the environmental issues are trans-boundary in nature and actions/ inactions in one country will have significant impact on others. Global changes in the forest sector, especially as regards shifts in production, processing and trade would have important implications on the forest sector in the West and Central Asia region.

The current and emerging impact of the various internal and external driving forces are discussed below:

3.2 INTERNAL DRIVING FORCES

5. As indicated earlier the internal driving forces can be broadly grouped into the following:

- Demographic changes;
- Economic and social development;
- Changes in policies and institutions;
- Environmental changes; and
- Developments in science and technology

6. The impact of these on forests and forestry are direct and indirect and most often collective such that it is often difficult to separately identify the cause-effect relationship of any one driving force. Further within a given broad group of driving force, there are several components which may have widely differing direct and indirect impacts on the forest sector. Also many of the impacts are time dependent with a very high probability of change, especially over a long time horizon. A brief description of the various driving forces and how they are likely to impact forests and forestry in the region are indicated below.

Demographic changes

7. Demographic changes are an important group of drivers that alter the demand for products and services (including those from forests and woodlands) and an important element that require analysis in the context of any outlook study. Table 3-1 summarises the likely impact of key demographic variables on forests and forestry.

Table 3-1 Potential impact of demographic variables on forests and forestry

Demographic variable	Situation/ direction of change	Potential impact on forests and woodlands
Size of population	Size of population varies from less than 1 million to over 70 million in the FOWECA region.	<ul style="list-style-type: none"> • Demand for agricultural and livestock products that may result in conversion of forests and woodlands. • Size of markets for wood and wood products and potential for economies of scale in processing industries. • Availability of labour for forestry and forest industry
Population growth	Annual growth rate varies from negative to about 3.7 percent. But in view of the differences in the size of the population, the increase in absolute numbers is more important.	<ul style="list-style-type: none"> • Depending on other factors, population growth will alter the demand for agricultural and forest products. Probable consequences include clearance of forest lands, increased collection of woodfuel and other forest products legally and illegally. • Decline in population tends to reduce pressure on land and other resources.
Urbanisation	Proportion of urban population in the Region varies from 40 percent to over 90 percent. Urban migration is taking place at a rate much faster than population growth rates.	<ul style="list-style-type: none"> • Reduction in direct pressure on land and forests; • Changes in the pattern of demand (for example changes in the demand for energy and the type of energy used); • Increased demand for urban amenities (urban forestry) and recreational facilities. • Shortage of labour for forestry activities.
Age structure	In many countries the proportion of those below the age of 15 is high.	<ul style="list-style-type: none"> • Increased demand for employment and better living conditions. • Declining interest in traditional occupations, especially agriculture. • Migration to other countries
State of human resource development	Literacy rate and level of educational attainment varies considerably within and between countries	<ul style="list-style-type: none"> • Availability of skilled and unskilled workers for forestry. • Productivity and wage levels in forestry and forest industry. • Ability to develop and adopt improved technologies. • Awareness about the role of forests.

Population and its growth

8. Table 3-2 gives the population and its change in the West and Central Asia region during 1980 to 2005 and the estimates to the year 2020. Between 1980 and 2005, the population in the region has registered an increase from about 207 million to 361 million. Available forecasts indicate an average annual growth rate of about 2 percent, resulting in a total population of 487 million by 2020. However, as indicated in Table 3-2 the size of the population and the growth rates differ considerably in the different sub-regions and countries.

Table 3-2 Population change in the West and Central Asia Region

	Total Population ('000)					
	1980	1990	2000	2005	2010 (proj)	2020 (proj)
Central Asia						
Armenia	3096	3545	3082	3016	2979	2917
Azerbaijan	6161	7212	8143	8411	8745	9381
Georgia	5073	5460	4720	4474	4315	4089
Kazakhstan	14919	16500	15033	14825	14861	15036
Kyrgyzstan	3627	4395	4952	5264	5623	6413
Tajikistan	3953	5303	6159	6507	7107	8926
Turkmenistan	2861	3668	4502	4833	5214	6114
Uzbekistan	15952	20515	24724	26593	28877	34288
Total for Central Asia	55642	66598	71315	73923	77721	87164
West Asia						
Afghanistan	15209	14606	23735	29863	35955	50448
Bahrain	347	493	672	727	797	944
Cyprus	611	681	786	835	882	974
Iran	39330	56674	66365	69515	74540	86500
Iraq	14092	18514	25075	28807	33100	44425
Jordan	2225	3254	4972	5703	6429	8106
Kuwait	1375	2143	2230	2687	3059	3774
Lebanon	2698	2741	3398	3577	3789	4231
Oman	1187	1843	2442	2567	2913	3746
Qatar	229	467	606	813	900	1072
Saudi Arabia	9604	16379	21484	24573	28100	36842
Syria	8978	12843	16813	19043	21754	27991
Turkey	46316	57300	68234	73193	78509	89114
United Arab Emirates	1015	1868	3247	4496	5060	6287
Yemen	8197	12086	17937	20975	24888	35821
Total for West Asia	151413	201892	257996	287374	320675	400275
Total for WECA	207055	268490	329311	361297	398396	487439

Source: UNCDB, 2005

9. The West Asia region accounts for 80% of the population in the entire region, and the 6 countries where the current population exceeds 20 million (Afghanistan, Iran, Iraq, Saudi Arabia, Turkey and Yemen), accounts for 86% of the sub-region's population. These countries also account for most of the forests and other woodlands in the West Asia. In

Central Asia the most populated country is Uzbekistan with a population of over 26 million. Uzbekistan and Kazakhstan, the next most populated country in the Central Asia and the Caucasus, (population 14.8 million) account for 56% of the population in sub-region. Again, the size of the population, in combination with and how it is dispersed (density, rural/ urban distribution) and economic situation gives an indication of the likely pressure on the forests.

10. While the size of the population in combination with other factors determine the current demand for forest products and services, its growth rate will have important impacts on future uses of forests and woodlands. Within the region, there are significant differences in the population growth rate between the sub-regions (see Table 3-3). Population in the Central Asian and Caucasus countries are growing at a low rate with a projected growth rate of about 0.8% to the year 2020. Here again there are significant inter-country differences with the growth rates ranging from negative (Georgia and Armenia) to about 2.3 percent in the case of Tajikistan. The most populated country in the sub-region, Uzbekistan, is expected to grow at the rate of about 1.7 percent to the year 2020.

Table 3-3 Growth rate of population

Population growth rates	2000 - 2005	2005 - 2020
Negative	Armenia, Georgia, Kazakhstan	Armenia, Georgia
Very Low (Less than 0.5%)		Kazakhstan
Low (>0.5 – 1.0%)	Azerbaijan, Iran	Azerbaijan
Medium (>1.0 – 1.5%)	Kyrgyzstan, Tajikistan, Uzbekistan, Cyprus, Lebanon	Kyrgyzstan, Cyprus, Iran, Lebanon, Turkey
High (>1.5 – 2.5%)	Bahrain, Oman, Turkey	Tajikistan, Uzbekistan, Bahrain, Kuwait, Oman, Qatar
Very high (> 2.5%)	Afghanistan, Iraq, Jordan, Kuwait, Qatar, Saudi Arabia, Syria, UAE, Yemen	Afghanistan, Iraq, Jordan, Saudi Arabia, Syria, UAE, Yemen

Source: UNCEDB, 2005

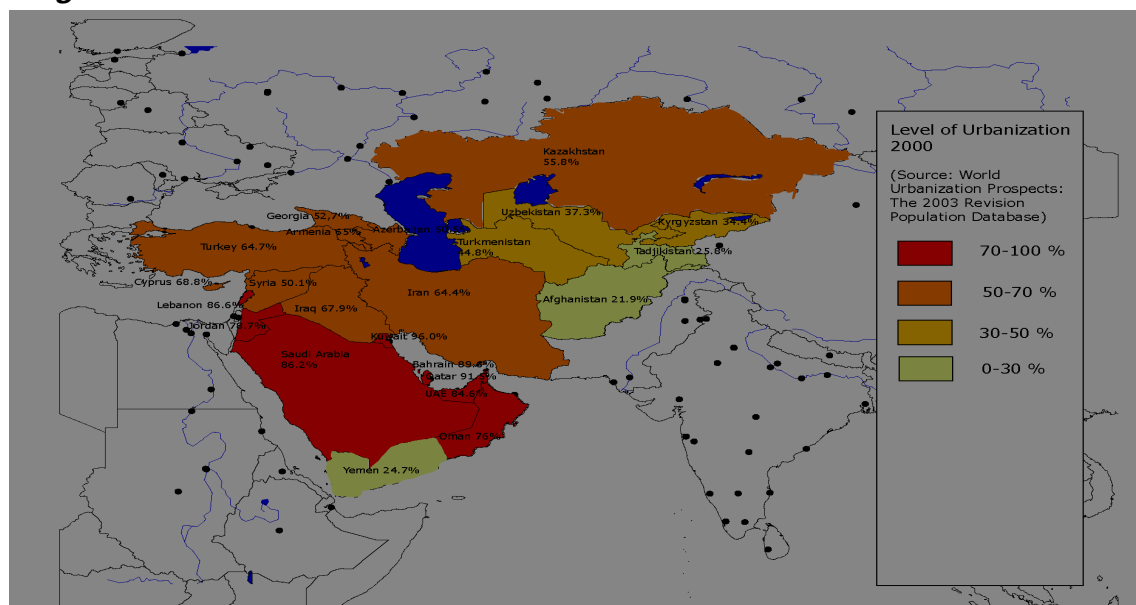
11. In contrast to the Central Asian and Caucasus situation, West Asia has a much higher population growth rate averaging about 2.1 percent and this will result in an increase of 113 million by 2020. Here again there is considerable variation in the growth rates. Afghanistan and Yemen, the poorest countries in West Asia, are projected to have a population growth rate of 3.5 and 3.7 percent respectively. Iran and Turkey, the most populated countries in the region will see a continuing decline in population growth rates. Job creation is however not keeping pace with the increase in the number of people in the working age (Box 3-2).

12. Thus, while in some of the countries population growth may not be an issue that directly impacts resource use, in others it will be of critical importance. This is all the more so, as some of the countries with high growth rates are also densely populated and with high levels of poverty.

13 Another factor that needs to be taken into account in assessing the pressure on land and forests is the population density and the extent of arable land available per capita. Population density in the region varies from 5 persons/ km² in Kazakhstan to over 1000/ km² in the oil producing city states like Bahrain. Although several of the countries with a high proportion of deserts have low average population densities, the density of population in terms of agriculture area is extremely high. This would imply intense pressure on such areas, especially in the absence of other sources of income, limiting the scope for growing trees.

14. Obviously such high densities cannot be easily supported in the absence of a highly diversified economy or substantial technological advancements in cropping and livestock management. Agricultural intensification has been attempted in a number of countries through improving irrigation and increased use of inputs like fertilizers. But often this has led to severe environmental degradation in many countries. Especially in the context of acute water deficit, some of the countries have already reconsidered the policy of self-reliance in agricultural production. Thus, people in many countries may not be able to derive significant incomes from agriculture and would be highly dependent on other natural resources, especially animal husbandry or alternatively non-agriculture income. It is therefore important to consider other aspects of demographic changes, in particular, urbanisation and age structure.

Figure 3-2 Urbanisation



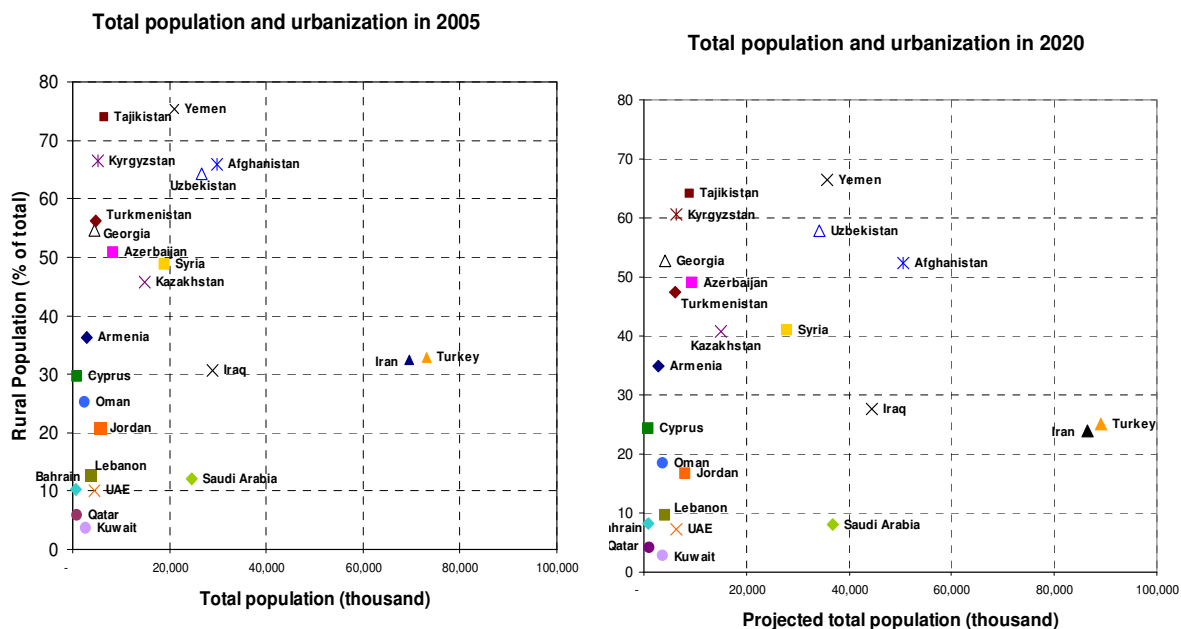
Urbanisation

15. The extent of urbanisation varies in the West and Central Asia Region and excepting a few countries like Afghanistan and Yemen in West Asia and Tajikistan, Kyrgyzstan, Uzbekistan and Turkmenistan in Central Asia almost all countries have an urban population of over 50% (see Figure 3-1 – Source: Akerlund, 2005). In some of the countries like Bahrain, Kuwait, Lebanon, Qatar, Saudi Arabia and UAE over 80 percent of the population lives in urban centres. In the West Asia 72% of the population lives in urban areas, while in the case of Central Asia and the Caucasus it is 44%. As indicated in Table

3-1, urbanisation has important implications on forests and woodlands. Other factors remaining the same, urbanization would have the following impacts:

- Reduced direct dependence on land for production of food and other products (especially when most of urban demands are met through imports).
- A possible reduction in the demand for wood as a source of fuel, especially when cheaper commercial fuels are available and accessible. However, this depends on the relative prices of the different fuels and the ability of the households to switch over to non-wood fuels. There are however instances where urbanisation increases the demand for wood as a source of energy, when wood is converted to charcoal for ease of transportation to urban centres.
- Increased demand for wood and wood products in the context of the expansion of housing and other amenities. Where sources of wood supply exist close to urban centres, they are liable for intensive exploitation; alternatively this will have to be met through imports.
- One of the outcomes of urbanisation is the growth in demand for green spaces, especially for amenity reasons. Most of the Central Asian and Caucasus countries have a long tradition of urban planning, inherited from the Soviet times, that has incorporated green spaces in city planning. This is also the case with some of the cities in the Arabian Peninsula. Especially in the case of cities that are commercially and politically important substantial investments have been made to improve the urban environment (Example: Abu Dhabi, Bahrain, Dubai, Kuwait, Riyadh, etc.). Growing economic importance of tourism has further encouraged this. Often development of green zones and protective belts are major functions of the municipalities.

Figure 3-3 Population and urbanization in 2005 and 2020



Source: UNCEDB, 2005

16. Urbanisation in many countries in the region is often unplanned, largely stemming from the “distress-push” (especially on account of conflicts as in the case of Afghanistan) and people moving to urban areas in search of alternate sources of livelihood. Most of these people are poor and they often continue to depend on wood and other biomass as a source of energy. High cost of commercial fuels, the lack of infrastructure for their efficient distribution and the low purchasing power excludes them from commercial energy supplies. Increased demand for woodfuel, especially charcoal has led to a significant increase in illegal charcoal production in many countries.

17. Often urbanisation is due to the “pull-effect” (especially in those where there have been substantial investments in the extraction of oil and natural gas and the development of associated industries – as in the case of some of the countries in the Arabian Peninsula and Central Asia) as opportunities for employment in secondary and tertiary sectors improve. Many such urban centres are well planned and the overall high income permits substantial investments in creating green spaces and such amenities. Although in the early stages of urban expansion some of the forests, woodlands and orchards may be cleared (for example expansion of Teheran towards the north has led to clearance of plantations for enhancing housing and other facilities), partly this is often compensated by the investments in creating additional green spaces.

18. All the indications are that urbanisation will continue at a rapid pace such that the proportion of people living in urban areas will increase from 58 percent now to about 63 percent in 2020 (For example see Box 3-2). However, Central Asia will still be largely rural (with about 51 percent of the population), whereas West Asia will be primarily urban with 78 percent in urban centres. Among the Central Asian countries Kyrgyzstan and Tajikistan will still have more than 60 percent of the population living in rural areas. In West Asia, Yemen will continue to be predominantly rural with about 66 percent of the population. Afghanistan will also be primarily rural. This would suggest continued dependence on land and other natural resources, including forests and trees, especially for woodfuel, non-wood forest products, etc. High population growth rates in some of these countries (for example Afghanistan, Tajikistan and Yemen) will exacerbate the problem.

Box 3-1. Urbanization in Kazakhstan

In the Soviet times around 68% of the population lived in the country side. Now it is 45%. Even so this is still a very low urban population compared with more developed economies and taking into account the growth of the economy it is anticipated that another 5 million people will migrate to the cities in the next few years.

Age structure

19. Another important demographic variable that impacts land use directly and forestry indirectly is the age structure of the population. Table 3.4 gives the distribution of population in the various age groups for the different regions.

Table 3-4 Age class distribution of population in the WECA region

Region	Percentage of population in the group 0 -14 and range	Percentage of population in the group 15 – 65 and range	Percentage of population over 65 and range
Central Asia	36 (28-42)	59 (54-66)	5 (3-7)
Caucasus	26 (22 – 31)	64 (63-66)	9 (6-12)
Arabian Peninsula	33 (26-48)	65 (49-74)	2 (1-3)
Other West Asia	36 (23-47)	59 (50-66)	5 (3-11)

Source: UNCDB, 2005

20. Excepting the Caucasus countries, in other sub-regions the proportion of people below the age of 14 is over one-third of the population. In some of the poorest countries (for example Afghanistan and Yemen) this is nearly half of the total population. Among the Central Asian countries Tajikistan has about 39 percent of the population in the age group 0 – 14. Issues like human resource development and employment will become critical in the next two decades, when those in the younger group reach the working age. Some of the implications of this are:

- Depending on the nature of education and exposure to the rest of the world, the perception of the younger generation will be very different. In a situation where they are exposed to outside influences, their interest in agriculture and other low-paying, but strenuous occupations, will be very low. This could lead to a higher rate of migration to the cities. This is already happening in several countries (for example Iran, Turkey, Kazakhstan, etc.) where educated young people are reluctant to pursue agriculture and are keen to take up more remunerative professions in urban centres.
- However, there are countries where such opportunities are limited, resulting in continued dependence on land. Since arable land is limited and continues to fragment, this results in decline in farm income and persistence of poverty. Afghanistan and Yemen are particularly vulnerable to such developments.
- In countries where urbanization is very high, providing remunerative employment will be a major problem. Many governments, especially in the oil producing countries, which were dependent on expatriate staff, are increasingly emphasizing on reducing such dependence to enhance the employment opportunity for local people. Largely this depends on investment in human resource development. Absence of attractive and productive employment often has led to social instability and the emergence of extremism that has serious consequences including undermining development⁷.

⁷ As discussed in Chapter 2, several countries in the region have substantial potential for tourism development. However, security and political stability are key factors for the growth of tourism. Recent years have particularly witnessed extremists targeting the tourism industry as a means of destabilising the economies.

Human resource development

21. Recent studies have highlighted the critical issues relating to human development in the region (see UNDP, 2005). There are several elements that together provide an indication of the state of human development. Some of the traditional components are (a) literacy rate, (b) life expectancy at birth and (c) infant mortality. Other elements that have been included are (i) women's participation in work and (ii) enrolment for secondary and tertiary levels of education. Excepting in a few countries like Afghanistan and Yemen, accomplishments as regards literacy rate, life expectancy and infant mortality are well above the global average and substantially higher than that of the developing countries. In many of the Central Asian and Caucasus countries, there has been some deterioration of the situation during the post-Soviet period, due to the overall economic decline and consequent reduction in public expenditure. The level of women's participation in economic activities varies considerably, and in many countries strong social and religious rules significantly restrict women's participation in work.

22. Improved access to information, especially facilitated through developments in communication technologies, is however bound to change the situation and most governments are under pressure to invest more on human resource development. Empowerment of women is receiving particular attention, and a number of countries have changed their constitutions enabling women's participation in public life. The situation in the next decade and beyond could be significantly different from what it is now. Whether the countries are able to fully take advantage of their human resources would depend on increased investments in secondary and tertiary education and more importantly enhanced opportunities and freedom of choice. A more informed and educated population would require increased freedom, the absence of which could result in extremism and social instability.

Overview of the impact of demographic changes

23. Population growth alone is unlikely to have a direct impact on the forests and range lands and the ultimate effect will largely depend on a combination of several other factors. In many countries population density in relation to arable land is extremely high. Many are however countries that derive a major share of income from exploitation of petroleum resources and to that extent the dependence of the population on land are minimal. This is particularly the case with many countries in the Arabian Peninsula, like Saudi Arabia, Bahrain, Kuwait and United Arab Emirates as also some of the Central Asian and Caucasus countries. At the other end of the spectrum are countries with very limited arable area, high population density, high proportion of rural population, high proportion of people in the younger age group and poorly developed human resources and skills. Unless there is substantial investment in improving human skills and capabilities, dependence on land through extensive use is likely to persist and under such a situation population growth would have a significant impact on forests, woodlands and pastures. Evidently, what happens in the economic front will be critical to understand the population – forests linkage.

Economic changes

24. Economic changes include several interlinked elements which tend to have an overwhelming direct influence on the forestry situation as also indirectly through influencing other driving forces. While several elements could influence the forestry situation, the most important ones seem to be the growth in income, income distribution and poverty and structural changes in the economy. The nature of their impacts is outlined in Table 3-5.

Table 3-5 Potential impact of important economic variables on forests and forestry

Economic variable	Situation/ direction of change	Potential impact on forests and woodlands
Gross domestic product and its growth	Size of the economy and per capita income varies enormously in the region. The three largest economies are Turkey (US\$ 300 billion), Saudi Arabia (US\$ 250 billion) and Iran (US\$ 160 billion), while there are several with US\$ 10 -20 billion. Growth rate of the economies also vary and in the recent years some of the economies have registered rapid growth, often through exploitation of petroleum and natural gas resources.	<ul style="list-style-type: none"> • Demand for wood and wood products and size of markets. • Potential to raise tax income by governments and investing in forestry.
Per capita income	In 2004 the per capita income for the WECA region was US\$ 7,231, with Central Asia and West Asia having a per capita income of US\$ 3,860 and US\$ 10,601 respectively. Within each of the sub-regions there are significant differences in per capita income. Within each of the sub-regions the differences could be very high, about 6 times (between Tajikistan and Kazakhstan) and 25 times (between Yemen and Bahrain).	<ul style="list-style-type: none"> • Household demand for wood and wood products. • Demand for environmental services (especially recreation) from forests and the willingness and ability to pay for such services. • Willingness to invest in conservation and management of forest and tree resources.
Income distribution and poverty	Income distribution is highly skewed in most countries. Along with low incomes, this results in high levels of poverty in many countries.	<ul style="list-style-type: none"> • Rural poverty often results in high dependence on natural resources, especially for woodfuel, fodder, timber, non-wood forest products etc. for domestic consumption as also for income generation. High potential for poverty related illegal collection of forest products. • Inability of farmers and other resource managers to invest in sustainable resource management.
Structural changes in the economies	While the economic significance of primary sectors is declining in a number of countries, agriculture and animal husbandry remains important in some countries resulting in land use pressures. Many countries have diversified the source of income with significant decline in the contribution of agriculture and animal husbandry.	<ul style="list-style-type: none"> • Shift from primary sector activities reduces the pressure on land and in some cases abandonment of agriculture, paving way of regrowth of forests. • Declining dependence on traditional occupations, especially agriculture.

25. Although the overall developments in the economic and social fronts are critical, and it is possible to see a broad correlation between change in the economic situation and change in forest cover, as in the case of other variables, this is also complex involving a multitude of feed back loops. Some of the changes in the economic variables and their impacts are discussed in the next paragraphs.

Gross domestic product

26. In aggregate terms the WECA region is relatively better off in comparison with other developing regions and this largely stems from the high income from the exploitation of oil and natural gas. However, the region's share in the total global domestic product is only about 3.3 percent although it accounts for about 6 percent of the world population. In 2004 the per capita GDP for the region was about US\$ 7,200 (see Table 3-6). Much of the prosperity of the region stems from the exploitation of oil and natural gas and the related investments in related industries, infrastructure, and trade. In the post 1980 period, the pace of exploitation of oil and natural gas has increased enormously and so also the economic growth. This trend is likely to persist as long as oil prices remain high.

Figure 3-4 Real GDP change in the West and Central Asia Region

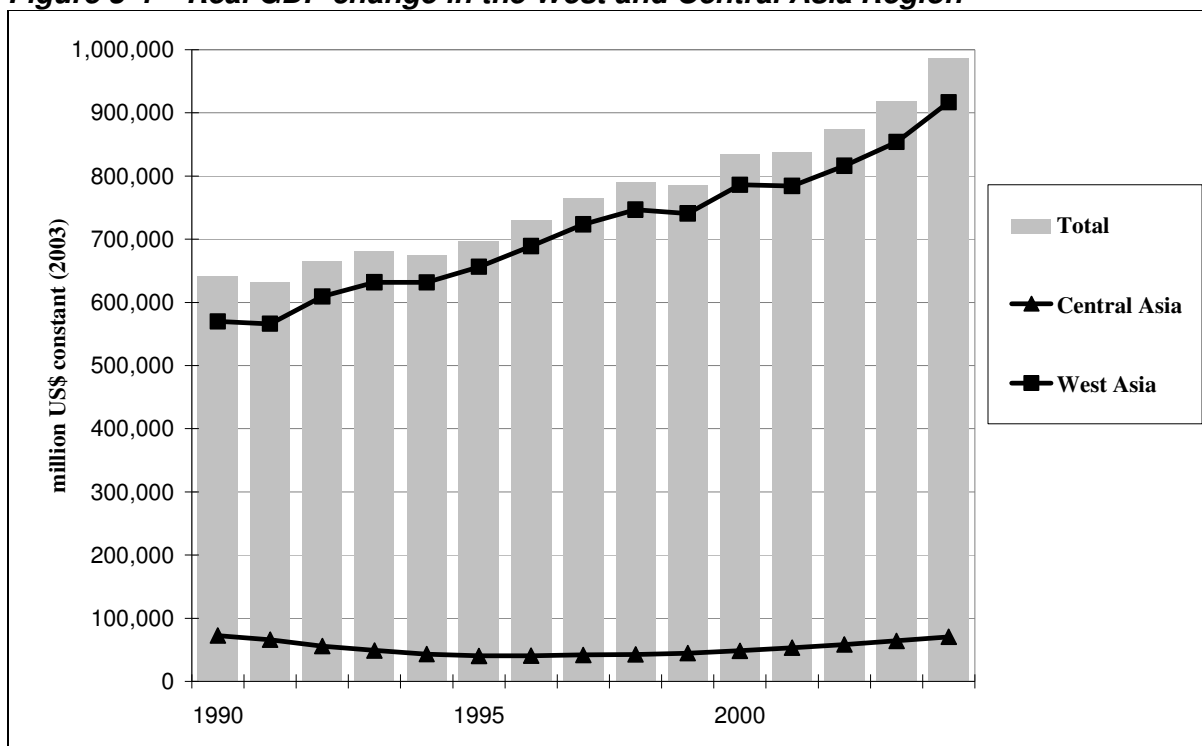


Table 3-6 GDP per capita in the West and Central Asia Region

	GDP per capita by purchasing power parity (current US\$)			
	1990	1995	2000	2004
Central Asia				
Armenia	2,727	1,671	2,422	4,222
Azerbaijan	...	1,673	2,571	4,175
Georgia	3,672	1,329	1,990	2,977
Kazakhstan	4,664	3,318	4,594	7,494
Kyrgyzstan	1,994	1,123	1,560	1,928
Tajikistan	1,882	758	803	1,193
Turkmenistan	4,674	2,843	3,668	7,021
Uzbekistan	...	1,233	1,516	1,871
Average for Central Asia	3,269	1,744	2,391	3,860
West Asia				
Afghanistan	...	...	...	...
Bahrain	11,672	13,489	15,870	19,109*
Cyprus	11,213	14,758	20,041	22,900
Iran	3,752	4,876	5,576	7,546
Iraq	...	...	...	...
Jordan	3,148	3,736	3,829	4,571
Kuwait	...	16,959	15,766	18,073*
Lebanon	1,777	3,777	4,162	5,320
Oman	9,494	10,957	12,480	13,795*
Qatar	...	...	...	...
Saudi Arabia	9,754	11,531	12,700	14,022
Syria	2,164	2,912	3,345	3,945
Turkey	4,484	5,383	6,519	7,710
United Arab Emirates	21,041	18,066	...	...
Yemen	525	694	799	888
Average for West Asia	7,194	8,803	9,215	10,601
Average for WECA	5,231	5,273	5,803	7,231

... – not available * - data for 2003

27. The Central Asian and the Caucasus countries, which were part of the erstwhile Soviet Union, suffered a significant decline in income with the collapse of the Soviet Union and most are yet to reach the level of income they had prior to independence. Only in the case of Armenia, Azerbaijan, Kazakhstan and Turkmenistan per capita income in 2004 exceeded that of in 1990, while in all other countries in Central Asia and the Caucasus it is still below the 1990 levels. For example, the real per capita income of Georgia in 2004 is only about 60% of the per capita GDP of 1990. Some of the countries that are endowed with substantial fossil fuel reserves are however improving their economic situation, largely through exploitation of oil and natural gas. Azerbaijan, Kazakhstan, Turkmenistan and Uzbekistan are some of the countries that have benefited from oil and gas incomes. However, countries like Georgia, Kyrgyzstan and Tajikistan continue to depend on traditional sectors, especially agriculture.

28. Much of the inter-country differences in per capita income are a reflection of the availability and ability to utilise resources like oil or other minerals. Traditional agriculture, largely based on rain fed farming or animal husbandry, is highly susceptible to rainfall variation. Many countries have invested in irrigation infrastructure to minimise the uncertainty of rainfall and taken up large scale cultivation of cash crops like cotton. However, these options have their limitations in generating income in view of the declining global prices of primary commodities and environmental problems on account of desertification, salinization and water logging. Also dominance of oil economy has in some

cases undermined the economic viability of traditional agriculture sector, especially in the context of imports of cheaper products. In a way this has a positive impact by way of reducing the pressure on land and other natural resources⁸.

Box 3-2 *Jordan – Resource constraints*

The annual allocated budget for the Forest Department has remained constant for some years and just covers mainly the salaries and wages of seasonal workers. Very little is left for the development of the forests and whatever is left is insufficient to provide for any ambitious planting programme, to improve the working conditions of field personnel or to renew the outdated equipment. . FD’s functions tend to concentrate on law enforcement for forest protection and as such the staff is viewed by rural populations as well as public as repressive officers. Equipment for communication and transport, particularly at district level, is limited making the monitoring of field operations difficult. Salaries of civil servants are relatively low in comparison with other sectors and many staff with university degrees have found other career opportunities and left the Forestry Department.

29. The economic situation has both direct and indirect impacts on the forest sector. Low incomes at the national and individual levels imply:

- High dependence of people on natural resources and the inability to invest in sustainable management;
- Even where government and other players are able to derive substantial income, forestry is unlikely to be a priority sector for investment, especially in view of alternative opportunities to earn high incomes. In many cases this has led to a real-estate boom, often resulting in forest clearance.
- Inability of governments to support forestry (see Box 3-3), especially in the context of limited budget and the need to give priority for investments in education, health care, infrastructure, etc.

Box 3-3 *Kazakhstan: The next Asian Tiger*

With GDP consistently growing in excess of 10% per annum over the last five years, Kazakhstan stands at the vanguard of the next generation of Asian tiger economies. The current growth in oil and gas prices undoubtedly helps bolster an already burgeoning economy, but the windfall in petrochemical dollars is by no means the whole story to Kazakhstan’s economic miracle. Kazakhstan has attracted per capita more foreign direct investment than any other country in Asia and Eastern Europe. It has diversified its economy and reinvested oil and gas income in a number of key sectors. Further, there have been significant efforts to link up with the high performing economies, especially China. With the revival of the Silk Route, Kazakhstan is positioning itself to become the most important land link between China and Europe.

30. In many countries therefore investment in the forest sector is extremely low and most often there is high dependence on external funding. This is particularly the situation in countries like Afghanistan and Yemen. On the other hand there are countries with relatively high incomes and GDP registering satisfactory growth rates, which are in a better position to invest in forestry and allied activities. This is particularly the case with a number of oil/ natural gas producing countries.

⁸ The phenomenon of “Dutch disease” is often widespread in that the very rapid and unbalanced growth of high income sectors could undermine the economic viability of a number of sectors. Agriculture is one sector that is highly vulnerable, especially as labour costs go up and prices decline.

Long term growth prospects of the economies

31. Broadly countries in the region can be grouped into three categories, namely (a) those which are highly dependent on income from extraction and processing of fossil fuels, (b) those that have a diversified economy and well developed human resources and (c) those which are highly dependent on agriculture and animal husbandry with limited diversification of income sources.

The long term prospects of their growth are indicated below:

- Several countries in the region (for example Saudi Arabia, Kuwait, Bahrain, United Arab Emirates, Oman, Turkmenistan, Uzbekistan, Iran and Iraq) are highly dependent on income from exploitation of fossil fuels. Although there is considerable volatility and some correction to the current high prices is inevitable, oil and gas prices are unlikely to decline drastically in the foreseeable future, especially in view of the growing demand from emerging economies like China and India. Recent increases in oil prices could boost the investments in alternative sources of energy, especially renewable ones, at least in the next couple of decades oil is expected to remain the most important source of energy. This would suggest that the economic growth of oil producing countries will remain at a reasonable level and governments may not have any inherent constraints in allocating resources for forestry and related areas. There are however other non-economic uncertainties, especially relating to political and social stability that may arise from how people are able to benefit from the economic growth.
- Many countries have diversified their economic base and have invested significantly in the development of industrial and services sectors. This is also the case with a number of oil producing countries, like Iran and United Arab Emirates reducing their direct and indirect dependence on oil revenues. In Central Asia, Kazakhstan is another country that is making every effort to develop a diversified economic base (see Box 3-3). Other countries that have also been able to diversify their economies include Cyprus, Lebanon and Turkey. The prospects of their growth largely depend on their global competitiveness. Many of them will face intense competition from emerging economies. However, the diversity and openness also provides certain stability and adaptability to address the emerging challenges and to take advantage of new opportunities.
- There are a number of countries that have neither the critical resource like fossil fuels nor a diversified economy and are largely dependent on land based activities, especially agriculture and animal husbandry. Low income has also limited the ability to invest in human capital. These cause some uncertainty as regards their growth prospects. Given the low per capita income, even if the economies grow rapidly, forestry may not receive sufficient investments in view of other priorities. However, the situation in these countries could also change abruptly. For example, if the political and security situation improves, Afghanistan could become a major transit route for the Central Asian gas and petroleum supplies to South Asia and could realize substantial income by way of transit fees. Yemen has some limited oil reserves and has just started extracting this. Other sectors receiving attention are tourism and fisheries and this could help to improve the economic situation in the coming years.

32. Some of the factors that affect economic growth are gross investment, physical capital formation and efficiency. Between 1975 and 1998 the rate of gross investment (gross fixed capital formation relative to GDP) was on an average 24.6% of the gross

The Middle East as a whole will experience labour force growth of more than 3 percent for the next 15 years or so....The region will have to maintain investment rates of the order of 30 percent of GDP and income growth of 5 to 6 percent a year to absorb all this labour.

domestic product. On the whole there has been a long term decline in gross investment, declining from about 27.3% during 1975 – 1980, 25.1% during 1980 – 1990 and 21.9% during 1990 -98 for the West Asian countries (). Another factor is the efficiency of the use of capital or productivity, as reflected in the incremental capital output ratio. On the whole the incremental capital output ratio is high for most countries. Studies hitherto indicate very low labour productivities. All these indicate that long term prospects for growth largely revolve around oil prices, and for many countries with limited oil income, the prospects are less optimistic.

Box 3-4 *Poverty in Yemen and Turkey*

Based on UNDP statistics, 48% of people live below the poverty line, and about 75% of poor people in Yemen live in rural areas. The Poverty in Yemen is distinctively rural. About 40% of the land area in Yemen is rangeland, which contains about 60 million farm animals. Trees provide 50 – 60% of fodder for the livestock. 41.6% of the population relies on traditional fuels and energy use for cooking. Honey and charcoal production are important sources of income for some poor people. Based on UNDP statistics, 48% of people live below the poverty line, and about 75% of poor people in Yemen live in rural areas. The Poverty in Yemen is distinctively rural.

According to census in 2000 of Turkey, about 7.4 million people are living in 19,577 forest villages. Forest villagers constitute approximately 11% of the total population and nearly half of the total rural population of the country. Forest villagers constitute the lowest income group of society.

Income distribution and poverty

33. Low incomes and skewed distribution of income are particularly serious in some of the countries like Yemen (see Box 3-4) and this has resulted in a large proportion of people remaining poor. Household income studies reveal that the share of 20% of the low income groups in the GDP is only 6% while the share of 20% of the high income groups amount to 49%. This disparity in income distribution between low and high income, males and females and rural and urban people means continued pressures on natural resources, especially land.

34. In Central Asia and the Caucasus, there have been significant increases in income in-equalities, especially due to the discontinuation of state involvement in economic management. Prior to independence the economies of the constituent countries were linked with the rest of the Soviet Union and decisions on what and how to produce were made in a top down manner. Product and input markets were stable and the state provided education, health care, housing, etc. With the collapse of the Soviet Union, markets were lost and the governments of the newly independent countries were unable to maintain the support. This led to a drastic increase in unemployment and decline in income. Often the decline in income was more than 50 percent. Agriculture was largely

managed through state farms and cooperatives during the Soviet period, but the transition resulted in total institutional and economic disarray, increasing rural poverty.

35. Policy and institutional reform in the post Soviet period focused on market orientation and private sector participation. Many of the public sector enterprises were transferred to the private sector. In the absence of strong institutional framework to regulate the process and to safeguard public interest, most often privatization led to the enrichment of a few. Income disparities have grown alarmingly, especially in the context of exploitation of the fossil fuel resources. There is concern that majority of the people are excluded from the benefits, and as most of the benefits accrue to a small group, income distribution and poverty worsens.

Box 3-5. Yemen: Impact of growth

It may be stated that the national economy showed better performance in the last three years of the second half of the nineties. In general the economy was dominated by a developing service sector and petroleum, while the role of the slow growing primary industries was limited. The agricultural sector that supports two thirds of the population at the subsistence level was stagnant.

Country outlook paper - Yemen

Structural changes in the economy

36. As the economies develop, the relative share of value added by different sectors change. With the rapid growth of exploitation of fossil fuels and the establishment of related industries, the share of primary sector in value addition has declined in many countries. This transition and its impact on rural communities are extremely varied in the in the Region as indicated below:

- There are several countries where fossil fuel exploitation and the related development of industrial and services sectors have transformed the economies significantly. Urban conglomerations have developed and expanded and most employment and income are generated by the secondary and tertiary sectors. Such island-type development has encompassed a number of Gulf States, as also urban pockets in large countries. In a way this reduces the pressure on the remaining land for production of food and other products. Further, higher income enables investments in the improvement of environment. In many countries in West and Central Asia, governments have invested resources in urban amenities and recreational facilities, including green spaces. Also increased demand for recreation has led to establishment of national parks as well as protected areas.
- In several large countries, secondary and tertiary sectors have grown rapidly, but its impact on rural employment and income has been rather limited (see Box 3-6). With a substantial proportion of the people dependent on land and remaining poor, public forests and woodlands are used for the production of a variety of goods. At the same time ownership issues limit the ability of users to manage the resources. The key question is how the increased income from the secondary and tertiary sectors is likely to trickle down to the primary sector, especially agriculture, animal husbandry, etc. and to what extent the rural communities depending on them benefit through income and employment.

Box 3-6 Shifts in the location of agriculture areas:

In countries like Saudi Arabia, there is some shifts in agriculture areas. Conforming to the policy to conserve water resources, the cereals and forage crops expansion began to shrink in forestless regions. There is a trend to apply intensive agriculture in watershed regions including the South Western Region where rainfall is fair and where most of the Kingdom's dams and seasonal water courses are built. Thus the encroachment trend towards forest lands and shrinking in the forest area in the future will be considerably intensified.

Source: Saudi Arabia: FOWECA

Agriculture and land use policies

37. Among the structural changes, the important ones from the point of view of forestry are those that reduce the share of agriculture value added. Agriculture value added in the GDP of the West and Central Asian countries varies enormously. In the West Asian region the share of agriculture value added in GDP varies from less than 1.0 percent in Kuwait to over 22 percent in Syria. The share of agriculture value added of Turkey and Iran, the two most populous countries in the region, is 13.8 percent and 18.6 percent respectively. Countries in Central Asia and the Caucasus have a much higher share of agriculture value added in their GDP, ranging from 9 percent in the case of Kazakhstan to over 37 percent in the case of Kyrgyzstan. For several countries the agriculture value added exceeds a quarter of the GDP (for example Armenia, Tajikistan and Turkmenistan) (FAO, 2005). However, in most countries the share of agriculture in GDP and employment is on the decline on account of the following:

- As indicated earlier many countries have diversified their economies increasing the share of non-agricultural sectors. In several countries this has been largely on account of the exploitation of oil and natural gas and the related growth of industrial and services sectors. Considering the continued demand for fossil fuels and the fact many countries still have large reserves, oil and natural gas will maintain their importance. Recent increases in price although signals change, especially the search for alternative renewable resources, the primacy of oil as a source of energy will continue in the foreseeable future. And this would imply continued decline in the importance of the agriculture sector in the national economies.
- Except for countries like Kazakhstan, most others have reached the upper limit as regards agriculture expansion, unless irrigation is expanded. However, most countries have reached their upper limit for water use and most countries already face acute water deficits. For the region as a whole agriculture uses over 80% of the water. Increasing domestic and industrial demand, especially in the context of rapid urbanisation, further increase in agriculture expansion based on irrigation has very limited scope.
- Forests and rangelands are particularly vulnerable in countries and situations where the economy is not diversified and population continues to grow. Afghanistan and Yemen are two examples of this. Expansion of rain-fed mixed farming to the uplands and increased pressure of livestock are some of the major problems in Yemen, Turkey, Jordan, Iran and some of the Central Asian countries like Tajikistan and Kyrgyzstan. Unless there is significant growth of the non-agriculture sector and

concomitant increased absorption of labour in those activities, rangelands and forests will continue to be subjected to grazing and agriculture.

- Some of the countries like Saudi Arabia face the problem of shifts in the location of agriculture (see Box 3-8) During the 1980s and 1990s Saudi Arabia undertook an aggressive programme of agriculture expansion providing subsidised inputs. This was undertaken in extremely arid conditions requiring intensive irrigation. However, as water supply is becoming scarce, agriculture policies are attempting to discourage agriculture in such areas. Increasingly the focus is on more favourable areas in the West where rainfall and consequently growing conditions are better. However, these are probably the most important for forests and any agriculture expansion could have a significant negative impact on the area under forests.

38. In many countries, especially in Central Asia, extensive areas have become unsuitable for cropping on account of water logging and salinity. This is particularly severe in the Aral Sea basin. Large areas have been affected by salt-laid winds and the toxicity prevents their use for agriculture. A major thrust of environmental rehabilitation is afforestation of these areas, especially to control wind erosion. Countries that are affected by environmental degradation are implementing a joint programme for improvement of the Aral Sea basin, particularly, reforestation/ afforestation. In countries like Cyprus and Lebanon in West Asia economic development, urbanization and off-farm work opportunities have resulted in reversion of agriculture land to forests.

Range land – Forest interaction

39. Animal husbandry has been an important source of income, as also a way of life for a large number of people in both Central Asia and West Asia. Transhumance has been an important strategy to take advantage of uncertain fodder and water availability. Much of the transhumant population migrated between winter and summer pastures. In the recent years, there have been two broad paths of development in Central Asia and West Asia.

- In the case of Central Asia independence of the countries resulted in the dissolution of cooperatives, lack of maintenance and deterioration of infrastructure, the decline of state support as also the loss of traditional markets, especially in Russia. This has led to a significant decline in the number of cattle (except horses). In countries like Kyrgyzstan, there has been a revival of the traditional approach to animal husbandry and it is reported that many of the range lands that suffered from high levels of degradation has recovered.
- Range management in West Asia has developed differently. In most countries increased wealth and urbanisation has resulted in a significant decline in the population of nomadic tribes. However, this has not always led to a decline in the number of animals. In countries like Saudi Arabia the pressure on range land has increased on account of commercial scale animal husbandry, as increased income enables the transport of animals over longer distances to pastures and water sources. Although there has been a drastic decline in the proportion of transhumant population the number of animals has not decreased, but has increased in some cases (see Box 3-9).

Box 3-7 *Change in livestock management in Saudi Arabia*

Saudi Arabia registered a significant reduction in the proportion of semi-nomadic and trans-humant population on account of policies that supported settlement and agriculture. Agriculture was subsidised heavily taking advantage of the rapid increase in oil revenue. However, this did not necessarily change the number of livestock population and the pressure on rangeland. Improved income and transport facilities enabled the transportation of animals, fodder and water over long distances. While many nomadic and semi-nomadic households settled in urban areas, the system of paid shepherds (often based on immigrant workers) led to increased pressure on range and forest land.

These modifications in the nomadic society and the grazing patterns especially related to nomadic settling occurred voluntarily as a result of the services provided by the government in all the regions. These services enabled the nomads to overcome the natural limiting factors (such as scarcity of water and forage which used to dictate herd sizes and range productive capacity) and maximize their herds and keep them for longer periods. This led to premature and overgrazing which resulted in range deterioration and acceleration of desertification process.

Source: Country Outlook Paper - Saudi Arabia

40. One of the most important farming systems in Yemen and Syria is the highland mixed livestock farming system, primarily involving raising of goats and/or camels on communally managed lands (FAO, 2001). Those dependent on the system migrate seasonally between lowland steppe and uplands. Poverty is widespread among the people dependent on the system, especially on account of poorly developed infrastructure, long distance to the markets and degradation of natural resources.

Agriculture and livestock economy and implications on forests and trees

41. Most cultivation in the Region has been limited to the irrigated areas close to major rivers, those in the areas served by canals and the oases. Beyond this most of the land is used as pasture land. Forests are largely in areas less inhabited and often on slopes, unsuitable for cultivation. The exception to this is the uplands in countries like Jordan, Syria, Turkey, Saudi Arabia and Iran, where mixed farming, especially of horticultural crops often expands to the adjoining forests.

42. In the Central Asian countries most expansion of agriculture has been to range lands and hence did not have a significant direct impact on forests. However, this has increased the pressure on the remaining pasture lands, resulting in degradation including reduction of watershed values. On the whole there has been very little expansion of agriculture to forests, largely due to the fact that most population is concentrated in the irrigated valleys and oases, and the arid and semi-arid conditions makes agricultural expansion dependent on improvement of irrigation. The major change as regards agriculture in Central Asia took place in the 1970s and 1980s, when extensive steppes were opened up for cotton cultivation primarily through development of large scale irrigation system, particularly reservoirs and canals. Cotton continues to be an important crop for countries like Turkmenistan and Uzbekistan.

43. Diminution of the range land is an obvious outcome of this development. However, in the absence of reliable statistics it is difficult to indicate the direct and indirect impact of this on trees in the range lands and forests and how the flow of goods and services has been effected. An important outcome of this is however the environmental problems in the Aral Sea basin, including the drying up of the Aral Sea, increased desertification and deposition of salts in large areas undermining agriculture productivity.

44. Expansion of agriculture and its impact on forests and trees in the future will be determined by the following factors:

- In view of the preponderance of arid and semiarid lands, future expansion of agriculture will be largely determined by expansion of irrigation facilities. However agriculture already accounts for nearly 80% of the water consumption, and since most surface water has already been developed, the scope for further expansion of irrigation is limited. Excepting for improving efficiency of irrigation, the scope for further expansion of irrigation to new areas is limited and therefore the scope for extending the cultivation to new areas is limited.
- Even if some expansion takes place, it will be to the adjoining range land and for that reason, forests as such may be spared. Such expansion however may result in removal of scattered tree growth.
- Land degradation is one of the major problems facing the region, largely due to faulty land and water management. Extensive areas have been affected by salinization and are being abandoned, reverting to pasture areas and thus permitting regrowth of trees and other vegetation.
- Expansion of most commercial agriculture in the past has been supported by governments through subsidised inputs, including water, fertilizers and pesticides. Increasing market orientation policies, removal of subsidies and privatization implies that such agriculture will be uneconomical. Excepting small scale subsistence agriculture, market oriented agriculture is unlikely to expand. On the other hand this segment may face some decline.
- Another factor that will impact agriculture in the future is the mobility of people and rapid urbanization. Limited income opportunities would encourage more of the young people to move to urban areas, and this would result in the further decline of agriculture (see Box 3-8).

Box 3-8 Declining income from agriculture in the Balkans and Central Asia

“ In the Balkans and the Central Asian Republics (where the research was undertaken), the agricultural sector is failing to provide a decent livelihood for its workforce, especially the poor. The rural labour cannot be productively absorbed in the agricultural sector and poverty is growing”.

Davis J.R, Bezemer D.J, Janowski M and Wandssneider 2004.

- Agriculture subsidies will be another element of uncertainty that will impact agriculture expansion in the region. Agriculture subsidies in other regions (especially Europe) and market access limitations are having a negative impact on agriculture production in many West and Central Asian countries affecting their competitiveness in the domestic and external markets. Future expansion of commercial agriculture in the West and Central Asia will, thus, to some extent depend on issues like input prices, productivity and competitiveness, especially taking into account the effects of changes in agricultural policies in Europe and other regions.

Box 3-9 War, agriculture production and illegal logging

“Afghanistan is a traditional agrarian society, with rural Afghans constituting well over 80% of the population before the Soviet invasion in 1979. Since 1979, agricultural production has decreased by 50%. To compensate for this loss, rural people have started to utilise the free and unregulated natural resources and their environment. The end result of this process is the loss of natural forests and smuggling of wood outside the country”.

Saba 2001

45 There are, however, situations in the region where a multitude of factors, most important being war and instability, have led to a decline in agriculture impacting forests negatively. An example of this is Afghanistan, where the war during the last three decades has created instability in land use and undermined the fine balance required in the context of a fragile ecosystem. Production of crops and livestock has declined drastically and this has increased in the dependence on informal non-farm activities including illegal logging (see 3.10). Obviously political situation and policies and institutions tend to have a significant impact on the social and economic situation and the land use and thus forests and forestry.

Box 3-10 Political transition in Central Asia and the Caucasus

In the early 1990s, despite the collapse of the socialist system in the region, there was poor public understanding of alternative political, economic and social arrangements. The understanding of democracy was translated into free elections. Other essential attributes of democracy such as the rule of law and strong civil society remained underdeveloped. This political vacuum was rapidly filled by a centralized system of governance. The majority of the first presidents of the newly emerged states were former communist rulers. The initial changes in governance system were very slow as the new leaders maintained that transition to democracy and market economy should be gradual. According to them, the public in general was not ready for rapid reforms and therefore a typical top-down approach prevailed.

Osepashvili, 2005

3.3 POLITICAL DEVELOPMENTS, POLICIES AND INSTITUTIONS

46. Political and institutional changes fundamentally influence natural resource use pattern through influencing the actions/ responses of the people. The WECA Region has witnessed profound changes in the political situation during the last two decades. Collapse of the Soviet Union and independence of countries in Central Asia and the Caucasus is one of the most important developments. Although slow and chequered, West Asia is also undergoing political changes with democratic arrangements taking roots in the countries. These changes affect policies and institutions that alter the behaviour of people and thus their interaction with natural resources. Some of the developments in this regard include:

- Political changes, especially the emergence of democratic governments;
- Community participation and decentralisation and devolution of administration;
- Growth of the private sector and its increased involvement in resource management;
- Increased role of civil society organizations in influencing policies in the public and private sectors.

Political changes and empowerment

47. The political situation in a country is a fundamental element that impacts almost everything and therefore of critical importance in assessing the future of the forest sector. The West and Central Asia region is characterised by a wide spectrum of political systems, ranging from governments elected through democratic processes to authoritarian governments with all the powers vested in one or a few individuals, who are not answerable to the public. However, the situation is changing rapidly in the general direction of strengthening of the democratic process and weakening of authoritarian regimes. The Central Asia and the Caucasus is a typical example of change in the last one decade, especially due to the collapse of the Soviet Union. However the transition to effective democracies has been extremely slow (see Box 3-10) and often authoritarian regimes persist.

48. A related issue is access to information on governance and transparency in the conduct of government's business. All the countries in Central Asia and the Caucasus have ratified the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (UNECE). Notwithstanding some efforts by the concerned ministries and departments, access to information is limited. There is also scepticism about the impact of participation in decision-making and often the attitude that very little will change is widespread.

49. Several countries in West Asia have already embraced democratic process of electing the governments and increasingly this is expected to have an impact on other countries also. Improved access to information tends catalyse change, and even authoritarian governments are compelled to broaden participation. This is all the more so in a situation with a high proportion of young people, whose values and aspirations will be different. All the indications are that there will be continued political changes in the region (Box 3-11), leading to broad based democratic governments that take into account the views of the people on how they are governed. Such developments are already impacting policies and legislation pertaining to forests (see Box 3-15).

Box 3-11 Political Participation in Arab countries

“Political participation in Arab countries remains weak, as manifested in the lack of genuine representative democracy and restrictions on liberties. At the same time, people's aspirations for more freedom and greater participation in decision-making have grown, fuelled by rising incomes, education and information flows. The mismatch between aspirations and their fulfilment has in some cases led to alienation and its offspring – apathy and discontent. Remedying this state of affairs must be a priority for national leaderships”

UNDP, 2002

Box 3-12 *Legal framework for public participation in forest management in Central Asia**

“All the countries have their legal framework for the forest sector revised in the 1990s with varying degree of indications towards a market economy. Armenia, Azerbaijan, Georgia, Tajikistan, Uzbekistan and the Kyrgyz Republic define the forest resources exclusively as state property. The management responsibility may be divided between different central-level state agencies and in some cases local government and/ or state enterprises. ... In Tajikistan, degraded pasture lands (with potential for tree planting) are being transferred to non-state parties. In the Kyrgyz Republic and Uzbekistan community forestry experimented to very limited extent through long term leases of state forest lands”

Source: Savcor, 2005..

* Note: Kazakhstan and Turkmenistan were not covered by the study

Local governance, decentralization and community participation

50 Given the nature of governments in West and Central Asia, formal involvement of community organizations in resource management is still in the very early stages of development. No doubt there is a long history of community level arrangements for resource management, especially in the use of pasture land. However government policies in the past have weakened such traditional arrangements. This has been particularly so in Central Asia and the Caucasus in the context of centralised planning and collectivisation of farming and animal husbandry implemented during the Soviet period. Some of the issues relating to local governance and community participation in the WECA region are discussed below:

51. In the Central Asian and the Caucasus countries there are three basic levels of governance: Central, regional and local (district, city and village administrations). Local representative bodies (councils) are normally elected, while heads of regional and local administrations (executives) are directly appointed by the central governments. The interaction between the central, regional and local governments is predominantly hierarchical as nearly all of the political and economic decisions, including those which are of local importance, are made at the national level (Osepashvili, 2005). Although many governments have expressed their intention to shift greater rights and responsibilities to local authorities, most often these intentions have not been translated into action. Often the transfer of responsibilities has taken place, but neither the authority nor the resources. Some of the directly appointed heads of administrations at the local level take decisions without consulting the elected bodies, undermining the very purpose of decentralization.

52. With the exception of Cyprus and Turkey, initiatives to involve local communities in the management of forest and tree resources in West Asia are limited. The Forest Village Cooperatives in Turkey, established in accordance with the Forest Villages Development Law 2924 (1983), is a notable effort (see Box 3-13). Although village cooperatives play an important role in harvesting wood, they have very little say in how the forests are to be managed and even as regards fixing forest products prices. This situation is likely to change with the entry of Turkey in the European Union.

Box 3-13 VILLAGE COOPERATIVES IN TURKEY

In Turkey, there were 4,948 Agricultural Village Cooperatives with 684,936 members. Of which, 3,199 villages were forest villages by end of 2001.

The forest village cooperatives have been given special rights and privileges by forest laws since 1970's. Forest Law Article 40 regulates that the Forest Village Cooperatives have the priority to get the job of timber production, which is in accordance with the management plans of the State Forest Organization. The villagers or the Village Development Cooperatives are paid according to the unit prices set forth. Article 34, amended in 2000, regulates that in addition to the labor payments, an premium of 10 percent are to be paid in wood harvesting works and 25 percent of the logs carried to depot should be sold to the Cooperatives at 20 percent less than the average auction price. These legal rights have been providing additional opportunities for incomes and significant benefits to villagers through their cooperatives.

According to the records of the General Directorate of Forestry, Cooperatives and villagers were paid TRL 175 trillion for wood harvesting works in 2002. In addition to this, a sum of TRL19.5 trillion was paid to the Cooperatives and villagers on the basis of other legal rights.

Based on the information of the General Directorate of Forestry, about 287,000 members of the 2,100 Village Development Cooperatives were involved in forest products harvesting operations in 2000. It was estimated that about 60% of the total wood production was carried out through the cooperatives during the period.

Source: Turkey – FOWECA Country Outlook Paper

Development of the private sector

53 Following the transition from centralised planning a number of countries in Central Asia and the Caucasus have made efforts to promote private sector involvement in all key economic sectors. Privatisation of state assets and enterprises has been a major thrust. But the pace of privatisation and the manner it has been implemented has varied. In many cases there has been very little efforts to implement privatisation in its true sense of promoting efficiency through a competitive market (see Box 3-14). Private sector involvement in forestry, especially in ownership and management (see Table 3-7) of forests, has been limited for the following reasons:

- Low productivity and high costs reduces the rates of return in comparison with alternative investment options;
- Most benefits from forests and trees in the region are environmental and therefore public goods. Since the value of such public goods is not accounted and there are no markets for environmental services, the owners of forests and trees are unable to benefit from their provision.

54. Some of the countries in West Asia like Cyprus and Lebanon have however a long history of private ownership of forests and woodlands. In Cyprus more than 38 percent of forests and over 76 percent of other wooded land are under private ownership. However most of these forests are not managed, partly because of the small size of the holdings as also that many of them are owned by absentee owners who have no interest in managing them. In Lebanon also private ownership of forests and other woodlands dominate, many of which are managed for the production of pine nuts.

Box 3-14. Turkmenistan and Georgia: Contrasting economic systems

Turkmenistan has been very conservative in terms of economic reforms. Privatization has been virtually halted since the mid-1990s. State investment amounts to around 30 percent of the GDP, mainly covering oil, textiles, food processing, transportation and construction. The services sector has been mostly privatized and currently private sector controls 90 percent of the retail trade. In contrast, the state share in industry is more than 80 percent, while medium and large scale enterprises remain in state hands. These enterprises are subject to mandatory state plans. The supply of basic commodities such as water and natural gas is either free or heavily subsidised. The tight state control of the economy and the lack of transparency severely restrict private investments.

In Georgia the Structural Adjustment Programs have been implemented by International Monetary Fund (IMF) and the World Bank since the mid 1990s. The associated measures have included privatization, price liberalization, cutting social expenditure and freezing wages. Though painful, these measures helped to overcome the problems of inflation and economic stagnation. Privatization in the early 1990s was poorly organized and non-transparent. After 2003, the new government has accelerated the economic reform and restructuring process. This includes selling some of the state-run strategic enterprises, such as mining enterprises and metallurgical plants, the simplification of the tax code and removal of excess bureaucracy.

Osebashvili 2005

Table 3-7 Ownership of Forest and Other wooded land 2000

Country / Area	Forest				Other wooded land			
	Total	Public	Private	Other	Total	Public	Private	Other
	1000 ha	%	%	%	1000 ha	%	%	%
Armenia	344	100	0	0	44	100	0	0
Azerbaijan	936	99.9	0	0	54	100	0	0
Georgia	2,760	100	0	0	51	100	0	0
Kazakhstan	3,365	100	0	0	14,765	100	0	0
Kyrgyzstan	858	100	0	0	303	100	0	0
Tajikistan	410	87.8	0	12.2	142	47.2	52.8	0
Turkmenistan	4,127	100	0	0	-	-	-	-
Uzbekistan	3,212	100	0	0	-	-	-	-
Central Asia and the Caucasus	16,012	99.7	0	0.3	15,359	99.5	0.5	0
Afghanistan	1,015	100	0	0	-	-	-	-
Bahrain	n.s.	100	0	0	-	-	-	-
Cyprus	173	61.2	38.8	0	214	23.7	76.3	0
Iran (Islamic Republic of)	11,075	100	0	0	5,340	100	0	0
Iraq	818	100	0	0	1,033	0	0	100
Jordan	83	85.5	0	14.5	54	55.6	22.2	22.2
Kuwait	5	100	0	0	-	-	-	-
Lebanon	131	38.2	60.3	1.5	117	13.7	79.9	6.4
Oman	2	-	-	100	1,303	100	-	-
Qatar	n.s.	-	-	-	n.s.	-	-	-
Saudi Arabia	2,728	99.3	0.7	0	34,155	99.6	0.4	0
Syrian Arab Republic	432	100	-	-	35	100	-	-
Turkey	10,052	99.9	0.1	0	10,728	100	n.s.	0
United Arab Emirates	310	100	0	0	4	100	0	0
Yemen	549	5	80	15	1,406	5	80	15
West Asia	27,373	97.4	2.3	16.0	54,389	94.9	2.8	2.3
Total FOWECA region	43,385	98.2	1.4	0.3	69,748	95.9	2.3	1.8
Total World	3,988,649	84.4	13.3	2.4	1,448,648	89.8	3.8	6.5

Source: FAO 2006

55. In many countries the public sector has been playing an important role in wood processing also. However, this has changed in most countries with the private sector taking on most of wood processing and trade. Private sector participation largely depends on the overall investment climate and issues like markets and input prices. As economies are liberalised and private sector involvement encouraged, foreign direct investments in processing and marketing of wood and wood products is expected to increase in the West and Central Asia region. Countries like Turkey and Iran could become important centres of forest industries, especially panel products and furniture, taking advantage of the large domestic and regional markets and the availability of skilled and unskilled workers.

56. Looking ahead, no major changes are anticipated as regards the involvement of private sector in wood production, even if favourable policies and legislations are introduced. Low productivity in the harsh growing conditions will remain a major constraint. Even where private ownership is well established, as in the case of Cyprus, there are little incentives for investment in wood production by the private sector on account of the small size of holdings and better returns from alternative investments. Increasing private investment is however foreseen in the provision of recreational services and production of high value non-wood forest products.

Emerging role of civil society organizations

57. The state of development of civil society organizations and their involvement in forest related issues vary among the countries in the Region largely reflecting the overall political and social environment. In many countries there are very rigid rules for the functioning of non-governmental organizations and in many cases are unable to operate independently.

The main functions of the non-governmental organizations include:

- Creating public awareness on environment and forestry issues through education, publicity, etc.
- Implementation of research and studies relating to forestry issues;
- Undertaking development tasks on behalf of national and international organizations (for example see Box 3-15) ; and
- Functioning as pressure groups to bring about changes in policies, institutions, programmes and activities.

Box 3-15 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 the natural resources of Jordan. It 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, 2005

58. In general most non-governmental organizations are primarily focusing on the first three tasks, often largely with support from governments or international agencies. The ability of non-governmental organizations to bring about changes largely depends on the overall political environment, support that the non-governmental organization gets from the public and their technical, organizational and financial capabilities. Currently this seems to be constrained and the ability of civil society organizations to make an impact seems to be limited (see Box 3-16).

Box 3-16 State of civil society development in Arab countries

“...civil society faces the same problems as the political community vis-à-vis the authorities who seek to control civil organizations, directly or indirectly, by a dual strategy of containment and repression. In addition, many CSOs become extensions of political parties, which use them as fronts through which to expand their political influence at the popular level. This, in turn, limits the CSOs’ initiative and independence of action. Consequently, civil society organizations have not been significant actors in resolving the existing political crisis, as they too have been caught up in its vortex”

UNDP, 2005a

59. Given the broad trend towards more open political processes and the increasing public awareness about environmental issues, non-governmental organizations will have an increasing role in addressing forestry and environment related issues in the Region. Improved access to information on account of the growth of information and communication technology will further enhance the role of the non-governmental organizations. Support from international non-governmental organizations would further strengthen the national non-governmental organizations and in a way this may to some extent “internationalise” some of the local and national issues.

Conflicts and insecurity

60. The West and Central Asia region is highly prone for conflicts, partly stemming from the political and institutional environment that often fails to recognise the aspirations of people from diverse ethnic, religious and linguistic backgrounds and the impact of various geopolitical interests. There are several pockets of conflicts that have particularly affected forests and forestry. For example insecurity in some of the forested provinces in Afghanistan (see Box 3-17) has virtually prevented any management. This has often resulted in large scale illegal logging from these areas. Conflicting claims between Armenia and Azerbaijan on the vast tracts of forests and other land bordering the two countries has led to neglect of management, exposing the forests to illegal extraction. Georgia has also similar problems, making forests vulnerable to illegal logging. Extensive areas of tree growth in Iraq has been destroyed or deliberately removed to deny cover to insurgents. Conflicts impact forests and forestry in the following manner:

- It diverts resources of governments from developmental activities including forest management.
- Weakening of institutions in view of conflicts encourages illegal activities and with little willingness to make long term investments.
- Conflicts and instability acts as a strong disincentive for long term investments.

Box 3-17 *Afghanistan -Instability and weak institutional framework*

Situated in the North East along the border with Pakistan, Kunar forest is one of the last remaining forests in Afghanistan. It is believed that half of this forest’s viable stocks have been stripped by timber mafias and shipped to Pakistan for export to the Gulf and Europe. Before the fall of Taliban, who somehow controlled the deforestation activities in Kunar – and profited from its products – had at least limited the exploitation.

The current interim authority is now powerless to stop the unrestrained logging as the perpetrators are protected by tribal and political warlords, who run much of the rural Afghanistan. One of the efforts made by the new government in March 2005 was to form the “Green Division” an armed and trained contingent of 300 forest rangers with the goal of protecting Afghanistan’s forests from timber smugglers. The rangers function under the Ministry of Interior, which expects to increase the division’s manpower to 2000 rangers by the end of the year. Scepticism surrounds the effectiveness of these efforts as some cite that corruption of the police and high ranking local officials will render them useless. Others have noted that the government has neither the budget nor the equipment to support the division”

Source: Nasrat & Babak, 2005 and Wafa 2002.

61. Improving management of natural resources would depend on how these conflicts are resolved. There are considerable uncertainties in this regard, especially in view of the

chequered development of democratic governance that accommodates the aspirations of people of diverse ethnic, linguistic and religious following.

3.4 TECHNOLOGICAL CHANGES

Overall situation

62. In assessing the long term scenarios of development, it is important to consider the role of technological changes and how they may impact forests and forestry in the region. In addition to developments in the field of information and communication technologies, some of the key areas to be considered are the efforts to enhance efficiency in the use of water and energy. Most countries in Central Asia benefited significantly from the large science and technology infrastructure of the Soviet Union. Research and Development (R&D) efforts in the erstwhile Soviet Union were entirely in the public sector. Collapse of Soviet Union led to significant decline of institutional capacity of these countries. Limited resources, persistence of top down approach to research and development, loss of competent scientists through emigration all contributed to the decline of science and technology capacity in most Central Asian and Caucasus countries.

63. Although the West Asian countries have a different historical background, the overall situation as regards science and technology development is not very different except as regards some of the countries like Iran and Turkey. Table 3-8 gives a general indication of the overall situation as regards some of the important technology parameters.

Table 3-8 Indicators of innovation and its diffusion

Indicator	Central Asia and Caucasus	West Asia	World average	Average for developing countries
Researchers in R&D (per million people – Average 1990 -2003)	Georgia (2317) Armenia (1606) Azerbaijan (1248) Kazakhstan (744) Kyrgyzstan (413)	Jordan (1977) Cyprus (569) Iran (484) Turkey (345) Kuwait (73) Syria (29)	1,146	400
R&D expenditure (percentage of GDP – Average for 1997-2002)	Kazakhstan (0.3) Georgia (0.3) Azerbaijan (0.3) Kyrgyzstan (0.2)	Turkey (0.7) Cyprus (0.3) Kuwait (0.2) Syria (0.2)	2.5	0.9
Internet users (per 1000 people in 2003)	Georgia (24) Kyrgyzstan (38) Uzbekistan (19) Tajikistan (1)	Cyprus (337) UAE (275) Kuwait (228) Bahrain (216) Lebanon (143) Turkey (85) Saudi Arabia (67) Syria (35)	120	53

Source: UNDP, 2005. Human Development Report 2005

64. It may however be noted that the data on the number of researchers in Central Asia and the Caucasus may be distorted, especially as it partly reflects the pre-independent situation, when Soviet Union made substantial investment in R&D. The R&D expenditure for the period 1997-2002 probably gives a better picture of the situation. None of the countries in the region have R&D spending to the average level of the world or even that of the developing countries. As regards use of internet several countries in West Asia have a much higher proportion than the world average. While this is a crude index of improved access to information, it also reflects the higher disposable income.

Research and Development in forestry and allied sectors

65. Considering the overall R&D situation in most of the countries that typically involves a low allocation of GDP, the ability of the countries to address the emerging problems is likely to be constrained. Much of the emphasis – including in R&D – will be to adapt known technologies through applied and adaptive research. Since forestry is not an economic priority and most of it is focused on protection and conservation, the share of resources allocated for forestry research seems insignificant. Most Central Asian and Caucasus countries were dependent on the central research capabilities. However, with the collapse of the Soviet Union, that support was lost and the economic decline prevented the development of science and technology capability in the forest sector.

66. In the long term there are several potential areas of technology improvement in the forest sector. Remote sensing is expected to improve significantly to facilitate real-time monitoring of the forest resources. Another area of considerable significance for the entire West and Central Asia region would be improved techniques for control of desertification, especially with improved biotechnology applications in relation to plants that are able to withstand water scarcity. Other technological developments that may have immediate impact would be improvement of fire detection and control and management of pests and diseases.

3.5 CHANGES IN THE EXTERNAL ENVIRONMENT

67. One of the most important factor that will influence the overall social, economic and political environment in the West and Central Asia region is the regional and global economic and political situation, reflected in the (a) rapidly evolving geopolitics and (b) the pace of globalisation. Both the sub-regions are in the centre-stage of global geopolitics with intense competition by major powers to influence the developments, specifically to have access to the energy resources in the region. Globalisation is another dimension of the external environment, which is altering the global economic geography, resulting in the emergence of new global players and consequent shifts in trade and investments. Some of the possible developments that may have important implications are indicated below:

Changing geopolitics

68. As the region holds nearly two third of the proven oil and half of the natural gas reserves, it is inevitable that the Region has been in the centre-stage of global geopolitics. The demise of the Soviet Union, the quest for stability in oil supplies to the traditional oil users and the increasing demand from emerging economies like China and India are

bound to have enormous influence on the geopolitics in West and Central Asia. Although the decade following the collapse of the Soviet Union led to a situation where the events were largely shaped by one super-power, the situation is changing rapidly as a multi-polar world emerges and countries or groups of countries like Russia, the USA, China, India, European Union, etc. exert influence in the region. This could evolve in a positive direction if the countries have the necessary internal cohesion and strength (which will largely depend on more open and transparent governance and the wider distribution of the benefits of economic growth) to take advantage of the competitive environment provided by a multi-polar world. On the other hand, persistence of internal conflicts could result in competing external influences which could worsen the situation.

69. Lessons from the recent interventions in West Asia, especially in Iraq, would suggest that increasingly countries will be reluctant to embark on military interventions and there will be increasing reliance on international mechanisms to settle conflicts peacefully. Given the critical importance of the region as a source of energy, maintaining political stability in the region would be a primary concern for a number of countries. Since some of the key producers of fossil fuels in Central Asia are land-locked, they would be very much depend on their neighbours to transport oil and gas to the markets, and there will be strong compulsion to maintain political stability.

Impact of globalisation

70. The last two decades have witnessed an increased pace of globalisation resulting in rapid mobility of capital, technology, information and products across national borders. Largely this is due to a significant improvement in transportation and information and communication technologies. Countries are much more linked now than it was before such that what happens in one country has a significant impact on others, even though physically they may not be close. The region's importance in the globalisation process stems from its vast reserves of oil and natural gas. The pace of investment in the oil and affiliated infrastructural sectors is expected to continue and this would alter the overall economic situation of some of the countries. Some of the countries in West Asia are emerging as regional and global centres of commerce and trade. The main concern will however be whether such developments will benefit all or whether the globalisation will be an asymmetrical process, benefiting only a few, leading to social instability.

71. An important element in the process of globalisation is the global and regional economic cooperation and trade agreements. Eleven of the countries are members of the World Trade Organization and of the 10 observers some like Saudi Arabia is about to become a full member. Currently Syria and Turkmenistan are the only countries who are not members or associated with WTO as observer member governments. Negotiations on trade, especially relating to agricultural subsidies could have a significant impact on land use in the Region. While removal of agriculture subsidies in Europe may open up markets, only a few countries and possibly a limited number of products may be able to benefit from this.

72. This concern is made particularly acute by two on-going developments, one external and the other internal. The external source of concern is that the successful ongoing globalisation of emerging economies like China and India and others will increase competition. The global market place simply embodies increasing competitive pressures and less tolerant substandard policies and practices than 20 or even 10 years ago.

Success in such an environment depends on substantial investments in human capital and creating necessary conditions favourable for investments. The internal pressure comes from demographics. Most West Asian countries have commenced a period in which the bulge generation created by the demographic transition is entering the labour force and the imperative is to create jobs. It is almost impossible to imagine the sustained generation of employment opportunities without a successful process of globalization and cross-border economic integration.

Global and regional environmental issues

74. Another important factor affecting forests and forestry is the growing concern about environmental degradation and the global and regional responses to address them. The post UNCED period has witnessed a series of international initiatives relating to conservation of biological diversity, control of desertification and mitigation of climate change. Almost all the countries in the WECA region (except Iraq) have ratified CBD, CCD, UNFCCC and the World Heritage Convention. Several countries have also ratified the Kyoto Protocol, the CITES and the Ramsar Convention. All these conventions and protocols commit the countries to pursue action in specific areas and these directly and indirectly affect the forest sector (see Box 3-18).

Box 3-18 *The Pan-European Biological and Landscape Strategy*

The Pan-European Biological and Landscape Strategy was endorsed at the third Ministerial Conference “Environment for Europe” in 1995 with the objective of providing an innovative and pro-active approach to stop and reverse the degradation of landscape diversity values in Europe. All the 8 countries in the FOWECA study covering the Caucasus and Central Asia are signatories to this strategy. Initiatives under this include support to the preparation of national biodiversity strategies, establishment of a Pan-European Ecological Network, integration of biological and landscape diversity considerations in all sectors, raising awareness, action to protect threatened species, etc.

Source: EFI, 2005

75. Following the ratification of the Convention on Biological Diversity, most countries have prepared National Environmental Action Plans (NEAP) or National Biodiversity Strategy and Action Plans (NBSAP). 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 efforts to improve institutional capacity. Most often these initiatives are based on external financial and technical support, involving international non-governmental organizations. But for such assistance, many countries would not have been in a position to develop national strategies and action plans. However, this also raises the issue of long term sustainability, especially when resource availability for implementation is limited.

76. A similar approach has been adopted in the implementation of the UN Convention to Combat Desertification. A Strategic Regional Action Plan to combat desertification in West Asia has been developed within the framework of UNCCD. There are also a number of sub-regional initiatives focused on general cooperation or addressing common problems of concern to more than one country. The Central Asian countries have drawn up a sub-regional programme on combating desertification (UNCCD, 2003). Two important sub-regional initiatives in this regard are the Aral Sea Programme and the Caspian

Environment Programme, both emphasizing on collaborative action to address desertification issues.

77. An important environmental service provided by forests and trees relate to the sequestration of carbon and thus their potential to contribute to climate change mitigation. With the ratification of Kyoto Protocol, the potential for investing in reforestation/afforestation under Clean Development Mechanism has increased significantly. While all afforestation/ reforestation projects as well as improved management of natural forests do help to sequester carbon, projects under CDM are of limited scope. In particular the scope for such initiatives is limited in the WECA region on account of the low productivity. As such there are no projects under CDM in any of the countries in the Region and most are yet to establish the necessary institutional structure for implementing CDM projects. Further, within the CDM framework, afforestation and reforestation tends to get a very low priority and much of the emphasis is on projects aimed to enhance energy efficiency.

Global trends in production of wood and wood products

78. As globalisation intensifies and tariff and non-tariff barriers are reduced drastically, forestry sector in the Region will be influenced by the global trends in production and trade. Competitive advantage than natural advantages will become more important. Over the last four decades, global industrial roundwood production has increased by about 60 percent, to the current level of around 1.6 billion m³ (Whiteman, 2005) although currently it is less than the peak production in the 1990s. In addition, the most important change is as regards a shift in the regional distribution of production with a number of countries in the South increasing their production substantially. In the recent years, Eastern Europe has become an important supplier of wood and wood products. China has become one of the largest producer and exporter of plywood and furniture. Similarly, Russia is on the path of recovering from the decline of its forest and forest industry and this could have significant impact on global wood supplies and prices.

79. In view of low productivity very few of the countries in the West and Central Asia region will have competitive advantage in wood production. With reduced trade barriers, barring a substantial increase in the costs of transportation, wood supply is unlikely to be a major problem. With higher investments in research and development, costs of production of wood from plantations will decline further. Also improved technologies, including use of recovered paper would reduce the raw material input requirements. All these global developments will have an impact on the countries in the Region, that it may not be cost effective for them to manage forests for meeting the domestic demand for wood and wood products.

3.6 SUMMARY OF KEY CHANGE DRIVERS

80. Providing an overview of the key driving forces and their current and potential impact on forests and forestry is extremely difficult on account of several factors. There are significant variations between countries as regards the demographic, economic, policy and institutional and technological conditions. Although the clustering of countries into two broad sub-regions (West Asia and Central Asia and the Caucasus) helps to provide a better perspective in terms of the political historical context, there are several other factors that differentiate them. This is also true in the case of the Central Asia and Caucasus

countries, notwithstanding their common political history. Inherent differences in human and natural resources coupled with the differences in the pace of political change has been a key factor in the current differences and there will be continued divergence in the social and economic development of these countries. While all the driving forces will have some impact, their relative influence will vary between countries and over time. Table 3-8 summarises the relative importance of the driving forces for each country.

81. Forestry in the West and Central Asia Region will be directly and indirectly affected by the collective effect of a number of internal and external factors. Demographic changes, growth of income and how it is distributed and policy and institutional environment will be the key driving forces. Other aspects like environmental changes and development and adoption technologies will also have some influence. Together, these will influence a wide range of drivers, especially relating to land use, demand for wood and wood products and the demand for environmental services. Economies of most countries are likely to witness substantial diversification with industries and services sector enhancing their share, while agriculture and related activities declining in importance. This would imply some reduction in the pressure on forests and abandonment of agriculture, paving the way for natural restoration as has happened in a number of countries.

82. However, the demand for wood and wood products and environmental services are likely to increase considerably. In many countries the construction sector is bound to grow rapidly, as income from oil and gas are invested in development of infrastructure and housing needs of a growing adult population are met. At the same time there will also be demand for provision of environmental services, especially recreation. This is particularly in view of the anticipated growth of international tourism, as some of the economies invest in diversifying the economic base.

83. The internal social, political and institutional environment will to a great extent influenced by the external global and regional environment. West and Central Asia has been in the centre-stage of global geopolitics, primarily on account of it being the most important source of energy supply to the rest of the world. Competition to access oil and gas supply has been an important determinant of development in the Region. The post 1990 period has particularly witnessed major changes in the geo-political situation, often reflecting the domination of one super-power. However, the situation is changing in the context of emergence of a multi-polar world. Many of the countries in the Region would be a position to take advantage of this and ensure that they have a more favourable external environment.

84. Another important external factor will be the pace and nature of globalisation. Depending on the efficacy of global institutions, especially to provide just and equitable mechanisms for trade, investment and technology transfer, the impact of globalisation will differ considerably. Improved international arrangements would help to spread the benefits improving the social and economic conditions in the countries, and thus forests and forestry. On the other hand unfavourable institutional arrangements would result in asymmetrical globalisation that may have negative consequences in the social and economic conditions and consequent adverse effects on forests.

85. Considering the multitude of driving forces and their complex interactions, a wide range of forestry situations may develop in the Region. Although some extent of

simplification is inevitable, some broad trends can be identified that could provide possible paths of development and what can be accomplished given the impact of various factors. Primarily this involves identification of possible scenarios and assessment of their implications on forests and forestry. These aspects are dealt with in the next chapter.

4 THE FUTURE OF THE FOREST SECTOR

4.1 INTRODUCTION

1. As discussed in the previous chapter, several factors collectively impact the forest situation in the West and Central Asia Region. Assessing the future of forests and forestry requires an analysis of how these different factors will interact and collectively impact the direction of development. Considering the multitude of possibilities, it is difficult to visualise all the possible permutations and combinations. Absence of reliable data and uncertainties relating to some of the key variables make it difficult to precisely identify what may happen. However, it is possible to indicate the broad paths of developments and thus to identify the general nature of interventions required to improve the situation. This chapter focuses on how the future direction of changes arising from the collective impact of various driving forces could be better understood to enable improved decision making.

2. Traditional modelling approaches to forecasting the future are highly dependent on a very limited array of quantifiable variables whose relationships are well established. Assumptions of stability of other parameters (*ceteris paribus* – other things remaining the same) help to exclude problematic behaviour of variables that are not easily measurable. Important limitations of such modelling approaches in identifying the direction of developments in sectors like forestry are:

- they are dependent on quantifiable relationships between given variables; and
- the assumption that past trends are likely to persist in the future, implying no significant qualitative changes.

3. However, in societies undergoing fundamental transition, there are several variables that are difficult to quantify. The uncertainties, characteristic of long time horizons, are another major problem. Further, in situations where information base is extremely weak (as is typical of the case of forestry, particularly as regards data on production, consumption and trade of forest products), projections based on limited information could be grossly misleading. Minor inaccuracies in key variables are magnified many fold undermining the usefulness of forecasting based on limited information.

Box 4-1 Scenarios - Definition

“Scenarios are plausible, challenging and relevant stories about how the future might unfold that can be told in both words and numbers. Scenarios are not forecasts, projections or predictions. They are about envisioning future pathways and accounting for critical uncertainties.

Source: MEA 2005

4. Therefore, increasingly long term outlook studies adopt scenario planning approaches, combining quantitative and qualitative methods (see 4.1). More importantly, scenario approaches encourage resource managers, stakeholders and the society as a whole to visualise the likely paths of development, and in the process help develop a collective vision of how the future should be and what may be done. Scenario planning is particularly useful to address uncertainties and to analyse the options available in the context of unanticipated developments.

Box 4-2 Arab Human Development Scenarios

The Arab Human Development Report 2004 identifies three scenarios, (a) Maintaining the status quo, (b) the “Izdihar” alternative (the ideal scenario) and (c) the “Half-Way House. According to the authors maintaining the status quo would lead to intensified conflict, especially destructive upheavals and if this happens the future of human development will be severely undermined. The Izdihar scenario involves a process of peaceful negotiation on the redistribution of power, safeguarding freedom for all, effective political participation, efficient institutions which are transparent and accountable and an independent judiciary. The third alternative envisages a gradual and moderate reforms which is a pragmatic approach to make the best of regional and international initiatives, giving due consideration for Arab ownership and leadership, adherence to international human rights, inclusion of all societal forces and respect for outcomes freely chosen by people.

UNDP, 2005

5. Scenario approaches have been widely used at various levels – addressing issues at the sectoral, local, national, regional and global levels. One of the earliest efforts as regards scenario planning has been with the oil sector, assessing the interaction between prices, demand, investments in finding new reserves, technological developments in exploration and processing, and political changes⁹. Most recently the Millennium Ecosystem Assessment adopted the scenario approach to assess the implications of alternative paths of development on key ecosystem parameters adopting a time frame of 2050. The MEA identified four scenarios (a) Global Orchestration, (b) Order from Strength, (c) Technogarden and (d) Adapting Mosaic, each resulting in distinct outcomes as regards the state of ecosystems and the provision of various ecosystem services. These scenarios help to identify what will happen under alternative assumptions of resource use. Recently the scenario approach was used by the UNDP in the preparation of the Arab Human Development Report (see Box 4-2). The Forestry Outlook Study for Africa (FAO, 2003) and the European Forestry Sector Outlook Study (UNECE/FAO 2005) used scenario approaches to outline priorities and strategies in the forest sector.

4.2 APPROACH TO DEFINING SCENARIOS

6. The first step in defining scenarios is to identify the critical driving forces that will help to shape the paths of future developments, and how they are likely to evolve in the future. Among the two broad groups of factors (internal and external) discussed in Chapter 3, certainly the internal factors seem important in influencing the development of the forest sector. Global environmental issues, changes in demand for fossil fuels, changing pattern of global trade, etc. do have some bearing on forests and forestry, largely through impacting the internal social and economic situation. Hence, for the purpose of defining scenarios, the internal driving forces are taken as the basis.

7. Among the various internal driving forces, some are more predictable than others. For example, substantial information is available on demographic changes (especially changes in the total population, rate of urbanization, age structure, etc.) and their future trends are less uncertain. Technological and environmental changes are more uncertain, and impact society in the long term. Over shorter horizons of 10 – 20 years, it is not

⁹ See a more recent analysis on the future of energy by Shell International, 2001.

difficult to provide some reasonable indication of the nature of technological and environmental changes and their implications. Even if major changes take place, the main concern would be to take them on board through appropriate policy and institutional adaptations.

8. Unquestionably uncertainties are particularly serious as regards (a) economic performance and (b) policy and institutional changes. Changes in these two interlinked areas tend to have far-reaching direct and indirect impacts on the forest sector. Economic performance could be measured in terms of the level of income, its growth rate, distribution of income, extent of poverty, structural changes in the economy, etc. Policy and institutional development is another major dimension that, though less predictable and measurable, will influence the development of the forest sector significantly. The relevance of these two broad groups of change drivers in influencing the overall social and economic development in the region are discussed below:

Economic performance:

9. Within the WECA region, there is considerable divergence in the economic situation as also in the dynamics of development. Important components of economic performance include:

- Current level of gross domestic product and its growth rate;
- Savings and investments;
- Income distribution and extent of poverty;
- External debt, development assistance and foreign direct investment;
- Development of internal and external markets and the growth of trade;
- Structural shifts in the economies and changes in the relative importance of different sectors; and
- Technological changes and their impact on production efficiency.

10. Long term economic performance will be influenced by all the above elements. As discussed in chapter 3 the situation in the region varies significantly. Several countries in the region have relatively high per capita income, income growth exceeds that of the population, economies are diversified and efforts are underway to reduce disparities in income. However, there are others that are at the other end of the scale. Even in countries with relatively high per capita income, its distribution remains highly skewed. Economic growth of several countries is often primarily dependent on income from the oil sector and hence vulnerable to changes in fossil fuel prices. Realising the potential vulnerability of exclusive dependence on the income from sector, a number of countries are making efforts to diversify their economies through investing in agriculture, industries and in the services sector, including tourism. Success of such diversification efforts has been extremely varied.

11. In contrast to the countries that are economically better-off, there are those with extremely low incomes and high levels of poverty and ranked very low as regards almost all indicators of human development (for example see UNDP, 2005b). Afghanistan and Yemen in West Asia and Kyrgyzstan and Tajikistan in Central Asia are the poorest countries in the region. They are characterised by very low incomes, poor growth rates, high dependence on traditional sectors, poorly developed markets and low productivity,

especially due to the low levels of technology and human skills. But for major discoveries of fossil fuel reserves or mineral deposits sustained economic growth in these countries will largely depend on high investments in traditional sectors or substantial external support. Political instability will be another critical element that impact long term economic prospects of almost all countries.

12. The economic scenario of a number of countries is expected to change significantly on account of their participation in regional cooperation agreements. Cyprus has already become a member of the European Union in 2004 and negotiations for Turkey's accession have been launched in October 2005. There are several other regional economic cooperation agreements with differing potentials and the benefits that a country derives will largely depend on the overall economic and institutional strengths of the regional grouping. Membership in European Union could have significant impacts, especially through access to EU markets, increased flow of investments, labour mobility, access to technologies, etc. This will also imply adherence to common policies, strategies and rules and regulations.

13. While the overall situation in each country tends to be very specific with varying levels of economic performance, for the purpose of analysis the following economic scenarios could be identified:

- Countries like Cyprus, Iran, Turkey and Kazakhstan are making substantial progress in developing stable, diversified economies that are able to withstand internal and external changes. Many would have also implemented wider policy reforms that help to reduce inequality and poverty.
- A number of countries (for example Kuwait, Oman, Saudi Arabia, Turkmenistan, etc.) remain highly dependent on one sector (for example oil and natural gas) and have not been able to broaden their economic base. Although the world is still far away from reducing its dependence on oil, these economies are rather vulnerable to changes in global energy markets. Unbalanced development has also resulted in inequitable distribution of income, largely on account of the policy and institutional limitations.
- The third cluster of countries consists of those that face serious economic difficulties, especially on account of low incomes and poor growth rates. Many of them like Afghanistan and Yemen have very limited natural resources and the human capital also remains poor on account of low investments in education and health care. They are highly dependent on external assistance and in view of high levels of poverty, domestic resource mobilisation for investments is extremely difficult. Unless some unanticipated developments (for example discovery of a large reserve of oil or natural gas), low income and poverty will persist in these countries.

Institutional environment

14. The institutional environment is another critical dimension that will influence future development scenarios, largely through altering the behaviour of the various actors. Institutional environment determines the freedom of choice as also the obligation of individuals and groups.

Even how the future economic situation unfolds will be largely determined by the institutional environment. Some of the key components of the policy and institutional dimension include:

- The nature of government (how government is formed and changed) and government policies;
- Governance and transparency;
- Ability/ competence of government institutions;
- Development of private sector/ civil society organizations;
- State of community organizations;
- Development of market institutions;
- Relationship between different institutions and their ability to resolve conflicts;

15. The policy and institutional situation in the countries differs considerably and visualising future changes is extremely difficult. In a number of countries, governments are formed through democratic process, while there are others where participation of people in forming governments is very limited. Recent years have seen some, often slow, changes towards democratic governance, including election of representatives to parliaments and other decision-making bodies. Some of the countries have recently approved limited participation of women in governments through giving voting rights. In many Central Asian and Caucasus countries governments still function largely within the pre-independent Soviet framework, while there are some where popular uprising has triggered some change, although the transition to an open, less authoritarian system is far from complete. Thus, the pace of institutional change in the region towards more accountable political and institutional environment is often slow.

16. Closely related to the nature of governments is the mix of institutions in place to pursue the objectives of the governments and their efficiency and effectiveness in discharging their functions. In many countries almost all economic activities are controlled by government and this provides little space for the development of alternative institutional arrangements. During the Soviet period, almost every economic activity was controlled and managed by governments. Notwithstanding the collapse of central planning, there are some countries where government institutions still dominate and the development of alternative institutions is very slow or even stymied. There are also instances where continuing conflicts have led to a total collapse of existing institutions, and, as in the case of Afghanistan and Iraq, it may take quite sometime to revive or rebuild them.

17. No doubt efficient public sector institutions are critical to economic progress, especially through providing an effective policy and legal framework and thus a level playing field to all other actors. There are certain areas where market mechanism is more efficient than government interventions. Similarly, there are certain functions that can be better performed by private sector and community level organizations. Many countries are implementing wide-ranging institutional reform helping to develop a balanced institutional framework that benefits from the collective strengths of the different arrangements.

18. Reflecting the varied pace of ongoing efforts, the policy and institutional scenario in the region during the next two decades will be extremely varied. While in some cases effective democratic institutions may have emerged, there will be others still far from

accomplishing such a transition. The overall state of public sector, market and community institutions will also reflect considerable diversity as indicated below:

- a) The public sector remains the most dominant institution in all aspects of economic life in a number of countries. However, their effectiveness will vary significantly as indicated.
 - In some countries public sector is in total control of all key sectors and often prevents the development of alternative institutional arrangements. This is particularly so where authoritarian governments are in power. Almost all other institutions become highly dependent on government agencies and in a way negating their potential to provide an alternative views on/ approaches to addressing developmental issues.
 - Often there are situations where *de jure* power is vested with public sector institutions, but in view of limited human, financial and organizational resources, they are often unable to discharge their functions. Often such a situation results in the emergence of informal institutional arrangements.
 - A more appropriate development would be where public sector plays a facilitating role, laying down the policy and legal framework and ensuring a level playing field to enable other actors – private sector, civil society organizations, community groups, etc. – to play their appropriate roles.
- b) As in the case of public sector, the state of development of private sector could also take different paths. There are instances where private sector has very limited role and this is particularly so where all key economic activities are under government control. One can also visualise a situation where private sector dominates all spheres of economic activity and there are no mechanisms to regulate their functioning especially to ensure that market mechanisms contribute to the accomplishment of broader social objectives. There are also situations where absence of transparency in the privatisation process has led to powerful vested interests appropriating public assets.
- c) Development of civil society organizations also faces a somewhat similar pattern. In general civil society organizations are less developed or almost non-existent in many countries in the West and Central Asia region. Those exist are often highly dependent on governments or international organizations for funding, constraining their ability to independently pursue their objectives. Often they take up tasks like environmental education, creation of public awareness, etc. with support from government and other organizations. While civil society organizations have the potential is to provide an alternative perception of social and economic development, in many countries they are unable to do this.
- d) There may also be situations where traditional institutional arrangements (community groups, tribal protectorates, committees of village elders, shuras, etc.) play important political, social and economic functions. This is particularly in situations where government and private sector institutions are under-developed and ineffective. As other formal institutional arrangements emerge and local economies become increasingly integrated into national and global economies, traditional institutions become weaker and often fade into irrelevance. However, they do remain important under certain situations.
- e) An ideal situation would be where a mix of institutions that play different, but complementary roles exist. Largely this depends on the political and social environment in which they operate and accordingly their capacities and effectiveness differ. In more open democratic societies the private sector and community organizations play an important role in various economic and social spheres. In general

economic activities are largely in the realm of private sector, while the public sector provides the necessary policy and legal framework. Non-governmental organizations are particularly active in the social and environmental spheres, ensuring that these aspects are not sidelined by government and private sector. It also plays an important role in improving efficiency and transparency in the functioning of private and government institutions.

19. The policy and institutional scenario in the West and Central Asia region will hence be extremely varied in the next two decades. In some cases, there will be a more balanced development with a mix of well developed and efficient institutions, while others may be far from that. In several countries public sector will remain the most important institutional entity, although often they may not be able to function efficiently on account of a number of constraints. Traditional community level organizations, though on the decline, may still play an important role in local resource management, especially when other formal institutional mechanisms are ineffective. It is also important to realise the potential for conflicts between traditional different institutional arrangements and this could be particularly serious between tribal community arrangements and the more centralised government institutions.

20. The internal institutional environment will be very much influenced by the values, objectives and strategies of the external agencies, including international organizations operating in the country. Largely this will depend on the overall economic and institutional environment. Strong national institutions backed by robust economies are in a better position to effectively channel external assistance, whereas in the opposite situation donor agenda and concerns often relegate domestic concerns and priorities to the background.

4.3 PROBABLE SCENARIOS IN THE REGION

21. Combining the current and anticipated changes in the economic situation and the probable direction of institutional development, a number of possible scenarios could be identified. Some countries are already in the process of developing strong diversified economies and well developed institutions, while there are others whose economic performance is largely dependent on one or a few sectors (especially of oil and natural gas) and institutional development is nascent. At the other extreme are countries where economies and institutions remain weak. These scenarios can be described as:

- a) Strong diversified economies and well developed institutional arrangements: **“Reshaping- the- future”** ;
- b) Economies growing rapidly, but institutional development lagging behind: **“Living-in the-present”**; and
- c) Weak economies and poorly developed institutions **“Struggling –with- the –past”**.

A brief description of the above scenarios and their implications on forests and forestry are given below:

Reshaping-the-future

Key features

22. Reshaping-the-future scenario is largely an outcome of a combination of pluralistic institutions and a forward looking economy, continuously adapting to the various internal and external challenges. Countries are implementing various measures to develop a highly diversified economy to reduce their vulnerability. Economic reforms that promote savings and investments and thus rapid growth are in place. Benefits from such growth are not concentrated, but percolates to all levels, helping to reduce poverty significantly. Policies and programmes specifically aim to bridge the rural-urban divide and rich-poor gap are in place and extremely effective. Realising that globalisation is rapidly altering competitiveness, countries are investing in education at all levels to improve the human capital and positioning themselves to take advantage of the emerging opportunities as also to face the challenges. Research and development efforts are also receiving substantial support enabling countries to develop/ adapt appropriate technologies.

23. Stable and rapid economic growth under “Reshaping-the-future” is largely based on the existence of a highly pluralistic institutional environment. Political and institutional systems are democratic and ensure equity and justice. Transparent and just rules and regulations implemented effectively provide a favourable environment for rapid economic growth. High investment in education and healthcare improves the quality of human resource. Poverty declines rapidly and to that extent the dependence on unsustainable natural resource uses diminishes drastically. Willingness of the society to meet the costs of maintaining environmental quality is high.

24. “Reshaping-the-future” scenario involves substantial re-invention of many of the existing institutions focusing on efficiency, transparency and equity as the core values. Public sector continues to play an important role, but is particularly focused on formulating policies, legal framework and strategies that enable other actors to operate effectively. Market mechanisms function without any major distortions and private sector is well developed. The same is the case with civil society organizations, whose independence helps to ensure that government and corporate sectors abide by their social, economic and environmental responsibilities.

Box 4-3 Key characteristics of the scenario “Reshaping-the-future”

- Rapid growth of the economy and improvement in the distribution of income resulting in drastic reduction of poverty.
- High level of investments in human and physical capital, increasing the global competitiveness of the countries;
- Diversification of the economies with increased efforts to develop industrial and services sectors, reducing the direct and indirect pressure on land and other natural resources.
- A highly pluralistic institutional environment.
- Civil society organizations are active and have the necessary ability to take up issues of public concern.
- Public and private institutions are effective and function impartially and transparently ensuring a level playing field.
- Ability to adapt to and influence the globalisation process.

25. Countries in the “Reshaping-the-future” scenario are able to build effective bridges across national borders. Many of them actively participate in the global and regional economic cooperation agreements and are able to better address external shocks. Regional cooperation agreements and the institutions supporting them are effective and are able to boost cooperation, minimising conflicts. International disputes are resolved through negotiations, avoiding wars and conflicts. Trade is liberalised, but there are adequate international and national arrangements to ensure a win-win situation.

Forests and forestry under “Reshaping-the-future” scenario

26. Evidently “Reshaping the future” scenario represents an ideal situation for the development of the forestry sector though it will remain a minor sector in the economy. Some of the key features of forests and forestry under this include:

- Wider recognition of the multiple value of forests resulting in a balanced emphasis on their production, protection, social and cultural values;
- Substantial emphasis on the environmental values of forests, with particular attention on the amenity and recreational uses;
- Integrated management of natural resources finds wider application minimising resource use conflicts;
- Sustainable forest management is widely adopted;
- As a broad-based economy emerges and agriculture production is intensified, the pressure on forests declines substantially, stabilising and improving the forest situation;
- Improved efficiency in the production and processing of wood and other forest products (especially through the application of productivity enhancing and resource saving technologies);
- Public forestry institutions are able to play an effective facilitating role, supporting other actors, especially private sector, community groups and civil society organizations;
- Well developed private sector that operates according to the broader policies and legislation;
- Civil society organizations play a lead role in mobilising support for rational and sustainable use of resources ensuring efficiency and equity.

Living –in- the-present

Key features

27. “Living-in-the-present” scenario is characterised by a rapid, but unbalanced growth of the economy, primarily due to the expansion of one or a few sectors. Several countries in the WECA region are in this scenario largely based on income generated through exploitation of oil and natural gas. Important socio-economic features of the “Living-in-the present” scenario are:

- Overall economic performance is highly dependent on the growth of one or a few sectors, which directly and indirectly accounts for a major share of the national income. In the case of the West and Central Asia region, extraction of oil and natural gas remains the main engine of economic growth;
- As substantial surpluses are generated through the export of oil and natural gas, development of other sectors are neglected. Viability of traditional sectors like

agriculture and animal husbandry are undermined on account of cheaper imports made feasible on account of the income from the fossil fuel sector;

- High dependence on natural capital results in the neglect of human capital. In general there is a tendency to neglect investment in education and building up appropriate skills resulting in a high dependency on imported labour (skilled and unskilled) while high levels of unemployment of local population persists.
- Very few countries in the “Living-in-the-present scenario” are investing in research and development and enhancing domestic innovation. There is a high level of dependency on imported technologies (as this is easier in the short term) and this in a way undermines development of indigenous science and technology capabilities critical for long term economic progress.
- Many countries are striving to diversify the economic base through propping up other sectors. But this often requires very high levels of subsidies that promote inefficiencies and unsustainable in the long term;
- High surpluses generated by the dominant sectors also results in high income disparities. Those who control/ or have access to the resource get most of the income while those dependent on traditional low income sectors tends to be extremely poor.

28. Much of the problems in the “Living-in-the-present” scenario stems from severe institutional weaknesses. While economic growth has been very rapid, policy and institutional development has lagged behind and often the dominance of one sector and the institutions associated with it undermines broader institutional evolution. Some of the problems that countries in this scenario confront are:

- Most often government is under the control of a narrow group and democratic institutions are yet to emerge;
- Rules and regulations are less transparent and other stakeholders, especially community groups and non-governmental organizations, are unable to operate independently. Institutional pluralism is almost absent;
- Market mechanism seldom operates efficiently and is subject to distortions stemming from institutional weaknesses.
- Private sector is weak or if present operates in less transparent ways.

Forestry situation under the “Living-in-the-present scenario”

29. The key characteristics of the forestry sector under this scenario are:

- Forests and forestry are not seen as important sectors deserving attention, especially as most attention of policy makers and planners are focused on the high income generating sector. Even when there is emphasis on enhancing self-reliance, attention is focused on agriculture and animal husbandry and forests and forestry receives little attention;
- High income implies that most of the wood and wood products can be imported; long term nature of forestry investments make them less attractive in comparison with alternatives that have a short pay-back periods;
- Some segments of the society, especially in rural areas, who are excluded from benefiting from the rapid growth of the economy, continue to depend on forests for wood and other forest products. However, their ability to invest in improved

management is limited, resulting in resource degradation; formal institutions also remain weak and unable to adopt sustainable management practices;

- Rapid development of infrastructure (especially roads) and urban expansion often adversely affect forests including through outright clearance or degradation; insufficient attention is given to assess the environmental impacts of large scale investment and to adopt preventive or mitigation efforts;
- A similar situation often develops in the context of large scale agricultural and related infrastructure development, resulting in desertification, soil erosion, deposition of toxic salts, etc. Preventive and mitigation measures receive inadequate attention;
- As income increases, there is increased pressure for the recreational use of forests and woodlands; however in the absence of significant improvements in management intensive use could result in site degradation and consequent decline in the recreational benefits;
- In view of the importance of enhancing amenity value of urban areas (especially since a significant share of the economic activity is concentrated in urban areas) urban and peri-urban forestry receives some attention.
- Formal forestry institutions – forestry agencies, education, training and research institutions – remain under-developed; since forestry is not seen as a core sector, it seldom attracts the required human and financial resources;

Struggling-with-the-past:

Key features

30. This scenario represents a highly unfavourable economic and institutional situation and in the West and Central Asia region there are several countries that are making efforts to unshackle them from such under-development. Political upheavals in the past (for example the collapse of Soviet Union or conflicts – for example Afghanistan, Iraq, Georgia, Tajikistan, Uzbekistan) have led to precipitous economic decline and collapse of institutions. Some of the Central Asian and Caucasus countries have been more successful on the economic front; but there are several others whose economies are yet to grow out of the post-Soviet period decline. Shift from centralised planning (especially as part of a the large Soviet economy) to a fragmented and undeveloped market economy has led to substantial welfare declines, especially on account of increased unemployment and stoppage of publicly provided housing, education, health care, etc.

31. Some of the West and Central Asian countries are in this scenario largely on account of poor natural and human resources. Unfavourable climatic conditions limit the scope for intensification of agriculture or animal husbandry. Low income has also undermined the development of human skills and technological developments. Resource constraints are becoming critical especially in the context of high population growth rates. Remittance from employment in other countries has become one of the most important sources of income and this has led to substantial migration.

32. As in the case of the economic situation, institutional development also remains stagnant. Many countries under this scenario have vestiges of old organizations, but with substantially reduced ability to discharge their responsibilities. The overall economic decline has reduced human and financial resources available to them. Often they is

frequent organizational reshuffling without any adequate efforts to understand the more fundamental problems. Public sector organizations dominate and often no alternative system able to deliver public services efficiently is in place. Market institutions are poorly developed and in many cases economic liberalisation in the absence of adequate public oversight and transparency have led to emergence of powerful vested interests, who have been able to appropriate public resources taking advantage of reform processes.

33. The overall economic situation is such that it may take many years for the development of a viable institutional framework. In the meanwhile some of the traditional institutions will continue to exert their authority, although often with limited impact. This is particularly the case with some of the government institutions. The vacuum created by the decline or absence of formal government institutions is often filled by traditional community based organizations (for example tribal committees, shuras, etc.). They are often in a better position to provide the services required by public and more importantly some social stability in the context of the enormous uncertainty the society faces. While they play a vital role in resource management in certain situations, they face a number of constraints in dealing with larger issues, especially in the context of increased interaction with outside world.

Forests and forestry under the “Struggling-with-the- past” scenario

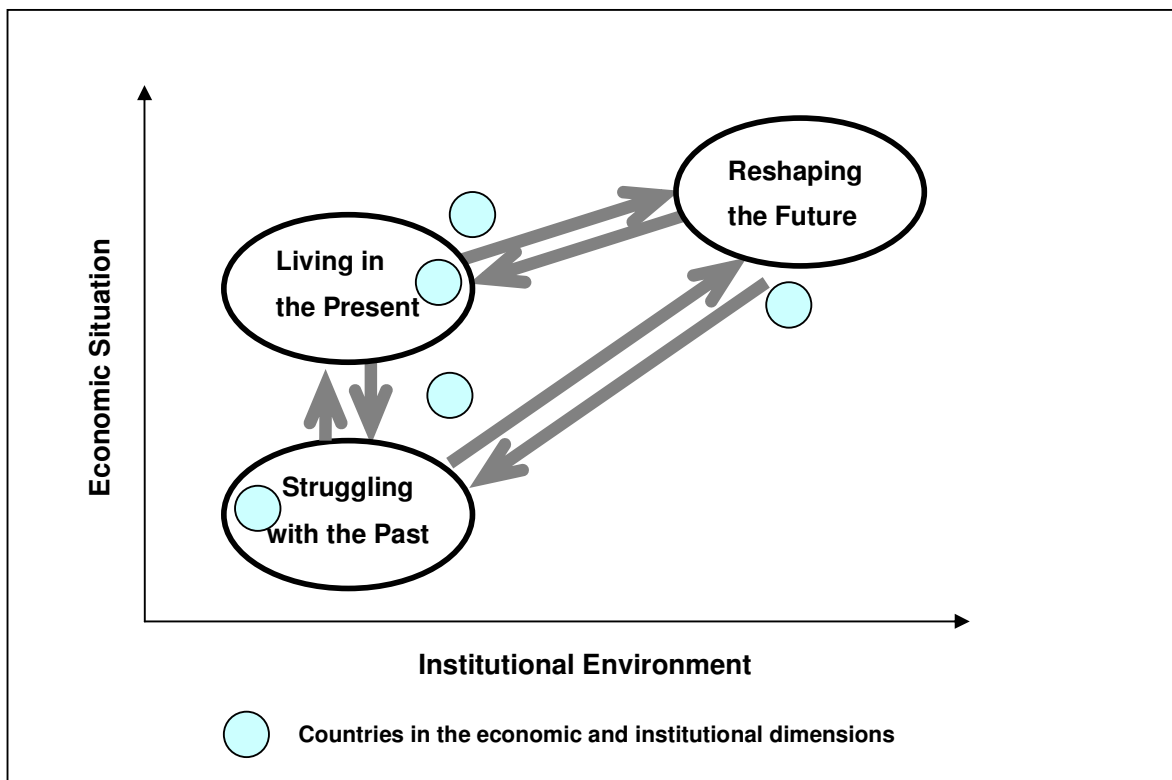
34. Obviously this represents the worst case scenario for forests and forestry resulting in the following situation:

- In view of the poor economic situation and the high population pressure forests are subjected to intense pressures, including conversion of forests to agriculture, widespread collection of timber, woodfuel and non-wood forest products, intense grazing, etc.
- Where valuable forests exist, they are subjected to intense and unsustainable logging; although they could often form an important source of income to government, institutional weaknesses results in illegal logging resulting in significant loss of potential income;
- Degradation and desertification of land continues to be a serious problem;
- Loss of biodiversity persists;
- Forestry agencies are poorly developed and have very limited capacity in terms of human and financial resources. Often formal institutions build on the basis of external support remain unsustainable;
- The overall ability of governments to mobilise resources (through taxes and other means) remain extremely constrained and in such a situation they are unable to allocate resources to forestry in view of other more urgent priorities like agriculture, education, healthcare, infrastructure, etc.
- Forestry development is often largely dependent on external support, but even well-intentioned interventions are often unsustainable especially in the context of limited national capacity;
- Vestiges of local community organizations exist and in some cases they are in a better position to exercise control over local resource management;

Evolution of scenarios

35. The overall institutional situation as discussed in the three different scenarios is illustrated in Figure 4-1 below. It is important to note the situation in a particular country is a continuum in the economic and institutional dimensions and it could occupy any particular position and move in any direction depending on changes in the economic and institutional situation. The area marked as the three scenarios are just to illustrate the differences.

Figure 4-1 Possible Scenarios



36. As indicated in the diagram, the scenario “Reshaping-the-future” represents an idealistic vision under which economic and institutional development are balanced, offering substantial stability as also capacity to address unanticipated changes. Vibrancy of institutions helps countries to overcome internal and external problems. Economic stability is ensured through balanced development of all key sectors. However, it is important to note that maintaining a country or society under this scenario requires persistent efforts by all stakeholders. Especially in a highly globalised environment, competitive advantages may change rapidly and the system has to anticipate and respond to such changes. Otherwise, there is a danger that it could decline to “Living in the present” or even sharply revert to “Struggling with the past” as depicted in the diagram.

37. The scenario “Living in the present” could in the long term move towards the scenario “Reshaping the future” provided substantial efforts are made to improve the institutional environment. Creating an enabling environment to encourage the full involvement of all the actors is very critical. On the economic front the emphasis should be to diversify the economy and to enhance long term stability. Failures in this could

sometimes even result in a decline in the economic situation, pushing the countries to the scenario of “struggling with the past”. Such decline could also take place on account of external factors, like a rapid reduction in the price of commodities/ products that are critical to economic growth or external intervention.

38. “Struggling with the past” is probably the most difficult to address, especially in view of the mutually reinforcing weaknesses on the economic and institutional fronts. In many cases the situation may remain unchanged for a long time, especially in the absence of broad-based long term external support. Emphasis needs to be given to address poverty and deprivation through appropriate resource management practices giving due attention to equitable distribution of benefits. Building up human capital and nurturing institutions that can be sustained by the economy will be the other important step to improve the situation. Systematic efforts could help to build up the economy and institutions in a balanced way, enabling a gradual move towards “Reshaping-the-future” scenario, although this may take many years. For many resource-poor countries moving along such a path, systematically building up institutional capacity, and thus the economy, will be the only option, notwithstanding its slow pace and all the associated bottlenecks.

39. The impact of the different scenarios on the forest sector is summarised in Table 4-1.

Table 4-1 Possible direction change under different scenarios

Indicators	Reshaping the future	Living in the present	Struggling with the past
Forest cover	↗	↔	↘
Degradation/ desertification	↘	↔	↗
Biodiversity	↗	↘	↘
Forest health	↗	↔	↘
Wood production	↘	↘	↘
Industrial wood demand	↔	↔	↔
Woodfuel demand	↘	↘	↗
Recreational services/ecotourism	↗	↔	↘
Urban forestry	↗	↔	↘

4.4 OVERALL FORESTRY SITUATION IN THE REGION IN 2020

39. The overall forestry situation in the WECA region in 2020 will largely depend on the proportion of countries in the different scenarios and it is extremely difficult to provide a clear indication of what may happen in the Region as a whole. The situation that may emerge in the next 15 years will be as diverse as it is today, although this will depend on

the overall efforts to bring about changes in the economic and institutional fronts. An ideal situation would be where there is an increase in the number of countries that are in the “Reshaping the future scenario”, a reduction in the numbers under the “Struggling with the past” and significant institutional improvements so that many countries in the “Living in the present” moves to the “Reshaping the future” scenario through appropriate institutional changes. One could visualise some broad patterns of change in respect of key parameters, especially as regards the state of forests (especially the condition) and the demand for wood and wood products, as also the various environmental services. Some of the possible directions of change are indicated below:

Forest cover, afforestation and sustainable management:

40. On the whole forest cover in the Region is expected to increase in most countries largely on account of the decline in the importance of agriculture (including animal husbandry) as the main source of income and employment. Increasing urbanization and development of the manufacturing and services sectors could see a reversal of agriculture expansion. There will also be some increase in afforestation/ reforestation that will help to compensate the loss of forests, although not the loss of biodiversity. The likely exceptions to this would be countries like Afghanistan, Kyrgyzstan, Tajikistan and Yemen, where a sizeable population will still be rural, dependent on agriculture and animal husbandry. The problem will remain extremely serious in countries with high population growth rates like Afghanistan and Yemen.

41. Degradation will be a major problem that several countries – forested as well as low-forest cover – have to confront. In a number of countries where substantial forest cover exists now (e.g. Georgia), an increase in timber exploitation – both legal and illegal – could be anticipated. Weak economic situation coupled with poorly developed institutional capacity would remain the major problem. In several low forest cover countries some improvement could be expected, especially in the context of increased urbanisation and reduction in the dependence on land.

42. In most countries, extent of natural forests is likely to remain stable and there will be some increase on account of the continued reforestation/ afforestation efforts. Most of the afforestation efforts will be focused on environmental improvement, especially through establishment of shelterbelts and wind breaks and the creation of urban green spaces. Economically better off countries, particularly those seeing to diversify their economic base would particularly pay attention to improvement of the urban environment. There may also be situations where agriculture is abandoned on account of declining interest, especially as opportunities in other sectors improve.

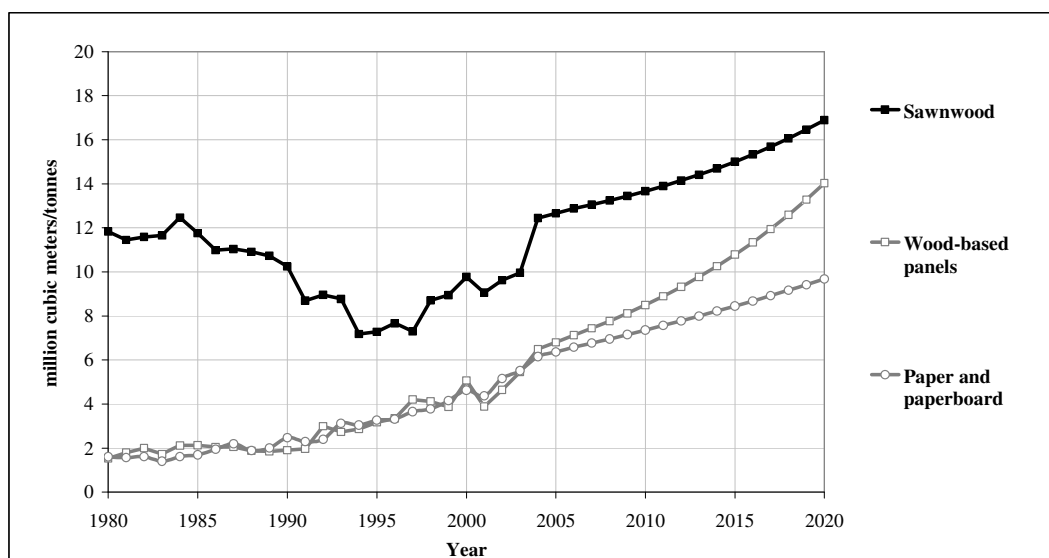
43. A number of countries are also implementing afforestation/ reforestation programmes to address specific environmental problems, like that in the Aral Sea area. Future of such initiatives will to some extent depend on regional and sub-regional cooperation and more importantly availability of financial and technical resources. Currently some of the major programmes of afforestation in the WECA region (for example the Aral Sea Programme) are dependent on external support. Unless there are substantial efforts to mobilise internal resources, some of these efforts are unlikely to be sustained in the long term.

44. Although there may be some increase in the forest cover, the ability of the countries to implement sustainable forest management will remain limited. This will require substantial investments especially to improve policy and institutional arrangements, including technical capacities. In the absence of this, the area of forests and woodlands covered by sustainable management is likely to remain negligible. Problems like forest fire are expected to worsen.

Wood and wood products consumption and supply

45. The consumption of wood and wood products is likely to increase in the entire region, especially on account of the growth in population, increases in income and the changes in lifestyles, especially on account of urbanisation. Figure 4-2 gives an indication of the projected consumption of sawnwood, wood based panels and paper and paper products to the year 2020.

Figure 4-2. Trends in the consumption of key forest products in the WECA region



46. During the next 15 years consumption is expected to grow at an average annual rate of 3-4% in the case of sawnwood and 4-5% in the case of wood-based panels and paper and paper board. Faster growth (in relative terms) is expected in Central Asia, whose economies have recovered during the recent years. Currently the region is a net importer of forest products exceeding about US\$7 billion (in 2004), and this is likely to double in real terms during the next 15 years. West and Central Asia will remain one of the most important net global forest products importing region, largely because of its extremely poor resource base.

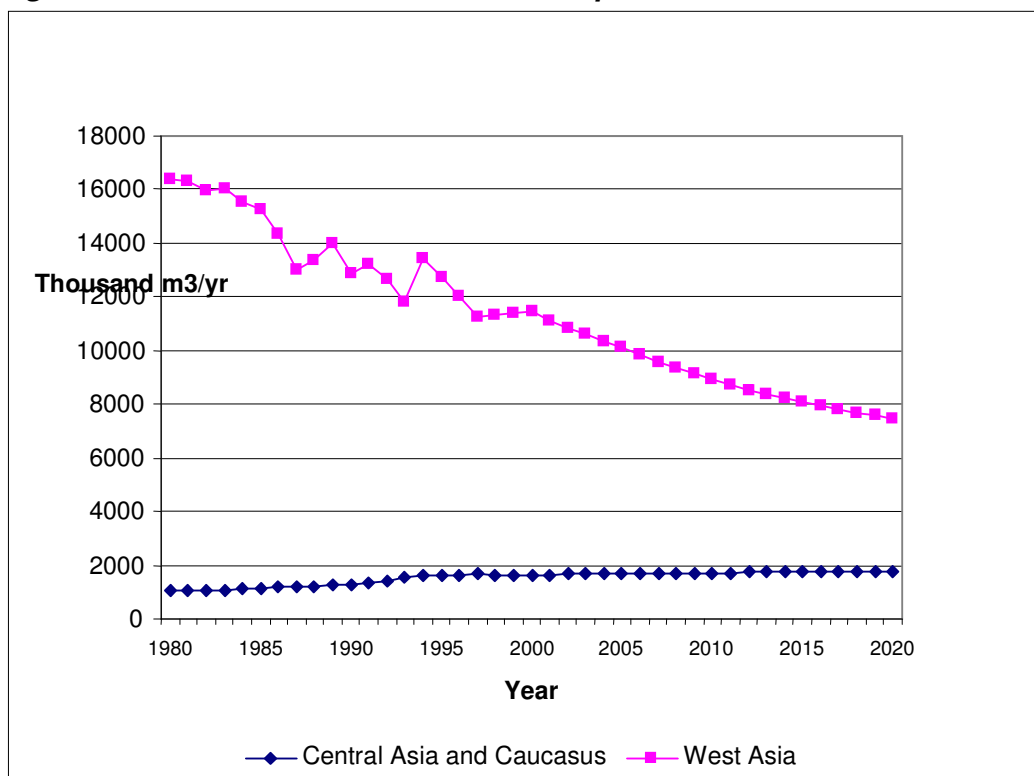
47. The scope for enhancing raw material supply from within the region is extremely limited and most of the demand will be met by increased imports from outside the region (mainly Europe including Russian Federation, followed by South-East Asia). Some of the countries that are strategically located and have a large domestic market (for example Iran and Turkey) will be in a better position to develop forest industries based on imported industrial roundwood. There has also been a rapid growth paper industry (mainly tissue

paper and corrugated case material) in the GCC largely based on imported waste paper (Mubin, 2004). There has also been a rapid growth of panel and pulp and paper production in Turkey and Iran. Declining profitability of wood industry in Europe could further speed up relocation of industries, to the advantage of some of the countries in the WECA region with low cost labour, stable investment climate and access to wood supplies. Although most countries may not have any natural advantage in producing wood, they may still be in a position to develop wood industries on account of their competitive advantage.

Wood fuel consumption

48. Woodfuel consumption is expected to decline during the next 15 years, especially in view of improved access to commercial fuels (primarily due to higher incomes and increase in the urban population). For the region as a whole woodfuel consumption has declined from about 17.4 million m³ to about 13.1 million m³ in 2000 and this is expected to follow a declining trend as indicated in Figure 4-3 (Broadhead, et.al 2001). There will of course be substantial inter-country variation, on account of the differences in the driving forces. For example, woodfuel consumption is expected to increase in Afghanistan and Yemen in West Asia and Uzbekistan and Tajikistan in Central Asia. Considering the weaknesses in data relating to consumption, these need to be treated as indicative.

Figure 4-3 Trends in Wood fuel Consumption 1980-2020



Provision of environmental services

49. Considering the general upward trend in income in most countries in the region, an increase in the demand for environmental services is inevitable. Of particular interest will

be to develop urban green spaces and recreational facilities. Improvement in transport and communications coupled with political stability and improved security is expected to boost international and internal tourism in the WECA region and forests and woodlands would form an important component of tourist attraction. Forests and woodlands close to urban areas will be subjected to intense recreational pressure and most often forest management may not be in a position to develop appropriate management practices that would avoid deterioration of recreational experience. Especially in many of the West Asian countries, recreational demand will increase to such an extent as to cause severe degradation if adequate efforts are not made to regulate the use.

50. The demand for protection of agriculture land and habitations from desertification and land degradation will also increase, resulting in higher investments in the establishment of shelterbelts and windbreaks. Much of this will however depend on ability of the key players, namely governments and farmers, to make such investments. The prospects of an increase in the efforts would therefore vary between countries. In many low income countries, expansion of the programme to arrest desertification would be rather very slow and will depend very much on external funding. There will however be others, which are economically well-off and hence able to meet the growing demand for environmental protection.

4.5 OVERVIEW OF SCENARIOS AND THEIR IMPLICATIONS

51. Based on the driving forces identified in chapter 3, this chapter analyses the various socio-economic development scenarios. They are formulated on the basis of changes in the economic and institutional environment and three broad scenarios reflecting different combinations of economic and institutional development have been identified. This broad range helps to capture most of the situations that are encountered now and arising in the future.

52. Considering the current low forest cover situation and the ongoing afforestation/ reforestation efforts, forest cover in the WECA region is likely to increase. Net increase in forest cover is likely to be the result of increased investments in afforestation. However, degradation is likely to persist in many countries and the problems of loss of biodiversity and desertification will persist. Urban forestry is also expected to receive more attention, especially in the more economically better-off countries. Most of the demand for wood and wood products will however be met through imports, which is expected to surge in response to the growth in population, increases in income and the demand for housing. In view of the high proportion of population in the younger age group, housing needs will surge in the coming years resulting in continued growth of demand for construction material, furniture, etc. These will be met almost entirely through increased imports and will not have any backward linkages resulting in increased domestic wood production.

53. Provision of environmental services will however remain the most important functions of forests and woodlands. In addition to the demand for urban green spaces, the demand for recreation will increase substantially, especially on account of the increase in tourism. Other environmental services that will require particular attention is the protection of agriculture and habitations from desertification and sand encroachment.

54. Priorities and strategies for the forestry sector will have to be carefully crafted taking into account the overall social and economic scenario. In the short term, given the economic and institutional constraints, the options available to a number of countries may be rather limited. Nevertheless, it is still possible to identify measures to improve the situation, accepting the current level of constraints especially by focusing on those that will have the maximum impact. These are discussed in the next chapter.

5 BUILDING UP A FUTURE: PRIORITIES AND STRATEGIES

5.1 DEFINING PRIORITIES AND STRATEGIES

1. As discussed in the earlier chapter, the overall economic and institutional environment in the West and Central Asia region varies across the countries. As the countries move in different directions in the economic and institutional dimension, the demand for forest products and services as also the ability of the society to fulfil them will change. Thus, while it is important to address the current concerns, it is equally important to understand probable future changes and prepare forestry to adapt to such changes. Specifically it is important to address (a) what options are available to policy makers and planners in the forest sector to realise the full potential of a given scenario and (b) how they can contribute to the overall change towards a better scenario. Being a minor sector in almost all countries, the latter may be of less immediate relevance and more attention may be required on what can be done to make the best use of a given situation. These are discussed in this chapter.

5.2 IDENTITY OF OBJECTIVES AND APPROACHES

2. While existing scenarios may be different, there may be considerable identity in the broad objectives. Accomplishing sustainable forest management would be a common long term goal for all the countries. Within this broad objective, what has to be actually accomplished (for example the mix of goods and services) and how (the nature of interventions, the kind of institutions required and the technologies to be adopted) will differ depending on the specific circumstances. Even in the mix of goods and services there may be some identity among the countries, while differences become more pronounced in details as the nature of products and services are defined more precisely at successive levels taking into account the specific situation. Commonality across countries and regions include the following:

- Emphasis on the provision of environmental services;
- Integrated approach to land management;
- Policy and institutional adaptation; and
- Sub-regional, regional and international collaboration.

Emphasis on the provision of environmental services

Functions fulfilled by forests and woodlands

3. Forests and woodlands in the region fulfil a variety of productive and protective functions. These include:

- Arresting land degradation/ desertification;
- Conservation of biological diversity;
- Improvement of watershed values;
- Recreation including eco-tourism;
- Amenity values of forests and trees, especially greening urban areas.

- Production of woodfuel, especially in situations where people have limited access to alternate sources of energy;
- Production and processing of non-wood forest products.
- Limited production of industrial roundwood

Increasing emphasis on environmental functions

4. Considering the current environmental situation in the region – the arid and semi-arid conditions, the high level of desertification, declining agricultural and range productivity on account of land degradation, loss of biodiversity, increasing water stress, etc.,- provision of environmental services will be the most important concern for almost all countries. As discussed earlier, with an increasing proportion of people living in urban areas, improving urban environment will continue to be another priority for a number of countries. Use of forests for recreational uses in the form of eco-tourism is another growth area, especially in view of the growth of domestic and international tourism.

4. What precisely should be given importance largely depends on the specific ecological conditions and the economic situation. For example in many countries (example most countries in the Arabian Peninsula, Turkmenistan, Armenia, parts of Iran, Afghanistan) control of desertification, including sand-dune stabilisation will be an important function. In several countries with mountainous topography, conservation of watershed values will be the most important objective. Both in West and Central Asia, there are several countries where water is harnessed for irrigation and electricity generation (Turkey, Iran, Kyrgyz Republic, and Tajikistan) and hence stabilising water flow is of direct economic significance.

Declining importance of productive functions

5. On the whole the productive functions of forests are on the decline and this trend is likely to persist. Within this broad group, industrial roundwood production is probably the least priority for the region, not because of the absence of demand, but on account of the inability to produce it economically in view of unfavourable growing conditions. Improved economic situation and liberalised trade would permit imports that will be cheaper than domestic production. Further, as economic situation improves, the willingness of society to pay for environmental services increases, evidently resulting in a shift from production to protection. Even in countries where industrial wood production was important before, ability to substitute local production with imports and shifts in the objectives of management towards provision of environmental services have led to a decline in industrial wood production as has happened in the case of Cyprus. Industrial wood production is an objective of management in a very few countries/ regions - for example Georgia, parts of Iran and Turkey and to a very limited extent Cyprus. As is already happening importance of industrial wood production is likely to decline further in the coming years.

6. Woodfuel is an important product from forests and wooded lands in the region; again its importance, present and future, will vary between countries. There are several countries where woodfuel is a critical product, especially due to the non-availability of alternatives and more importantly the inability of people to pay for them in view of very low income. Also in such situations production of firewood and charcoal are important sources

of income to rural communities. A similar situation exists with a number of other products like fodder and non-wood forest products, including medicinal plants. Products collected from the wild support subsistence consumption as also generate income, depending on the demand for such products.

Changing mix of services and products

7. Certainly the provision of environmental services remains the most important function of forests and forestry and over the coming years will become more important. Within this broad group the relative importance assigned to different services will vary depending on the specific situation. There may also be some situations where wood production objectives may be dominant, and within that varying specific mix of products. Much of the conflicts in resource use are stemming from the different possibilities and the different priorities assigned to them at different levels of resource management.

Integrated approach to resource management

8. Considering the overall state of forest and tree resources in the region and the continuum of different land uses, accomplishing the objectives of management - whether it is provision of environmental services or production of wood and other products - warrants an integrated approach to resource management. The need for an integrated approach stems from:

- The extent of area designated as forests is rather limited in most countries. As indicated in Chapter 2, there are several countries where forests account for less than 10 percent of the geographical area.
- Other lands, including agriculture and pasture, also produce most of the benefits, including provision of environmental services. A significant share of woodfuel, fodder and non-wood forest products are obtained from non-forest lands, including agriculture land. Similarly the problems of watershed degradation, loss of biodiversity and desertification are not just limited to forests and other wooded lands.

9. Addressing the problems of provision of environmental services and production of wood and other products requires policies and strategies that cut across the different land uses and sectors. Often addressing such problems requires a landscape approach. This would imply that forestry will not be able to exist as a distinct sector, but forestry concerns are well integrated with other land uses, mainstreaming aspects like growing/ managing trees into all land uses.

Policy and institutional adaptations

10. The focus on provision of environmental services and the need to adopt an integrated approach to resource management would necessarily imply substantial improvements in the policy framework and institutional arrangements relating to land use in the region. Traditionally forest policies have largely focused on areas that are under the control of public sector forestry agencies (State Forest Funds as in the case of many former Soviet Republics). As indicated earlier, in most cases an increase or decrease of goods (wood and non-wood products) and environmental services is often dependent on lands that are not designated as forests. Adoption of an integrated land use approach requires going beyond the traditional domain of foresters requiring more broad-based

The key features of the scenario specific priorities and strategies are discussed below:

Struggling with the past

14. As indicated in the previous chapter countries under the “Struggling with the past” scenario faces substantial economic and institutional problems and therefore the priorities and strategies in the forestry sector will have to take cognizance of these. Severe financial and human resource constraints will be of particular concern. Forestry is unlikely to be a high priority sector. The overall approach under this scenario could be summarised as “**Build up from the base**” focusing on the following:

- Meeting basic needs of the people sustainably;
- Building up local institutional capacity; and
- Improving/ adapting local level technologies and upgrade skills.
- Focus on options that are less demanding in terms of financial resources.

Meeting basic needs sustainably

15. A number of countries in the region (for example: Afghanistan, Yemen and Tajikistan) will continue to have a high proportion of rural population dependent on low productivity agriculture and animal husbandry, implying high levels of poverty. Even in countries which are largely urbanised, there will be a sizeable rural population with limited access to markets and meeting local consumption needs will be an important objective of resource management. Even if markets exist, excepting the case of a limited number of unique products (medicinal plants, certain non-wood forest products), local communities may not be able to produce them competitively. Meeting basic needs with minimal investments of human and financial resources will hence be the priority for the management of land and other natural resources. Production of woodfuel, fodder and non-wood forest products, including medicinal plants, will certainly remain important. Conservation of soil and water in support of sustainable agriculture will be the other thrust area of land management, including forestry.

16. Opportunities for production of industrial roundwood will be rather limited for most of the countries under the scenario of “Struggling with the past”. Both the institutional and economic environment remains unfavourable such that they may not be able to make industrial roundwood production sustainable. One of the major problems they will have to confront is the illegal removal of wood as in the case of countries like Afghanistan, Georgia, Azerbaijan, etc. High cost law enforcement system (especially through centralised bureaucracies) is unlikely to be economically viable in such situations and it may be necessary to explore low cost institutional options. This would particularly require improvement of institutional arrangements without significantly increasing the costs of establishing and maintaining such institutions.

Building up local institutional capacity

17. While institutional re-invention will be important under all scenarios, the scenario of “struggling with the past” will require specific attention, especially in view of the extremely underdeveloped state of formal forestry institutions. Economic situation in most countries under this scenario excludes development of institutional arrangements that result in high transaction costs. While external support comes in handy to build up institutions (forestry

departments, research and education institutions, community resource management agencies, etc.), countries often find it difficult to sustain the institutions once donor support ceases. Financial resources available will often be just adequate to pay salaries and the state forestry agencies are unable to undertake even routine forest management responsibilities.

18. Most of the actual resource management will have to be undertaken at the local level and this is probably done more effectively by local community groups and organizations, especially the committee of tribal elders, shuras, tribal protectorates, etc. As such in many situations these are the only effective institutional arrangements at the local level. While in the long run they may fade out, at least for the time being there are no viable alternatives to such arrangements. Supporting them to conserve and manage forest resources would remain the most cost-effective option. Governments' effort should be primarily to function as a facilitator to strengthen the technical and managerial competence of local level organizations.

Improving local technologies and skills

19. Considering the limited resources, it will be extremely difficult to introduce off-the-shelf technologies that are readily available and which may be more productive. There is a need to make an assessment of local technologies and the thrust will be to nurture such local technologies. These are time-tested, people are familiar with their uses and in many cases they are able to build upon such knowledge.

20. This does not imply a total reliance of indigenous technologies, which often on account of long isolation and high dependence on the limited knowledge base of local communities, may not be able to address new problems. Selective adaptation of technologies from other situations would be of particular advantage, as also improving the science base of existing technologies. However, the fundamental thrust should be to involve local communities in the innovation and adaptation phases.

Focus on less resource demanding options

21. In view of the limited resource situation, countries under this scenario will have to be extremely careful in the choice of investment options to ensure that they are affordable and within the capacity of the countries. Adverse environmental conditions (extreme dry conditions and the very poor rainfall) that affects productivity makes a number of investment options unattractive. In many cases critical inputs like water are extremely scarce. Much of the emphasis will be to pursue investment options that are less resource-demanding..

Living in the present

22. As discussed earlier the main difference under this scenario is that the resource situation is less precarious, although there is considerable vulnerability on account of the high dependence on a limited number of sectors to maintain positive economic performance. Also the rapid growth of a dominant sector (that generates most of the economic surpluses) undermines the economic viability of most other traditional sectors. A major problem is that production aspects of forests and forestry is unlikely to get much

political attention nor will it be an economically viable option, especially in view of low productivity and the high real costs of inputs like water. Further, the favourable economic situation provides an easy option of imports. Priorities and strategies will have to be designed taking this into account. The overall approach of “**Improve fundamentals and change direction**” would involve the following components:

- Encourage pluralistic institutional arrangements;
- Improve the role of public sector agencies as facilitator in support of development of other institutions; and
- Upgradation of technologies and skills.

Encourage pluralistic institutional arrangements

23. The major strategic thrust under the scenario is to develop/ support diverse institutional arrangements. In addition to local level/ community organizations, there is a need to support and nurture private sector, farmer’s associations and civil society organizations to play divergent roles to take full advantage of their unique capabilities. Wood production will be one area that may have scope for substantial involvement of non-governmental players, although the scope of this may be limited to a small proportion of the area that have better growing conditions.

24. Community organizations, local bodies and private sector may have some scope for provision of environmental services, especially in managing recreation areas in national parks and such other areas. Moving up the value chain in recreation, especially management of visitor areas, nature trails, establishment and management of related infrastructure, etc. could be better done by private sector than by public sector agencies. However the public sector will also have to play an important role in this especially to ensure that private sector management does not have a negative impact on the environment.

Improve the role of public sector forestry agencies

25. The fact that in most countries an integrated approach is required for land use implies that forestry concerns are to be mainstreamed into the functions of agencies (ministries/ departments) that address agriculture, range management, urban development, watershed management, etc. In most cases this would dictate against the establishment of a separate forestry department that is responsible primarily for the management of land under its control. The thrust should be to develop a strong policy and technical unit that helps in the integration of forests and forestry in all land uses and which oversees the formulation

Upgrade technologies and skills

26. Improved management of environment will require substantial investments to improve technologies, especially to economise on critical resources like water. A number of countries are already using technologies like use of waste water for afforestation and there is substantial scope to improve and widely adopt such technologies. Arresting land degradation, afforestation of areas with poor soils, stabilisation of sand dunes, improved management of watersheds, sustainable management of recreation areas, etc. require substantial knowledge in biophysical and social sciences. However, many countries,

notwithstanding their relatively better economic situation, have not made adequate investments in research and development efforts and to upgrade the skills of professional and technical staff. In several countries, there is a substantial shortfall of qualified professionals in the national forestry system. In addition to correcting this deficiency, there is a need to improve the systems of education, training and research focusing on integrated resource management.

Reshaping the future

27. Countries in this scenario are in a relatively better position on account of their balanced economic and institutional development. However, they operate in a highly globalised situation in that their economies are closely intertwined with that of other countries. Policy processes and legislation will have to comply with regional and international agreements as also take into account the perception of stakeholders outside the country. Especially participation in regional economic cooperation bodies like European Union, implies the need to be more competitive and efficient. Policies relating to energy, agriculture, environment, etc. at the regional level will have significant impacts and it will be necessary for countries to adjust/ adapt to the changing policies and legislation in these areas. Strong external linkages also increase competition in both domestic and external markets and this would necessitate continuous scaling up of the quality of products and services provided. The overall approach under this scenario could be summarised as “**Keep moving forward**” and the focus will be on the following:

- Maintain vibrancy of institutions and their adaptability;
- Invest in human skills to improve efficiency and competitiveness; and
- Focus on unique/ high value products and services

Maintaining vibrancy and adaptability of institutions

28. While the institutions are reasonably well-developed under the scenario “Reshaping the future”, they will have to remain vibrant and adaptable to survive and perform in a highly competitive environment. The ability of institutions to forge linkages with regional and international bodies will have to be strengthened substantially. National policies and institutions will have to be made adaptable to regional and international agreements. At the same time institutions will have to respond to the conflicting demands of domestic stakeholders. Balancing the divergent demands would require highly adaptable and organizations that are able to learn quickly from their environment.

Invest in human skills

29. Success of institutions operating in a globalised environment will largely depend on enhancing human skills. This will require both deepening and broadening the knowledge base. With increasing emphasis on eco-system approach to management, skill sets of land managers, including foresters, will have to be improved significantly. Also required will be improvement in social science skills.

Focus on unique/ high value products and services

30. As countries are exposed to increasing competition, there will be a need to focus on unique set of products and services, integrating local skills as well as improved technologies. Countries will be able to enhance income through adding value to local specificities, cultures and values. Some of the countries have several unique products (especially non-wood forest products, including medicinal plants) which could form the basis for

5.4 SUMMARY OF PRIORITIES AND STRATEGIES

31. Enhancing the contribution of the forest sector through increased provision of goods and services requires substantial interventions at the policy and institutional levels. However, it is important to take into account the overall economic and institutional scenarios in designing the interventions. Table below provides an overview of the priorities and strategies that are relevant to the region as also to the three scenarios identified.

Table 5-1 Priorities and strategies

Overall priorities and strategies	Scenario specific priorities and strategies		
	Struggling with the past	Living in the present	Reshaping the future
1. Emphasis on the provision of environmental services. 2. Integrated approach to land management. 3. Policy and institutional adaptation. 4. Strengthen sub-regional, regional and international collaboration.	<p><u>Build up from the base</u></p> <ul style="list-style-type: none"> • Meeting basic needs of the people sustainably. • Building up local institutional capacity. • Improving/ adapting local level technologies and upgrade skills. • Focus on less resource demanding investment options. 	<p><u>Improve fundamentals and change direction</u></p> <ul style="list-style-type: none"> • Support/ strengthen pluralistic institutional arrangements. • Improve the role of public sector agencies as facilitator in support of development of other institutions. • Upgrade technologies and skills. 	<p><u>Keep moving forward</u></p> <ul style="list-style-type: none"> • Maintain vibrancy of institutions and their adaptability; • Invest in human skills to improve efficiency and competitiveness; and • Focus on unique/ high value products and services

32. The next 15 years is likely to witness major political, economic, social and environmental changes in the West and Asia region, especially as the countries become more integrated into the world economy and new opportunities and challenges emerge. Certainly environmental issues will be at the forefront of policies relating to natural resource management. At the same time several countries will have to continue grappling with poverty and making the best use of natural resources to address underdevelopment. In this regard countries and parts of countries will have to adopt priorities and strategies that can be accomplished given the economic and institutional constraints. The broad indication of the priorities and strategies under different scenarios are indicative and they

could be elaborated for specific situations based on more in-depth assessment of the situation. This is a task that needs to be pursued at the country level.

6 SUMMARY AND CONCLUSIONS

1. The Forestry Outlook Study for West and Central Asia (FOWECA) provides a regional overview of the current and emerging situation in the forest sector in 23 countries covered by the study and indicates the current and emerging situation as regards the role of forests (including other wooded lands) and trees in the well-being of people in the region. Specifically it attempts to identify the factors that are impacting and likely to impact the sector in the next 15 years. Evidently, in comparison with other regions, forestry is not an economically important sector for most countries in the region. Out of 23 countries 17 are low forest cover countries and among them several are with less than 5 percent of the geographical area under forests. Direct economic contribution of the forest sector in terms of gross domestic product and employment is extremely low. Partly for this reason forestry has remained a very minor sector in most countries. However, there is increasing recognition of the importance of forests and trees in the provision of a wide array of environmental services.

2. Through out the region there has been an array of interventions to enhance the contribution of the forest sector to sustainable development. The impact of these interventions is varied and often the forest sector has not been able to take full advantage of the opportunities and challenges. Further, as the economies of the region get integrated at the sub-regional, regional and global levels, new opportunities and challenges are expected to emerge. In this context an understanding of broader changes on a long term basis would provide a better understanding of the scope and feasibility of what needs to be done to improve the contribution of the sector to the well being of people. The Forestry Outlook study for West and Central Asia was undertaken in this context.

6.1 KEY FINDINGS

3. With the exception of a few countries, the role of forests and forestry in the national economies is extremely limited. Largely this stems from the very low proportion of area under forests and other wooded lands and more importantly due to the extremely unfavourable growing conditions, especially due to the highly unfavourable conditions for tree growth. The unfavourable conditions however also underpin the need to step up efforts to enhance the environmental role of forests, especially as regards arresting further degradation and desertification of land, improvement of watersheds especially in view of the acute water scarcity that most countries face and to improve the urban environment. FOWECA attempts to provide a larger picture and to understand the overall global context in which forests and forestry in the region could be developed.

Factors affecting forests and forestry

4. The region covered by FOWECA is extremely divergent in terms of economic, social, political and historical conditions and hence the future paths of development of the forest sector may differ considerably. Although clustering of the countries into two sub-regions (West Asia and Central Asia and the Caucasus) helps to provide a better perspective in terms of the political and historical context, there are several other factors that differentiate them with differences in the future paths of development. While recognizing the differences, some of the broad trends that will have direct and indirect

impact on the forest sector, especially as regards the demand for goods and services include the following:

- Population in the WECA region is expected to increase by about 126 million between 2005 and 2020. However this will vary between countries; in a few cases there may be even a reduction while in others high growth rates of over 3% will be maintained.
- Economic growth in the region is likely to continue at high levels, largely attributable to the high performance of the countries exporting oil and natural gas. Increased oil income will continue to generate substantial direct and indirect demand for forest products, including sawnwood, panel products and paper and paper products. However, in view of the low forest cover and the poor productivity, most of the demand for wood and wood products will have to be met through imports. There will also be increasing demand for environmental services, especially for recreation and eco-tourism.
- Structural changes in the economies that alter the relative importance of different sectors will be the most important in influencing land use and thus the future role of forests and other wooded lands.
- Policy and institutional changes within and outside the forest sector will be another important element that will affect the forest sector. In most cases forestry institutions – including forest administrations, education and research agencies, community organizations, etc. – remain extremely weak.

Probable scenarios

5. Combining the current and anticipated changes in the economic situation and the probable direction of institutional development, the study has identified three probable scenarios of development. Some countries are already in the process of developing strong diversified economies and well developed institutions, while there are others whose economic performance is largely dependent on one or a few sectors (especially of oil and natural gas) and institutional development is nascent. At the other extreme are countries where economies and institutions remain weak. These scenarios are:

- Strong diversified economies and well developed institutional arrangements: **“Reshaping- the- future”** ;
- Economies growing rapidly, but institutional development lagging behind: **“Living-in the-present”**; and
- Weak economies and poorly developed institutions **“Struggling –with- the –past”**.

Future impact on forests and forestry

6. The overall forestry situation in the WECA region in 2020 will largely depend on the proportion of countries in the different scenarios. The situation that may emerge in the next 15 years will be as diverse as it is today, although this will depend on the overall efforts to bring about changes in the economic and institutional fronts.

Some of the possible directions of change in the forest sector are indicated below:

Forest cover, degradation and ability to implement sustainable forest management

7. On the whole forest cover in the Region is expected to increase in most countries largely on account of the decline in the importance of agriculture (including animal husbandry) as the main source of income and employment. Increasing urbanization and development of the manufacturing and services sectors could see a reversal of agriculture expansion. There will also be some increase in afforestation/ reforestation that will help to compensate the loss of forests, although not the loss of biodiversity.

8. In most countries, extent of natural forests is likely to remain stable and there will be some increase on account of the continued reforestation/ afforestation efforts. Most of the afforestation efforts will be focused on environmental improvement, especially through establishment of shelterbelts and wind breaks and the creation of urban green spaces. Economically better off countries, particularly those seeking to diversify their economic base would particularly pay attention to improvement of the urban environment. There may also be situations where agriculture is abandoned on account of declining interest, especially as opportunities in other sectors improve.

9. Degradation will be a major problem that several countries – forested as well as low-forest cover – have to confront. In a number of countries where substantial forest cover exists now (e.g. Georgia), an increase in timber exploitation – both legal and illegal – could be anticipated. In several low forest cover countries some improvement could be expected, especially in the context of increased urbanisation and reduction in the dependence on land.

10. Although there may be some increase in the forest cover, the ability of the countries to implement sustainable forest management will remain limited. This will require substantial investments especially to improve policy and institutional arrangements, including technical capacities. In the absence of this, the area of forests and woodlands covered by sustainable management is likely to remain negligible. Problems like forest fire are expected to worsen.

Demand for wood and wood products

11. The consumption of wood and wood products is likely to increase in the entire region, especially on account of the growth in population, increases in income and the changes in lifestyles, especially on account of urbanisation. During the next 15 years consumption is expected to grow at an average annual rate of 3-4% in the case of sawnwood and 4-5% in the case of wood-based panels and paper and paper board. Faster growth (in relative terms) is expected in Central Asia, whose economies have recovered during the recent years. Currently the region is a net importer of forest products exceeding about US\$7 billion (in 2004), and this is likely to double in real terms during the next 15 years. West and Central Asia will remain one of the most important net global forest products importing region, largely because of its extremely poor resource base.

13. The scope for enhancing raw material supply from within the region is extremely limited and most of the demand will be met by increased imports from outside the region (mainly Europe including Russian Federation, followed by South-East Asia). Some of the

countries that are strategically located and have a large domestic market (for example Iran and Turkey) will be in a better position to develop forest industries based on imported industrial roundwood. Declining profitability of wood industry in Europe could further speed up relocation of industries, to the advantage of some of the countries in the WECA region with low cost labour, stable investment climate and access to wood supplies. Although most countries may not have any natural advantage in producing wood, they may still be in a position to develop wood industries on account of their competitive advantage.

Demand for environmental services

14. Considering the general upward trend in income in most countries in the region, an increase in the demand for environmental services is inevitable. Of particular interest will be to develop urban green spaces and recreational facilities. Improvement in transport and communications coupled with political stability and improved security is expected to boost international and internal tourism in the WECA region and forests and woodlands would form an important component of tourist attraction. Forests and woodlands close to urban areas will be subjected to intense recreational pressure and most often forest management may not be in a position to develop appropriate management practices that would avoid deterioration of recreational experience. Especially in many of the West Asian countries, recreational demand will increase to such an extent as to cause severe degradation if adequate efforts are not made to regulate the use.

15. The demand for protection of agriculture land and habitations from desertification and land degradation will also increase, resulting in higher investments in the establishment of shelterbelts and windbreaks. Much of this will however depend on ability of the key players, namely governments and farmers, to make such investments.

6.2 PRIORITIES AND STRATEGIES

16. The priorities and strategies will differ across the countries depending on the current and emerging economic and institutional scenarios. As the overall economic and institutional environment changes, the demand forest products and services as also the ability of the society to meet them will undergo changes. While existing and future scenarios may result in very different demands on the forest sector, similarities in the situation also results in common approaches in addressing the problems. Accomplishing sustainable forest management is a long term goal for all countries and there may also be broad similarities in the overall strategies. Differences become more pronounced when the nature of goods and services are defined at successively lower levels.

Common priorities and strategies

Emphasis on environmental services

17. Considering the current environmental situation in the region – the arid and semi-arid conditions, the high level of desertification, declining agricultural and range productivity on account of land degradation, loss of biodiversity, increasing water stress, etc.,- provision of environmental services will be the most important concern for almost all countries. As discussed earlier, with an increasing proportion of people living in urban

areas, improving urban environment will continue to be another priority for a number of countries. Use of forests for recreational uses in the form of eco-tourism is another growth area, especially in view of the growth of domestic and international tourism.

18. What precisely should be given importance largely depends on the specific ecological conditions and the economic situation. For example in many countries (example most countries in the Arabian Peninsula, Turkmenistan, Armenia, parts of Iran, Afghanistan) control of desertification, including sand-dune stabilisation will be an important function. In several countries with mountainous topography, conservation of watershed values will be the most important objective. Both in West and Central Asia, there are several countries where water is harnessed for irrigation and electricity generation (Turkey, Iran, Kyrgyz Republic, and Tajikistan) and hence stabilising water flow is of direct economic significance.

Integrated approach to resource management

19. Considering the overall state of forest and tree resources in the region and the continuum of different land uses, accomplishing the objectives of management - whether it is provision of environmental services or production of wood and other products - warrants an integrated approach to resource management. The need for an integrated approach stems from:

20. Addressing the problems of provision of environmental services and production of wood and other products requires policies and strategies that cut across the different land uses and sectors. Often addressing such problems requires a landscape approach. This would imply that forestry will not be able to exist as a distinct sector, but forestry concerns are well integrated with other land uses, mainstreaming aspects like growing/ managing trees into all land uses.

Policy and institutional adaptations

21. The focus on provision of environmental services and the need to adopt an integrated approach to resource management would necessarily imply substantial improvements in the policy framework and institutional arrangements relating to land use in the region. Traditionally forest policies have largely focused on areas that are under the control of public sector forestry agencies (State Forest Funds as in the case of many former Soviet Republics). As indicated earlier, in most cases an increase or decrease of goods (wood and non-wood products) and environmental services is often dependent on lands that are not designated as forests. Adoption of an integrated land use approach requires going beyond the traditional domain of foresters requiring more broad-based policies. More particularly many of the environmental problems like loss of biodiversity, desertification, soil erosion and watershed degradation, etc. stem from inappropriate use of agriculture and pasture lands. Prevention and mitigation of these require more broad-based policies than what is conventionally formulated.

22. Formulation and implementation of policies for integrated land use management also requires more broad-based institutions than what most countries currently have. Revamping public sector forestry agencies, which currently play a dominant role, will require a re-examination of the core values, functions and structures and to make appropriate changes. Public sector forestry agencies will have to work very closely with

other sectors, especially agriculture, animal husbandry, urban development, tourism, etc. Increasing role of private sector, community groups and civil society organizations provides new opportunities for the production of forest products and environmental services. Collective action with other governmental and non-governmental agencies will require redefining the roles and responsibilities of each and development of appropriate policy and institutional framework. In some cases this would require substantial re-invention of existing institutions.

Sub-regional, regional and international collaboration

23. Common history, economic interdependence and ecological contiguity of countries in the region underscore the importance of inter-country collaboration at different levels. Sharing of information and technology and undertaking joint initiatives are particularly important to reduce costs and more importantly to enhance the effectiveness of resource management initiatives. Sub-regional and regional collaboration is particularly important in addressing problems like fire and pest and disease incidence. Other important area where inter-country collaboration is particularly important, or even a necessity, is in the management of trans-boundary protected areas. Resource assessment, education, research and training are other areas that could significantly benefit (especially by way of reducing costs) from sub-regional and regional collaboration.

Scenario-specific priorities

24. Differences in the current and emerging economic and institutional environment necessitates that countries fine-tune their priorities and strategies to make them relevant to the specific scenarios.

Struggling with the past

25. As indicated in the previous chapter countries under the “Struggling with the past” scenario faces substantial economic and institutional problems and therefore the priorities and strategies in the forestry sector will have to take cognizance of these. Severe financial and human resource constraints will be of particular concern. Forestry is unlikely to be a high priority sector. The overall approach under this scenario could be summarised as “Build up from the base” focusing on the following:

- Meeting basic needs of the people sustainably;
- Building up local institutional capacity;
- Improving/ adapting local level technologies and upgrade skills; and.
- Focus on less resource demanding investment options

Living in the present

26. Although the resource situation is less precarious under this scenario the rapid growth of a dominant sector (that generates most of the economic surpluses) undermines the economic viability of most other traditional sectors. A major problem is that while production aspects of forests and forestry are unlikely to get much political attention they are also less economically viable, especially in view of low productivity and the high real costs of inputs like water. Further, the favourable economic situation provides an easy

option of imports. Priorities and strategies will have to be designed taking this into account. The overall approach of “Improve fundamentals and change direction” would involve the following components:

- Encourage pluralistic institutional arrangements;
- Improve the role of public sector agencies as facilitator in support of development of other institutions; and
- Upgradation of technologies and skills.

Reshaping the future

27. Countries in this scenario are in a relatively better position on account of their balanced economic and institutional development. However, they operate in a highly globalised situation in that their economies are closely intertwined with that of other countries. Policy processes and legislation will have to comply with regional and international agreements as also take into account the perception of stakeholders outside the country. Especially participation in regional economic cooperation bodies like European Union, implies the need to be more competitive and efficient. Policies relating to energy, agriculture, environment, etc. at the regional level will have significant impacts and it will be necessary for countries to adjust/ adapt to the changing policies and legislation in these areas. Strong external linkages also increase competition in both domestic and external markets and this would necessitate continuous scaling up of the quality of products and services provided. The overall approach under this scenario could be summarised as “Keep moving forward” and the focus will be on the following:

- Maintain vibrancy of institutions and their adaptability;
- Invest in human skills to improve efficiency and competitiveness; and
- Focus on unique/ high value products and services

6.3 FOLLOW UP WORK

28. The next 15 years are likely to witness significant political, economic, social and environmental changes in the region, especially as the countries become more integrated into the world economy and new opportunities and challenges emerge. Certainly environmental issues will be at the forefront of policies relating to natural resource management. At the same time a number of countries will have to continue addressing poverty and make the best use of natural resources to tackle underdevelopment. Priorities and strategies need to be designed taking into account the overall economic and institutional constraints. The broad priorities and strategies outlined under different scenarios are indicative, and they need to be elaborated for specific situations based on more in-depth assessment of the situation. This is a task that needs to be pursued at the country level. Some of the areas for follow up are indicated below:

Strengthening national forest programmes

29. The Forestry Outlook Study for West and Central Asia provides a broad indication of the emerging opportunities and challenges and outlines the overall regional and global context of forestry development. Inevitably this involves some generalisation and it is

important that country specific efforts are made to refine and adapt the findings. The national forest programmes provide a unique framework to take on board the findings of FOWECA and to elaborate them based on in-depth assessment of the specific situation.

Institutional changes

30. FOWECA has clearly indicated the need for substantial strengthening of institutions dealing with forests and forestry in the region. In many cases existing institutions have failed to adapt to the overall changes and thus their ability to address current and emerging issues has been undermined significantly. Weaknesses are widespread in almost all institutions, including government forestry agencies, research organizations and educational and training institutions. There is therefore a strong case to review the institutional framework and where necessary to reinvent them to address the emerging challenges.

Capacity building in strategic planning

31. Although forestry is a long term investment, the ability to develop and implement long term strategic plans in the sector in the FOWECA countries is poorly developed. The FOWECA process has made some effort to remedy this. However, substantial country level efforts are required to improve the capacity to undertake strategic planning, taking into account intersectoral linkages and visualising the long term changes outside the sector. This is all the more important in the context of adopting an integrated approach to land and natural resources management.

Review and updating

32. A major challenge for all outlook studies is the change in the various assumptions that form the basis of the analyses. As discussed in chapter 3, a number of internal and external factors influence the forest sector and often the ability to foresee changes in them and the consequences is limited. Scenario analysis helps to some extent to identify the probable paths. However, there are several factors that could change in less predictable directions. This necessitates that planners and policy makers understand the changes and assess their implications on a regular basis.

Improving the information base

33. A related issue is the poor state of information on forests and forest products and services. Most countries in the region have not been able to provide recent information on the area under forests and other wooded lands, the condition of forests, growing stock, etc. Same is the case with regard to production, consumption and trade of forest products. Although environmental services from forests are becoming important, here again information on bio-physical and economic aspects of their provision is very poor. Weaknesses in this regard make it extremely difficult to undertake any meaningful planning. There is therefore an urgent need to develop strengthen the information base in support of strategic planning.

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