

Public sector Forestry Institutions in The Near East

By C.T.S Nair and H.O Abdel Nour



Food and Agriculture
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FAO Representation

FAO Office for the Near East
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FOREWORD

Forests and rangelands in the Near East countries have been an integral part of the society, providing a wide array of goods and services. Public policies and institutions play a critical key role in ensuring that these resources are managed sustainably taking due account of the changing demands of society. While policies are revisited and revised regularly, often institutional reforms lag far behind, adversely affecting resource management and thus the supply of goods and services.

In most countries in the region there have been efforts to reform forestry and range institutions. The nature of these interventions and their outcomes are however extremely varied. Divergences in the nature of institutional framework and differences in the outcome of institutional reforms could provide valuable lessons on what is appropriate to countries in different stages of development. It is in this context that a study was conducted on existing and future institutional changes needed, as called for by the Near East Regional Forestry Commission in its last meeting held in April 2010. In order to capture the divergences and similarities in institutional evolution four countries were taken up for in-depth assessment, two from North Africa (Sudan and Tunisia) and two from West Asia (Kingdom of Saudi Arabia and Syrian Arab Republic). In addition every effort was made to capture the experience in other countries in the region and to relate them to the larger social, economic and political context.

Though the study has been carried out during a short time period, yet it gives very useful insights into how the institutional system as regards forest management is evolving over time. There are also clear indications that public sector institutions are lagging behind in adapting to the larger changes. Although the state of public forestry institutions is a reflection of the overall state of public sector governance, yet there is considerable scope for improvement of forest governance. Public sector forestry institutions have to increasingly play a facilitating role creating the enabling conditions for other institutions, – local communities, farmers, private enterprises and civil society organizations – to play roles appropriate to their capabilities. This will entail changes in the structure and core competencies of the public sector forestry institutions.

At this juncture when important social and political developments are taking place in the region, I am sure this synthesis will provide a broad indication of the emerging opportunities for bringing about timely changes in forestry institutions so that forests and woodlands are able to deliver the full range of goods and services required by society.

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This study report is the result of efforts by several colleagues who worked extensively in the NE Region as well as those well versed in the subject area of forestry institutional change and adaptation. The Part I that provides an overview of the changing context of public forestry institutions and identifies some potential actions for effective adaptation by public forest agencies has been prepared by Dr. CTS Nair. Dr. Hassan Abdel Nour is the author of part II, which gives a cross-cutting view of changes occurring in the forest sector in the region. The individual country case studies for Tunisia, Sudan, Kingdom of Saudi Arabia and Syrian Arab Republic, which form Part III, were prepared respectively by Youssef Saadani, Ismat Hassan Abdalla, Ibrahim Aref and Mohamad Cheikho. FAO is greatly indebted to the authors for generously offering their knowledge, experience and time far beyond their contractual obligations. The overall work was initiated and supervised by Mr Mohamed Saket, Senior Forestry Officer, RNE and Rao Matta, Forestry Officer, Forest Policy and Economics Division, Rome. Sincere gratitude is also extended to Dr. Michael Martin, Ms. Eva Muller and others in FAO Headquarters for their support and guidance throughout the implementation of this initiative.

ABBREVIATIONS & ACRONYMS

ACSAD	Arab Centre for Studies of Arid Zones & Dry lands
AH	After Higrā
ALP	Authority of Livestock & Pastureland
ARC	Agricultural Research Corporation
CBD	Convention on Biological Diversity
CBO	Community Based Organizations
CDM	Clean Development Mechanism
COFO	Committee on Forestry
CPA	Comprehensive Peace Agreement between North & South Sudan
EU	European Community
FAO	Food and Agriculture Organization of the United Nations
FD	Forests Department
FNC	Forests National Corporation of Sudan
FRA	Forest Resources Assessment
FRC	Forestry Research Centre
FREI	Forestry Research and Education Institute
FSR	Forestry Sector Review
GAC	Gum Arabic Company
GCP	General Cooperation Project
GCSAR	General Commission for Scientific Agricultural research
GDP	Gross Domestic Product
GEF	Global Environment Facility
GoS	Government of Sudan
HR	Human Resources
IAZ	Institute for Arid Zones
ICARDA	International Centre for Agricultural Research in Dry Areas
ICRAF	International Centre for Research in Agro-Forestry
IDPs	Internally Displaced Populations
IFF	Intergovernmental Forum on Forests
IPF	Intergovernmental Panel on Forests
IRI	Islamic Republic of Iran
IUFRO	International Union of Forestry Research Organizations
KSA	Kingdom of Saudi Arabia
MoA	Ministry of Agriculture
MAAR	Ministry of Agriculture & Agrarian Reform
MOA	Ministry of Agriculture
NEFC	Near East Forestry Commission
NEFRC	Near East Forestry and Range Commission
NFP	National Forest Programme
NGARA	Natural Gums & Resins in Africa
NGO	Non-governmental organizations
NWFP	Non-wood forest products
PES	Payment for Environmental Services
RD	Royal Decree
REDD	Reducing emission from deforestation and forest degradation
RFD	Range & Forests Department
RNE	Near East Region
RNEO	Regional Office for the Near East
RPA	Range & Pasture Administration
SAR	Syria Arab Republic

SFM	Sustainable Forest Management
TCP	Technical Cooperation Project
UAE	United Arab Emirates
UK	United Kingdom
UN	United Nations
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific & Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
USAID	United States International Development Agency
UTF	Unilateral Trust Fund
WB	World Bank
WFC	World Forestry Congress
WWFN	World Wide Fund for Nature

EXECUTIVE SUMMARY

“One of the things that happen with organisations as well as people is that they settle into ways of looking at the world and they become satisfied with those.....and the world changes.”
Steve Jobs, 1995

Institutional adaptation: Unavoidable to build a better future

There is widespread acceptance that public forestry institutions have to continuously adapt to the larger societal changes so that they are able to effectively respond to society’s demands for goods and services. Experience with diverse institutional arrangements for managing forest and range land resources in the Near East region provides important insights into what works and what does not and how institutions need to organize themselves to provide the goods and services required by society. This is all the more so in the context of the political changes taking place in the Near East region, with increasing demands to strengthen democratic institutions and to improve transparency and accountability in public governance.

It was in this context that FAO Regional Office for Near East initiated this study to examine the changing context of public sector forestry institutions in the Region, how they have adapted to the changes and the lessons thereof. In-depth assessment of institutional changes in four countries, a synthesis of these country studies and detailed review of experience within and outside the Near East region form the basis of this report.

Changing society, changing management objectives

The larger economic, social, political and environmental changes have brought about significant changes in the objectives of management of forest and range land resources during the last couple of decades. In particular environmental issues have come to the forefront of policy makers in the Near East countries. Issues like worsening water scarcity, land degradation and desertification, loss of biodiversity and a host of climate change related events have underscored the importance of sustainable management of forests and rangelands in the region. Added to this is the increasing demand for amenity values, especially to improve urban environment and to enhance recreation facilities. Responding to these demands requires timely changes in public institutions to make them more efficient service delivery organizations.

National forest programmes have become the framework for implementing sustainable forest management in most countries in the Near East region. Further, several countries in the region have a long history of public sector management of forests and range lands. Yet challenges persist in making appropriate changes in the institutional framework in response to the larger changes in society. In many cases changes have been far from adequate and institutional deficiencies have severely handicapped the delivery of services required by society.

Creating space for other institutions

In most countries in the region local community institutions took care of forest and rangeland management. Emergence of centralized forest departments under colonial regimes marginalized such community institutions, undermining traditional land management systems. Resource strapped central forest organizations however were unable to exercise effective control and could not provide an acceptable and viable framework for sustainable resource management.

This single institution based approach has been challenged during the last two decades and new institutional arrangements are emerging, including the rediscovery of the viability of community management systems. There are increasing efforts to pursue participatory approaches ensuring that local communities assume the responsibility for resource management and share the benefits there from. Farmers and other private sector are increasingly investing in farm tree planting. Civil society organizations are playing an active role in awareness

generation and conservation related activities. Thus a new institutional mosaic, with diverse organizations interacting with society at large and other organizations, is emerging. It is in this context one need to examine the opportunities and challenges facing public sector forestry institutions.

Differing pace and direction of change

The direction and pace of change of public forestry institutions have varied across the region. In several countries the nature of functions undertaken and the structure of public forestry institutions have undergone major changes, whereas in others change has been extremely slow and in most cases the characteristics of public forestry institutions – in terms of their values, functions and structures - haven't changed much. This poses major challenges, especially when society's aspirations have increased while the institutions are unable to fulfill them.

Change in public sector institutions

Most countries had traditional systems of community management of forests and rangelands which worked satisfactorily in the context of low human and animal population, cohesiveness of local communities and limited external pressures. In most countries, these community managed institutions have been superseded by more centralized government forestry administrations; however in the absence of adequate capabilities, government takes over did not have a positive impact. On the contrary decline in community institutions combined with ineffectiveness of public sector institutions have accentuated resource degradation and depletion.

Governments have responded to this in varying ways and paces. One approach has been to establish more flexible and financially independent para-statals like the Forests National Corporation in the Sudan. Certainly this had a very positive impact, in elevating the status of forestry and bringing about fundamental changes in the way problems are addressed. Yet challenges remain as regards the long term economic viability of para-statal organizations, especially in a situation of low productivity characteristic of most countries in the Near East region.

Shifting from “command and control” to “connect, communicate and coordinate”:

Most public forestry institutions in the region remain in the “Command and control” framework. Even when changes are made, this core philosophy has remained intact. However in the context of larger changes, forestry organizations have to move into a “connect, communicate and coordinate” framework. Forest departments will have to develop the capacity to network effectively with other players and increasingly function as facilitators.

Production of marketable products and services

There is a strong case for divesting the responsibility for marketable products and services to private sector, especially farmers and private entrepreneurs. In fact farmers are in the forefront of growing trees especially under agroforestry systems and in many countries they account for a sizeable share of wood production. Production of gum Arabic by farmers is another success story. These clearly demonstrate the potential for increased involvement of farmers in producing wood and non-wood products. Public sector forestry institutions should focus on providing technical support to private entrepreneurs rather than directly getting involved in production. This will require major functional and structural changes in public forestry administration.

Public forestry institutions and provision of public goods

In most countries in the Near East region provision of public goods – watershed protection, arresting land degradation and desertification, conservation of biodiversity and carbon sequestration will remain the primary objective of the forest sector. Many governments are investing substantial resources to improve the urban environment and meet the burgeoning demand for recreation. With the exception of a small segment of this (in particular forest recreation), all others are largely public goods limiting the scope for involvement of non-public institutions. Obviously public sector institutions will have to play a critical role in providing the environmental services. The main thrust

of public sector reform will be to improve the efficiency in delivering environmental services. Understanding the varied demand for environmental services and managing resources based on a thorough understanding of the science of provision of environmental services will be the thrust area for improving the performance of public sector institutions.

Need to avoid superfluous changes

Changes in public sector forestry institutions often have a tendency to be superficial like shifting the forest administration between different ministries or changing the organigram. Seldom efforts are made to examine the basic philosophy of the organization, the nature of services it renders to the various stakeholders and the efficacy and effectiveness of the services it provides. Consequently changes are often made for the sake of giving a semblance of change. Such superficial changes will turn out to be costly distraction from the real issues and needs to be avoided.

A related issue is the separation of the regulatory and management functions. Many public forestry institutions perform multiple functions including policy formulation, law enforcement, production of wood and non-wood forest products and provision of extension services to farmers and other private sector stakeholders. A separation of different functions and creation of different specialized institutions may seem appropriate; however countries need to carefully consider the pros and cons especially considering that an organization has to cross-subsidize many of the social and environmental services from the income generated by commercially viable activities.

Lessons from institutional changes in the Near East countries

While institutional changes are imperative and every country should strive to ensure that the public forestry institutions should strive to continuously adapt to the larger changes, those dealing with institutional development needs to take the following into consideration:

- There are no standard off-the-shelf approaches to institutional development. Certainly countries can learn from the experience of others, but institutional development has to be strongly rooted in the local context.
- Gradual and continuous adaptation will be a better strategy. Failure to keep up with the larger changes would necessitate drastic and often very painful reinvention at a later date.
- All institutions should have a built-in culture of change and every effort should be made to inculcate that culture of change in every individual working in the organization.
- Leadership of public forestry organizations have a critical role in bringing about timely changes. Although institutional change could be extremely unsettling for leadership, it should not shun the changes. And every effort should be made to ensure that the pain of change is distributed in an even and just manner. Most often resistance to change comes on account of the perception that institutional changes are targeted at a particular group.
- Retraining staff will be a key to the success of institutional change. As the functions change, there will be an increased need to provide new expertise and skills.
- Donor assistance for institutional change is be provided on a long term basis considering that bringing about institutional change is a long drawn process. This is all the more so if there has been inadequate efforts to bring about continuous changes. Short term support for institutional change could be very counter-productive.
- Institutional improvement is not a one-shot affair. As one set of problems are resolved, new problems are bound to crop up and as these are addressed, further problems may arise.
- Economic aspects of institutional change need in-depth assessment. This includes the transaction costs in bringing about change and sustaining the change. Failure to take these into account will result in failed institutional changes.
- Since provision of environmental services will remain the thrust area of forest and range management in the Near East countries, public sector institutions will have to continue playing a pivotal role. Providing the environmental services in an efficient way will require strong science inputs and this will require significant strengthening of science and technology capability in the region.

PART I

PUBLIC SECTOR FORESTRY INSTITUTIONS IN THE NEAR EAST COUNTRIES: THE CHALLENGES OF ADAPTING TO A CHANGING WORLD

By Dr C.T.S Nair

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1. Introduction

Background

All over the world forests and forestry are undergoing major changes in response to the larger societal changes. In response to the collective impact of a number of factors, forestry institutions are under considerable pressure to meet the changing demand from society. Institutional adaptation is hence a critical issue confronting the forest sector all over the world, especially in the face of rapid changes. Especially in the countries in the Near East Region, the issue is particularly important in the context of the low forest cover and the declining extent and quality of range lands on account of unsustainable human activities and the effects of natural phenomena such as drought, accentuated by climate change. Populations of many rare and unique wildlife species of this region are also in danger of extinction due to loss of natural habitat and competition from livestock. While some countries have attempted to broaden public participation in forestry, participatory approaches have not yet taken root in most countries. Forestry also faces severe financial constraints as many countries in the region have neglected the sector over the years. Declining budgets and capacities of forestry institutions have also affected their ability to address problems like unauthorized wood removals, uncontrolled grazing, and forest fires.

A number of issues in this regard were outlined during the Heads of Forestry Dialogues held in the World Forest Week/19th Session of the Committee on Forestry (COFO) in March 2009 as well as in the Near East Regional Forestry and Range Commission (NEFC) meeting held in April 2010. These deliberations, while acknowledging the challenges, called for public forestry institutions to effectively respond to society's changing needs and aspirations. Based on a detailed analysis of socio-economic, institutional and technological changes, the FAO Forestry Sector Outlook Studies (FAO, 2003, FAO 2007) have also underlined the need for institutional changes, in particular transforming the public sector forest agencies for better management of forest and rangeland resources in the region. . Three broad directions of change affecting forests and forestry in the Near East region are:

1. Increasing emphasis on the provision of environmental services, especially to improve watershed protection, arresting land degradation and desertification and catering to the increased demand for amenity values;
2. Greater thrust on improved governance and emphasis on more efficient delivery of services to the public; and
3. Emergence of new players, in particular private sector and civil society organizations providing different approaches and models for delivery of services.

The FAO Outlook Studies provided a broad framework of emerging scenarios in the forest sector, the situation that is likely to emerge by 2020 and what needs to be done to enhance benefits to society. In all the countries in the Near East Region, public sector dominates the forestry scene and obviously the larger changes entail a review of the functions and structures of public sector institutions to make relevant to the changing needs of society. (Box 1).

Box 1. The need for re-inventing public sector forestry institutions

“Formulation and implementation of policies for integrated land 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 re-examining the core values, functions and structures and making appropriate changes. Public sector forestry agencies will have to work very closely with other sectors, especially the agriculture, animal husbandry, urban development and tourism sectors. The increasing role of the 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 developing appropriate policy and institutional frameworks”.

Source: FAO. 2007

The larger political and social changes taking place in the Near East countries also underscores the need for reviewing the functioning of public sector organizations and to make appropriate changes. It is in this context that FAO Regional Office for Near East initiated this study to examine the changing context of public sector forestry institutions in the Region (see Box 2), how they have adapted to the changes and the lessons thereof.



Box 2: Near East Region and the scope of the study

The Near East Region of the Food and Agriculture Organization comprises of 19 countries namely Algeria, Bahrain, Egypt, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Kingdom of Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates and Yemen. Some of the countries in the Near East Region are also included in other regions. The Near East Forestry and Range Commission have 27 countries: Afghanistan, Algeria, Cyprus, Egypt, Ethiopia, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Kyrgyz Republic, Lebanon, Libya, Mauritania, Morocco, Oman, Pakistan, Qatar, Kingdom of Saudi Arabia, Somalia, Sudan, Syria, Tajikistan, Turkey, Tunisia, United Arab Emirates, Uzbekistan and Yemen. An earlier study by FAO addressed the institutional change issues in the Central Asian and Caucasus countries (FAO 2010) and to that extent the scope of this study is limited to the 19 Near East countries.

Objectives of the Study:

The main objective of the study is to contribute to enhancing the capacity of forestry institutions in the Near East region to enable them effectively address new and emerging challenges in the region. Specific objectives are:

- Outline how the functions and structures of public forestry institutions have changed, where reforms have been carried out in the past decades such as through national forest programmes (nfp) and in what ways these reforms have contributed to the better delivery of the required services,
- Analyze the drivers of change in the structure, functions and capacity of forestry institutions and how they affected the state of the resources and socio-economic environment in the sector,
- Assess the current and emerging challenges forestry sector has to address in the context of wider socio-economic, political and environmental changes and identify the sectoral priorities for the national institutions and FAO to address in the short, medium and longer terms,
- Analyze the effectiveness of existing institutional arrangements in meeting the new challenges and opportunities,
- Identify specific additional institutional reforms needed to enhance the efficiency and effectiveness of forestry agencies and to improve the performance of the forestry sector in the perspective of better integration of forest and rangelands and their sustainable management.

Methodology:

Although the Near East countries share a number of common characteristics, yet considerable differences exist in their social, economic and environmental conditions as also in the history of societal evolution. This is reflected in the differences in the institutional environment. To capture the divergences and similarities in institutional evolution the study was done in two stages. During the initial phase the broad trends as regards changes in public sector forestry institutions drawing upon the various studies undertaken hitherto was undertaken. It examined the overall experience in various countries focusing on the larger changes within and outside the forest sector and to what extent public sector forest institutions are responding to the changes. This overview was further strengthened during the second phase of the study through country case studies undertaken by national consultants in four countries namely Kingdom of Saudi Arabia (KSA), Sudan, Syrian Arab Republic (SAR) and Tunisia. These countries were identified as examples where forestry institutional changes have been taken up and are in different stages, thus capturing the broad spectrum of experience in public sector institutional reform.

The present report synthesizes the initial regional assessment, the four country case studies as also information on institutional change initiatives at national, regional and global levels from several sources.

Structure of the report

Chapter 2 provides an overview of the larger social and economic context, including the larger public sector institutional environment. Specifically it examines the changes in the economic, social and political context and how these are affecting forests and forestry with particular focus on public sector forestry institutions. How public sector forestry institutions have adapted (or not) is discussed in chapter 3 drawing upon the four country case studies as also from other countries in the Region. Putting together these, an attempt is made to identify the broad patterns of public sector forestry institutional change. Chapter 4 summarizes the findings and indicates

the way forward outlining how public sector forestry institutions indicates the possible direction of change in public sector forestry institutions in the context of possible societal changes. The concluding chapter summarizes the main findings and recommendations indicating the direction of change as regards public sector forestry institutions.

2. The Changing context of Public sector forestry institutions

Public forestry institutions are integral components of the larger socio-economic and political system and therefore changes in their functions and structures need to be considered in the context of the larger environment. Certainly institutions do also influence the larger system, primarily depending on their strengths vis a vis other institutions in the system. When forests and forestry are recognized as important for society, forestry institutions do get considerable public support and so will be their influence on the larger system. When forests are seen as less important vis a vis other sectors (or sometimes a hindrance to “development”) by majority of the people, public forestry institutions remain under-developed and ineffective. As a “living entity” public forestry institutions also face problems of adaptation to the larger changes and thus tend to lose their relevance and effectiveness over time when the pace of adaptation is not in tune with larger changes. It is hence important to understand the larger social, economic and political context and the changes thereof to analyze the adaptation challenges of public forestry institutions in the Near East countries.

2.1. Economic, Social and Political Context

Economic transition

The countries in the Near East region share a number of common characteristics. The entire area was under the Ottoman Empire. With the exception of Saudi Arabia, all other countries came under British or French colonial rule before they became independent during the second and third quarters of the 20th Century. The differences in resource endowments and the divergent paths of development have led to significant economic differences with per capita annual income ranging from less than US\$ 2500 (for example, Mauritania, Sudan and Yemen) to over US\$ 20,000 (Bahrain, Kuwait, Oman, Saudi Arabia and UAE) (See Annex 1) . Such differences in income affect the ability of governments in managing forest and range resources sustainably. Other over-riding demands from certain sectors severely constrain the ability of most countries (in particular low income countries) in allocating adequate resources to manage their forests and range lands, affecting the public sector forestry institutions. Most often forests are cleared to generate income to support other activities notwithstanding its long term adverse impacts. This has been particularly severe in situations where governance has been delegated to local/ provincial authorities, but without any concomitant financial support, compelling local governments to over exploit forests to raise income.

The Human Development Index, developed as an aggregate of key socio-economic variables by the United Nations Development Programme (UNDP) gives an indication of the overall development status of the countries (see Annex 1). Of the 19 countries considered in the study none are in the highest HDI ranking of 1 -25. Seven countries have ranking below 100, reflecting the limited ability of government to spend on education, health care and other social development sectors. Invariably these are also countries with low per capita income. Evidently forests and forestry, including development of forestry institutions are unlikely to get a high priority in these countries.

Most countries in the region have been agrarian societies dependent on agriculture and animal husbandry, with the latter dominating in most countries. For a large segment of society

transhumance has been a way of life enabling people and animals to take advantage of seasonal shifts in water and fodder supplies. Emergence of alternative sources of income, especially exploitation of fossil fuels and the associated manufacturing and trading, has helped in the transition from agrarian economies to industrial and services sector based economies. Consequently the share of agriculture (including animal husbandry and forestry) in the gross domestic product has declined considerably during the last two decades. Only in the case of Sudan, Syria and Yemen the share of agriculture in the gross domestic product exceeds 20 percent (see Annex 1). There are several countries in the region where the share of agriculture in the GDP is less than 2 percent. Where agriculture still remains important, the potential for land use conflicts remains high and in many cases increased investment for horizontal expansion of agriculture – often undertaken to enhance self sufficiency in food supplies, as in the case of mechanised farming in Sudan - has been a major cause of large scale deforestation.

One of the major changes, reflecting the transition from an agrarian society, is the emergence of a market economy. This has a direct impact on the overall institutional system. The institutional set up that promotes a command economy cannot serve a market economy. There is hence a disconnect between economic and social policies and the institutions that exist, especially as institutional reform takes place at a much slower pace than reform of policies.

Demographic transition

An important issue affecting demand and supply of food, fibre, fuel and water is the demographic transition, in particular growth in population, and its distribution. The total population in the region is about 404 million (in 2008) or about 6 percent of the World's population (see Annex 1). This is unevenly distributed reflecting the differing pace of demographic transition and the divergent ecological conditions. Many of the old river valley civilizations with well developed irrigated agriculture and the emerging commercial hubs have relatively high population densities. Population growth rate in the region varies from as low as 0.8 percent in the case of Lebanon and 3.5 percent in the case of Syria. Average population growth rate in the region is about 1.9 percent, much higher than the global growth rate of 1.2 percent per annum. This implies a significant increase in the demand for a wide range of agriculture, livestock and forest products. Public sector institutions including those dealing with forestry will have to address the challenges stemming from such an increase in the demand for products.

Urbanization is another demographic dimension that impacts forests and forestry and thus public sector forestry institutions directly and indirectly. Urbanization is largely related to changes in the economic situation and a reduction in the dependence on land as a source of income. Expanding employment and income opportunities in industrial and services sectors enable people to move out of rural based agriculture and allied activities. With the exception of Egypt, Sudan and Yemen all other countries are highly urbanised with more than 50 percent of the population living in urban areas. There are several countries with more than 75 percent of the population living in cities. Forest recovery in countries like Iran is often linked to abandonment of agriculture land stemming from rural urban migration. A high level of urbanisation has compelled several countries to allocate substantial resources to improve amenity values including through urban tree planting. In a number of countries like UAE, Bahrain, Kuwait and Qatar urban tree planting remains a thrust area of the municipal authorities. Increased demand for recreation by urban population has also led to major functional shifts in forestry departments, from wood production to management of recreation sites.

An important demographic factor affecting policies and institutions in the Near East region is the age class distribution of population. Currently about 36 percent of the population is below

the age of 15. As this cohort moves to the working age group, major changes are expected in the perceptions and values, including the expectations about governance. In fact the current political change in the Arab world is largely a reflection of the changing expectations of the younger generation aspiring for better governance.

Political changes

Public sector forestry institutions are very much linked to the prevailing political system and the related policies. In most countries forestry departments tend to be one of the oldest government departments, largely established by colonial regimes, often with the objective of appropriating forest resources, especially timber and valuable non-wood forest products. The post-colonial period witnessed the emergence of highly centralised regimes which continue to dominate the political scene of the Near East region (EIU, 2011). As already evident, the demand for more inclusive governance is bringing about major political changes in the region. Notwithstanding the uncertainty about how the situation may unfold after the so called Arab spring, major political changes seem to be inevitable in the region.

Centralised regimes favour top-down hierarchical institutions, including in the forest sector. In such a situation the scope for major institutional changes in the forest sector tend to be rather limited. In the context of imposing control over local communities, often such system discourages traditional community management arrangements as has happened in several countries within and outside the Near East region.

Conflicts and wars

No other region has suffered and continues to suffer from wars and internal conflicts, sanctions and embargoes like the Near East region, severely affecting people, economy and institutions. While some of the conflicts stem from changing geo-political environment (being the most important source of fossil fuel supplies in the world, the region is highly prone for conflicts related to access to the oil wealth), many of the internal conflicts are an outcome of repressive actions of certain governments and the failure to accommodate the divergent aspirations of the people coupled with corruption and absence of transparency and accountability. Some countries are struggling to recover from ravages of war and are burdened with high levels of debts (Iraq and Sudan), limiting options for public expenditure. All affected countries have emerged with compounded socio-economic problems that have retarded progressive moves toward liberalization and democratisation. There is substantial lag between countries of the region and other regions in terms of participatory governance. The political turmoil that engulfed the Arab region during 2011 starting from Tunisia, through Egypt, Libya, Syria and Yemen, is an indication of the urgency of better governance, equity, accountability and transparency. But there is uncertainty as to how long the pains of change will persist and what system of governance may eventually come into existence.

2.2. Environmental challenges

Most countries in the Near East region have to confront a number of adverse environmental conditions as outlined below:

Land degradation and desertification:

Large part of the region is arid or hyper arid with deserts and semi-deserts dominating the landscape. Land degradation, loss of natural ecosystems and associated biodiversity and desertification remain major problems for most countries, adversely affecting the livelihoods of millions of people. Arresting land degradation and desertification are thus thrust areas of land

management, although institutional, financial and technical problems affect the level of efforts. Most countries have implemented measures to stabilise sand dunes to protect agricultural land and habitation. Windbreaks and shelterbelts, intended to protect agricultural lands from degradation and loss of productivity are an integral part of the farming system in most countries, which in addition also supplies construction timber and woodfuel. Most of the farms are under private ownership and obviously providing extension services has become a priority for forestry departments. The functions to be performed – mainly provision of technical advice and supply of seedlings (or supporting local communities in nursery management) – require a different approach than what forest departments in most countries have been used to earlier.

Water crisis and protection of watersheds

Related to land degradation and desertification is the acute water scarcity confronting the region. All the countries in the region suffer from an increasing scarcity of usable water resources and the Near East is considered one of the most water-stressed regions in the world. The World Bank has identified 15 countries in the region that are below the water poverty line, defined as those that have less than 1,000 m³ per person per year. The Bank has estimated that these countries' average renewable water resources will fall from just over 1,000 m³ /year- level in 1997 to 740 m³/year by 2015. Countries like KSA and Libya are already mining non-renewable sources. Physical shortages are compounded by problems in water quality caused by dumping of pollutants into rivers and streams, run-off of agricultural chemicals and increasing silt levels.

Some 85% of the region including the four focus countries share their water with at least one other country either as riparians (Iraq with Iran & Turkey, Sudan with all East Africa countries such as Ethiopia, Uganda, South Sudan Republic and Egypt; SAR with Turkey) or by sharing a common aquifer (Sudan with Libya and Egypt). More powerful upstream and downstream countries have been able to determine the water shares of the riparian countries. Sharing is often compromised by politics. Conflicts over water shares loom over the region

Protecting and improving water sources will remain an important function of forests and woodlands, especially in the upland areas of most countries. Historically forest management in several countries gave thrust to watershed protection, primarily through enforcement of regulations in a top down approach. Obviously results hitherto indicate the ineffectiveness of such “conservation through exclusion” approaches, underscoring the need for major changes in the institutional framework. Success of protecting uplands against degradation would require more effective institutions linking people dependent on uplands and those requiring clean and regular water supplies in the down-stream. Eventually there will be a need to compensate the upland people for the water conservation services they have to deliver by altering their land use. Whether such payment for environmental services can be operationalised depends on the institutions in place and the national policy on the matter.

Conservation of biodiversity

Loss of biodiversity has again drawn attention to the need for more concerted efforts to manage forests with conservation as a focal consideration. The main strategy hinges on declaring biodiversity rich areas as “protected areas” and to exclude them from production of wood and other products as also to exclude all human interferences. The Near East region has established a network of protected areas extending to about 7.4 percent of the land area (Saudi Arabia has set aside about 31 percent of its land as protected area) (WDPA 2011). As in the case of traditional management of forests for production, initially protected area management focused on law enforcement. Although there is increasing concern about the effectiveness of such a

strategy, many public sector institutions dealing with protected area management are yet to make the necessary changes in their management strategies. .

Forests and climate change mitigation and adaptation

The role of forests in climate change mitigation and adaptation is well understood, especially considering that deforestation accounts for about 17 percent of the global carbon emission. There have been several international initiatives aimed to arrest the pace of deforestation and forest degradation, the most recent being the REDD+, UN REDD and the World Bank led Forest Carbon Facility. Currently REDD+ aims to improve the technical and institutional capacity of participating countries, especially for monitoring, reporting and verification of carbon stocks, while actual REDD benefits in terms of payment for maintaining and improving carbon stocks is yet to materialize. Currently no country in the Near East region is involved in the UN REDD programme or the World Bank's Forest Carbon Partnership Facility. The situation with regard to CDM funding for afforestation and reforestation under the Kyoto Protocol has also not been encouraging. At the end of September 2011 the number of afforestation/ reforestation projects registered globally stands at 36 (out of a total of over 3682 CDM projects) and there is none in the Near East region.

Hence a paradoxical situation is emerging that while there is a strong recognition of the importance of forests and forestry in countering climate change and providing a critical global environmental service, willingness to pay for the service seems to be rather limited. Protracted international negotiations (including in the recently concluded UNFCCC COP 17 in Durban), are yet to provide a clear direction on climate change mitigation and adaptation as also what may be done in critical sectors like forestry. In a way this mirrors the national situation in many countries. International resource flow to the forest sector may remain constrained, all the more so in the context of persistent economic uncertainties in the developed countries, the main source of carbon demands.

Yet, countries in the region will have to address the various challenges posed by climate change. "Potential climate change impacts such as water stress, more frequent and extreme weather events, and coastal erosion would intensify the existing pressure on the region's forests and rangelands, leading to further land degradation and deforestation. If the likelihood of severe human reactions were to be factored in, such ecosystems would risk coming under extreme pressure that, given the fragile environmental situation in the Region, may be hard to resist. Climate change is also likely to force the shift of species habitats, to increase the risk of wildfire and to raise the risk of species extinction. It would also adversely affect forest health, in the same way as the outbreaks of forest pests in Lebanon, Morocco and Saudi Arabia" (FAO 2010a). Responding to climate change would require significant changes in institutional arrangements (Box 3).

Box 3: Climate change and forest planning

Despite the acknowledge multi-functionality of forests in providing multiple and valuable goods and services to society, traditional forest planning approaches in the Mediterranean region have been wood based. Most forest management has been stand-based developed in Europe during the 19th century. Stand-based methods are based on stand-level evaluations and decisions to select a prescription which maximizes wood production for each stand. Dealing with the risks and uncertainties of climate change would require a shift from:

- A single scale forest planning to a multi-scale landscape planning; and

- Static to adaptive planning enabling society to respond quickly to occurrences of un-anticipated events

Certainly such changes these will require a very different institutional arrangements, enabling rapid responses to climate change related events

Source: Palahi, et al 2008

2.3. Global drivers of change

Oil supply and geopolitics

In an era of rapid globalisation, no country or institutions therein can remain unaffected by external factors, which have both positive and negative impacts. Being the most important source of fossil fuel supplies geopolitics tends to have a significant impact on governance and the institutions in the Near East region. Often the need to maintain access to oil supplies have encouraged military intervention and propping up of authoritarian regimes in some cases. Such “resource curse” has in some countries stymied the evolution of democratic governments and institutional adaptation responding to the needs of the society at large. Yet the role of oil-derived wealth and income in the transformation of the countries and the consequent reduction in poverty and a host of associated changes, are undeniable.

Increasing international trade of forest products

The last two decades have witnessed a boom in international trade, including that of forest products, and increasingly a larger share of production is traded. Trade liberalization, especially in the context of WTO agreement, has increased international trade and there has been a significant increase in the “wood miles” as wood from one continent is processed in another and consumed in a third one. Lower raw material costs (essentially related to high productivity stemming from more favourable growing conditions and application of productivity enhancing technologies) along with lower labour costs have brought about major changes in the wood products supply chain. In view of unfavourable growing conditions most countries in the Near East region will not be able to compete in the global or even local markets. This would necessitate changes in the objectives of management and attendant institutional adaptation. Commercial wood production will find it extremely challenging to maintain economic viability. However institutions dealing with unique products from the region (for example Gum Arabic, Cork, etc.) may be less susceptible to such problems, although development of substitutes could still pose a challenge.

International conventions and agreements

A major development, especially during the post-UNCED period is the multitude of international initiatives related to the pursuit of sustainable development. Agenda 21 led to a number of international agreements/conventions, including that relating to biodiversity conservation (CBD), arresting land degradation and desertification (UNCCD) and combating climate change (UNFCCC). Almost all countries in the region are signatories to the various international environmental agreements.

Although no legally binding agreement on forests could be reached, various initiatives like IPF/IFF and currently the United Nations Forum on Forests (UNFF) have drawn attention to addressing deforestation and forest degradation. Efforts to define criteria and indicators of sustainable

forest management have broadened the objectives and approaches to forest management with particular focus on social and environmental aspects including how forestry will benefit local people and means or processes to secure their participation. National forest programme (nfp) processes at the country level have in this context noted the need for institutional changes, the key to promote sustainable forest management.

In addition to the multitude of conventions and agreements, a wealth of new ideas and approaches to forest management have evolved based on inputs from academic institutions, civil society organizations, think tanks and bilateral and multi-lateral development agencies. Global studies on forest resource situation, especially by the Food and Agriculture Organization and its potential impact on livelihood of people led to enhancing public awareness on the need for improved conservation of forests, especially in the tropics. Two thrust areas of international initiatives in the 1980s were improving wood supplies and promoting participatory approaches to forest management.

Bilateral and multi-lateral technical and financial assistance

Many of the international conventions and agreements and other initiatives have led to enhanced financial and technical support at the country level through targeted projects and programmes. This has contributed to:

- Improvement in the human resource capacity through research, education and training, especially in specialised areas like remote sensing and inventory, watershed management, community/ participatory approaches. Bilateral and multilateral assistance has helped to apply new concepts and approaches and in the process demonstrate the potentials and constraints and helped to build human resources in areas where expertise was lacking in the country. Masters and Ph.D programmes funded by bilateral and multi-lateral agencies provided opportunity to professionals in the region to specialise in new areas. Issues like gender were main-streamed into forestry and core capacities have been built in these areas. Some of the local level projects, especially those implemented by international NGOs, drew attention to the weaknesses of traditional forestry institutions and identified the potentials and constraints of participatory approaches.
- Some of the larger multilateral assistance programme gave impetus to fundamental changes in public sector forestry institutions. For example the World Bank's 1984 Forestry Sector Review in Sudan led to the development of a comprehensive sector assistance development project with a condition to transform the Forest Department as parastatal organization, leading to the establishment of the Forests National Corporation in 1989, although the much anticipated World Bank project to support institutional transition and to strengthen forest management did not materialise at the end. Yet Sudan implemented the change drawing upon the support from a number of other projects including the Netherlands –FAO Wood Energy Development project. Similarly, the World Bank's 1986 Forestry Sector Review in Tunisia led to four 5-year cycle forest development projects aimed, at promoting afforestation and integrating forest dependent population in resources management.

2.4. Forests and Forestry in the Region

Forests and woodlands:

With a forest area of 92.60 million ha amounting to only 6.3 percent of the land area, the region

as a whole is a low-forest cover region (see Annex 2). Further the distribution of forests is very uneven. Two countries namely Iran and Sudan account for about 87 percent of the forests in the region with the remaining 17 countries accounting for the rest. There are several countries with small or very insignificant area under forests (for example Egypt, Kuwait, Libya, Oman, Qatar). The region has about 63 million ha of other woodlands and their distribution is very similar to that of forests with Iran and Sudan accounting for most of the woodlands (see Annex 2).

A major problem with forest and woodland area statistics relates to their reliability considering the absence of credible national capacity to undertake periodic forest inventories. Reporting of the same figure for the four consecutive assessments (1990, 2000, 2005 and 2010) is not necessarily a reflection of stability at the forest front, but probably the deficiencies (largely reflecting institutional inadequacies) in updating/reporting the information regularly.

Change in the extent of forests

Between 1990 and 2010, the Near East region registered a decline in the extent of forests to the tune of about 6.1 million ha with Sudan accounting for most of the loss, especially during the period 1990 and 2010 (FAO, 2010b). With the largest extent of forests in the region and being a low income agriculture dependent country, to some extent this is understandable.

Table 1: Trends in forest area change in the Near East Region (1990 -2010)

Extent of change	Countries
No significant change	Bahrain, Iran, Iraq, Jordan, Libya, Oman, Qatar, Saudi Arabia, Yemen
Increase	Egypt, Kuwait, Lebanon, Morocco, Syria, Tunisia, UAE
Decrease	Algeria, Mauritania, Sudan,

Source: Based on FAO, FRA 2010

Although Sudan went through major institutional reinvention during the 1990 – 2000 period (especially the establishment of the Forests National Corporation in 1989 and a series of initiatives since then), it is to be noted that this period has seen the most significant decline in forest area in the country, making it the third highest rate of deforestation in the world after Brazil and Indonesia. As pointed out earlier, this has been a period of rapid expansion of agriculture spearheaded by the Mechanised Farming Corporation. Fortunately the deforestation rate has come down drastically after 2000, largely because of the termination of the Mechanised Farming Corporation, as Sudan diversified the economy and emerged as an oil exporter.

Most countries have taken up afforestation/ reforestation programmes largely focused on addressing environmental issues. The region has a total of about 9.64 million ha of planted forests (FAO, 2011). Two countries (namely Sudan and Iran) account for 72 percent of the region’s planted forests, to some extent reflecting the relatively better developed institutional capacity in these countries. Other countries that have invested significantly in planted forests are Tunisia, Morocco, Algeria, UAE, Syria and Libya. In several countries planted forests account for 100 percent of their forest area (for example Egypt, Libya, Kuwait, Oman and UAE). Most plantations are under public sector, reflecting the challenges in promoting alternative institutional arrangements as indicated later.

This however is not the situation with a number of valuable non-wood forest products like gum Arabic (Sudan), cork (Algeria, Morocco and Tunisia) and pine nuts (Lebanon), which are unique products with long established global markets. Production of some of these (especially Gum Arabic in Sudan and pine nuts in Lebanon) are under private control. Gum Arabic in Sudan is produced under a well established agroforestry system providing substantial income to farmers. Public sector intervention has been primarily aimed to control international trade, for example the Gum Arabic Company in Sudan maintaining total monopoly in trading until recently.

Productivity of forests and its implications on institutional arrangements

Except in small a proportion of the area, the rest of the region faces adverse growing conditions resulting very low productivity of wood. In about three –fourth of the countries providing growing stock information, the per hectare growing stock is less than 50 m³. Obviously the cost of producing wood competitively tends to be much higher than countries in other regions, where the productivity is significantly higher on account of more favourable conditions for tree growth. Certainly high productivity has been reported in irrigated plantations in the Region, but considering the acute water scarcity in the region, irrigated plantations are not a widely applicable option. A number of countries have however perfected the technique of waste water use to irrigate plantations.

Low productivity imposes severe limitations to private sector investments in plantations. In view of the low productivity, the cost of wood production tends to be very high and this makes wood production less competitive in comparison with countries where conditions for tree growth are more favourable.

Importance of forests to society

Institutional arrangements for managing forests, including investments in managing them, are closely linked to society’s perception of the importance of forests, which could be economic, social and environmental. A very incomplete and partial measure of the economic significance of forests is the contribution of forests to gross domestic product. Table 2 summarises the gross value added by the sector, giving details of the different components.

Table 2: Gross value added by the forestry sector in the Near East region (in US\$ millions in 2006 prices and exchange rates)

Year	Gross value added by the Near East region				Global gross value added	
	Wood production	Wood industry	Pulp and paper	Total	Wood production	Total
1990	846	875	1074	2795	98218	423596
2006	1006	786	1682	3474	117508	467908

Source: Lebedys, 2008

As evident the region’s share in value added in wood production (which remains an important function of public sector forestry institutions) was about 0.9 percent in 1990 and this has remained more or less unchanged in 2006. While value added in wood production has increased by about 19 percent between 1990 and 2006, value added by wood industry and pulp and paper has increased by about 27 percent reflecting the increased dependence of wood processing sector on imported raw materials. There are several countries in the region, who has reported no value addition (or very insignificant) as regards wood production in 2006 (for example Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, UAE and Yemen). Partly this

indicates the insignificance of the wood production role of the forests in the region and partly the difficulties in capturing actual production in the national income statistics, especially due to the preponderance of informal sector transactions.

In any case this gives an indication of the challenges facing public forestry institutions considering that low contribution of the sector to the gross domestic product tends to marginalize the sector at the national level affecting budget allocation, except when the environmental and social significance of forests gets due recognition. However, difficulties exist in projecting the social and environmental significance of forests, as very few public forestry institutions have the capability to make realistic assessment of the relevant values and convincing decision makers in a situation where funds are limited and outlay on other critical sectors with immediate and measurable outcomes gets priority.

Obviously support for forests and forestry will have to largely stem from their social and environmental significance. Certainly there is considerable evidence to demonstrate the role of forests in providing rural employment, reducing poverty and providing vital environmental services to other economic sectors, especially agriculture and industry. There is also greater recognition that as economic situation improves, amenity values of forests will gain importance. The main institutional challenges facing public forestry institutions is their inability to sell forestry in a convincing way (other than making generalized statements) to the various stakeholders. Deficiencies seem to be particularly severe as regards:

- Inability to make a shift from the role of policing forests and to take on board all the stakeholders in forging a collective approach;
- Weak technical capacity, especially in clearly assessing and providing realistic assessment of the environmental and social significance of forests.

The latter seems to be a problem that has been highlighted by several studies (Box 4).

Box 4: Challenges in accounting the full range of forest values

In general there is a lack of appreciation of the economic and environmental roles of forest & rangelands in RNE:

- None of the countries of the region has made any serious attempt to assess the contribution of forests & woodlands to any aspect such as protection of watersheds, conservation of biodiversity, and arresting land degradation and desertification
- Only in a handful of countries including Sudan and Tunisia have there been serious studies to assess the contribution of home grown wood to the national energy budget and wood-based industries,
- Only in a few countries such as Algeria, Iran, Lebanon, Morocco, Sudan, Tunisia and Yemen is there an official tally of the value of exported NWFPs like, cork, pistachio nuts, stone pine, gum Arabic, rosemary and bee honey
- In none of RNE countries has there been a serious study to assess the contribution of rangelands to the national economy

This lack of appreciation of the role of forests stems from:

- Wood and NWFPs are largely collected directly by people from forests or are traded in informal markets and national income accounting seldom captures this
- The science of environmental and natural resources accounting is still in its infancy.

Source: H. Abdel Nour, 2011

Some of the available assessments relating to the environmental values of forests and loss to society on account of deforestation and degradation give an indication of the challenges facing the countries in the region (Box 5). Obviously improving the accounting of these values requires substantial capacity building in the public sector institutions.

Box 5: The cost of deforestation and degradation in the Islamic Republic of Iran

Annual loss to society in terms of the direct and indirect benefits from forests on account of deforestation and forest degradation in the Islamic Republic of Iran, one of the most important forested country in the Near East has been estimated as US\$ 843 million, or about 0.7 percent of the gross domestic product in 2002. Deforestation accounts for 83 percent of this while 17 percent is accounted by forest degradation. The losses of forest services (especially watershed protection, loss of carbon, reduction in recreational benefits) are estimated to be more significant than the losses of timber and other extractive values. The decline in values affects different segments of society differently: firewood and grazing are usually losses to forest users; dam sedimentation creates costs to downstream population, recreation losses affect visitors and loss of biodiversity and carbon affects all.

Source: World Bank 2010

Evolution of forest policies and legislation:

Most of countries in the Near East have developed National Forest Policy Statements, but there seem to be major differences in what the term “policy” means and the force or authority that it bears. To some, policy meant a declaration of intent or a broad, general statement of overall planning and programming goals. To others it meant specific objectives or procedures. Still others use the term to describe the legal or regulatory restrictions or functions (FAO 1990a). Sustainable forest management (SFM) has become the basic thrust of most forest policies in the region.

Invariably environmental protection has become a key objective of most forest policies in the region (Annex 4). This largely stems from the need to deal with the severe adverse environmental conditions, especially land degradation and desertification and acute water scarcity facing the countries. With urbanisation provision of amenity values (especially recreation) has become another important objective. High income urbanised countries in the region are giving particular emphasis to the amenity values. In view of their higher incomes, financial resources are seldom a constraint and most often creation of green spaces is integrated with urban planning

The major problem with most of the forest policies are that they rarely spell out the approaches and tools of how the policies will be actually implemented. Another major deficiency is that they also seldom indicate how tradeoffs are established between competing objectives.

Forest laws and regulations are key instruments in operationalising forest policies. Since the inception of forest/range services, all countries have witnessed the promulgation of a series of forest legislations largely of regulatory, protective and control nature. Three of the countries had forest legislation which established a forest service with defined hierarchy for more than a century (for example Syria (1869), Tunisia (1883) and Sudan (1902)). However, often the forest laws tend to be archaic and seldom get revised in tune with the changes in the political environment and policies. Or even when they are revised, their basic characteristics, especially the regulatory thrust, remain unaltered.

Forest tenure and forestry institutions

Tenure is an important indicator of the institutional arrangements for forestry, in particular the relative importance of public sector, communities and private sector (Table 3).

Table 3: Ownership of forests in the Near East region

%public ownership	Countries	Remarks
100%	Bahrain, Iran, Iraq, Kuwait, Oman, Syria, United Arab Emirates	
80-99	Mauritania, Morocco, Sudan, Tunisia, Jordan, Saudi Arabia,	
50-79	Algeria, Egypt	
20 - 49	Lebanon	Area under private ownership is about 72%.
< 20	Yemen	95% of forests are under private sector, mostly under customary ownership.

Most forests in the Near East region are under public ownership with the exception being Yemen and Lebanon. Yemen has about 95% of its forests grouped as “private” forests, mostly managed by local communities as common property resource, adhering to customary rules and regulations. However, the precise nature of ownership is unclear because of the absence of proper surveys and, even more important, an effective legal system that protects ownership rights. Lebanon’s private forests, mostly owned by religious groups, account for about 72 % of the total forest area and are well managed, although government regulations prohibit the removal of wood. These forests are primarily (enclosures) within government forests. Algeria and Egypt also have forests under private management.

2.5. The environment of institutional change: An overview

Both the larger socio-economic environment and the forest sector in the Near East region are undergoing major changes. The last few decades have witnessed a transition from a subsistence agrarian economy to one that is increasingly dependent on non-agricultural activities, especially industrial and services sectors. However, the transition is far from complete and the diverse needs of different segments of society demand different products and services. Changing aspirations of society have led to new policies, which often give thrust to the provision of environmental services. Yet, institutional adaptation often lags far behind, calling into question the relevance of public sector forestry institutions in many countries. It is in this context that we need to examine the different reform options to make public sector forestry institutions more responsive to the changing aspirations of people.

3. Changes in Public Sector Forestry Institutions

As outlined in the previous chapter, the larger context in which public sector forestry institutions operate have been undergoing rapid changes. Most countries in the Near East region have witnessed fundamental societal changes resulting in the transformation of a largely subsistence

agrarian economy to one that is highly globalised and much less dependent on agriculture. The political environment is also undergoing major shifts, although highly centralized governance persists in several countries, there are clear indications of change on account of increased demand for transparency, accountability and participation in governance. It is in this context we need to examine what may be done to make public sector forestry institutions relevant to the changing times.

3.1. PATTERNS OF INSTITUTIONAL CHANGE

Changes in public sector forestry institutions have to be considered in the context of the changes in their functions as required by society, enshrined in a variety of policies, especially forest policies. Two broad patterns of change witnessed in the Near East region and elsewhere are:

1. Strengthening existing institutions to fulfill new functions or to fulfill existing functions more efficiently; and.
2. Establishment of new institutions or transfer of responsibilities to other institutions (public or private) to undertake different functions as appropriate to their competence in response to the changing demands from society.

Before the advent of formal governmental institutions, land management was largely under traditional community organizations. There were well defined rules and regulations to ensure that resources are not over exploited, supported by sanctions to counter violations. From this basic arrangement, several paths of institutional development can be seen in response to the impact of various drivers as indicated in Figure 1.

It has to be noted that the pace of transition varies across countries, largely depending on historical factors. In some of the countries, forestry organizations were established by colonial rulers more than a century ago. The socio-political conditions remained unchanged until these countries gained independence and only then the pressure to change increased. In many countries, the colonial mind set of governments persisted even after attaining freedom and this slowed or even thwarted institutional changes. The different phases of evolution of forestry sector institutions are indicated in Table 4.

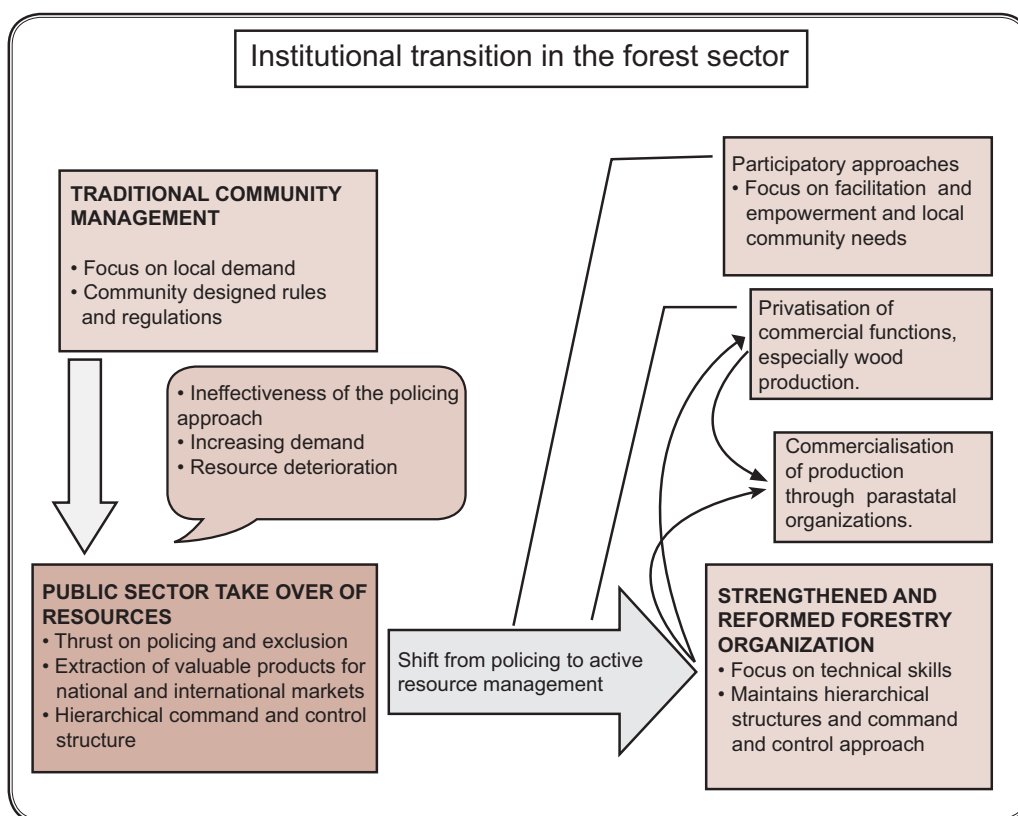
Table 4: Development of forestry institutions over time

Period/ Phase	Dominant institutions	Underlying principles and institutional characteristics
Pre-colonial/ Prior to the emergence of national governments	Community institutions	<ul style="list-style-type: none"> • Resource management focused on local subsistence needs. • Community prescribed rules and regulations including sanctions against violations. • Population growth and increasing tensions on resource sharing with neighboring communities

Colonial control	Establishment of forestry departments	<ul style="list-style-type: none"> • Introduction of colonial forest policies and laws • Take over of community managed lands • Thrust on policing of forests taken over by colonial administration. • Extraction of more valuable timber and other products to support colonial administration. • Wood processing, especially sawn wood production
Post colonial governments	Continued reliance on Forest Departments established during colonial times Emergence of private sector in wood processing.	<ul style="list-style-type: none"> • Most rules and regulations of the colonial period were retained. • Continued emphasis on policing function • Shift in governmental priorities and forests seen as a source of income to support other sectors or land for agriculture and infrastructure development. • Forest departments remained largely marginalised and neglected • Increasing pace of deforestation and forest degradation. • Divestment of wood processing to private sector and decline and closure of government owned processing units.
The post 1970 period	Emergence of diverse institutional arrangements	Major changes in policies, functions and structures of forestry institutions
Market oriented development (1980s and 1990s)	Para-statal forestry corporations	<ul style="list-style-type: none"> • Independent organizations focused on commercial production of wood and other products. • Thrust on improving productivity through application of new technologies • Increased investments in R&D • Introduction of modern management approaches
	Private investors, forest industries, transnational companies	<ul style="list-style-type: none"> • Emphasis on liberalisation and the wider acceptance of the primacy of markets and private investments. • Support to private sector through concessional leases of land, credit and public-private partnerships. • Relaxation of rules and regulations to promote private sector investments
Livelihood improvement and poverty alleviation (inclusive development) (1980s onwards)	Community/ Participatory forestry <ul style="list-style-type: none"> • Community level organizations, cooperatives, etc. • Civil society organizations supporting community forestry 	<ul style="list-style-type: none"> • Local level involvement becomes a thrust area in forest policies. • Priority of forest management shifts to meeting local needs • Emphasis on participatory approaches • Forest departments become more of a facilitating agency rather than a policing organization

<p>Environment protection in the context of deteriorating environment (largely during the post 1990 period)</p>	<ul style="list-style-type: none"> • Specialised government agencies focused on environmental protection including protected area management. • Environmental NGOS playing key roles. • Community organizations involved in protected area management 	<ul style="list-style-type: none"> • Provision of environmental services becomes a top priority in forest policies. • Establishment and expansion of protected areas. • Initial thrust on strict protection law enforcement, but increasing thrust on participatory approaches
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Figure 1: Institutional transition in forestry sector



As such the forestry institutional scene in the Near East region is a mosaic of different institutions that originated at different time periods with differing priorities and mandate, pursuing different approaches to accomplish their objectives. Certainly public sector dominance persists, though government forest departments have attempted to adapt to the changes at varying paces. Economic and ecological imperatives have also brought about changes in the approach to forest management (Table 5), which also impacted public sector institutions

Table 5: Changes in the thrust of forest management

Phase	Nature of management
Phase 1: Only a limited number of species/products are valuable.	Low intensity management focused on a small number of high value species for targeted products. Very similar to the “hunter-gatherer” system. Protecting the “territory” becomes important
Phase 2: Intensive single use management focusing on one or more valuable species/products.	Thrust on monoculture of valuable species. Substantial emphasis on productivity enhancing technologies.
Phase 3: Ecosystem approach for multiple use management	More emphasis on understanding ecosystem processes and values and to fine tune management ensuring that environmental services are given due attention

Some of the salient developments as regards institutional evolution under different time period are discussed below:

3.2. Colonial/ Pre-Independence forest administration

In several countries in the region, forest departments were one of the earliest public service to be established by colonial regimes and in some cases they were established more than a century ago. Much of the thrust then was:

- To take control of forest resources with the objective of exploitation of timber and other valuable products;
- To restrict or totally prevent local communities from exploiting the resources.

Invariably this led to a conflict of objectives (or interests) between colonial administration at the central level, provincial administration and local needs (see Box 6)

Box 6. Sudan’s first forest policy and allocation of responsibilities between national and provincial governments

Right from the beginning of the Anglo-Egyptian Condominium rule of Sudan (1898-1956) dichotomy of interest and hence conflict over the functions of and benefits from forest & range resources emerged between the central government and provincial authorities. The central authorities were anxious about wood supply for urban needs, especially construction and other infrastructure development. Woodfuel, telegraph & telephone transmission poles, building poles together with sawn timber in the form of railway sleepers and construction timber were the most sought products by the national governments. Provincial authorities on the other hand were more concerned about local needs especially fuel-wood, non-wood forest products (NWFP) and fodder for livestock.

This necessitated a division of functions and authority between the central and local entities, which was elaborated in the 1932 forest policy statement, supported by the Central and the Provincial Forest Ordinances 1932. Accordingly, the Central Directorate of Forests and the Governors of the Provinces were respectively entrusted to satisfy the national and provincial needs for forest products from central and provincial forest reserves. However, the authority to change the status of reserve forests vested entirely with the Governor General and this was permitted only in the context of over-riding national interests.

Key characteristics of almost all colonial forest administration were (a) a hierarchical command and control system and (b) thrust on law enforcement. Establishment of reserve forests (largely focusing on the commercially more important portions – for example the riverain forests in Sudan) and formulation of forest laws were largely aimed to curtail traditional use by local communities, especially if this is seen as affecting the primary objective of state appropriation of resources. The overall thrust was on law enforcement and to manage forests with emphasis on exploitation of commercially important products, especially timber.

Effectiveness of the policing approach depended on (a) population pressures and options for meeting the varied demand of local communities, (b) the value of products aimed to be protected and (c) the reach of the forest administration. Although forest departments had de jure control, limited institutional capacity and resources constrained in making the control de facto. In fact, local communities continued to exercise de facto control over resources, but without the responsibility to manage them. At the same time public sector forestry organizations were unable to exercise effective control, largely due to the high transaction costs, which was often disproportionately high in comparison of the value of the forests. The breakdown of traditional land use systems without any effective system in place has been a major contributor to resource degradation in most countries in the Near East region (See Box 7). Inability to exercise control from the centre, especially in the case of large countries (for example Sudan) has encouraged decentralization of forest administration to provincial/ local levels.

Box 7. Decline of the traditional “Hima” system of land use

A classic example of decline of traditional land use system on account of centralised interventions and other factors is that of Hima. It is one of the oldest land stewardship systems dating back to ancient times. Hima originally referred to private lands used for hunting and grazing. This was refined by Prophet Mohamed as a protected area of public land and all members of the community were responsible for their protection and in turn shared the benefits there from. Improved productivity fostered a sense of stewardship among members of the community ensuring that resources are not over exploited. Himas were widespread in the Arabian Peninsula and along the Red sea coast. The Hima system began to decline in view of the imposition of colonial land use systems and changes in land use and transport. Currently efforts are underway to revive Hima, for example in Lebanon under the auspices of the Society for Protection of Nature in Lebanon (SPNL).

Where resources were more valuable (largely related to more favourable growing conditions) and considered as strategically important thrust was given to manage resources more systematically, often adhering to the principles of sustained yield. On the whole the thrust of forest administrations were:

- Enforce forest laws to protect forests from any unauthorised interventions, especially by local communities;
- Ensure sustained yield of commercially important timber and other products to enhance income to colonial government or other strategic objectives (for example production of railway sleepers or charcoal).

In the early days of colonisation, most countries in the region did not have a developed wood industry (in particular saw milling). Nor there was any potential for private sector investment in large scale wood processing units. This compelled the forest departments to develop and manage wood processing units, especially saw mills. Forest departments (or comparable public sector

institutions linked to Forestry Departments) often managed an integrated operation, involving protecting the forests, extraction of wood and other products, transport, processing, regeneration, etc. Increased private sector involvement in wood industries subsequently led the divestment of wood processing, shrinking the domain of the forest departments. Forest Departments continue to regulate the operation of private sector wood processing units through a plethora of cutting and transportation rules and regulations. Most often colonial forest departments did not take into account narrow economic considerations as wood supply was regarded as strategically important and alternative sources of supplies were limited.

While there is a large volume of literature on the ecological, social and economic viability of traditional community resource management systems and how they were undermined by state takeover of communal land, it is important to consider whether such traditional systems of community management would be sustainable in the long term. Much of the success of community management depended on local population's intimate knowledge of the environment and more importantly the low demand for products in a subsistence economy. Increasing aspirations of people and market penetration of subsistence economies have in any case undermined the community based traditional land management. Policy uncertainties have also weakened traditional institutional arrangements (Box 8).

Box 8 Institutional change in the Syrian rangelands

“Over a period of 40 years, successive government policies have transformed the institutional basis of Bedouin range-management systems. Sedentarisation, accompanied by increased reliance on agriculture, has resulted in new institutional arrangements for accessing livestock feed resources, based on a mix of market mechanisms and reciprocal relationships between communities. Such a swing has increased the array of uncertainties that Bedouin people must deal with to include

not only ecological uncertainties, such as drought, ,but also other uncertainties relating to market conditions, social networks and government policy. Different social groups - in particular contrasts between richer, larger flock owners and small and medium flock owners - face and respond to such uncertainties in different ways”.

Source: Ngaido, et al 2001

3.3. Forestry Institutions in the Post-colonial period

The post colonial period witnessed divergent patterns of development of forestry institutions although the dominance of public forestry institutions, especially government forestry departments, persisted in several countries. National governments often (either by default or by design) continued to pursue the policies and laws formulated during the colonial times. Independent governments, keen on nation building looked at forests as a source of income or land especially to improve food security. This led to considerable weakening of the forest administrations, both professionally and in terms of their power and authority. Developments during the post-colonial period varied over time and space depending on the specific country circumstances. Broadly the thrust has been in the following directions:

1. Continuation of the traditional functions and structures with appropriate modifications in terms of priorities depending on changes in perceptions of decision makers and stakeholders and most importantly resource availability;

2. Decentralization of forest administration to sub-national levels, especially to provincial levels, largely aimed to ensure that local level administration takes better interest in forest management;
3. Separation of different functions (commercial activities, especially wood production and wood processing and management of protected areas, afforestation, etc.) between different agencies within the national governments and in some cases establishment of financially more independent para-statal corporations to provide more flexibility as regards commercial operations.

In all the above the public sector organizations continued to dominate the forestry scene. Major shifts from this position included:

1. Devolution of forest management to local communities and farmers including tree growers societies; and
2. Privatization of production of wood and non-wood forest products and management of recreational and eco-tourism areas.

Examples of changes in the above lines in the Near East and their implications are discussed below:

Persistence of traditional framework

In almost all countries where forests and woodlands were considered an important source economically and ecologically, public forestry administrations remained in the “policing” mode of functioning with hierarchically structured administration. Enforcing forest laws remained the “core function”. Other functions included improvement of forests and woodlands and addressing environmental issues like watershed protection, arresting desertification.

Yet, most Forestry Departments were unable to address deforestation and forest degradation on account of:

- Increasingly the policing approach became less and less effective in the context of population growth, especially when resource constraints limited the ability of forestry departments to enforce forest laws and exclude people from forests;
- Considerable pressure came from other more powerful departments in the Government to allocate land for a wide array of activities, in particular expansion of cultivation, development of infrastructure, etc. A typical example of this is the rapid expansion of mechanized farming into the woodlands in Sudan to attain self reliance.

Strengthening traditional frameworks

While retaining the traditional centralized framework, several countries have attempted to strengthen the system which has taken broadly two directions namely:

1. Upgrading the status of the forestry by elevating it to the status of directorate or department so that forestry is more visible and involved in decision making at higher political levels;
2. Strengthening the capacity of the department by adding new units, especially to build technical competence in emerging areas. This for example included upgrading the technology for resource assessment and monitoring, establishing community/ participatory forestry units, forestry extension units, eco-tourism units, etc. (see for Box 9)

Box 9. Structure of Forest and Rangeland administration in Tunisia

The management of the Forest & Rangelands in Tunisia is under the General Directorate of the Forests (GDF) within the Ministry of Agriculture & Environment. The last restructuring of GDF was by Decree of 2001. The impact of nfp process on the forest administration is evident in the change of functions and the consequent changes in the organizational set-up. The new organigram shows four Directorates, eight Sub-directorates and six services. In addition to the creation of a new Directorate in charge of the socio-economic development of the local population in the forest areas, the other three directions are: Directorate of Forest Conservation (DCF); Directorate of Silvo-pastoral Development (DSP), and Directorate of Law Enforcement & Monitoring (DRC). The Forest Exploitation Agency (REF) is assimilated as a Directorate and linked technically to the GDF, but enjoys managerial autonomy.

At the regional level, GDF is represented within the Regional Offices for Agriculture Development (ROAD) by “Arrondissements Forestiers” (AF), one “Arrondissement” per governorate; subdivided at lower administrative level into districts and triages (intervention units). The AF is administratively and financially attached to the ROAD and technically to the GDF. Under this scheme, the GDF conceives, supervises and controls forest development activities carried out at the regional level. The “Arrondissements Forestiers” implement the annual work plan within the limits of the budget allocated and under the supervision of ROAD.

While the organigram of the forest departments may look different on account of their vertical (especially when its status is elevated) or horizontal (on account of adding new specialized units) expansion, the basic structure remains the same. Much of such expansion has taken place in the case of forestry departments where forests are seen as important economically. Horizontal expansion by way of adding resource assessment, participatory forestry, etc. has often been with the support of bilateral and multilateral agencies. In fact external support has played a pivotal role in bringing in new skills and perceptions, including for example mainstreaming gender dimension in forestry.

Most often these new units (managed by staff who has received specialized training through externally supported projects) have been spearheading major changes, albeit slowly, for example participatory forestry, which provided a strong foundation for major policy and institutional changes later. Often bringing about change from the top through major restructuring of the organization may be difficult and costly; but support to new building up capacity in new topics at lower level often had a significant impact in the long term, provided this is nurtured systematically. In fact in the initial stages, there were considerable tensions within the system, largely stemming from the differences in the perception of “old guards” holding on to traditional views and approaches and the younger persons who have been exposed to new ideas. To some extent this resulted in a change by “stealth” by default or design (see Box 10).

Box 10: Donor support to Syrian forestry

Since the early 1990s Forests Directorate has benefited from a number of donor assisted-FAO implemented projects such as GCP/SRY/010/ITA, and GCP/SYR/012/ITA which have infused the emerging concepts of participatory forest and fire management. Of late and within the framework of the project ‘Forest Sector Policy and Institutional Development (‘TCP/SYR/3103) a series of activities and training workshops on forest sector policy and institutional development were carried between February 2008 and February 2009. In addition some exercises were

undertaken by the Ministry of Agriculture & Agrarian Reform (MAAR) with support from FAO whereby local and international experts dwelt on the forest sector policy and institutional development to bolster the capacity of various stakeholders, for the joint development and implementation of country-led National Forest Program (nfp) process.

Decentralization of forest departments to provincial and local levels

Decentralization (and deconcentration) has been an important direction of change as regards forestry administration in a number of Near East countries. To a large extent this is related to the size of the country, the diversity of the social, economic and environmental conditions and, more important, the ability of central forest administration to exercise effective control. Especially in large countries, the pressure for decentralization and delegation of responsibilities to provincial and local level has been particularly significant. In many cases decentralization of forest administration follows the overall decentralization policies. For example in Sudan the advent of Federal system of government in 1994 and devolution of substantial powers to the provinces, the FNC established Federal and State (Provincial) organizational structures in all 16 States of Northern Sudan to manage federal and local forest resources. It also established Technical Sectors located at selected State capitals with set mandates. The latter encompassed collection of data & information, mapping and formulation of management plans for all types of forests.

As elsewhere, the outcome of decentralization has been at best mixed. At least in the initial stages sustainable forest management gets relegated to a lower order priority on account of the following:

- In most cases administrative decentralization is not backed up by financial decentralization and most provincial/ local governments did not have the financial or technical resources to manage forests sustainably.
- Where large tracts of valuable forests exist, they are most often seen as a source of income by cash-strapped provincial/ local governments to support the development of other sectors, with its adverse consequences.

Semi-autonomous institutions

Most forest departments established during colonial periods are designed to accomplish wide array of functions, including policy formulation, regulation, resource management, processing and trade and provision of support services to farmers, industries, community groups and civil society organizations. Skill sets and the approaches to be adopted and more important the philosophy underlying the different objectives tend to be different justifying breaking down of the large government forest departments into separate organizations, each specializing in a narrowly defined area. Production of traded products has been one area that has been either commercialized through para-statal agencies or out-rightly privatized.

Probably the Forests National Corporation in Sudan is a typical example of transformation of a traditional forest department as a para-statal self-financing organization in the Near East region. The Forest National Corporation was established in 1989 as a follow up of the World Bank Forest Sector Review and as a condition to approve a major World Bank forestry project. Sudan complied with the condition and totally transformed the Central Forest Department as semi-autonomous corporation. Although the proposed World Bank project was not approved, Sudan pursued the reform taking advantage of some of the externally assisted projects. A further review, taking advantage of FAO support done in 2002 broadened its mandate (in particular adding the

responsibility of managing range lands also), renaming it as National Forests and Renewable Natural Resource Corporation. The objectives of the renamed organization include:

- Enforcement of the legislative framework governing forests;
- Development of forests and range lands;
- Intensification of afforestation;
- Improvement of gum Arabic production; and
- Encouraging community participation

Obviously FNC has to fulfill all the functions of the erstwhile Central Forest Department. The example of Sudan's National Forest Corporation raises a number of institutional issues as indicated below:

1. Functional separation has been a favorite topic for discussion in the context of institutional reform and obviously there are several arguments in its favour. Largely divesting different functions between separate entities is aimed to minimize conflicts within the organization on account of divergent objectives and clients. Self financing institutions largely focus on commercially viable functions and tend to minimise their involvement in service activities which are not income generating. However, contrary to this, the Forests National Corporation inherited all the diverse functions – commercial and non-commercial- of the former Central Forest Department, several of which may not generate any income but will be a drain on the budget of the organization.

2. This brings the question of financial viability of FNC on which hinges its functional flexibility and autonomy. With the broadening of its mandate, especially including rangeland management and delivery of a wide array of services (which may not generate much income) coupled with the likelihood of a decline in its income, FNC's dependence on government budgetary support is likely to increase and the objective of financial autonomy is unlikely to be accomplished. (Box 11).

Box 11 : Forests National Corporation of Sudan – the challenges

The Forests National Corporation of Sudan (FNC) (which was renamed as National Forests and Renewable Natural Resources Corporation in 2002) was established in 1989 as a major institutional innovation, replacing the erstwhile Central Forest Administration, to strengthen the forestry sector. Since its establishment, FNC has done a commendable job by streamlining various activities and creating necessary awareness. FNC has particularly encouraged wider community involvement in afforestation and reforestation. Area under gazetted forests has increased, extension has been strengthened and the overall human resource capacity has been improved. Its concerted efforts have brought forestry into the mainstream of policy process, although forest loss remained high during the period 1990 to 2000, largely on account of government's policy on self reliance in food supply and the expansion of rain-fed cultivation to the savannah woodlands spearheaded by the Mechanised Farming Corporation

Interestingly, FNC is facing several challenges. As alternative energy becomes widely available, demand for charcoal has declined significantly reducing FNC's income and consequently its overall operational capability. With the removal of the monopoly of Gum Arabic Company in gum Arabic trade, another source of income is also declining. Further, under the federal system of government, the states are becoming more assertive about their right to decide how the resources could be managed. Addition of the responsibility of range lands further adds to the financial burden of the National Forests and Renewable Natural Resources Corporation

Experience in establishing financially and operationally independent parastatal organizations raise a number of issues as indicated below:

Functional separation:

Separating regulatory and forest management functions and commercial and non-commercial activities within the management function would appear to be rational and is taken up on the argument of enhancing efficiency and avoiding conflicts of interests. A possible negative effect of this is that commercially viable activities and units involved will get all the attention and resources, while socially and economically important activities that seldom generate any immediate income will be sidelined. In fact working under the same organizational framework helps to ensure that commercial operations also give due consideration to social and environmental responsibilities. This also makes it easier for cross-subsidising activities that are unlikely to generate any income. Yet in many situations it will be advantageous for an organization to get involved in all the links of the product/ market chain.

Operational flexibility transparency and accountability:

Enhancing operational flexibility is one of the primary objectives of establishment of autonomous or semi-autonomous para-statals. Certainly it helps to overcome some of the procedural delays characteristic of traditional bureaucracies. But there is also a danger that this could facilitate corruption and nepotism unless a rigorous accountability system is put in place.

Economic viability:

A much larger issue is the commercial viability of autonomous organizations in the context of the inherent low productivity typical of most countries/ areas in the Near East. Without substantial government budgetary support (especially in the form of subsidies), autonomous organizations will find it very difficult to function effectively, unless external support is mobilized.

Public sector institutions and urban and peri-urban forestry

For a number of countries in the region, improving the urban environment through urban and peri-urban forestry is a primary objective. This is particularly the case of highly urbanized economies largely dependent on export of oil and natural gas and commerce and trade like Bahrain, Kuwait, UAE, etc. With tourism becoming an important source of income a number of countries are investing in afforestation to enhance amenity values and environmental protection (Box 12).

Box 12 Forests for amenity values in United Arab Emirates

The United Arab Emirates has been highly urbanized since 1980s with more than 80 percent of population live in urban areas. The high urbanization together with the strong financial support has led to substantial investments in urban forestry. There are no natural forests in the UAE and overcoming the unfavourable growth conditions requires substantial investments. Institutions involved in the forestry development include Ministry of Agriculture and Fisheries, Forestry Department in Abu Dhabi and Al Ain and the Municipalities in the seven Emirates. The purpose of forestry is:

- Providing greenery and amenity, and protecting cities including city parks and trees along the roads, and green belts around cities;
- Combating desertification, specifically, to protect cities from sandstorm;

- Natural sanctuaries for breeding animals such as gazelles, bush rabbit and birds and general preservation of wildlife; and
- Protecting of agriculture farms and rangelands.

Most of the forest plantations are made in separate fenced areas, and each tree is protected with plastic tree-guards during the first two years until they become self-sustaining. Drip irrigation from groundwater, treated sewage effluent or desalinated water is utilized over the whole life of trees.

Source: Qiang Ma 2008

Most of the cities are well planned and make substantial provision for developing green spaces. For a number of reasons highly centralised public sector institutions (in particular Municipal Authorities) are in control of most urban forestry initiatives. The comparative advantage of centralised institutions in urban forestry stems from the following:

- Urban forestry is primarily for the provision of amenity value, largely a public good, and this is unlikely to be taken up by private sector or civil society organizations on a significant scale;
- Invariably most land belongs to government and in view of the extreme arid conditions, opportunities for alternate uses and consequently the need for alternative institutions is limited.
- The objective of urban and peri-urban greening is very straight forward and is intended to provide amenity values. Unlike other forestry activities, where multiple end uses and stakeholders exist, management of urban green spaces is relatively less prone to conflicts
- Resources are not a major constraint for many of the relatively rich countries in the Near East and many urban greening activities are well integrated with the development of urban infrastructure. The better resource situation enables the countries to engage highly qualified experts and deploy the latest knowhow.

Obviously for the above reasons urban and peri-urban greening will largely remain in the public domain. However considerable scope exists to enhance efficiency in the delivery of the services.

3.4. Institutions outside the public sector

Establishment of semi-autonomous parastatals is an important, although small step, towards more fundamental institutional changes in the forest sector. From government ownership and control, further evolution is in the direction of private or community ownership. Several factors influence the development of these alternative institutions, foremost being a favourable policy climate and the willingness of the forest departments to nurture them. The other fundamental requirement is economic viability of the activities. Some of the experiences as regards developing alternate institutional arrangements are discussed below:

Community/ participatory forestry:

Community forestry is on a revival mode in most countries in the Near East. Largely this is due to the long tradition and history of community management of forests and range lands and the realisation that without such involvement forests and range land conservation will be almost impossible, especially when the reach of the government forest and range administration is far from satisfactory. As pointed out earlier bilateral and multilateral agencies along with civil society organizations have played an important role in promoting devolution of management

responsibility to local communities and developing the necessary institutional framework. Yet the relationship between the forest department and communities is extremely varied. Where the forest departments continue to remain powerful, the role of communities in actual decision making is often limited and in most cases the partnership is unequal with the communities being assigned a subservient position. In many cases this is justified on the argument that communities lack the requisite technical know-how of managing forests. This is especially in the case of community forestry practised in the government controlled forest areas. Communities are quite independent and active in other areas.

Forest co-operatives form an important mechanism to facilitate involvement of local communities in forest management. However the performance of the forest cooperatives differs considerably in the region. There are indications that forest co-operatives are not performing satisfactorily. To some extent this stems from the differences in perception between the forest departments and forest co-operatives. And most often forestry organizations seek community involvement in largely low productivity degraded areas (Box 13).

Box 13: Islamic Republic of Iran: challenges in forest management through cooperatives

Forest ownership in the Islamic Republic of Iran was transferred to the government following enactment of the Forest Nationalization Law in 1963. Most forest areas are now State-owned, except for a few plantations on private land. Although forest management rights belong to the State, since the 1980s, the implementation of forest management plans has been gradually devolved to forestry plan administrators (FPAs), which can be government institutions, semi-governmental companies and local cooperatives. At the moment, 48 percent of forests are managed by the government, 36 percent by private companies and 15 percent by local cooperatives. The FPAs' responsibilities include harvesting timber products, paying royalties to FRWO, constructing and maintaining forest roads and skid trails, reforesting degraded lands, and other duties stipulated in the forest management plan. The FPA's rights include the commercial benefits from implementing the forest management plan, chiefly through timber harvesting. FRWO has facilitated the formation of small forest dwellers' cooperatives (FDCs) to promote community cooperation in organizing and implementing forest management plans, mainly on degraded and often erosion-prone forest lands with low-density forests whose management is often not economically viable. The focus of forest management by FDCs has gradually changed, from biological and technical aspects of forests to greater consideration of socio-economic issues, such as the relocation of livestock from planned forest districts. However, the trend for establishing FDCs has lost momentum, mostly as a result of economic inefficiency and local mismanagement. For example, there is a basic conflict between the State's and local communities' perceptions of the purpose of cooperatives. In forming an FDC, the State considers objectives such as forest protection and resource sustainability, while local people living in poverty tend to view the FDC mainly as a source of income to support their livelihoods. Nonetheless, the participation of local communities (and sometimes local experts) in managing FDCs can bring benefits for local forest protection, as well as commercial benefits for local people, provided the government supplies the necessary financial support through forest mechanization, subsidizing activities, etc. The main advantage of an effective FDC mechanism is the community's greater sense of responsibility for protecting forest resources. Recent forest management plans show promise – at least in their basic terms of reference – for increasing public participation, but it is too early to assess how effectively they are doing so. One of the weaknesses of FDCs is their definition of local participation: they tend to use local

people as low-skilled forest workers, rather than involving them in forest management planning and implementation. While communities' livelihoods should be supported through temporary and permanent employment opportunities, their long-term experience, knowledge and interests should also be integrated into the planning process.

Source: Yachkaschi et al. 2008,

Private sector involvement

As such involvement of the private sector in forestry (especially tree growing) is limited in the region, except in Tunisia and Iran and of course farm tree planting in irrigated areas in most countries. Production of non-wood products like Gum Arabic and Pine Nuts is entirely in the private domain. The main factors affecting tree planting on a large scale are (a) preponderance of public ownership of forest land and (b) extremely low productivity on account of the unfavourable growing conditions. Many of the rules and regulations intended to protect public forests from encroachment and illegal felling have become major disincentives to private sector investments.

3.5. Economics of Institutional change

The experience in the Near East countries as regards the performance of different institutional arrangements and the efforts to bring about changes give an indication of a number of challenges. Obviously institutions have to continuously adapt to the changes in its environment; but this very rarely takes place as adaptation is time consuming and there are costs associated with such changes. In view of the adverse conditions for tree growing in the Near East countries, commercial profitability will be very low and this dissuades any private sector investments in tree growing. Forests and rangelands however generate a number of public goods – water conservation, biodiversity conservation, protection of land from degradation and desertification, carbon sequestration and provision of amenity values. Some of these are local public goods while others are national or global. Difficulty in appropriating these and generating income are extremely challenging and this limits the scope for most institutional development that is market related. Certainly it is possible to indicate the value of different environmental services, but that is unlikely to attract any market linked investments. Obviously public sector involvement has to be significant in managing forests and rangelands if the primary purpose is the provision of environmental services

The other economic dimension of institutional change is the cost of change itself unless it is gradual/ incremental and the cost is built into the system. When change is delayed for too long, the direct and indirect cost of catching up becomes quite substantial. This is a key factor causing considerable inertia to change. Further individuals in the institutions will be significantly affected and this in a way encourages them to resist any change even when there is realisation that such a change is to the larger good of society. Creating a positive view of change within the institution – especially among senior staff who feel more threatened on account of the fact that a change could undermine their position more than the younger staffs who is mentally more prepared to accept and adapt to changes.

4. SUMMARY AND RECOMMENDATIONS

4.1. Overview

The evolution of public sector forestry institutions in the Near East and the divergent experience of reforming them provide valuable lessons for what may be done to make them more responsive

to the changing societal demands. Most countries in the Near East Region have attempted to reform their public forestry institutions and the level of these efforts and their outcomes differ considerably. Considering the preponderance of government ownership of forests, public sector organizations continue to dominate the forestry scene in the region. Historically public sector organizations have evolved as hierarchical bodies in the command and control framework and this has imposed severe limitations in their ability to adapt to the larger social, economic and political changes in the Near East countries. Institutional changes should be looked at from two perspectives namely (a) changes in the functions of the organization, especially in response to the changing demand from society and the emergence of new players who are able to deliver the goods and services more efficiently and (b) changes in the structure of the institution to enhance the efficiency in the delivery of services.

Certainly public sector forestry organizations have undergone a number of changes; but many of these changes are too little and too late and at a much slower pace than the larger changes in society. Largely this is a reflection of the varying impact of the change drivers, internal and external. Persistence of highly centralised political systems and the low priority given to the forest sector (largely due to the limited economic significance of forestry) have in a way marginalized the public sector forestry institutions from the larger reform agenda of the government. This however is changing in the context of greater awareness about the environmental functions of forests, especially the increasing concern about water supplies, land degradation and desertification and the potential impact of climate change.

External factors, especially the commitment to implement the various international conventions and various global initiatives (particularly on sustainable forest management and the pursuit of participatory approaches and community based resources management through community associations supported through a multitude of technical assistance projects) have been a major factor facilitating changes in public sector forestry institutions. This has brought new ideas and concepts drawing upon the global knowledge pool and from the experience from a wide array of countries and situations. This has also helped to upgrade knowledge and technologies which in turn have led to institutional changes.

It has to be noted that institutional adaptation needs to be a continuous process and it is not a “one time affair”. In some cases the adaptation will be gradual process, while most often drastic “reinvention” will be the only option. Largely this depends on the degree of disconnect between the historically determined functions and the corresponding structures of the institutions and the larger societal context. Often public sector forestry institutions established during colonial times focusing on appropriating forest resources and excluding local communities through a “policing approach” tend to be far out of tune with the ground realities of a democratic environment. Perceptions and approaches of forestry organizations evolved during such times deviate significantly from the present conditions and these will require very drastic reinvention.

4.2. The way forward

Although most countries in the region have made efforts to reform their public sector institutions, lot more needs to be done to make them relevant to the changing needs of the society. The recent political upheavals in the Arab countries in a way reflect the aspirations of the people for a more democratic, accountable and transparent governance system. Obviously public forestry institutions cannot afford to ignore the larger developments and prepare themselves for the larger changes.

Public forestry institutions as service delivery organizations

Public sector forestry institutions, irrespective of their diverse functions – namely production of wood and non-wood forest products, improve the flow of environmental services, support communities and farmers in managing trees and forests or a combination of all the above – are, essentially service delivery organizations. The entire focus of institutional reform should be on how to make the department or corporation an effective system for delivery of services required by different clients or stakeholders (Box 14).

Box 14: Service delivery organizations

“As the process of democratization moves forward in transition economies, the public sector is increasingly expected to be responsive and accountable to the interests it is intended to serve. As such, the evolving role of forest organizations has changed from one which has been largely controlling, regulatory, and focused on technical forest management, to one which is outward looking and oriented toward delivering specific services. An understanding of exactly what these services are (or should be) is central to how organizations can and should reform.

“Services” in the forest sector can be broadly defined to include services for the public good (erosion control, fire prevention, biodiversity conservation), as well as specific services to the forest industry (marketing assistance) or to private forest owners (extension services). But the point is that these services need to be defined as an objective of policy so that expectations can be defined and performance standards can be set”.

Source: World Bank 2005

Shifting from the “command and control mode” to “connect, communicate and coordinate mode”.

Typically public sector forestry institutions have been designed as “command and control” law enforcement organizations. Notwithstanding their development as resource management organizations, the “command and control” culture persists, resulting in severe learning disability and inability to respond to the larger changes. All key decisions are taken at the top level, while their implementation is left to those at lower levels, who have no authority to make necessary adaptation to suit local conditions. In most cases the two-way flow of information is far from perfect. This is one of the reasons for the difficulties being experienced in implementing sustainable forest management.

More appropriate in a democratic environment will be the “connect, communicate and coordinate” framework. The rapid developments in information and communication technologies have made a change over to the “connect and communicate mode” necessary and inevitable. This also makes it possible for the organization to continuously adapt to the changes in its environment and thus avoid losing relevance or undertaking drastic reinvention to catch up with the changes.

Obviously communication should receive considerable attention, as most public forestry institutions focusing on law enforcement, forest management and revenue collection are extremely poor in communicating to the rest of the world about what they are doing. Rightly or wrongly the more widespread perception about forest departments tends to be negative. Society’s increasing concern about environment provides a unique opportunity to the forest departments, but failure on their part, especially on account of weak communication skills, has led to their marginalisation in pursuing the environmental agenda.

Facilitating pluralistic institutional environment:

Forest management in the Near East countries is dominated by government forestry departments. Most often their early growth involved systematic efforts to undermine traditional community organizations. All critical functions came under the authority of forestry departments and no space was provided for the development of alternate institutional arrangements. Necessarily an improvement from this requires a paradigm shift resulting in diverse institutions and stakeholders - local communities, farmers, private entrepreneurs, civil society organizations, forest departments, etc.- sharing responsibility for different aspects of forestry. However this should not be a mechanical process and promoting pluralism should have clarity of purpose, fulfilling well defined objectives.

A related issue is the separation of different functions – policy and regulatory functions, management of forests for production, provision of environmental services, etc. – to avoid potential conflict of interests so that the institution gives undivided attention to the core function assigned to it. Here again there is a strong case for detailed assessment of the pros and cons taking into account the specific situation in which the functional separation is to be implemented.

Making institutional adaptation as an organizational culture and developing a mind-set for change within the institutions:

Considering that change in the external environment is inevitable and no institution can avoid this, change management should become an integral part of all public sector forestry institutions. Every organization needs to establish a strategic planning team to keep track of the long term changes taking place in its environment, how such changes will affect the organization and to take pro-active steps necessary to make the organization relevant to the changing societal needs.

Change is always unsettling and most often resistance to change comes from within the organization. Most organizations tend to pursue a conservative approach, especially to safeguard its domain/ territory and much of this is related to the “fear of change” of key individuals in the organization. Education, training and retraining of staff in the organization should focus on developing a culture of change, assuring that managing change pro actively taking advantage of emerging opportunities is better than resisting change.

Building leadership for change:

Reinventing public sector forestry institutions requires a very different style of leadership than what exists today. Authoritarian leadership will not be able to imbibe confidence in the staff and facilitate the change process (Box 15). Retraining and reorienting leadership in public forestry administrations should hence become a thrust area to facilitate meaningful institutional changes.

Box 15 Leadership for institutional change

“A leadership style based on command and control is no longer suited for effective public sector management. Instead, leaders are increasingly judged by their ability to motivate and bring out the best in staff, by how well they communicate the vision and mission of the organization, and by their effectiveness in building partnerships and collaborating with other organizations. Together, the complexity of challenges in the public sector is requiring new leadership skills of senior civil servants.

Since public sector transformation often involves the reform of values and attitudes of staff, the role of leadership by example is critical. The term “leading by example” indicates the transformational power of leadership when employees follow the example of a leader. An important role of a leader is to champion the shared vision, values, norms and standards of the organization. This will require high-level skills combined with strong commitment and determination on the part of the organizational leadership”.

UN, 2005

Science and technology development:

A key component in the delivery of services by public sector forestry institutions is improvement in technology, especially to make the products and services more economical and efficient. Public forestry institutions need to constantly upgrade the technologies and should have a strong R&D system in place. This will require major changes in the education and research institutions, many have become ineffective and impervious to the larger changes. Of particular importance is the constant updating of teaching curricula and research priorities. As such education and research institutions in the Near East institutions suffer from inadequate level of efforts and poor quality of outputs. Instances of poor employment opportunities for forestry graduates are a reflection of the outdated nature of teaching in Universities, making them unfit to the rapidly changing real-world situation.

A major concern in this regard is the absence of inter-disciplinary teaching and research. Although most countries have built up their education and research capacity, most of this is focused on biophysical aspects, especially traditional silviculture and management. Social science aspects are rarely taken into account and consequently affecting the application of knowledge. New knowledge relevant to future will largely stem from institutions that are not developed in the traditional mould (Box 16).

Box 16: Changing concept of teaching and research

“The rapid growth of cross-disciplinary and interdisciplinary work would indeed argue that new knowledge is no longer obtained from within the disciplines around which teaching, learning and research have been organized in the nineteenth and twentieth centuries”

Source: Drucker 1989

Streamlining external support:

External technical and financial support has played a key role in reforming public sector forestry institutions in the region. As pointed out earlier, such support has helped to improve technical capacity in new areas and brought in new concepts and approaches taking advantage of experience world-wide. This however needs significant streamlining taking into account the following:

- Support for institutional reform should be on a long term basis. Institutional reform is often a long-drawn out and gradual process and it will be extremely difficult to accomplish this in the short term. There are several instances where short term external support for institutional reform has been counter-productive. In fact a flawed reorganization could worsen the situation, and bringing the organization back on track will be extremely difficult.

- While external support also provides an opportunity to learn from experience elsewhere, equally important is to keep in mind the dictum that “no one size fits all” and design institutional change to the local conditions and needs. The tendency to transplant models found successful elsewhere without adequate assessment of the local situation should be scrupulously avoided.

Benchmarking public sector forestry institutions

As service delivery organizations there is need to assess performance, especially through bench-marking so that organizations are able to understand where they stand, the extent of short fall in comparison with the best performing organizations and how they could catch up and improve their performance. A wide array of indicators can be identified for bench marking public sector forestry organisations so that both processes (for example participation and involvement of stake holders in policy making, gender balance, etc.) and products (increase in production of wood and non-wood forest products) and services (arresting deforestation, improvement in water quantity and quality, arresting desertification) are rated in terms of efficiency, economy, and a host of social and environmental considerations.

4.3. What future for public sector forestry institutions?

Without doubt public sector forestry organizations will remain key players in the environment and natural resources sector in the foreseeable future. Especially the increasing public attention on environmental issues bode well for public sector forestry institutions. However their functions, and hence structures will have to be fine-tuned in response to the changing demands from society. Any adaptation failure will make them increasingly out of step with the real world, increasing their chances of fading into irrelevance. As pointed out earlier a gradual/ incremental adaptation will be much better and this will have to be built into the system so that the institutions are always in harmony with its larger social and economic context. Otherwise the costs to society – in terms of failure to deliver the services and eventually the pains of drastic re-invention – tend to be very high. The responsibility for avoiding this largely rests with the organizations themselves, in particular their leadership.

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PART II

PUBLIC SECTOR FORESTRY INSTITUTIONS IN THE NEAR EAST:
A REVIEW OF CONTEMPORARY CHANGES AND POTENTIAL
OPPORTUNITIES IN SELECTED COUNTRIES

By Dr Hassan Abdel Nour

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1. The Study

1.1. Study Objectives

The main objective of the study is to contribute to enhancing the capacity of forestry institutions in RNE to enable them effectively address new and emerging challenges in the region. Specific objectives are:

2.1.1. Outline how the functions and structures of public forestry institutions have changed, where reforms have been carried out in the past decades such as through national forest programmes (nfp) and in what ways these reforms have contributed to the better delivery of the required services,

2.1.2. Analyse the drivers of change in the structure, functions and capacity of forestry institutions and how they affected the state of the resources and socio-economic environment in the sector,

2.1.3. Assess the current and emerging challenges forestry sector has to address in the context of wider socio-economic, political and environmental changes and identify the sectoral priorities for the national institutions and FAO to address in the short, medium and longer terms,

2.1.4. Analyse the effectiveness of existing institutional arrangements in meeting the new challenges and opportunities,

2.1.5. Identify specific additional institutional reforms needed to enhance the efficiency and effectiveness of forestry agencies and to improve the performance of the forestry sector in the perspective of better integration of forest and rangelands and their sustainable management.

1.2. Study Methodology

The study, 'Adapting to meet the challenges of a changing world: Public sector forestry institutions in Near East countries' was conducted by the RNEO of FAO. It was conducted during 2010/2011. It covered four selected countries: Kingdom of Saudi Arabia (KSA), Sudan, Syrian Arab Republic (SAR) and Tunisia.

RNEO appointed four national consultants; one from each of the selected countries together with a Regional Consultant. The latter designed a questionnaire for the national consultants to fill in and synthesise into national reports for him to synthesise into a regional report in turn. Complementary data and information was sought in the literature.

2. Key Region and Country Characteristics

Countries in the Near East Region share many commonalities. They share the same cultural heritage. The entire area was under the domain of the Ottoman Empire. With the exception of KSA, countries of the region subsequently went under British or French colonial rule before they acceded to independence during the second and third quarters of the 20th Century.

The region covers a vast territory which encompasses a diverse range of ecological systems. Two of the four focus countries, Syria and Tunisia fall under Mediterranean type of climate while KSA and Sudan fall under arid or semi arid climates with the desert covering the bulk of their territories.

Countries of the region face a number of common problems which fall under two categories: Resources scarcity and habitat degradation. Taken as a whole, the region is extremely water

scarce. It suffers from a shortage of arable land and land scarcity is being exacerbated by degradation and desertification. The region suffers from an increasing scarcity of usable water resources and is considered one of the most water-stressed regions in the world. The WB has identified 15 countries in the region that are below the water poverty line, defined as those that have less than 1,000 m³ per person per year. The Bank has estimated that these countries' average renewable water resources will fall from just over 1,000 m³ /year- level in 1997 to 740 m³/year by 2015¹. Countries like KSA and Libya are already mining non-renewable sources. Physical shortages are compounded by problems in water quality caused by dumping of pollutants into rivers and streams, run-off of agricultural chemicals and increasing silt levels. Example of the latter is silt levels in the Blue Nile water in Sudan. As a result of deforestation and mal-agricultural practice in the upper reaches of the river and inside Sudan silt levels have risen from 80 parts per million (ppm) levels in the 1960s to around 400 ppm. Silt accumulation is already disrupting irrigation and hydro-electric generation.

A number of factors exacerbate the water difficulties in the region

- Some 85% of the region including the four focus countries share their water with at least one other country either as riparians (Iraq with Iran & Turkey, Sudan with all East Africa countries such as Ethiopia, Uganda, South Sudan Republic and Egypt; SAR with Turkey) or by sharing a common aquifer (Sudan with Libya and Egypt). More powerful upstream and downstream countries have been able to determine the water shares of the riparian countries. Sharing is often compromised by politics. Conflicts over water shares loom over the region.
- The rapid increase in population is putting increasing pressure on water availability per capita,
- Conservation and re-use programmes are weak and no country in the region has effective water-demand management system.

RNE and NEFRC member countries being riparians, sharing aquifers with others or have their water sources outside their borders:¹



Photo 1: Blue Nile out of Lake Tana



Photo 2: Blue Nile in Sudan

¹ http://hdr.undp.org/en/reports/aerostats/RBAs_ahdr_En.pdf



Photo 3: Belgrade watershed Turkey



Photo 4: Watershed Syria (HOA).



Photo 5: Watershed Tunisia (HOA).

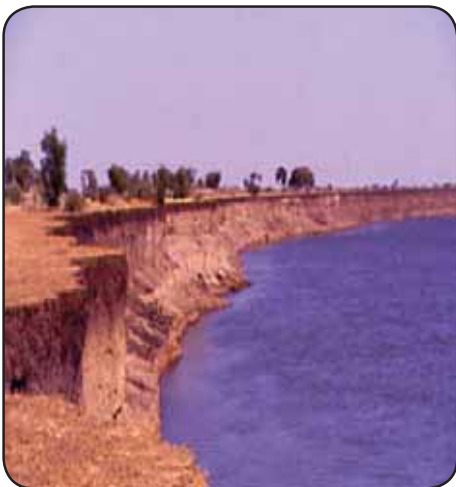


Photo 6 : Bank erosion B.Nile Sudan (HOA).



Photo 7: Canal Siltation Sudan

Land suitable for agriculture, grazing and forestation is also scarce. Cultivable land per capita averaged 0.24 ha in 1998. Unsustainable agricultural practices, natural factors (such as wind, sandstorms and floods) and pillaging of firewood have led to the loss of productive land and desertification.

Air is known to contain five elements that may directly affect human health and climate: Total dust (mg/m³), respirable dust (mg/m³), endotoxins (µg/m³), toxic gases (ppm) and bacteria & fungi (cfu/m³). Globally dust levels have doubled during the past century. Dust levels are monitored in some RNE countries. They are hardly ever published but for many countries in the region are suspected to be much higher than permitted levels. Forests and tree formations are known to reduce wind velocity to thresholds below the ones which enable winds carry dust particles (Anon 2011).

Sudan is the most populated of the four with a population of some 41 million in 2010 with a low population density of 17 persons (p) /km² and the highest rural population standing at 57%. SAR has the highest population density of 116 p/km² and a rural population of 46%. Tunisia stands in between with a population density of 65 p/km², 34 % of who are rural. KSA has the lowest population density of 13 p/km² and the highest rate of urbanization with 18% of the population living in rural areas.

Tables (6), (7), (8) (9) and (10) sum up the socio-economic situation in the four countries under focus together with extent of forest & tree cover and trends in such an extent:

Table 6: Basic data on countries under focus

Country	Land Area 1000 ha	Population 2008				GDP 2008	
		Total 1000	Density Pop./km ²	Annual Growth Rate %	Rural % of Total	Per Capita PPP US\$	AnnualGrowth Rate
KSA	200 000	25 201	13	2.1	18	23 991	4.4
Sudan	237 600	41 348	17	2.3	57	2 155	8.3
SAR	18 378	21 227	116	3.5	46	4 583	5.2
Tunisia	16 400	10 196	65	1.0	34	7 956	4.5



Photo 8: Ajlon N. Park Jordan (HOA).



Photo 9: Eucalypt Plantation Morocco (HOA)



Photo 10: Plantation Forests Turkey



Photo 11: Fir stand Almatu N.Park Kazakhstan (HOA)

Table 7: Extent of forest and other woodland 2010

Country	Land area						In-land water 1000 ha	Country area 1000 ha
	Forest		Other wooded land			Other land 1000 ha		
	1000 ha	% of Land area	1000 ha	% of land area	Total	with tree cover		
KSA	977	n.s.	1 117	1	197 906	705	0	200 000
Sudan ¹	69 949	29	50 224	21	117 427	-	12 981	250 581
SAR	1 006	6	300	2	14 230	2 204	825	16 361
Tunisia ²	1 010	3	132	n.s.	14 458	231	800	16 400

¹. The entire set of data of Sudan has changed with the cessation of South Sudan Republic on July 9th, 2011. ². Consultant Report

Table 8: Trends in extent of forests 1990-2010

Country	Forest area 1000 ha				Annual change rate					
	1990	2000	2005	2010	1990-2000		2000-2005		2005-2010	
					1000 ha/yr	%	1000 ha/yr	%	1000 ha/yr	%
KSA	977	977	977	977	0	0	0	0	0	0
Sudan	76 381	70 491	70 220	69 949	-589	-0.8	-54	-0.8	-54	-0.8
SAR	372	432	461	491	6	1.51	6	1.31	6	1.27
Tunisia ¹	672	837	924	1 016	19	2.67	17	2.0	16	1.72
Turkey	9 680	10 146	10 740	11 334	47	0.47	119	1.14	119	1.08
UAE	245	310	312	317	7	2.38	n.s.	0.13	1	0.34

¹. Consultant report

Table 9: Primary designation of forests 2010

Country	Total Forest Area	Primary designated function %						
		Production	Protect soil & water	Conserve biodiversity	Social services	Multiple use	Other	None or unknown
KSA	977	0	0	0	0	100	0	0
Sudan	69 949	50	3	17	0	0	0	30
SAR	491	0	0	0	0	100	0	0
Tunisia	1 006	24	41	4	0	32	0	0

Table 10: Forest ownership and management rights 2005

Country	Ownership pattern			Private ownership			Holder of management rights of public forest				
	Public ownership	Private ownership	Other	Individuals	Business Entities/ institutions	Local indig. tribal	A	B	C	D	E
KSA	98	2	0	-	-	-	100	0	0	0	0
Sudan	91	9	0	96	2	2	100	0	0	0	0
SAR	100	0	0	-	-	-	100	0	0	0	0
Tunisia	94	6	0	100	-	-	100	0	0	0	0

A: Public administration, B: Individuals, C: Business entities, D: Communities, E: Others.

Political upheavals, wars and internal conflicts, sanctions and embargoes have affected many economies in the region, causing a decline in productivity and disrupting markets (Sudan and SAR of the four focus countries). Some countries struggling to recover from ravages of war have emerged with substantive debts (Iraq and Sudan), limiting options for public expenditure. All affected countries have emerged with compounded socio-economic problems that have retarded progressive moves toward liberalization and democratisation. There is substantial lag between countries of the region and other regions in terms of participatory governance. It is the economic difficulties coupled with repressive governance which triggered the ongoing *political turmoil that engulfed the Arab region during 2011 starting in Tunisia, through Egypt, Libya, SAR and Yemen. The common denominator between all these countries is the call for good governance, equity, accountability and transparency.*

Governments in many countries in the region including all four focus countries have taken steps to liberate the private sector but a large unfinished agenda remain. Sound macroeconomic policies need to be maintained, adequate economic space needs to be provided for private initiative, central banks, banking systems in general and financial services need to be strengthened.

There are some differences in economic standing between the countries. KSA has the highest per capita annual income of US\$ 24,000 and as such classifies as high Non-OECD economy. Those of the others dwindle to US\$ 8, 5 and 2 thousand for Tunisia, SAR and Sudan respectively.

The economy of KSA from times immemorial and up to the advent of oil discovery in 1938 was of subsistence agriculture, animal rearing and fishing. The economy witnessed a substantial boom with the rapid increase in oil prices in the mid 1970s. The country saw rapid growth and GDP per capita soared by 1,838%. GDP then shrank by 58% in the Eighties with slower growth and population growth. However, successful diversification efforts helped register growth rates of

20% in the Nineties. The economy is now oil- based with strong government control over major economic activities. The petroleum sector accounts for roughly 45% of budget revenues, 55% of GDP and 90% of export earnings. About 40% of GDP come from private sector. GDP per sector in 2009 stands at 3.2% from Agriculture, 60.4 % from industry and 36.4% from Services

Since the mid 1970s, eight successive five-year socio-economic plans were implemented with measurable achievements in infrastructure, social amenities, industrial and agricultural development.

The agricultural sector was accorded particular importance translated in such actions as free ownership transfer of arable lands for investors, grants, and support to vegetal and animal production means including through purchase of wheat and fodder crops at incentive prices, construction of dams and drilling of deep bore holes. Through this some 6000 specialized agricultural projects were established at a cost of US \$12bn and many shares holding agricultural businesses and companies were established. The peak of agricultural growth rate of 8.6% was attained in 1995 with a cultivated area of 1.7 million ha.

Sudan is overwhelmingly an agricultural country. Much of farming is of subsistence kind. Agriculture occupies some 80% of the workforce but contributes 35% of the GDP. The government plays an important role in planning the economy. The leading export crops are cotton, sesame, peanuts and sugar. Sheep, cattle, goats and camels are raised. Sudan has the largest livestock inventories in Africa next to Ethiopia. Good natural pastures cover almost 117 million ha and the nomadic pastoral sector accounts for more than 90% of the huge animal population Table (11). Cattle, sheep and goats provide an important capital asset and a risk management tool for pastoralists and farmers at times of drought . A variety of forest products are produced, by far the most being gum Arabic with Sudan accounting for much of the world production.

Sudan began exporting crude oil in 1999.Until the second half of 2008, Sudan’s economy boomed on the back of increases in oil production, high oil prices and large inflows of Foreign Direct Investment. GDP growth registered more than 10% per year in 2006 and 2007. From 1997 to date Sudan has been working with the IMF to implement macroeconomic reforms including managed float of the exchange arte. The Darfur conflict, the aftermath of two decades of civil war in the south and the lack of basic infrastructure in large areas are the most pronounced impediments to economic stability. On November 3rd, 1997, the US Government imposed trade embargo against Sudan and a total asset freeze .

Table 11: Sudan Livestock population

Species	Year				Annual growth rate %	
	1980	1990	2000	2002	1980-1990	1990-2000
Cattle	18,354	21,028	37,093	38,183*	1.4	5.8
Sheep & goats	30,371	35,977	84,643	89,621	1.7	8.9

*.Excluding some 3 million camels.

¹ http://en.wikipedia.org/wiki/Economy_of_Saudi_Arabia

² http://www.fao.org/ag/againfo/resources/en/publications/center_briefs/Lsb_SDN.pdf.

³ http://en.wikipedia.org/wiki/Economy_of_Sudan/Embargos_and_Sanctions

Syria is a middle-income, developing country with an economy based on agriculture, oil, industry and tourism. However, the Syrian economy faces serious challenges and impediments to growth including a large and poorly performing public sector, declining rates of oil production, widening non-oil deficit, weak financial and capital markets and high rates of unemployment tied to high population growth rate.



Photo 12: Dune fixation IRI (HOA).

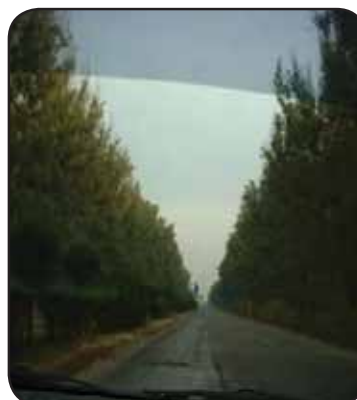


Photo 13: Roadside plantation Kazakhstan



Photo 14: Roadside planting Muscat, Oman.



Photo 15: Asbestos mine rehabilitation Cyprus

Table 12: Frequent further human and natural pressures

	KSA	Sudan	SAR ^o	Tunisia
Refugees (1,000)	0.7	419	15	2.3#
Carbon dioxide emission value	15.8	0.3	3.5	2.4
Population affected by natural disasters (Average/yr/million)	61	20408	8263	362

^o With the on-going strife in SAR (July 2011) many thousands of Syrian refugees ended up in Turkey and Lebanon.

With the on-going conflict in Libya (July 2011), expatriate labour fleeing into Tunisia ran into hundreds of thousands, albeit on transit to various destinations.

3. Forest and tree cover

The total forest cover in the world amounted to 4.0 billion ha in 2010, equivalent to 31% of total global land area giving 0.6 ha per capita of the world population (FAO 2010).

The area of forests & woodlands in the 18 countries of RNE totals 45.3 million ha, equivalent to 3.6% of the total land area of these countries and is equivalent to only 1.13% of the global forest estate giving 0.12 ha per capita for the 362.5 million inhabitants of the region.

The trends in forest and tree cover vary immensely in RNE countries and the four countries under focus which is a reflection of the importance accorded to the resources and demands for goods and services required from them. Two countries in the region, Sudan and Turkey span the two limits of the global spectrum of trends in forest extent over the past two decades

Forest plantations are on the increase over the period 1990-2005 in Egypt, Iraq, Kuwait, Lebanon, SAR, Tunisia and UAE (FAO 2010). This is largely due to the availability of treated sewage/waste water, desalinated and deep bore well water. The Forests and woodlands are on the decrease in Algeria, Mauritania and Morocco over the period 1990-2005 but were in the increase again in Morocco during 2005-2010. There seems to be no change in forest & woodland extent in IRI, Jordan, Libya, Oman, KSA and Yemen. There is insignificant forest cover in Bahrain and Qatar. All in all there was a net increase in the forest & woodland extent in the 18 countries of RNE of 32000 ha/yr over the period 1990-2000 and 21000 ha/yr during 2000-2005. There was no significant change during 2005-2010.

The most significant trends in forest and woodland extent in the RNE and NEFRC countries are confined to SAR, Sudan, Tunisia and Turkey. There was substantial increase in the extent of forest & woodlands in Turkey of 47000 ha/yr during the period 1990-2000 and of 119000 ha/yr over the period 2000-2010. As such Turkey is one of 10 countries in the world with largest net gain in forest area. There was a steady increase in the area of forests & woodlands in SAR to the tune of 6000 ha/yr over the period 1990-2005. There was an increase in forest estate in Tunisia of 19000 ha/yr during the period 1990-2000 and an insignificant increase thereafter. The most significant trend in forest & woodland extent in the region was that of Sudan. The forest and woodlands have decreased at a rate of 598000 ha/yr equivalent to 0.08% during 1990-2000 and 54000 ha/yr during the period 2000-2010. As such Sudan is one of the ten countries in the world with largest net loss of forest area during the last decade of the 20th Century (FAO 2010).

Forest estate ownership and rights of management in the four countries are similar while the primary designated functions vary. The forest estate is 100% state owned in SAR whereas it's divided in the other three at 98:2, 91:9 and 94:6 between the public and private sectors in KSA, Sudan and Tunisia respectively. The primary designated functions of forests & woodlands is 100 multiple use in KSA and SAR. In Sudan the functions are 50,3,17 and 30% for production, protection of soil & water, conservation of biological diversity and or unknown functions respectively. In Tunisia they are 24, 41, 4 and 32% respectively for production, protection, conservation of biological diversity and multiple uses.

4. Public expenditure on forestry

Financing for forestry in RNE countries comes from various sources, including: central and local government budgets, revenue from the sale of forest products and services, private-sector investment and overseas development assistance. The bulk of finance is from central governments.

Forest revenue & public expenditure on forestry 2005 is depicted in table (13), (FAO 2010).

In very few cases does the revenue exceed the expenditure, e.g. Sudan and Turkey. In case of Sudan, the para-statal status of Forests National Corporation (FNC) allows it to retain the revenue it generates to plough back into the sector and receive some financial support in the form of “development budget” together with any overseas development assistance.



Photo 16 Recreation Park Soda, KSA.(HOA)



Photo 17 Recreation Park Cyprus (HOA)



Photo 18: Public garden Isfahan IRI (HOA)

Table 13: Forest revenue and public expenditure on forestry 2005

Country	Forest Revenue 1000 \$	Public expenditure (1000\$)					
		Domestic funding		External funding		Total	
		Operational expenditure	Transfer payments	Operational expenditure	Transfer payments	Operational expenditure	Transfer payments
Cyprus	743	38259	2	98	0	38357	2
KSA	-	8273	10675	-	-	8237	10675
Lebanon	1004	2856	528	2741	1032	5597	1559
Sudan*	25175	25175	-	-	-	25175	-
SAR	752	34226	0	233	0	34460	0
Turkey	653525	432172	27974	434	0	432607	27974
Tunisia	11260	26975	0	5395	0	32371	0

* Data for 2010: Source FNC,

In SAR forestry finance over the last decade came from the central government together with some overseas development assistance. Government finance was disbursed through four projects namely Silviculture, Forest Improvement, Protection & Fire Control and Green Belt.

The Green Belt project, carrying out afforestation activities along a belt more than 1,000 km long and 10 to 20 km wide, where rainfall ranges from 150 to 250 mm. It has significantly contributed to increasing the forest and fruit tree cover.

The total budget for these projects in 2007 was almost 1347 million Syrian pounds (US\$24.5 million), and was about the same for the year 2008. Figures 2 and 3 (Martini 2009). In 2010 the total revenue, operational expenditure and external funding were US\$ 752000, 34226000 and 233000 respectively (FAO 2010).

Figure 2: Budget allocation for Forest Protection Project SAR

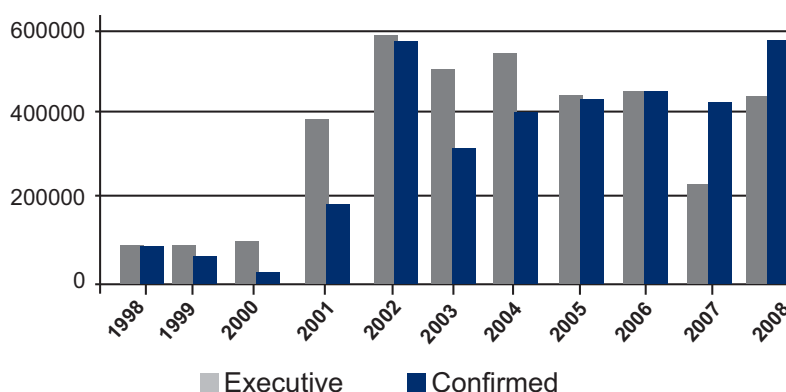
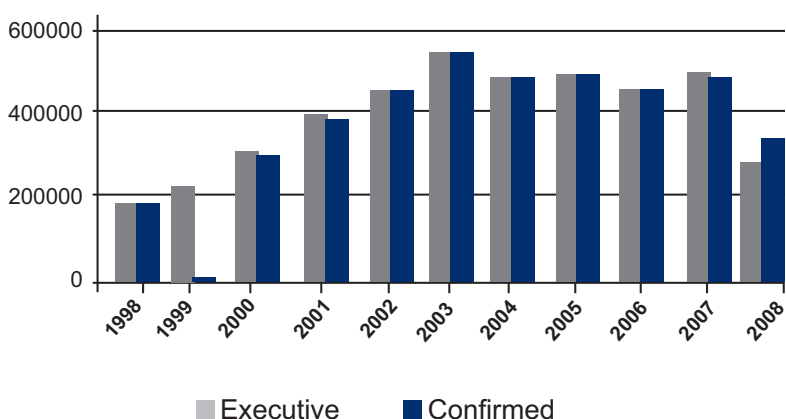


Figure 3: Budget allocation for Green Belt Project SAR



For Sudan, table (14) only portrays the proceeds from the sale of wood from forest reserves and royalty levied on products from outside forest reserves. The table does not refer to revenue from the export of Gum Arabic (table 14), which averaged US\$ 47 million over the period 2000-2005 making up 9.3% of total non-oil exports and 1.7% of total exports.

Table 14: Summary of the value of Sudan's oil & non-oil exports (2000-2005): Gum A.=Gum Arabic; Pet.=Petroleum

Item	2000	2001	2002	2003	2004	2005	Average 2000 to 2005	Share 2000 to 2005
Oil		(\$ million)				(percent)		
Crude Oil	1298	1268	1397	1968	2962	3948	2140	76.9
Pet.	110	109	114	114	138	239	137	4.9
Sub-total	1408.0	1377	1511	2082	3100	4187	2278	81.9
Non-Oil								
Cotton	53	44.4	62.1	107.7	93.8	107.3	78	2.8
Gum A.	23.1	24.3	31.6	35.4	60.6	107.6	47	1.7
Livestock	66.5	1.6	116.4	97.3	155.9	133	95	3.4
Sesame	146.9	104.5	74.6	74.5	178.6	118.6	116	4.2
Other	166.4	147.4	153.3	179.6	188.4	170.5	168	6.0
Sub-total	456	322	438	494	677	638	504	18.1
Total	1863.8	1698.7	1949.0	2576	3778	4825	2782	100.0

Source: Bank of Sudan, Annual Report 2007 and Sudan Customs Authority.

The contribution of forests and rangelands to the national economy is grossly under estimated. The Bank of Sudan and Ministry of Finance tend to only consider the direct revenue realized by FNC and export proceeds from forest products and estimate that to contribute 3.0% of GDP. They do not take into account:

- The value of total consumption of the country of wood at 0.73 m² per capita per annum (FAO 1995) derived from the country's forests, directly collected by people for no payment or traded in informal market,
- The total consumption of fodder & animal feed for national herd of 130 million head derived from natural pastures,
- The monetary value of the environmental services particularly the protection of watersheds and courses,
- The direct revenue from institutional, community or private forests which accrues to the owners of these forests.

The lack of appreciation coupled with general economic difficulties tends to be reflected in low funding allocation for forestry.

Public expenditure on forestry in Tunisia is reflected in table (15). The allocation is generally low making a small fraction of the expenditure on agricultural sector and donor co-funding making up between 10-30%.

Table 15: Public annual expenditure on forestry in Tunisia in Million of Tunisian Dinars

5-year Development Plan	Global (Country)	Agriculture sector	Forests and rangelands			Comments
			Treasury	Cofunding	Total	
4th Plan (72-76)	-	42	15	-	15	
6th Plan (8286-)	-	261	20	14	34	BIRD (Phase I)
8th Plan (9296-)	15 000	555	34,140	14,500	48, 650	BIRD (phase II) ; KFW
10th Plan (0206-)	18 000	855	40, 800	11, 600	52, 700	JBIC (Phase I) ; GTZ
11th Plan (0711-)	20 000	1067	66, 500	7, 000	73, 500	JBIC (Phase II) ; FAO

All in all there is a general lack of appreciation for the economic and environmental roles of forest & rangelands in RNE:

- In none of the countries of RNE may be with the exception of Turkey has there been a serious attempt to assess the contribution of forests & woodlands to any aspect such as protection of watersheds, GDP, employment, etc.
- Only in a handful of countries including Sudan and Tunisia have there been serious studies to assess the contribution of home grown wood to the national energy budget and wood-based industries,
- Only in a few countries such as Algiers, Iran, Lebanon, Morocco, Sudan, Tunisia and Yemen is there an official tally of the value of exported NWFPs like, cork, pistachio nuts, stone pine, gum Arabic, rosemary and bee honey.
- In none of RNE countries has there been a serious study to assess the contribution of rangelands to the national economy.

The lack of appreciation of the role of forests & rangelands in RNE stems from the facts that:

- Wood and NWFPs are largely directly collected by people from forests or are traded in informal markets,
- The science of environmental and natural resources accounting is in its infancy.

5. Contemporary Challenges

The forests and range institutions in RNE are confronted with a plethora of challenges and some opportunities:

5.1. Challenges include

- Climatic & Environmental Variables:

These include intrinsic aridity, scarce arable land, scarce usable water sources and erratic rainfall coupled with recently setting in vagaries of climate change and the attendant extremes of climatic phenomena such as drought and floods. As such tree establishment is difficult and expensive. There is a standing order for search for adapted and tolerant multi-purpose plant species and varieties and measures to mitigate the effects of climate change and associated

phenomena,

- Population growth and demographic changes:

Population growth, demographic changes and change in societal aspirations and consequent pressure on scarce resources like land & water and changes in demand for goods & services from forest and range sector:

- Rising human and animal populations

Demand for food and food security considerations; pretexts easily echoed by politicians to justify putting forests and woodlands under the plough. In many situation this is what triggers horizontal expansion of agriculture at the expense of forest and rangelands and resulting deforestation.

There is evident need to reconcile forest policy with policies of other sectors like agriculture,

Requirements of wood, wood products & NWFPs, browse & range material and habitat for wildlife,

With a high segment of young people in the population and their changing requirements, demand rises for such commodities as building material and learning material (paper).

- Influx of political and environmental refugees and internally displaced population (IDPs) due to wars and civil strife

- Their heavy dependence on wood for shelter building, energy requirements and sale for income,

- Lack of control: The physical absence of forest authorities from the scene, domination by war lords or the explicit directives from government and humanitarian activists to them not to intervene,

*** Urbanization**

- Sprawl on forests & woodlands,

- Requirements of building timber and fuel wood for brick and lime-making and bakeries,

- Requirements of charcoal for domestic & service sectors,

- Requirements for leisure and the consequent demand for parks and greeneries,

*** Resource degradation**

- Destruction by seasonal wild land fires such as in Sudan, Syria and Turkey,

- Genetic pollution through invasive alien species such as Misquite (*Prosopis* spp) in Sudan and Yemen,

*** Economic, industrial, physical & infrastructure development**

- Deforestation and forest degradation by petroleum extraction, mining activities and power transmission lines,

- Pollution and gas emissions by petroleum extraction and associated activities of transport, refining, petrochemical products,

- The need for forest institutions to accommodate all these requirements on a sustained basis.

*** Institutional Variables**

- Response by forest & range institutions to the changing and rising demands and the drive for institutions to change forest & range functions,

- Change of forests and range institutions mandates in response to calls by communities, ethnic or other interest groups and international community in sharing the benefits from and management of the resource,

*** Lack of appreciation of forest & woodland values**

In none of the countries of RNE may be with the exception of Turkey has there been a serious attempt to assess the contribution of forests & woodlands to such aspect as protection of watersheds, GDP, employment, etc.

Only in a handful of countries including Sudan and Tunisia have there been serious studies to assess the contribution of home grown wood to the national energy budget and wood-based industries,

Only in a few countries such as Algiers, Iran, Lebanon, Morocco, Sudan, Tunisia and Yemen is there an official tally of the value of exported NWFPs like, cork, pistachio nuts, stone pine, gum Arabic, rosemary and bee honey.

All in all the lack of appreciation of the role of forests & woodlands in RNE stems from the facts that:

- Wood and NWFPs are largely directly collected by people from forests or are traded in informal markets,
- The science of environmental and natural resources accounting is in its infancy,
- As a reflection of the lack of appreciation coupled with a variety of economic difficulties in many RNE countries forestry is marginalized and placed low in national agenda and public expenditure on it is generally low.

*** Political variables**

- The rapid growth in human and animal populations and the corresponding rise in demand for forest & range goods and services in the absence of rational land-use mapping have led and are likely to lead to conflict and political struggle. The case of Darfur in Sudan is fresh in mind. Conflict between Sudan and the newly borne Republic of South Sudan over Abeyi District is already brewing up. Conflict inevitably strains the national economy and limits the options for public expenditure on more pressing needs of health and education let alone aspects like forestry. On the contrary, such situations temp authorities especially local governments to cash in forest resources.

- Response to demands from parts of countries for decentralization, devolution or even cessation,

- The likely outcome of change towards good governance,

- The need for forestry and institutions to raise their profile and place in national agenda.

*** The need for forestry to adapt to and keep abreast with all the changes**

- Revision of entire nfp together with policy & legislation,

- Reconciliation of forest policies and streamlining with policies of other economic sectors particularly agriculture, industry, tourism and finance

- Revision of mandate and functions of forest & rangelands,
- Revision & accreditation of educational curricula to generate a new breed of forester/range ecologist capable of meeting societal changing demands and address contemporary socio-economic, climatic and other variables.
- Revision of and support to research programmes to accommodate variables.



Photo 19: Pistachios IRI (HOA).



Photo 20: Cork Depot Morocco (HOA).

5.2. Emerging Opportunities

- With the growing awareness about the environmental and multiple functions of forests (protection of watersheds, recreation & landscape restoration) there is a favourable and enabling environment to:
 - Put forward the forestry case,
 - Elevate/prop up the forestry image and assess its real values,

- Genuinely involve other stakeholders in management and fate determination of forest resource,
- Deployment of communication & media in extension & awareness raising. It suffices to acknowledge that social communication media like Face book were instrumental in kindling the on-going political turmoil in the region.
- The availability of desalinated and Treated Waste Water (TWW) for tree planting and greeneries building on the experiences of countries such as UAE and Egypt,
- Emerging funding mechanisms such as:
 - Windows for CBD, CCD, carbon credits, REDD,
 - Pledges by Regional Funding agencies like Kuwait Fund for support to development in Eastern Sudan and Qatar Government for reconstruction of Darfur.

6. Forest Legislation

Three of the countries had forest legislation which established a forest service with defined hierarchy for more than a century: Syria (1869), Tunisia (1883) and Sudan (1902). KSA enacted and had a forest & range service in 1966.

Since the inception of forest/range services, all countries have witnessed the promulgation of a series of forest legislations largely of regulatory, protective and control nature. A number of legislations have since been enacted bringing changes to the traditional forest functions such as the establishment of forest parks and enabling instruments like generation of revenue by levying of taxes and value. The most salient such legislations are portrayed in Annex 5.

6.1. Evolution of National Forest Policies

Most of RNE countries claim to have National Forest Policy Statements, but there seem to be major differences in what the term “policy” means and the force or authority that it bears. To some, policy meant a declaration of intent or a broad, general statement of overall planning and programming goals. To others it meant specific objectives or procedures. Still others used the term to describe legal or regulatory restrictions or functions (FAO 1990a).

The ambiguity of the term remained until the last two World Forest Congresses (WFC) held during the last decade of the 20th Century; the 10th WFC in Paris, France (1991) and 11th WFC in Antalya, Turkey (1997). Both gatherings devoted sessions for Forest Policy considerations and came up with modalities of formulation, framework and content for national forest policies de Montalembert, M.R. (1991), Merlo, M. & Paveri, M. (1997).

Eventually it was the concept of Sustainable Forest Management (SFM) that became the guiding theme for forest policy. SFM aims to ‘ensure that the goods and services derived from the forests meet present-day needs while at the same time securing their continued availability and contribution to long-term development’ (FAO 2011). Since the United Nations Conference on Environment & Development in 1992 and the associated international environmental agreements (IEAs), SFM became an increasingly important concept in forestry worldwide, RNE being no exception. IEAs of relevance to SFM include the UN Convention on Biodiversity (UNCBD), the UN Framework Convention on Climate Change (UNFCCC) and UN Convention on Desertification (UNCCD). In 1995 the Intergovernmental Panel on Forests (IPF) was established by the UN Commission on Sustainable Development to develop an international consensus on

national mechanisms for SFM. At the country level, nfps were conceived as central instruments to achieve SFM. To measure progress towards SFM, seven thematic elements derived from regional and international processes on Criteria & Indicators (C & I) for SFM have been put forward (FAO 2005).

Many RNE countries including some of the four focus countries actively participated in IPF deliberations. RNE eventually developed its own set of C & I for SFM. A series of workshops and consultations were organized by FAO and UNEP for elaborating C & I for SFM in RNE (FAO, 1996, 1997, 1998).

Seven Criteria each with a set of indicators were recommended:

- Extent of forest resources,
- Conservation of biological diversity in forest area,
- Health, vitality & integrity,
- Productive capacity and function,
- Protective & environmental functions,
- Maintenance and development of socio-economic functions & conditions,
- The legal & institutional frameworks.

Nine indicators were elaborated for the latter criterion:

- National forest policy, legislations and regulation,
- Institutional instruments and tools,
- Concrete implementation & capacity to monitor,
- Economic framework and financial instruments,
- Community consultation and information tools,
- Research and extension capacity,
- Deployment of local expertise, knowledge and local technologies,
- Transfer and adaptation of appropriate technologies,
- Capacity for implementing international instruments.

In 2003 Sudan endorsed C&I for SFM in RNE. A national team comprised of all forestry institutions in the country (Forest Service, Forestry Research and Forestry Education) in addition to Civil Society Organizations and NGOs guided by RNE C&I guidelines elaborated a Sudanese set of C&I. The resulting document was submitted by FNC to the Minister of Agriculture & Forests who approved it and directed that it be put into action.



Photo 21: Forest Fire Jebel Marra Darfur, Sudan (HOA).



Photo 22: Misquite, an invasive alien species, Yemen (HOA).



Photo 23: Dust storm

Countries of RNE including the four under focus went about dealing with IEAs according to their particular circumstances table (16).

Table 14: Summary of the value of Sudan's oil & non-oil exports (2000-2005): Gum A.=Gum Arabic; Pet.=Petroleum

Country	CBD	UNFCCC	Kyoto Protocol	CITES	Ramsar	World Heritage Convention	NLBI
Algeria	x	x	x	x	x	x	x
IRI	x	x	x	x	x	x	x
KSA	x	x	x	x	-	x	x
Morocco	x	x	x	x	x	x	x
SAR	x	x	x	x	x	x	x
Sudan	x	x	x	x	x	x	x
Tunisia	x	x	x	x	x	x	x

There seems to be no significant variation in the number of such IEAs signed, ratified, partied and entered into by the four countries in focus as of 2010. Such IEAs signed, ratified and entered into, respectively stand at: Tunisia (54, 66, 38), Sudan (21, 35, 14), KSA (18, 39, 21) and SAR (32, 57, 29). Evidently some countries are more proactive than others for particular circumstances of theirs (Djoundourain 2011).

In this latter context and as of 2011 all four countries have formally approved National Forest Policies/Strategies with defined missions, national goals and specific objectives. In KSA, Sudan and Tunisia the policy formulation/revision was within the context of nfp process. Subsequent policy revision in Sudan and the initial formulation in SAR were within the context of FAO TCP projects. Implementation of the policy directives in Tunisia was within a cooperation project with FAO (UTF/ TUN/ 033): Implementation of Participatory Action for Integrated Development. Revision of nfp process in Tunisia was undertaken in the context of partnership with FAO's National Forest Programme-Facility. Policy formulation in KSA was within a cooperation Trust Fund with FAO. Table (17) compares the policy objectives in the focus countries.

For all four countries, their endeavours to adhere to IEAs for which they are party of formed the most prominent external driving forces behind the initiation or revision of forest policy and indeed the whole over arching nfp.

Relevant regional studies by international organizations such as FAO's Forestry Outlook Study for Africa and Forestry outlook Study for Western Asia and dwelling of such statutory bodies as NEFC and COFO on SFM concepts were instrumental in nurturing concepts and processes.

Internal driving forces were equally instrumental in bringing the initiation or revision of policies. These internal drivers are elaborated in the country synopsis.

Table 17: Policy objectives in the four focus countries

Country	Policy Objectives	Remarks
KSA Al Sharif et al (2004) ¹	<p>1. Conservation of forests and enhancement of the vitality of ecological systems to assure sustainable continuity of their environmental and economic benefits for all forms of life including humans for both present and future. This is further elaborated in 11 specific objectives with corresponding projects & activities.</p>	Forest policy aspires to embody the SFM principles.
Sudan Ali (2011) ²	<ol style="list-style-type: none"> 1. Reservation, establishment and development of forest resources for the purposes of environmental protection and meeting the needs of population for forest products, 2. Divided authority over, benefits from and responsibilities towards natural resources between the central and provincial authorities, 3. Conceptualisation of multiple use of forests 	The Forest policies of Sudan 1932,1986, Draft 2006 addressed the broader principles of SFM
SAR Cheikho (2011) ²	<ol style="list-style-type: none"> 1. Sustainable management of forests for an optimum benefit of their multiple functions, economic, ecological, social, cultural and aesthetic, for the present and future generations. 2. Design and implementation of forest management plans oriented to an integrated and sustainable development of the forest resource, within the broader context of rural development, 3. Protection of the forests against wild and arson fires, pests and other damages, through integrated and community-based forest fire management. 4. Conservation of the renewable natural resources (soil, water, natural vegetation), through integrated watershed management, sustainable forest management and combating desertification, 5. Conservation of plant and animal diversity and genetic resources, through rational forest management, 	The Syrian Forest policy & nfp (2010) aspire to address the general principles of SFM

Tunisia Saadani (2011) ^{2,3}	Forest strategy of 2001, five main functions are assigned to the forests including: (i) Protection: Water and soil conservation, protection of hydraulic structures and combating desertification (ii) Social: Forest population exploits forest and range products. The sector also avails some eight million (iii) Economic: Wood and non-wood forest production, (iv) Recreational functions for urban population and tourists (v) Environmental: Nature & biodiversity conservation. All of this through: 1. Strategic partnership between public and private sectors in conformity with global guidelines for sustainable development: UNCBD, Cartagena Protocol for Bio-safety and Kyoto Protocol on Climate Change 2. Development of forestry sector and strengthening the partnership between the General Directorate of forests and local communities	Forest policy embodies the broader concept of SFM and participation by wide spectrum of stakeholders
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¹. Al Sharif, A.G., ElDool, Y.A., Al Mani, F., Al Kholi, A. (2004). *Forestry Outlook Study for the Kingdom of Saudi Arabia. Natural Resources Admin. Min. Agriculture. Riyadh, KSA.*

². *Unpublished country reports.* ³. *PFN: Tunisian Forests.*

7. Country Synopsis

7.1. Kingdom of Saudi Arabia

A National Forest Strategy & Programme was formulated in 2006 and approved in 2007.

A number of external and internal driving forces acted simultaneously to herald the whole process of nfp/strategy and the engulfed forest policy.

The external forces emanated from contemporary IEAs the Kingdom partied to particularly UNCBD, UNFCC, UNCCD, Convention on International Trade in Endangered Species of Wild Fauna & Flora and World Heritage Convention, together with the basic principles they embodied such as SFM, participation and stakeholder involvement. Collaboration with such organizations as FAO through Trust Fund Projects was a vital facilitating factor.

The internal factors include:

• Demographic changes

The Kingdom has a population of 25.2 million (2010) increasing at annual rate of 2.1% of who 82% are urban and 18% rural against a shrinking and deteriorating forest cover. A good proportion of the population practices agriculture largely through encroachment on forest and rangelands. Both urban and rural population still have their requirements for charcoal. The urban population has a rising demand for leisure & tourist sites. Tourism in KSA largely centred on the Juniper forests on the Sarawat Mountains on the South West of the country and Sea side resorts on the Red Sea. The intensity of vehicle trekking, fumes and mal-use of camping sites besides the

construction of accommodation facilities and access roads are already negatively impacting the vegetation in these areas exemplified in progressive deterioration of the resource.

• **Agricultural development**

With big rise of oil revenue in the mid 1970s, the agricultural sector was accorded particular importance translated in such policies and actions as free ownership transfer of arable lands for investors, grants, support to vegetal & animal production means including through purchase of wheat & fodder crops at incentive prices, construction of dams and drilling of deep bore holes. The peak of agricultural growth rate of 8.6% was attained in 1995 with a cultivated area of 1.7 million ha. However, in view of the lack of environmental awareness and absence of such regulations, many negative impacts were soon apparent. These included soil salinity, depletion of fossil water, deterioration or complete removal of tree cover, sand dune mobility, etc.

• **Technological variables**

During the past three decades KSA was subject to enormous urban development in terms of horizontal expansion of cities and townships and extensive road network. The total length of constructed roads was 47351 km by 2000 with another 15463 km underway since. Coupled with construction of deep bore holes for drinking water, which eased the mobility of herders with their livestock, this had a tremendous negative impact on forest and rangelands. The introduction of power saws expedited the illicit clearance of trees.

• **Climatic/Environmental realities**

Aridity, scarcity of rainfall, high temperatures, low relative humidity, and absence of permanent water sources such as rivers are some of the characteristics of the Kingdom's climate. All these rendered tree and vegetation cover vulnerable, difficult and expensive to regenerate and conserve.

• **Organizational and institutional changes**

The Ministry of Agriculture has always been and remains the principle line ministry in charge of forestry and range sector. Other entities however have a complementary and overlapping role in environmental conservation, tree planting, establishment and management of parks and greeneries. These entities include The Ministerial Committee for the Environment headed by HRH the Second Deputy Prime Minister, The National Commission for Wildlife Conservation & Development, The Meteorology & Environmental Protection Administration, the Supreme Commission for Tourism and the Ministry of Municipal & Rural Affairs. Coordination of policies and activities of these entities, encouragement of the involvement of private sector and forest neighbouring communities in management of national and recreation parks, were essential driving forces for the formulation of nfp.

The full text of strategy is elaborated in Annex 6. Box 11 gives general structure.

Box 17: The National Forest Programme/Strategy KSA 2007

The General Framework of the Strategy & Policies:

Objectives:

National goal:

Strengthen the vitality of forest ecosystems to ensure their rendering their environmental and socio-economic benefits on sustained basis for the benefit of all living things including humans.

Specific Objectives & Policies:

- Delineation of forests & their conservation,
- Protection of watersheds and courses together with all natural resources (soil, vegetation and wildlife),
- Provision of institutional support for Forests Administration and agencies concerned with trees to increase their effectiveness in implementing the programme,
- Desertification control & mitigation of its effects,
- Provision of forest goods and services through SFM,
- Provision of sites for recreation and internal tourism and support people's welfare at present and in the future,
- Reduction of pollution around residential and industrial centres,
- Conservation of biological diversity and forest heritage.

Procedures to be followed in implementing the strategy:

A. Obligatory mechanisms:

- Application of forest & range laws and regulations,
- Establishment of a forestry research centre and support thereof to provide technical data base,
- Promulgation of laws to allocate land for reservation of government, institutional and private forests,
- Reconciliation of KSA Forestry Strategy with international agreements ratified by the Kingdom,

B. Optional Mechanisms:

- Allocation of funds for establishment of government forest plantations,
- Encourage establishment of institutional & private forests,
- Encourage the establishment of shelterbelts around towns, villages, major roads and railways, using TWW,

C. Complementary Mechanisms:

Monitoring & evaluation and Revision of Strategy.

16 Associated costed projects.

7.2. Sudan

Since 1932, the forestry policy in Sudan went through three far reaching revisions. Internal socio-economic, administrative and political variables heralded the formulation and revisions. External factors had a catalytic role:

First forest policy (1932)

Right on the onset of Anglo-Egyptian Condominium rule of Sudan (1898-1956) dichotomy of interest and hence conflict over the functions of and benefits from forest & range resources emerged between the central government and provincial authorities. The central authorities were anxious about wood supply for domestic and services sectors of people in towns, construction and running of national infrastructure. Fuel-wood (firewood & charcoal), telegraph & telephone transmission poles, building poles are the sought commodities together with sawn timber in the form of railway sleepers and construction timber. Provincial authorities on the other hand were more concerned about supplies of fuel-wood, Non-wood Forest Products (NWFP) and browse material for sedentary rural and nomadic populations and their herds of livestock

The situation necessitated the division of functions and authority between the central and local entities. That was clearly elaborated by an announced forest policy statement for 1932 augmented by two acts; the Central and the Provincial Forest Ordinances 1932. Accordingly, the Central Directorate of Forests and the Governors of the Provinces were respectively entrusted to satisfy the country's and the provinces' needs for forest products from central and provincial forest reserves. The status of the forest reserves can only be repealed (de-reserved) by the Governor General for over-riding national interests.

Forest Policy Revision (1986)

The forest policy of 1932 is considered unique in its nature as it constituted the first attempt to divide authority over, benefits from and responsibilities towards natural resources between the central and provincial authorities. The Forest Policy of 1932 remained under operation till it was amended and replaced by a new forest policy in 1986. The latter was prompted by internal happenings and catalysed by external factors. A change of government from a military regime to a parliamentary democracy initiated a wide public debate over the whole question of governance, the economy and the environment. That coincided with a Forestry Sector Review (FSR) carried out in 1984/86 by a joint team consisting of representatives of Government of Sudan (GOS) and overseas aid agencies spearheaded by the World Bank (WB) and including United States International Aid Agency (USAID), The Netherlands, FINNIDA, Canadian International Development Agency, DANIDA, Overseas Development Agency (U.K.) , GTZ, Norwegian Ministry of Development Cooperation, Food & Agriculture Organization of the United Nations (FAO) and UNDP. The FSR instilled the then emerging concepts of popular participation in natural resources management. It also introduced the then global mechanism of Tropical Forest Action Plan (TFAP) which subsequently emerged as National Forest Programme (nfp). The 1984 FSR was considered Sudan's phase 1 of nfp.

The 1986 forest policy highlighted the role of forests in environmental conservation and promotion of popular participation through the involvement of local communities in forestry activities such as the establishment and ownership of community forests, private forests and institutional

forests in addition to the public Federal & State (Provincial) forest reserves. The new policy also emphasized the role of forest extension.

Forest Policy and Forest Law (2006)

In 2005, a new forest policy and law proposals were formulated through support from the FAO project (TCP/SUD/2903: Revision of Forest Policy, Legislation and Institutional Reorganization in collaboration with FNC, Sudan). The policy was developed based on participatory and collaborative approaches, where a wide spectrum of stakeholders had been consulted and contributed to the development of the sector vision, national goals, policy priorities and specific objectives based on the policy priorities.

A number of national drives were behind the initiation of policy revision. External factors including the FAO TCP project had a catalytic and facilitation effects. The national drivers behind the review of forest policy encompassed:

- The national quest towards poverty alleviation and improvement of people's well being,
- The national pursuit for amelioration of physical environment and combating desertification
- Maximization of the positive and mitigation of the negative impacts of exploitation of oil resources,
- Reform for stabilization and liberalization of the national economy,
- The Comprehensive Peace Agreement (CPA) between the North and Southern parts of the country (Box 2),
- The demand for better governance,
- Commitments to international conventions & treaties.

The Draft 2006 Forest Policy is yet to be endorsed by the legislature.

Box 18. Sudan Divided into two countries

The CPA signed between the Government of Sudan and South Sudan Liberation Army (SPLA) which ended a 50 years civil war embodied a self-determination referendum. The referendum took place on January 9th 2011. A majority of over 98% voted for the cessation of South Sudan. Six month later, on July 9th the whole world starting with the Government of Sudan recognised the Republic of South Sudan (RSS) as member n° 193 of the United Nations and member n° 54 of the African Union. Map 2. The RSS goes away with 619.745 km² and 8.26 million people of the area and population of Sudan portrayed in table 6. It will also go with some 80% of the forest & woodland area of Sudan



7.3. Syrian Arab Republic

A number of internal and external factors have interacted to advocate, bring about and eventually expedite the drafting of a forest policy:

Internal drivers:

- The Government of SAR expressed its intent towards SFM in Legislative Decree No. 25 (The Forests Act) of 9/4/2007 which stipulates:
- Chapter 10: Sustainable Forest Development (Sustainability-Participatory Approach):
- Article 33: The Forests Directorate manages Forests Resources & Forests Lands in a sustainable manner for social, tourist, economic, environmental and cultural & spiritual purposes for the benefit of the community and future generations,
- Article 34: Widening of popular participation base through the participation of all sectors (public, private, mixed, cooperative) together with popular organizations, professional trade unions and the entire national entities in works that lead to the protection, development and conservation of forests and their sustainable management,
- At the community popular levels, the idea of community participation in all aspects of forest management seems to be deeply entrenched in peoples' norms and beliefs. They are awaiting the forest authorities to take a firm step to recognise and institutionalise the concept through appropriate legislation (Abdel Nour 2010).

External driving forces

- SAR was party to the concept of SFM right from its coming in vogue. The country actively participated in the process of formulating C&I for SFM in RNE. It actually hosted the Meeting for National Consultants for the purpose (FAO 1998),
- By 2010, SAR had signed 32, ratified 57 and entered into force 29 IEAs some of which encompass the principles of SFM such as CBD, UNFCCC and CCD,
- Since the early 1990s Forests Directorate has benefited from a number of donor assisted FAO implemented projects such as GCP/SRY/010/ITA, and GCP/SYR/012/ITA which have infused the emerging concepts of participatory forest and fire management. Of late and within the framework of the project 'Forest Sector Policy and Institutional Development ('TCP/SYR/3103) a series of activities and training workshops on forest sector policy and institutional development were carried between February 2008 and February 2009. In addition some exercises were undertaken by the Ministry of Agriculture & Agrarian Reform (MAAR) with support from FAO whereby local and international experts dwelt on the forest sector policy and institutional development to bolster the capacity of various stakeholders, for the joint development and implementation of country-led National Forest Program (nfp) process.

National Forest Policy Formulation Process

A participatory approach involving a wide-spectrum of stake-holders had been followed in drafting the National Forest Policy for SAR. A Central Working Group together with several Provincial others were formed with representatives of the relevant line ministries and institutions, Government and Non- Government Organizations, local communities and private sector. Workshops were organized at Aleppo, Damascus, Daraa, Idleb, Lattakia, and Tartous. The workshops discussed such aspects as: The need for a new approach and orientation of the National Forest Policy in the country, definition, objectives, basic principles and strategies for such policy and institutional and legislative reforms in accordance with the new National Forest Policy. The full text of NFP for SAR is given in Annex 7. Highlights are portrayed in (Box 19).

The National Forestry Policy for SAR was approved by the Government in December 2010.

Box 19: Highlights of nfp of SAR 2010

A. Objectives:

Main & Long-term Objective:

The main and long-term objective of the NFP is the sustainable management of forests for an optimum benefit of their multiple functions, economic, ecological, social, cultural and aesthetic, for the present and future generations.

General Objectives:

- Productive, Technical and Silvicultural Objectives,
- Environmental Objectives,
- Socio-economic objectives,

B. Strategies:

- Productive, Technical and Silvicultural Strategies,
- Environmental Strategies,
- Socio-economic Strategies,
- Education, Research & Information Strategies,
- Organizational Strategies,
- Institutional & Legislative Strategies:
 - Reform of the Forestry Institutions,
 - Reform of Forest Legislation.

C. Plan of Action:

- Short-term 2. Medium-term 3. Long-term.

7.4. Tunisia

Several internal and external drivers have interacted to help bring about change and effect national forest programme formulation in Tunisia.

The internal drivers are demonstrated in a series of organizational, legislative and/or strategic decisions which have impacted the forestry policy in the country.

The Tunisian nfp process evolved through three stages. The start was the redesign of forest code in 1988 which allowed people to be active partners in forest administration:

- A start-up phase (1988-1995): This phase coincided with implementation of the first Forestry Development Project which was distinguished by significant accomplishments including the enactment of new forest code, implementation of first inventory of forest and rangeland resources, development and implementation of a strategy for reforestation and fight against

desertification,

- A consolidation phase (1996-2001): This coincided with the implementation of the Second Forestry Development Project. The achievements of the latter encompass strategic studies on forest products (fuel and industrial wood together with NWFPs) and piloting with a new policy of participatory forest development,
- A revision/updating phase (since 2002): The current phase started by the validation of a new forest and pastoral development. It coincides with the implementation of the draft integrated forest management (co-financed by JBIC) through a participatory approach and with a principal component of socio-economic development of forest population.

External drivers:

- i. Foremost in the external factors which impacted Tunisia forest policy formulation is the country's reaction to the shifts at global level towards SFM concepts, particularly those emanating from Post Rio IEAs. To date Tunisia had signed 54, ratified 66 and entered into force 38 IEAs most of which encompass the principles of SFM such as CBD, UNFCCC and CCD,
- ii. A cooperation project with FAO (UTF/ TUN/ 033): Implementation of Participatory Action for Integrated Development had a catalytic effect in the forest policy implementation process. The project emphasized the involvement of local populations in the development of the sector and on the preparation of methodologies and tools to improve their participation. A number of pilot projects were implemented on approaches to integrated and participatory development of the forestry resources with the aim of achieving sustainable, planned, participatory, and integrated & community based development programs in the forest areas.
- iii. Partnership agreement with FAO's National Forest Programme-Facility to analyze the nfp formulation process .Through that partnership a study took stock of prevailing nfp situation and reflected on the creation of a National Forest Forum and on procedures for its operation modalities.
- iv. Other donor co-financed projects helped entrench the process. These included the Silvo-Pastoral Development Project in Kairouan, The Forest Openings Development Project for Local Populations, The Development Project of the Forest Areas co-financed by the German Bank (KFW), and the Mountainous Areas Development Project in the North West of the country

Milestones in National Forest Policy & Programme in Tunisia:

- i. Promulgation of Act N° 88-20 of April 1988, adopting a new forest policy which focused on the involvement of local population in the development of the sector,
- ii. Structuring of forestry programme through:
 - The implementation of the first inventory of forest and rangelands resources (1987- 1993)
 - Development and implementation of the national strategy for forestry and desertification control (1990-2001)
 - Implementation of phase 1 & 2 of the forest development project with the support from the WB. Three strategic studies were prepared accordingly during the period of 1997-2000 including: (i) study on firewood; (ii) study on the industrial sector using local wood and (iii) study on NWFPs.
 - Design and implementation through FAO cooperation project (UTF/ TUN/ 033) of small scale experiments on models and approaches to integrated and participatory development of

forestry resources with the aim of achieving sustainable, planned, participatory, integrated and community based development programs in the forest areas.

iii. Modernization of forest sector, assurance of greater openness towards the environment and development & application of the concept of joint funding and management of the sector through active involvement of local communities and private sector:

- Launching in 2002 of the project for integrated management of forests co-financed by the JBIC according to the participatory approach covering an entire forest area with a principal component dealing with the socio economic development of the forest population,

- Upgrading of the Sub-Directorate of forest management into Directorate of socio economic development of forest populations which is responsible, among its tasks, for the assistance to the forest populations and their involvement in the forest development programs

- Start in 2003 of the project of Sustainable Management of Forest Ecosystems with support from GIZ in order to seek new forms of partnership between the stakeholders involved in conservation, management and use of forest resources. Among the other purposes, the project aimed at developing methodologies and tools for participatory and integrated forest management, at transferring activities and responsibilities of forest management to the local population and to private sector and promoting pilot initiatives of partnership public- private

- Preparation in 2004 of prospective study of Alfa steppes encompassing the technical , socio - economic, institutional and environmental aspects for the whole chain and the evolution scenario of likely changes and their impact in 2020 and identification of action plan for the sustainable management of these resources.

- Enactment in 2005 of the new Law n°2005-13 attributing concessions of state forest land for reasons such as silvo-pastoral development to the private investors and forest groups, in addition to license for temporary occupation. The law is considered a breakthrough which opened the forest sector to collaboration through partnership between public and private sectors.

- Completion, in 2005 through partnership programme with FAO national Forest Programme-Facility of the study on analysis of the formulation process of the nfp which took stock of the prevailing situation of nfp and reflected on the creation and functioning of National Forest Forum and on procedures of its operational modalities.

- IN 2010 Tunisia joined the initiative to promote African model forests of Natural Resources Canada (RN Can), which facilitated emergence of the Association for Model Forests of Kroumirie & Mogdos.

8. Forest Administrations

Three of the countries had forest legislation which established a forest service with defined hierarchy for more than a century: Syria (1869), Tunisia (1883) and Sudan (1902). KSA enacted and had a forest & range service in 1966. Salient Forest/range legislations in the four focus countries are highlighted in Annex 5.

In all four countries the Forest Administrations have slowly evolved from Departments/Directorates affiliated to Departments of Agriculture and subsequently to Ministries of Agriculture or in rare cases to Ministries for the Environment as in the case of Sudan. In the latter case the Department evolved into a para-statal corporation (Box 4).

Forests Services in all four countries seemed to have had clearly spelt missions and objectives

emanating from the respective National Policy Statements, National Forest Programmes or Strategies. The Notion of administrative decentralization rather than devolution of powers to lower levels of government/provinces are evident in the cases of SAR, Tunisia and Sudan. In almost all of the focus countries the decentralization took the form of establishment of provincial structures (forest administrations) but without financial authority or even technical capabilities to formulate or sanction forest management plans.

In the cases of Sudan and Tunisia, the nfp process impacted the Forest administration in many ways: The organizational structure was modified to reflect modification of functions. In the cases of KSA and SAR the latest changes in organizational structures preceded the advent of nfp process.

KSA

The latest structuring for the Range & Forests Department was in 2006; i.e. before the formulation of National Forest Strategy, when a Natural Resources Administration was established under the Ministry of Agriculture, made of four Departments namely, Range, Forests, Environment & Biodiversity and National Parks

SAR

The latest structure of the Directorate of Forests (FD) was effected at the end of 2010. FD is affiliated to the Ministry of Agriculture & Agrarian Reform (MAAR) and is constituted of five Divisions:

- Afforestation Division contains two sections i) Seed & Nurseries, ii) Afforestation,
- Protection Division contains four sections i) Forest Police, ii) Forest Fires iii) Forest Law iv) Communication,
- Forest Management , Organization & Investment Division contains three sections i) Forest Management ii) Silviculture iii) Private Forests,
- Biodiversity & Reserves Management Division contains four sections i) Biodiversity & Ecological Data Base ii) protected Areas, iii) Eco-tourism iv) Awareness & Forest Extension,
- Forest Studies Division contains two section i) Forest Studies ii) Cartography & GIS

Tunisia

The management of the Forest & Rangelands in Tunisia is assigned to the General Directorate of the Forests (GDF) within the Ministry of Agriculture & Environment. The last restructuring of GDF was by Decree of 2001. The impact of nfp process on the forest administration is evident in the change of functions and the reciprocal change in organizational set-up. The new organigramme (Figure 4) shows four Directorates, eight Sub-directorates and six Services. In addition to the creation of a new Directorate in charge of the socio-economic development of the local population in the forestry areas, the other three directions are: Directorate of Forest Conservation (DCF); Directorate of Silvo-pastoral Development (DSP), and Directorate of Law Enforcement & Monitoring (DRC). The Forest Exploitation Agency (REF) is assimilated as a Directorate and linked technically to the GDF, but benefit of management autonomy with dependency of the Secretariat of the Ministry and of independent budget. Parallel to that, DGF has a Unit with rank of Directorate for the management of external financial assistance. Among the financial assistance project, it is worth mentioning the first and the second forest development project co-funded by the World Bank (PDF 1 and PDF 2) and then the project of integrated forest

management co-funded by JBIC.

At the regional level, GDF is represented within the Regional Offices for Agriculture Development (ROAD) by “Arrondissements Forestiers” (AF), one “Arrondissement” per governorate; subdivided at lower administrative level into districts and triages (intervention units). The AF is administratively and financially attached to the ROAD and technically to the GDF. Under this scheme, the GDF conceives, supervises and controls forest development activities carried out at the regional level. The “Arrondissements Forestiers” implement the annual work plan within the limits of the budget allocated and under the supervision of ROAD.

Sudan

The FSR carried out in 1984 has led to perhaps the most important development in the field of forestry institutions in the Sudan during the 20th Century. The establishment of the Forests National Corporation (FNC) through the Act of Parliament in 1989 completely replaced the National Forests Administration, with a para-statal corporation with defined functions and organizational structure. The 1989 Forests National Corporation Act and Forests Act defined FNC’s most important functions as outlined in box (20).

Box 20: FNC Functions

1. Lay down the general forestry policies, 2. Assess, develop and provide good exploitation of the forests of the country, 3. Accomplish full protection of the environment, 4. Propose laws which achieve the implementation of the approved forest policies, 5. Disseminate awareness about forests among Sudanese people, 6. Increase the reserved forest area (up to 20% of the total area of the country), through planting trees and encouragement of the Sudanese people to establish of community, private and other type of forests, 7. Develop Gum Arabic and other types of natural gums, 8. Encourage applied research

The FNC started to fulfill its set functions with an organization structure constituted of six administrations, clustered into three sectors as depicted in Fig (4). At its HQs in Khartoum, sits The Management Board, Director General (DG), Deputy Director General (DDG) with Secretariat and Legal Advisor. There are Forests Directorates with varying organizational structures in the 16 States of Northern Sudan.

With the advent of Federal system of government in 1994, the FNC established Federal and State (Provincial) organizational structures in all 16 States of Northern Sudan to manage federal and local forest resources. It also established Technical Sectors located at selected State capitals with set mandates. The latter encompassed collation of data & information, mapping and formulation of management plans for all types of forests. The provincial forest administrations are without financial or technical authority.

Figure 4: Organigramme of the GDF and Regional Offices in Tunisia

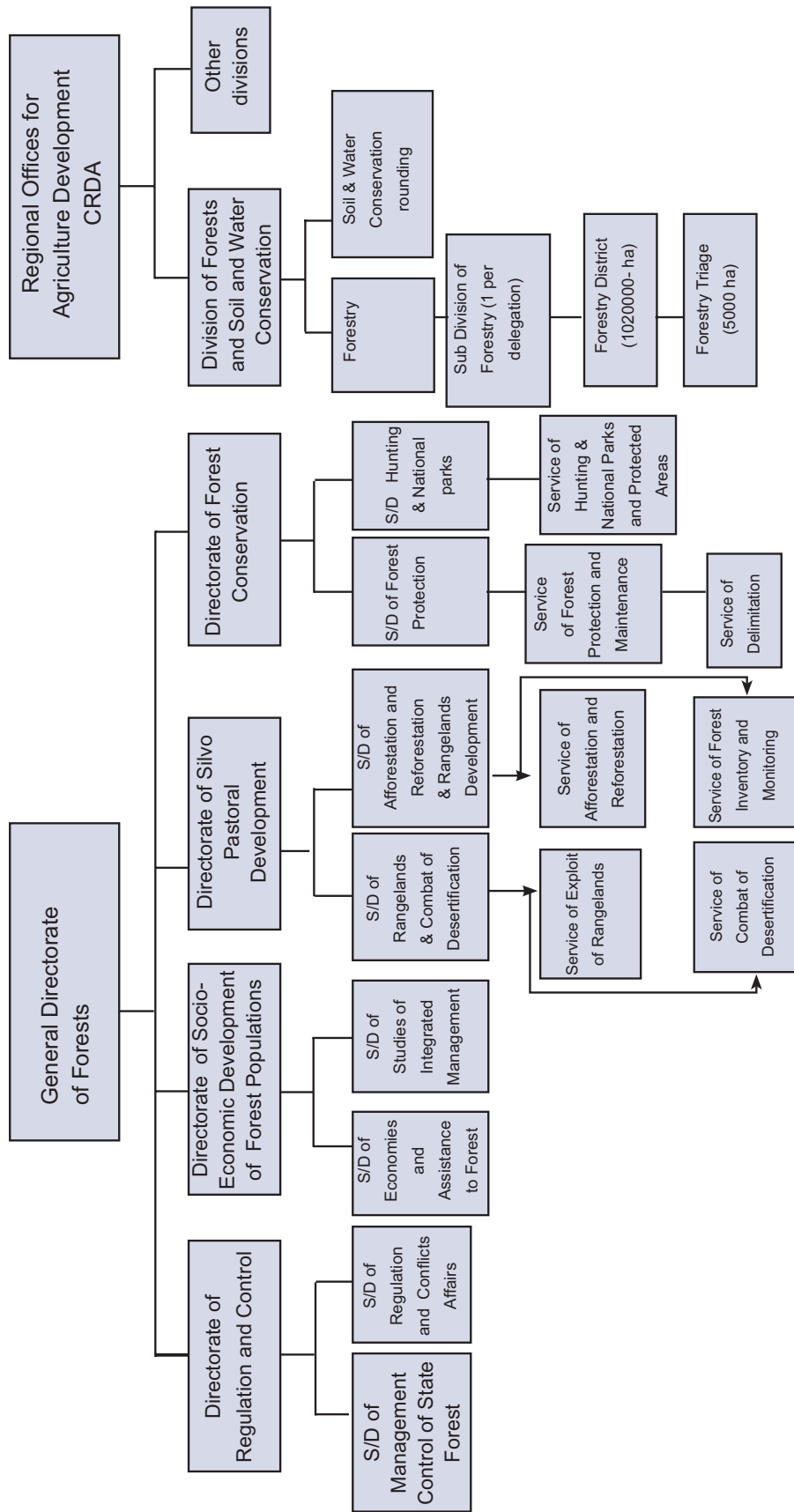
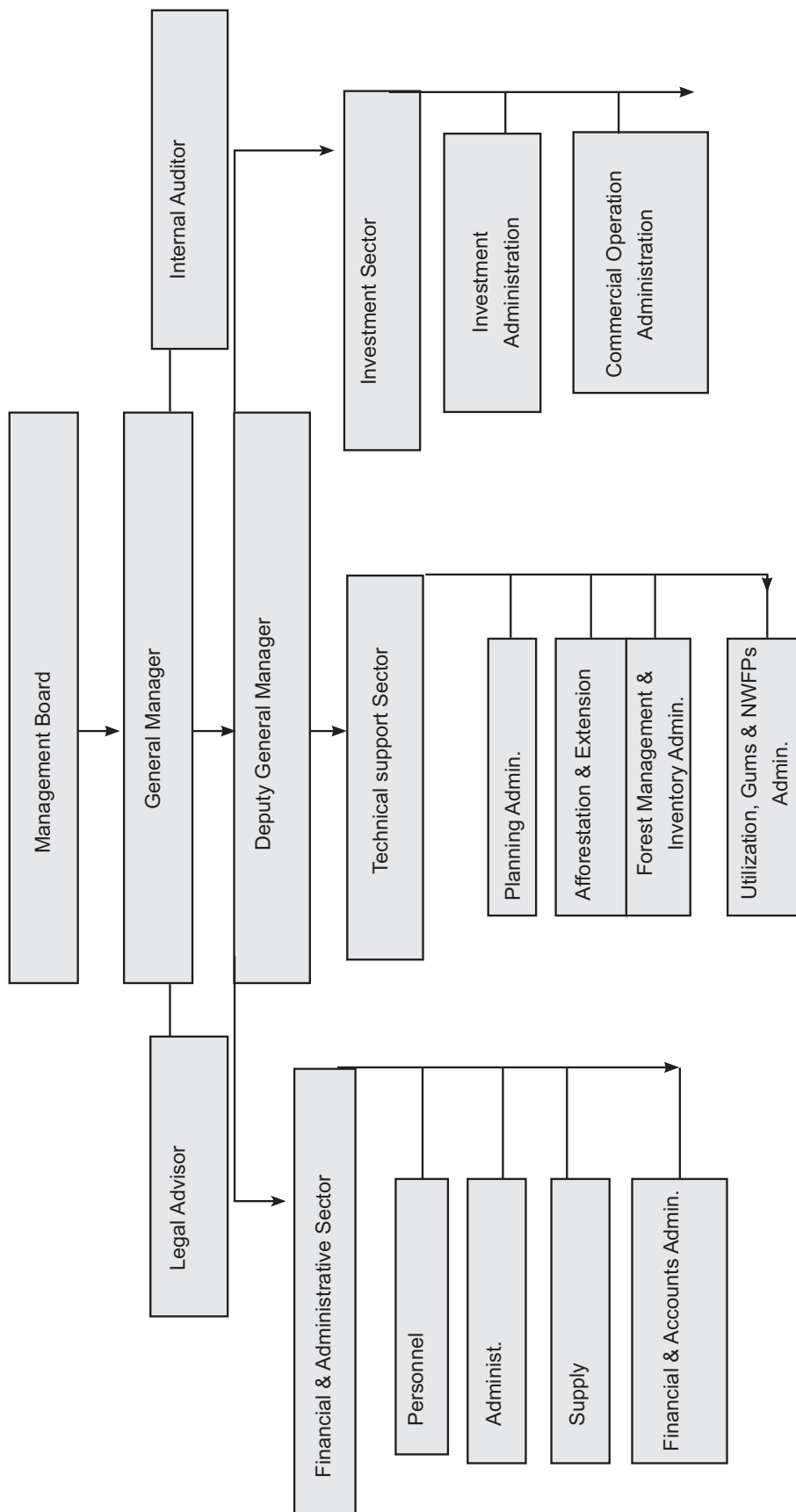


Figure 5: FNC Administration set-up (1989 - 1997)



8.1. Human Resources

Human resources (HR) corresponding to the organizational structures have gradually been built up in all four countries from humble beginnings during colonial eras to recognizable typical structures endowed to varying degrees with qualified staff.

Changes in functions of forest administrations and the corresponding changes in organizational structure prompted by changes in the broader policy & institutional environment and prescribed in the process of nfp formulation process entailed conduct of manpower needs in some countries of the region like Sudan and Tunisia.

Environmental variables such as phenomenon of climate change and socio-economic happenings which beset countries of the region prompted the need for corresponding specializations and training.

The establishment of FNC of Sudan in 1989 was preceded by a Man Power Assessment Study within the context of Project UTF/SUD/043/SUD (FAO 1988). A manpower requirements forecast was made based on the manpower requirements for protection and management of natural forests and the newly prescribed activity of forestry extension.

Manpower forecasting was based on formulation of work norms for undertaking particular types of activities as summarized in Annex 8.

Accordingly a long-term forecast of manpower demand was put forward as per table (18):

Table 18: Long-term forecast of manpower demand by FNC Sudan

Staff	Base yr (1989)	5th yr	15th yr
Degree holders	137	175	285
Diploma holders	298	362	397
Vocational level	308	393	794
Forest Guards	1668	2195	5696
Total	2411	2825	7127

The proposed manpower forecast for Sudan's FNC was soon overtaken by events which rendered it obsolete and irrelevant. These events include:

- The adoption of Federal System of Government in 1994 where the country was organized into 26 States; 16 in the North and 10 in the South. Only the 16 in the North came under the jurisdiction of the FNC. The majority of the 16 States opted for having parallel forest administrations,
- The implementation of substantial expansion in higher education in 1993 with the establishment of five new faculties/colleges of forestry & range studies and an abrupt discontinuation of intake and graduation of Diploma level.

The HR standing as of 2010 for the four countries is depicted in table (19).

Table 19: Forestry Technical & Professional HR in selected RNE countries 2010

Country	Diploma	B.Sc.	High Diploma	M.Sc.	Ph.D.	Total
KSA	19	26 ¹	-	4 ¹	-	49 ¹
Sudan	56	179	3	121 ²	6	345 ²
Syria	19	27	-	6	4	56 ³
Tunisia	263	-	100	32	-	395
Total	356	344	3	131	10	845

¹. Half and half between Range & Forestry, Technical: Professional 1:1.5,

². A total of 22 staff members have specialized in aspects other than forestry.

18 M.Sc. in Environmental studies, three in HRD and one in Accounts.

Technical: professional 1:5,

³. Technical: Professional = 1:2, □. Technical: Professional = 2:1,

□. Overall Technical: professional = 1:1.5

A close scrutiny of tables (19) indicates that:

a. The HR situation in general in RNE countries including the four focus countries is not optimal in that:

a.1. The greater bulk of degrees held are in traditional forestry/range sciences. In many RNE countries the holders seem to adequately man the traditional work units before the advent of nfp. I.e. units to do with forest management, silviculture, protection etc,

a.1.1. In a few countries like Sudan, professional and technicians are spread thin over expansive forest tracks. There is no shortage of graduates to employ but the stringent economic stand of FNC does not allow,

a.2. The specializations of the few higher degrees held do not adequately cover or address the revised functions of forestry & range institutions prescribed through the nfp process. They do not adequately cover the broader aspects of SFM. There are perhaps a few specializations in such an aspect as forestry/range extension but hardly any in socio-economic aspects or modalities of participatory forest/fire management, community or private sector involvement, park management,

a.3. There is total absence of specializations to address pressing emerging issues such as environmental/natural resources accounting, water and watershed management,

a.4. There is almost total absence of specializations to do with any aspects of climate change: phenomena it is manifested in, adaptation to, means & modalities of mitigation or mechanisms emanating from such as carbon trade etc.

b. There is a general decline in the ratio of Forestry Technicians (Diploma holders) to Professionals (Degree holders). In the best situation, that of Tunisia it is 2:1. The overall ratio for the four countries is 1:1.5.

This either implies that non-planning technical tasks such as nursery management, tree planting etc are relegated to a technical level of personnel below that of a Diploma holder technician

or are undertaken by professionals. In either case injustice is inadvertently dealt to the forestry profession and its constituent activities. Under the first assumption forestry activities are implemented at below optimum standards. Under the second assumption, a professional forester is performing a task he/she is over qualified for which translates into a misappropriation of talent and resources.

The irregularities in Technical: Professional ratio can be attributed to:

- i. Employment terms which do not equate professional progress of degree and diploma holders,
- ii. Shrinkage of public sector support to forestry which tend to spawn non- or under employment of graduates.
- iii. High education policies which do not link intake and graduation to market demand which culminated in the phasing out of Diploma programs in many spheres including forestry in some countries like Sudan.

However, the phenomenon of HR structure irregularities is not unique to RNE countries. Temu et al (2005) have pointed to the same in Sub-Saharan African and South Eastern countries.

- c. There is loud cry from within and without higher education circles in RNE to revise high education policies and revamp curricula.

8.2. Forest Administration Linkages

Forest Administrations in the four countries are formally linked to varying degrees with other relevant institutes, within the country, in the region or at global level. Relevant institutes encompass land-using institutes, entities involved in tree planting, education and research institutes.

The Forests & Range Department in KSA for instance is linked and coordinates activities with Natural Resources Administration, Hydro-biological Environment Admin., Agricultural Extension Admin., Administrations & Depts. of Natural Resources in General Admin of Agri. in major Districts, Tree Planting Dept, Ministry of Municipal & Rural Affairs and Saudi Wildlife Commission. It is the overlap in mandates under this linkages which brought in the call for coordination; a prominent internal driving force for nfp/strategy formulation.

Forestry Research and Education Institutes are represented in FNC Management Board of Sudan. The same institutes are formally involved, mostly on contract basis in implementation of thematic studies or formulation of forest management plans.

The Forest Sector of Tunisia is well linked to a number of line ministries each in a particular aspect as depicted in Box (21).

Box 21: Cooperating Ministries to promote forest sector of Tunisia

Ministry	Duties linked to forestry
Ministry of Environment and Sustainable Development	Protection and conservation of natural resources; recreation areas and urban and peri-urban plantations (urban parks , streets and avenues of environment , etc); focal point for different conventions (UNFCCC UNCBD, UNCCD)

Ministry of Industry	Harvest of Alfa steppes and processing in the industrial plant for pulp or paper using alfa fibers and processing of other forest products like timber, cork and NWFP products
Ministry of Commerce & Processing	Export/ import forest products
Ministry of education	University training (Ecology; botany)
Minister of Employment and Vocational Training	Vocational training centers
Ministry of Trade & Tourism	Ecotourism development and promotion (nature tourism , visits to national parks , hunting)
Ministry of Planning & International Cooperation	Planning forestry development , validating and follow up of projects
Ministry of Finance	Funding forest programs, follow up of budget and receipts
Ministry of State Property & Land Affairs	Tenure problems and expertise for temporary occupations and concessions in the forest land

The Forests Directorate of SAR has formal cooperation with neighbouring Turkey in Forest management and forest fire control.

Forest Administrations in all four countries enjoy cordial cooperation relations with such international organizations as FAO.

9. Range & Pasture Administrations

In all four selected countries as indeed in other countries of RNE, forests and rangelands are intrinsically interrelated land uses. When foresters refer to forest or forest reserves and range officers refer to rangelands both parties are probably referring to the same domain. Yet the two forms of land use seemed to have evolved differently and on parallel lines and so did their relative legislations and policies.

KSA

It is only in KSA that Range & Forests are under one administration. Even here, the recently formulated National Forest Programme/Strategy does not encompass Range. A separate strategy is under formulation for Range. In the three other selected countries Range & Pasture or Range alone is a parallel department or authority to the Forests Department affiliated to the same ministry or a different one.

Sudan

In Sudan, The Range & Pasture Administration (RPA) was established in 1954 under the umbrella of the Ministry of Animal Wealth. In 1973, the RPA was affiliated to the Ministry of Cooperation & Rural Development and in 1975 to the Ministry of Agriculture (MoA).

The adoption of the federal system in 1994 impacted the RPA institutional setup, affiliation

and functions. As part of the agriculture services, the RPA authority was decentralized. RPAs were established at States levels affiliated to the State Ministries of Agriculture. The federal RPA administration was put under the responsibility of the Federal MoA .The federal RPA comprises of three Divisions: Natural Range, Irrigated Pasture and Range Farms in addition to three units namely; Technical Studies & Supervision of Range Farms, General Demonstration Range Farms and the Commercial Pasture Farms.

Since its establishment, the objectives of the RPA included:

- i. Propose the general policy for range and pasture administration and prepare and endorse the range and pasture federal law,
- ii. Protection of natural ranges and opening of fire line network,
- iii. Conservation of genetic resources and the establishment of nurseries for propagation of fodder seeds,
- iv. Provision of capacity building program for the staff at central and State levels,
- v. Create strong ties and relations between nomads and range resources through effective range extension programs. The capacity of RPA is depicted in table (20).

Table 20: HR of RPA-Sudan

Diploma	B.Sc.	M.Sc.	Ph.D.	Total
	26 ¹	13 ²	1 ³	40 ⁴

1. Two in Forestry, nine in R&P, 15 other: Environmental studies, Agricultural Engineering, Plant Protection, Sociology, Crop Production and Agricultural Economics.

2. Seven in Range Sciences,

3. One in Range,

4. None in contemporary issues as climate change, integration of Range & Forestry, Wild land fires etc.

It is evident that societal expectations of range resources together with repercussions and conflicts that resulted from mismanagement thereof, highlighted up front do not correspond with occupational image, fluctuating affiliation, place in government hierarchy or negligible human & financial resource allocations.

With the cessation of Southern Sudan in July 2011, the uncertainty over the division of revenue from oil and possibilities of free access of pastoralists from north to south, it becomes imperative for Northern Sudan to maximize its foreign earnings from export of non-petroleum products, particularly livestock, meat, gum Arabic, oilseeds etc; all originating from Forest and Rangelands.

All this is against a backdrop of natural variables and phenomena such as rainfall fluctuation, aridity and climate change.

It is against this pot of challenges and opportunities that Sudan needs to rethink the interface of forest and rangelands. A synergy of concerted national efforts and support from the international community, development partners and such specialized agencies as FAO is eagerly anticipated.

SAR

In Syria, Rangelands are under the Badia & Rangelands Department of the Natural Resources Administration of MAAR.

Tunisia

In Tunisia two agencies, one national and another provincial are responsible for managing Range & Pasture resources:

1. The Authority of Livestock and Pasturelands (ALP)

ALP is a public establishment with a non administrative character. It falls under the Ministry of Agriculture & Water Resources. It is entrusted with the development and promotion of livestock at national level.

ALP contributes to improvement of private rangelands and value of production chains. It assists producers through vocational training, extension and organization of their associations. It entertains partnerships with most of the stakeholders in livestock, rangelands improvement and support services to livestock farmers.

2. The Authority for Silvo-Pastoral Development of the North-West (OSPDNW)

OSPDNW was created in 1981 as a public establishment with an industrial and commercial character. The Law n° 74 of 1996 modified the statute of the Authority to become a public establishment with non administrative character. Its main mission is to promote agro-silvo-pastoral development in the region where it acts in the five Governorates of North-West: Béja , Jandouba, Siliana , Kef and Bizerte .

Since its creation, the Authority benefited from several foreign funding resources such as from WB, KFW and European Union. Its activities cover: structuring rural areas into communal development sites; creating rural infrastructure; soil and water conservation; forest plantations and agro-forestry; promoting income generating activities and rural micro enterprises; training and assistance to local communities.

10. Forestry Education Institutions

Similar to administrative set-up, forestry education evolved from humble beginnings during the colonial era in the selected countries. On inception, forest/range administrations were run by expatriate staff and national technicians from the ranks. It was perhaps part of the administrative tasks of the expatriate foresters/ range officers to train nationals and send students to appropriate foreign universities. In this manner, Saudi students were sent to Iraq and the United States of America, Sudanese students were sent to the United Kingdom and Pakistan while Syrian students were sent to the Soviet Union and Tunisians were sent to Morocco.

Technical Diploma level forestry and range education started in the early 1960s and 1970s in national colleges like the Forest Rangers' College in Soba, Sudan; Silvo-Pastoral Institute of Tabarka, in Tunisia or the Regional Arab Forest & Range Institute (AFRI) in Lattakia, Syria as a Pan Arab initiative.

Domestication of university level Agriculture, Forestry or Range education soon followed. By the mid 1980s, all four selected countries had such functioning faculties or colleges.

The driving forces behind the move to initiate technical and university level forestry/range education were largely national; the general aspiration towards socio-economic development

and societal growing demands from natural resources endowments. External forces had a catalytic facilitating role such as:

The support from FAO in initiating the Forestry programme in the Faculty of Agriculture of the University of Khartoum, Sudan,

The subsequent support from the multi-donor trust fund to the technical and professional forestry education in the context of the FSR,

The support from the German Development Agency (GTZ) and FAO to the Pan-Arab Forest & Range Institute in Lattakia, SAR.

Annexes 9, 10 and 11 portray the picture as of 2011 of university level forestry/range education in the selected countries with regard to the faculties/colleges, academic staff and student enrolment.

A closer look at Annexes 9, 10 and 11 indicate that:

1. There is an evident decline in technical level (Diploma) education as was pointed out in the irregularities in HR in some forests administration. Again this is in line with the findings of Temu et al (2005) with regard to the situation in Sub-Saharan African and South Eastern countries. Strikingly the same phenomenon seems to have been experienced by Turkey where technical level education has been discontinued in universities and is being organized as in service training in departmental schools (Kose et al 2003). The problem rests with the employers and boils down to the image and professional prospects of technicians. As such only students with mediocre academic credentials will opt for such education. High education policies too do not help when they do not link intake and graduation to market demand which culminated in the phasing out of Diploma programs in many spheres including forestry in some countries like Sudan.

2. Specializations of Faculty members (academic staff) of almost all colleges/faculties in the selected countries are centred on orthodox forestry & range sciences. They rarely if at all venture into contemporary problems like climate change, carbon sequestration/trading, environmental/natural resources accounting etc.

10.1. Forestry Education Institutes Linkages

University colleges of forestry/range education in all four countries seem to benefit from linkages with relevant institutions within the countries, in the region or in the world at large. Saudi universities and technical institutes involve the Range/Forests Department and the Ministry of Agriculture at large in the formulation of their curricula and undertake consultancy services from them. Representatives of Sudanese Forestry Education Institutes sit in FNC Management Board on a rotation basis, while other representatives participate in or entirely take up assignments of thematic studies or formulation of forest management plans. Similar linkages tie up colleges/faculties in SAR and Tunisia with their counterpart institutions. AFRI and the Faculty of Agriculture of Aleppo University; the cradle of forestry education in SAR are both closely linked to FD of MAAR.

10.2. Challenges

As indicated under overall challenges, the most outstanding challenge confronting higher education includes:

- Paucity of overall financial allocations,

- Need for capacity building,
- Need for revision and accreditation of curricula to meet societal changing demands and address contemporary climatic and other variables.

10.3. Opportunities

Governments and international organizations and initiatives like GEF, FAO, nfp-Facility together with Secretariats of international conventions and treaties are looked for help with capacity building and funding.

11. Forestry Research Institutions

Forestry research was started at varying times in the focus countries of RNE: Sudan (1958), Tunisia (1976), KSA (1985) and Syria (2001). The forestry/range research institutions slowly evolved to varying degrees of clarity of mission, status, capacity and resource endowments.

Sudan

Forestry research

In Sudan forestry research was born within the forestry service and started in the period 1950-1955 as observation trials led by a single researcher. It was focused on Silviculture of some indigenous and exotic tree species such as *Acacia nilotica*, *Khaya senegalensis*, *Azadirachta indica*...etc. In 1958, a research section was established under the FD, focused on Gum Arabic research. Later in 1962-1968 the (G o S) and FAO with support of the UN Special Fund jointly established a Forestry Research & Education Institute (FREI) at Soba in Khartoum. That was a nucleus for a research organization fairly well-equipped with most of the necessary facilities for four research areas namely; Arid Zone Research, Silviculture, Timber Technology and Forest Botany. Three research centres were subsequently established for eastern, western & northern parts of the country

As of 1974, the FREI was affiliated to the Agricultural Research Corporation (ARC) of MAFNR under the name of Forestry Research Centre (FRC) with its HQs in Khartoum and researchers located within the ARC provincial stations. In 2002 ARC was affiliated to the Ministry of Science & Technology). In 2010 ARC was re-affiliated to MAF.

The ARC's vision is directed towards improving forests, forest products, forest ecosystems and agroforestry in a sustainable manner and thereby improving the livelihoods of rural and urban communities. Its mission is to conduct on-station, on-farm and laboratory research for improving the productivity and quality of forests and forest products. Its organizational structure reflects its mission and objectives.

FRC has internal, regional and global formal linkages with FNC, ARC centres, FAO research division (Forestry), National Centre for Research – Sudan, WLRC, Industrial Research Centre, ICRAF, ICEFRI (Kenya), Forestry Research- Ethiopia. DANIDA Forestry Research and VITRI-Finland. It is also part of a number of networks such as Natural Gums and Resins in Africa (NGARA), DANIDA, FAO, UNDP, Program for Plant Genetic Resources (IPGREN), International Union for Forestry Research Organizations (IUFRO).

Research in general is underfunded in Sudan. Financial allocations for it never reached 1% of GNP. Agricultural research's share of overall scientific research is modest and within that crops like cotton and sorghum get the lion share leaving very little for research on such aspects as forestry. The situation regarding infrastructure, capacity building and training is the same

as financial allocations and is also impacted by such actions as sanctions and embargoes. Specializations on such emerging issues as climate change are completely lacking.

The main challenges confronting ARC include: Intrinsic aridity & water scarcity, Climate change, increasing drought & desertification, food insecurity, poverty together with technology transfer & adoption at national level.

Substantial research work was carried out by ARC since its inception. Results are published in many books, pamphlets and leaflets. Research findings have found their way to application in such themes as gum arabic production, forest management, nursery practice and tree selection.

Wildlife research:

The Wildlife Research Center (WLRC) was established in 1975 under the umbrella of the ARC. Since then and up to 2010, WLRC was affiliated to various ministries. Now it is under the Ministry of Animal Resources & Fisheries.

The WLRC was established with set mission and main objectives which include:

- The conduct of reconnaissance surveys of wild animals,
- Exploration of new sites with viable wildlife populations or with suitable habitats capable of supporting wildlife.
- Conduct periodical surveys in protected areas to monitor the changes in wildlife population and/ or habitat.

Tunisia

The Institute for Arid Zones (IAZ) in Medenine:

IAZ is part of the Forestry Administration landscape. It is involved in research in agriculture and environmental fields particularly through topics on rangelands management and desertification control. IAZ was established by law in 1976. It was affiliated to the Ministry of Agriculture and was assigned the following mission:

- Carry out applied research that contributes to the development of agriculture, protection and conservation of natural resources, and control of desertification in the arid and desert areas,
- Provide training and education services to improve the skills of technicians and research staff specialized in agriculture in arid areas and desertification control,
- Participate in extension programs and technical assistance to the agriculture sector in order to conserve natural resources and prevent desertification,
- Facilitate and coordinate activities and works of different organizations involved in arid areas.

IAZ encompass four regional centers. It is endowed with a technical staffs at the pinnacle of which are eight Ph.D. holders.

The management and functioning of the institute is entrusted to a management board composed of representatives from organizations concerned with development of the South of Tunisia such as training and/or research institutions, regional / national development authorities, ROAD and different national/regional specialized institutions.

The work plans and programs are designed by a scientific board composed of elected qualified members. The programs of IAZ are implemented within the framework of local, national, regional

and international cooperation.

The National Institute of Research on Rural Engineering, Water and Forestry (NIRREWF):

Research in forestry is entrusted to NIRREWF, which was created in 1996 after the merging of the National Institute of Forestry Research (NIFR) (established 1966) and the Research Center of Water and Rural Engineering. NIRREWF which benefits from financial autonomy is affiliated to the Institution for Research and Higher Agriculture Education.

NIRREWF is organized in two laboratories. The first deals with use of marginal waters, management of irrigation systems and hydro-agriculture management. The second is dedicated to ecology and silvo –pastoral management. NIRREWF also has three research units for silviculture, protection & valorization of forest resources, improvement & development.

KSA

Agricultural, Forestry and Range research in KSA started in 1985. It is undertaken by many specialized research institutions, or units with university colleges, each with set mission and objectives. The most important of these institutions are:

- King Abdel Aziz Centre for Science & Technology,
- Prince Sultan's Centre for Research on the Environment, Water & the Desert,
- Wildlife Research in Taif,
- Forestry Research Unit in College of Agriculture & Nutrition in King Saud University, with a programme to conserve & develop forest resources,
- Agricultural Research Unit in Agriculture Department of Meteorology & Environment College of King Abdel Aziz University to research forest-tree propagation,
- Range Research Unit of King Saud University,
- National Research Centre for Research on Water & Agriculture.

The research centers are well endowed with laboratories and other facilities. Their endowment with qualified researchers is below optimum.

The driving forces behind the initiation of forestry/range activities are largely national, augmented by external others. The arid nature of the country, the rapid development of human and industrial centers and general infrastructure and their encroachment of the scanty vegetal/ tree cover are perhaps the most evident internal factors. The accession of the Kingdom to international conventions & treaties is the overriding external factor.

Evidently research programmes are devoid of activities to do with emerging issues as climate change, environmental or natural resource accounting. Consequently HR do not possess any such capabilities.

SAR

The General Commission for Scientific Agricultural Research (GCSAR), is SAR's primary agricultural research agency. The commission was established by Law n° 42/2001 under the MAAR through a merger of nine former research entities, one of them the Division of Forestry Research of FD. This moved the forest research in Syria to a more advanced level and empowered it to modernize scientific and administrative structures and develop research programs.

The GCSAR is a semi-autonomous body focusing on field crops, vegetables, natural resources (soil and water), forestry, horticulture, pesticides, plant protection, livestock, food industry, and socioeconomics. The commission encompasses seven research administrations, two technical administration, seven technical departments, and eighteen regional centers.

GCSAR is governed by a board that is chaired by the Minister of Agriculture and Agrarian Reform and comprises the Director General, Deputy Directors, and administration heads of GCSAR; Deans of Colleges of Agriculture and Veterinary Science; Scientific Experts appointed by the Minister; Directors of Extension & Planning within MAAR; and Representatives of Farmer Organizations and the State Planning Commission. GCSAR is also responsible for formulating national agricultural research policy. With the merger, it inherited all existing facilities resulting in a network of 18 provincial research centers, 54 research stations, and more than 150 smaller research facilities. Plans are under way to further consolidate this extended network.

The Administration of Natural Resources Research (ANRR) is constituted 11 departments one of them is the Forestry Department:

The GCSAR cooperates with the International Centre for Agricultural Research in the Dry Areas (ICARDA), Arab Centre for Studies of Arid Zones and Dry lands (ACSAD), International Centre for the Improvement of Wheat and Maize (CIMMYT), Food and Agricultural Organization (FAO).

In all four countries, the HR capacity is below optimal. Table (21) portrays the situation as of 2010.

Table 21: Research capacity in some Forestry/Range/Agriculture & Other Aspects in selected RNE countries 2010

Country	Research Institute	Dip	B.Sc.	M.Sc.	Ph.D.	Total
KSA	1. King Abdul Aziz Complex for Research in Science & Technology,	655	897	217 ¹	157 ²	1926
	2. Wildlife Research Centre, Taif					
Sudan	1. Forestry Research Centre	2	14	28 ³	13 ³	57
	2. Wildlife Research Centre	1	5 [□]	4 [□]	1	11
Syria	1. The General Commission for Scientific Agricultural Research (GCSAR)	306	827	145 [#]	111 [#]	1389
Tunisia	1. Institute for Arid zone Research.	30	65	35	70	200
	2. National Institute for Research in Rural Engineering, Water & Forestry	50	6	20	20	96

¹. Only 10 in Forestry/Range, ². Only 7 in Forestry/Range; ³. Largely on Forestry; [□]. Largely on wildlife & Range, [#]. Only a few in Forestry/Range

12. Other Institutions

The national forest policy statements in all four countries have stipulated the involvement of other actors such as private sector, community and non-governmental organizations in forest/range resources management.

A number of such organizations exist and are functioning to one degree or another in the four countries as indeed in other countries of RNE.

IRI

A well organized private sector is involved through substantial investments in production of NWFPs particularly pistachios.

KSA

The Range & Forests Administration of The Ministry of Agriculture has always been and remains the prime line ministry in charge of forestry and range sector. Other entities however have a complementary and overlapping role in environmental conservation, tree planting, establishment and management of parks and greeneries. These entities include The Ministerial Committee for the Environment, The National Commission for Wildlife Conservation & Development, The Meteorology & Environmental Protection Administration, the Supreme Commission for Tourism, the Ministry of Municipal & Rural Affairs and private sector companies and individuals.

Sudan

Besides government institutions such as forestry research & education, wildlife and Range & Pasture Administrations, other entities are actively involved in the Forest & Range Sector in Sudan. These include institutions such agricultural schemes, Sugar companies etc, communities and individuals who own and manage forest estates. Other concerned NGOs include advocacy groups such as Sudanese Horticultural Society and Sudanese Environment Conservation Society.

SAR

The recently endorsed National Forest Policy of SAR clearly stipulated the involvement of Community Based Organizations (CBO) and NGOs in participatory forest & fire management.

A number of CBOs and NGOs are registered with the respective regulatory bodies in the country.

The main spheres of NGO activities include:

- Raising of public awareness of environmental and forest issues;
- Conservation and management of forest and wildlife protected areas;
- Supplementing or undertaking of development tasks on behalf of government organizations;
- Implementation of afforestation or reforestation activities or projects;
- Provision of training or organization of seminars on forest-related issues.

Most Syrian NGOs derive their support from governments or international organizations such as the Global Environment Facility (GEF), the World Wide Fund for Nature (WWFN), the European Union (EU), etc. or sometimes individuals. The ability of NGOs to bring about policy and institutional changes depends largely on the overall political environment, public support for the individual NGO and their technical, organizational and financial capacities.

An example of such active NGOs in SAR is Deir Mar Musa (DMM):

DMM is involved in the implementation of an Eco-Touristic Centre in Wadi Deir Mar Musa Protected Area; The Global Environment Facility (GEF) Small Grants Programme furnished DMM with a grant to the tune of US\$ 50,000

Other registered NGOs include: Association of Environment Production and Sustainability Development (Damascus) , Association of Environment Friends (Damascus), Syrian Association

for Wildlife Protection (Damascus, Association of Environment Friends (Aleppo), Environment Pioneer Association (Deir ezzor), Association of Environment Friends (Hama), Association of Environment Friends (Lattakia).

Tunisia

Among the main NGOs operating in rural areas, are the Kairouan Association for Development, the Association for the Promotion of Employment & Lodging, the Association of Support for Self-development Foundation for Self-development & Solidarity, Tunisian Foundation for Community Development, Kef Foundation for Rural Development, World Wildlife Fund (WFF-Tunisia) etc...

Most of NGOs are short of human resources and material to provide significant support to rural populations. The involvement of NGOs in the process of integrated agriculture and forestry projects is on the increase.

Box (22) portrays the private sector organizations involved in Tunisian forest sector.

Box 22: Private Sector Organizations functioning in Tunisian Forestry Sector 2010

Name	Contact information	Field of activity /interest
Chamber of loggers and charcoal makers	Tunisian Union of Industry, Commerce & Crafting (TUICC)	Timber and wood exploitation
Chamber of harvesters of essential oils	TUICC	Use of secondary forest products (Rosemary, Myrtle (Myrtus comminus) ...
Technical center for timber and furniture	TUICC	Sawmills
Tunisian Union of Agriculture and fisheries	TUICC	Beekeepers, tree planting (wind- breaks, agro- forestry , linear plantations)

13. Overall Analysis of Forest Policies & Institutions in RNE

Countries of the Near East Region face a number of common problems which fall under two categories: Resources scarcity and habitat degradation. Taken as a whole, the region is extremely water scarce and insecure. It suffers from a shortage of arable land and land scarcity is being exacerbated by degradation and desertification. The area of forests & woodlands in the 18 countries of RNE totals 45.3 million ha, equivalent to 3.6% of the total land area of these countries and is equivalent to only 1.13% of the global forest estate giving 0.12 ha per capita for the 362.5 million inhabitants of the region. Trends in forest cover vary. There is an increase in forest plantations in some countries. Other countries are experiencing some of the largest net loss of forest area in the world during the last decade of the 20th Century. The forest estate is largely government owned and managed. In many countries primary designated functions of forest & woodland resources are multi-use; largely for protection and production. The region has rising and changing demands for goods and services from the resource to meet the changing requirements of rising human and animal populations.

Nfp processes embodying national forest policies have been undertaken in some RNE countries including the four focus countries. A number of internal and external factors interacted to instil the

concept and initiate the process of nfp formulation and subsequent implementation. Endeavours by countries to honour their obligations towards contemporary international conventions & treaties of which they are party of and that encompass the principles of SFM were foremost of the external factors. Equally important was cooperation and interaction with such international organizations as FAO, UNEP, WB and other development partners. The internal driving forces spanned such aspects as internal socio-political happenings, growing and changing demands for goods & services from forest and woodland resources, growing awareness about importance of environmental services from the resource, emergence of activist & advocacy groups such as Environment Conservation Societies such the ones in Sudan and Syria, continuous coverage by media such as TV, space channels and daily news papers in almost all region countries but more so in Cyprus, Egypt, Jordan, IRI, KSA, Morocco, Sudan, Turkey and Tunisia , the evident shrinkage and degradation of the resource and emergence of phenomena such as climate change and desertification.

There are positive signs in forest institutional efficiency and integration into wider national development reflected in sizeable expansion in tree planting in the form of plantation forests, road side tree formations and green spaces utilizing desalinated water and treated waste water resulting from general urban and industrial development. This is the situation in countries that did not adopt an nfp process per se but are proactive to global environmental debate, fully participated in UNFF deliberations and elaboration of C & I for RNE such as Egypt, Iraq, Kuwait, and UAE. Lebanon is in the same category but the expansion is in natural forests and national parks. There is measurable expansion in forest estate together with improvement and general stability in forestry institutions in RNE countries that have embarked on an nfp and forest policy revision such as Morocco and NEFRC member countries such as Cyprus and Turkey.

Yet it is difficult to assess the impact of nfp and national forest policy formulation and implementation on the structure, functions & capacity of public forestry institutions in the four focus countries of RNE. In KSA and SAR the processes were only recently approved and are yet to be implemented. In Sudan, the earliest to adopt an nfp and accordingly revise an existing forest policy, the country was simultaneously beset by overwhelming political happenings which affected its very national unity and territorial integrity. Tunisia is therefore the only country in the region where nfp and forest policy were on-going for two decades and where it is possible to index happenings in the forest sector to nfp process.

However, the mere implementation of nfp process has had positive tangible effects on the forest institutions & their policy objectives, the practice of forestry and delivery of some of the anticipated goods & services in countries of the region. These effects encompass:

- Conceptualisation and infusion of SFM and realization of some of its criteria:
- Extent of forests & rangelands: There are indicators of integration of forestry into national development. Net gains in forest extent in some cases can be attributed to integration of forestry in rural development activities such as is in SAR, Tunisia and Turkey and utilization of treated waste water in forest plantations such as in Egypt and UAE.
- Conservation of biological diversity in forest areas: Conservation of biological diversity features as a function in policy statements and organizational structure in all four focus countries and in the practice of others which did not adopt an nfp per se.
- Health, Vitality & Integrity: The Forest Policy of Syria clearly stipulates protection of forests against wild and arson fires, pests and other damage, through integrated and community-based

forest fire management. Arrangements for cross border cooperation in fire management are already in place with neighbouring Turkey. One of the functions of FNC of Sudan is to develop production of Gum Arabic and other natural gums. An important element of the latter is control of wild land fires and control of tree locust (*Anacredium melanorhodon melanorhodon*).

- Productive capacity & functions: Forest estate ownership and rights of management in the four countries are similar while the primary designated functions vary. There are signs for beginnings of privatisation and involvement of actors other than the state. The forest estate is 100% state owned in SAR whereas it's divided in the other three at 98:2, 91:9 and 94:6 between the public and private sectors in KSA, Sudan and Tunisia respectively. Investment in a development of such an important NWFP as pistachio nuts is mostly undertaken by private sector in IRI.

- Protective & environmental functions: The primary designated functions of forests & woodlands are 100% multiple uses in KSA and SAR. In Sudan the functions are 50,3,17 and 30% for production, protection of soil & water, conservation of biological diversity and or unknown functions respectively. In Tunisia they are 24, 41, 4 and 32% respectively for production, protection, conservation of biological diversity and multiple uses.

- Maintenance and development of socio-economic functions & conditions: Act 88-April 1988 stipulated the adoption of new forest policy in Tunisia which focused on the involvement of local population in the development of the sector. The act was augmented with FAO cooperation project UTF/TUN/033 for developing modules and approaches to integrated & participatory development of forestry resources with the aim of achieving sustainable, planned, integrated & community-based development programmes in forest areas.

- Legal & Institutional Frameworks; criteria for which include:

- National forest policy, legislation & regulations: This is evidenced by the evolution of forest policies in the four focus countries and other countries; the core subject of this report.
- Community consultation & information tools: The notion is echoed in almost all forest policy statements.
- Deployment of local culture, norms & knowledge: An important advocacy tool tapped by Forest & Range administrations in many countries of RNE is popularisation and deployment of Islamic principles and directives pertaining to environmental protection, conservation of life forms and rationalization of water use

However, RNE countries did not realize the full potential of nfp implementation or most thereof due to the interaction of a number of operational, capacity-related and motivational factors. The summation of these factors is reflected in such performance criteria as effectiveness, efficiency, responsiveness and sustainability. The forest institution in Sudan and Tunisia, the two countries with the longest on-going nfp process in RNE lend themselves to this analytical module, Boxes 23 and 24:

Box 23: FNC-Sudan

Factors & Impacts	Performance Criteria
<p>A. Positively impacted by operational factors: Political will/commitment: A.1. The process of forest reservation which started in 1923 could only gazette 3.0 million feddans (m.f.) equivalent to 0.5% of the total area of the country. The process was lengthy. It went through many steps in as many government authorities. In 1993, the President of the Republic issued a decree which shortened the process towards 9.0 m.f. bringing the area of forests under reserves to 12.0 m.f. equivalent to 4. % of the total area of the country. Protected areas which occupied 7% of the total area of the country were considered as forest reserves to bring the total area of the latter to 11% of the total area of the country. A.2. The 1998 National Constitution made a clear Distinction between Federal & State forests, A.3. In 2002 the Council of Ministers presided over by the President of the Republic held its weekly session in FNC premises in commemoration of 100 years of Forest Service & FNC was decorated with the 'High Distinguished Performance Award'. A.4. Adopting and annually celebrating/observing an 'Arbor' or Tree-planting Day. The occasion was first proposed by a journalist in 1963</p> <p>B. Positively impacted by motivational factors: B.1. On the transformation of Forests Department into FNC in 1989 a capable leadership was selected on competitive bidding. The latter, supported with evident political commitment to the resource, crystallized a vision for the FNC and lead it towards it.</p>	<p>Sustainability:</p> <ol style="list-style-type: none"> 1. The para-statal status of FNC is generally accepted as sustainable, 2. Institutional memory maintained with two FNC Director Generals out of three serving for more than six years. <p>Effectiveness:</p> <ol style="list-style-type: none"> 2. The effectiveness and efficiency of FNC in managing the resource, uplifting the sector image and its responsiveness to growing and changing demands are deemed commensurate with rendered resources, and generally sub-optimal. 3. Gains in forest estate (A.1.) are out-weighted by: <ol style="list-style-type: none"> 3.1. Forest destruction/degradation imposed by lack of governance in some situations. The latter is brought about by prevalence of state of war and civil strife and the attendant influx of political and environmental refugees and IDPs. Forest destruction/degradation is indexed to refugee/IDPs heavy dependence on wood for shelter building, energy requirements and sale for income while lack of governance in the form of lack of control is due to the physical absence of forest authorities from the scene, domination by war lords or the explicit directives from government and humanitarian activists to them not to intervene, 3.2. Encroachment by horizontal expansion of other sectors

Factors & Impacts	Performance Criteria
<p>C. Negatively impacted by capacity-related factors:</p> <p>C.1. nfp implementation process was not consolidated with proportionate financial, human, infrastructure or technical resources (see D.1 and D.2),</p> <p>C.2. There was dispute with State Governments over division of revenue and assets,</p> <p>D. Negatively impacted by operational (external) factors:</p> <p>D.1. Lack of political stability in view of prevalence of states of war and civil strife: This is reflected in overall economic performance and rendering of public services and utilities. A substantial proportion of public finance goes for defense and security. Forestry is hardly a priority in the disbursement of the remaining portion of public funds.</p> <p>D.2. Effects of economic sanctions and embargoes: Sanctions & embargoes limit or completely bar countries from benefiting from such initiatives as debt relief and training opportunities abroad.</p> <p>D.3. Lack of integration of forestry issues in policies and plans of other sectors such agriculture, mining, petroleum, transport etc.</p>	

Box 24 Forest Institution in Tunisia

Factors & Impacts	Performance Criteria
<p>A. Positively impacted by Operational Factors:</p> <ul style="list-style-type: none"> - Political will/commitment: Outgoing President would not inaugurate any development project unless its tree component & greeneries and those of its surroundings are implemented beforehand¹. - Information media for ever portraying the country as 'Green Tunisia' - Adopting and annually celebrating/observing an 'Arbor' or Tree-planting Day, <p>B. Positively impacted by Capacity-related Factors:</p> <ul style="list-style-type: none"> - Sector put high in national priorities: <ul style="list-style-type: none"> o Funds for UTF/TUN/033 'Implementation of Participatory Actions in Forest Sector', o Donor co-financed project such as 'Silvo-pastoral Development', Forest Areas Development' by German Bank, 'Forest Development Project' by WB, - Modernization of Sector: State of the art in forest plantation mechanization and Modern Tree Nurseries Co-financed by GTZ and WB, - Enactment in 2005 of Law attributing concessions of state forests to private investors and forest groups, - Up-grading of sub-directorate of Forest Management into Directorate of Socio-economic Development of forest populations to assist forest populations and ease their involvement in forest development programme. <p>C. Positively impacted by Motivational Factors:</p> <ul style="list-style-type: none"> - A capable leadership was selected to manage the Resource. Back-stopped with political commitment, the management polarized a national vision for the resource and lead it towards it. 	<p>Sustainability:</p> <ul style="list-style-type: none"> - Mainainenc of institutional memory with two consecutive Director Generals serving for more than six years each, - Affiliation of Forest institution and prominent place in administrative hierarchy. <p>Effectiveness:</p> <ul style="list-style-type: none"> - Strategies and action plans which updated information and knowledge that helped clarify choices, priorities and objectives of the sector, - Steady net gain in forest estate to the tune of 19000 ha/annum throughout the decade 1900-2000., - Review and adaptation of forest legislation, - Reconciliation of forest inhabitants ad neighbours with their natural surroundings, - Contribution to poverty alleviation

¹. Personal communication, Mr. Ahmed Rihda Fkeh, Director General Forests Directorate, Tunisia.

It can thus be cautiously concluded that:

- A harmonized blend between societal demands and political motivation, in that order, have worked to bring about positive changes to public forestry institutions in Near East countries,
- The effected changes enabled forestry institutions to meet society expectations to a great extent,
- If nfp processes were consolidated with proportionate financial, human, infrastructure or technical resources in the context of tranquil social peace and national security, changes brought about to forestry institutions are apt to enable them fully meet society expectations.

13.1. Potential

Public forest institutions in RNE have many ingredients of the potential and ability to adapt to and effectively address new & emerging challenges. It is envisaged that countries of RNE can and will gradually come to grips with new and emerging challenges:

- In the same manner as the concept of SFM was instilled and nurtured,
- In an analogous manner to how countries adopted, used and researched & developed global new innovations in medicine, architecture, telecommunications etc.
- In a similar manner to the ongoing political turmoil impacting many of the countries of the region.

Many of the countries are economically well to do with huge oil, mineral and cash reserves. Schools, university colleges and research centres are in place. Their curricula and programmes need to be revised and updated, capacity of their HR built and resource allocation increased. The capabilities of forestry personnel need to be strengthened to spearhead the envisaged changes and put forward the sector case.

13.2. Opportunities

- One envisaged outcome of the on-going political turmoil is a national mood and environment conducive to open dialogue on resolution of internal and cross-border conflicts, conservation and judicial management of natural resources & the environment and reorganization of national priorities,
- In view of intrinsic and imminent conflict over useable water resources, make use of the availability and maximize the benefit of non-traditional water sources such as TWW & desalinated water for tree planting and greeneries.
- Polarize public opinion and enable advocacy groups to reset funding priorities of regional and bilateral finance/development agencies active in the region such as Islamic Development Bank, Arab Authority for Agricultural Investment & Development, Kuwait and Saudi Development Funds etc with a focus on environmental and natural resources issues.

13.3. Additional Institutional Reform

Additional institutional reforms are needed in RNE countries to enhance the efficiency & effectiveness of forestry agencies and to improve the performance of the forestry sector in the perspectives of better integration of forest & rangelands and their sustainable management. These include:

- Continue and escalate the on-going nfp and policy formulation process to include countries

which have not hitherto started the notion,

- Continue implementation and install a monitoring & evaluation procedure of formulated nfp and policy statements,
- Continue revision process for nfp and policy to accommodate environmental, socio-economic and political variables,
- Initiate a structured process of capacity building of public forest/range institutions,
- Initiate a rigorous consultative & participatory revision & updating process for curricula of higher education and research programmes.

13.4. Sectoral priorities for countries & FAO to address in short, medium & longer terms

A core of priority actions can be short-listed. A number of relevant national, regional and international organizations can be identified. A few instruments/mechanisms can be pointed.

- Relevant institutions:

- The following entities have been instrumental in nfp and forest policy formulation in RNE countries and are looked forward for further involvement:

- FAO and sub-subsidiaries (RNEO, NEFRC, nfp-Facility),
- Other international organizations (UNEP, WB) development partners (Germany, Italy, Netherlands) ,
- Secretariats of international treaties & conventions (UNFCCC, CCD),
- Regional organizations (League of Arab States (LAS) and subsidiaries (Ministerial Council for the Environment), AOAD ,
- Universities and research centres,
- National Forestry institutions.

- The following entities have the means and the potential to be involved in furthering the cause of environment in general and forestry/range in particular:

FAO Sub-regional Office for Gulf States, regional finance institutions (Islamic Development Bank) and bilateral funding mechanisms (Abu Dhabi, Kuwait, Qatar and Saudi Funds).

- Priority actions

- Consolidate ongoing role and continue cooperation with RNE countries to implement and continuously revise/update nfp and forest policies,
- Continue cooperation with RNE countries in institutional capacity building to:
 - Mainstream the concept of SFM,
 - Popularise & infuse the importance of environmental functions of forest & rangelands,
 - Popularise & infuse the concept and practise of natural resources and environmental accounting,
 - Popularise & infuse a wider vision of forests & rangelands as part of general development,
 - Integrate forestry issues into the policies and strategies of other sectors,

- Prop up research capabilities to select & breed tree & shrub species adapted to the harsh and arid character of the region to meet the rising and changing needs and ameliorate climate and augment countries' resilience and adaptation to climate change,

- Revise, improve, update and accredit curricula of forestry educational institutes to generate professional foresters conversant with all current and emerging needs of the forestry & range sector.

The revision and accreditation should involve all stakeholders.

- Envisaged instruments/mechanisms/modalities:

A blanket project:

Main Objective

To ameliorate the environment in the region, consolidate regions resilience & adaptation to climate change, further the cause of Sustainable Forest & Range Management,

Specific Objective

Consolidate and escalate ongoing nfp formulation/revision process inclusive of forest/range policy formulation/revision,

Main thrust

Capacity building

AA: Individual Dimension: Involve individuals from first and second management tier of public forestry/range institutions in the region in a process of continuous learning, building on existing knowledge and skills through the facilitation of structured learning initiatives and training programmes, communication and awareness raising initiatives,

BB: Organizational Dimension: Interventions facilitating changes in systems, processes, mandates, procedures, regulations of organizations, bodies and government agencies. This also includes the exchange of coordination mechanisms among different agencies.

Modality

Advisors/coaches attached to RNEO or sub-regional Office for Gulf States to facilitate:

- Capacity building process at the individual dimension in collaboration with training centres in the region,
- Capacity building at the organizational dimension in collaboration with NEFRC and relevant regional organizations.

Host

RNEO or sub-regional Office for Gulf States.

Funding

Regional finance institutions (Islamic Development Bank) and/or bilateral funding mechanisms (Abu Dhabi, Kuwait, Qatar and Saudi Funds).

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PART III

COUNTRY CASE STUDIES

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1. Kingdom of Saudi Arabia ¹

1.1. Range & Forest Legislation

The Range & Forests Services of the Kingdom of Saudi Arabia (KSA) were first established in 1978. In order to ensure forest protection and development, many Royal Decrees (RD), Acts & Regulations were issued. The most salient of these were perhaps:

- The Range & Forest Act and Regulations issued by Cabinet Resolution No. 392 dated 18/4/1398 AH (1977) accompanied by RD No. M/22 dated 3/5/1398 AH (1977). The executive regulations for The Range & Forest Act were issued and approved by the Minister of Agriculture in 27/10/1399 AH (1978). They all stipulate modalities for forest exploitation and transportation of products according to specific formats of licensing in relation to fuel-wood collection, & transportation, charcoal- making & transportation. The licensing system however did not come into effect until 1991.
- The Range & Forest Act issued by RD No. M/22 dated 3/5/1398 AH (1977) updated through RD No. M/55 of 29/10/1425 AH (2004) which stipulated prohibited acts in forest lands such as wood cutting/removal or change of forest land for other purpose. Such acts are prohibited in:
 - Forests/woodlands growing in slopes exceeding 40%,
 - Forests grown to reduce sand mobility or fix sand-dunes,
 - Forests that protect water courses or ground water,
 - Forests that protect land from torrent/flood,
 - Forests which form green belts around towns or villages to improve scenery and ameliorate climate.
- The Royal Order 1182/8 dated 1405 AH (1983) issued to provide for the conservation of forestland and prevention of any individual laying claim to such land,
- In 1420 AH (1998), the Cabinet approved the establishment of a Rangelands Affairs Commission within the Regional Councils. That was a pioneer initiative towards the participation of local communities of pastoralists & breeders in the development and conservation of grazing resources.
- Decree by Minister of Agriculture according to Article 13 of the Range & Forest Act prohibiting trading in locally produced firewood or charcoal in KSA as of 1/1/1430 AH (2009).

1.2. Evolution of Range & Forests Policy

A National Forest Programme (nfp)/Strategy was formulated in 2006 and approved in 2007.

A number of external and internal driving forces acted simultaneously to herald the whole process of nfp and the engulfed forest policy.

The external forces emanated from contemporary post-Rio International Environmental Conventions & Treaties the Kingdom partied to particularly UNCBD, UNFCC, UNCCD, Convention on International Trade in Endangered Species of Wild Fauna & Flora and World Heritage Convention, together with the basic principles they embodied such as Sustainable Forest Management (SFM), participation and stakeholder involvement. Collaboration with such

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organizations as the Food & Agriculture Organization of the United Nations (FAO) through Trust Fund Projects was a vital facilitating factor.

The internal factors include:

i. Demographic changes

The Kingdom has a population of 25.2 million (2010) increasing at annual rate of 2.1% of who 82% are urban and 18% rural against a shrinking and deteriorating forest cover. A good proportion of the population practices agriculture largely through encroachment on forest and rangelands. Both urban and rural population still have their requirements for charcoal. The urban population has a rising demand for leisure & tourist sites. Tourism in KSA largely centred on the Juniper forests on the Sarawat Mountains on the South West of the country and Sea side resorts on the Red Sea. The intensity of vehicle trekking, fumes and mal-use of camping sites besides the construction of accommodation facilities and access roads are already negatively impacting the vegetation in these areas exemplified in progressive deterioration of the resource.

ii. Agricultural development

With big rise of oil revenue in the mid 1970s, the agricultural sector was accorded particular importance translated in such policies and actions as free ownership transfer of arable lands for investors, grants, support to vegetal & animal production means including through purchase of wheat & fodder crops at incentive prices, construction of dams and drilling of deep bore holes. The peak of agricultural growth rate of 8.6% was attained in 1995 with a cultivated area of 1.7 million ha. However, in view of the lack of environmental awareness and absence of such regulations, many negative impacts were soon apparent. These included soil salinity, depletion of fossil water, deterioration or complete removal of tree cover, sand dune mobility, etc.

iii. Technological Variables

During the past three decades KSA was subject to enormous urban development in terms of horizontal expansion of cities and townships and extensive road network. The total length of constructed roads was 47351 km by 2000 with another 15463 km underway since. Coupled with construction of deep bore holes for drinking water, which eased the mobility of herders with their livestock, this had a tremendous negative impact on forest and rangelands. The introduction of power saws expedited the illicit clearance of trees.

iv. Climatic/Environmental realities

Aridity, scarcity of rainfall, high temperatures, low relative humidity, and absence of permanent water sources such as rivers are some of the characteristics of the Kingdom's climate. All these rendered tree and vegetation cover vulnerable, difficult and expensive to regenerate and conserve.

v. Organizational and institutional changes

The Ministry of Agriculture has always been and remains the principle line ministry in charge of forestry and range sector. Other entities however have a complementary and overlapping role in environmental conservation, tree planting, establishment and management of parks and greeneries. These entities include The Ministerial Committee for the Environment headed by HRH the Second Deputy Prime Minister, The National Commission for Wildlife Conservation & Development, The Meteorology & Environmental Protection Administration, the Supreme Commission for Tourism and the Ministry of Municipal & Rural Affairs. Coordination of policies

and activities of these entities, encouragement of the involvement of private sector and forest neighbouring communities in management of national and recreation parks, were essential driving forces for the formulation of nfp.

The General Framework of the Strategy & Policies

1. Forests are inseparable part of national development plans,
2. Contribution of forests to the development of villages and resettlement areas,
3. A strategy for forest protection concept as high priority,
4. Endorsement of forest areas in land use maps.

National goal:

Strengthen the vitality of forest ecosystems to ensure their rendering their environmental and socio-economic benefits on sustained basis for the benefit of all living things including humans.

Specific Objectives & Policies

1. Delineation of forests & their conservation,
2. Start to implement SFM with the purpose of forest protection & development,
3. Protection of watersheds and courses together with all natural resources (soil, vegetation and wildlife),
4. Assurance of forest regeneration and increase of their extent through natural or artificial regeneration for the sake resource sustention,
5. Provision of institutional support for Forests Administration and agencies concerned with trees to increase their effectiveness in implementing the programme,
6. Desertification control & mitigation of its effects,
7. Provision of forest goods and services through SFM,
8. Support to agricultural production; plant and animal sectors thereof,
9. Provision of sites for recreation and internal tourism and support people's welfare at present and in the future,
10. Reduction of pollution around residential and industrial centres,
11. Conservation of biological diversity and forest heritage.

Procedures to be followed in implementing the strategy

A. Obligatory mechanisms:

1. Application of forest & range laws and regulations,
2. Enhance the capabilities of agencies concerned with trees in term of human resources and equipment,
3. Establishment of a forestry research centre and support thereof to provide technical data base,

4. Promulgation of laws to allocate land for reservation of government, institutional and private forests,
5. Reconciliation of KSA Forestry Strategy with international agreements ratified by the Kingdom,

B. Optional Mechanisms:

1. Allocation of funds for establishment of government forest plantations,
2. Encourage establishment of institutional & private forests,
3. Encourage the establishment of shelterbelts around towns, villages, major roads and railways, using TWW,

C. Complementary Mechanisms:

1. Support the Strategy through popularisation of Islamic Vision of Environmental Conservation,
2. Ensure the participation of relevant entities,
3. Extension & awareness raising,
4. Education & Training,
5. Involvement of Regions Emirates and civil Society Organizations in the quest to protect the environment,
6. Provision of free or subsidized tree seedlings together with technical support to encourage farm owners establish wind breaks and shelterbelts.

Risks:

Monitoring & evaluation and Revision of Strategy.

16 Associated costed projects.

1.3. Forestry & Range Institutions

Forests and rangelands are intrinsically interrelated land uses. When foresters refer to forest or forest reserves and range officers refer to rangelands both parties are probably referring to the same domain. Yet the two forms of land use seemed to have evolved differently and on parallel lines and so did their relative legislations and policies.

It is only in KSA that Range & Forests are under one administration. Even here, the recently formulated National Forest Programme/Strategy does not encompass Range. A separate strategy is under formulation for Range.

A Range Administration was first established in 1966 and was affiliated to the Animal Resources General Administration of the Ministry of Agriculture (MoA). It was up to 1971 when a Forests Administration was established and affiliated to the Land General Administration of MoA. In 1978, Range & Forests Administrations were amalgamated into a Range & Forests Department (RFD) under MoA. In 2006, Range & Forests together were put under Natural Resources Administration of MoA comprising Environment, Bio-diversity and National Parks.

Human Resources

The HR situation for RFD in KSA in 2010 is depicted in table (22).

Table 22: HR of RFD in KSA 2010

Year	B.Sc.	Diploma	M.Sc.	Ph.D.	Total
2010	26 ¹	19 ²	4 ³	-	49

1. Of whom 10 in Forestry and & in Range sciences; ². Of whom 5 in Forestry and 8 in Range; ³. Of whom two in Range and none in Forestry

Overall Staff Adequacy

A close look at table (22) indicates that there are none of the staff has a postgraduate qualification in Forestry. As such the current staff levels barely suffice to cover traditional forestry activities. The staff evidently lacks capabilities in contemporary issues such as climate change; the phenomena it is manifested in and modalities of mitigation thereof. Staff is also in adequate in most aspects of SFM, integration of Range & Forest resources, wild land fires etc.

Plans are underway to build capacity in traditional aspects of Forestry & Range together with contemporary environmental aspects.

Linkages to Local/Regional/Global Relevant Bodies

The FRD in KSA is linked and coordinates activities with Natural Resources Administration, Hydro-biological Environment Admin., Agricultural Extension Admin., Administrations & Depts. of Natural Resources in General Admin of Agri. in major Districts, Tree Planting Dept, Ministry of Municipal & Rural Affairs and Saudi Wildlife Commission. It is the overlap in mandates under this linkages which brought in the call for coordination; a prominent internal driving force for nfp/strategy formulation.

Challenges facing RFD

Major challenges confronting RFD include

- i. Implementation of Forests & Range Act and Regulations issued by Cabinet Resolution No. 392 dated 18/4/1398 AH (1977) accompanied by RD No. M/22 dated 3/5/1398 AH (1977),
- ii. Appreciation of Forest & Range lands value and the temptation of planners to convert them into arable lands,
- iii. Absence of actual demarcation of Forest & Range lands,
- iv. Implementation of nfp/Strategy projects and programmes.

1.4. Forestry & Range Educational Institutes

Up to the 1990s professional Saudi students were sent to study in Iraq and the United States of America. Technical Diploma level forestry and range students are sent to the pan Arab Regional Arab Forest & Range Institute (AFRI) in Lattakia, Syria.

Main Current Constraints:

The most outstanding challenge confronting higher education includes:

- Paucity of overall financial allocations,
- Need for capacity building,

Need for revision and accreditation of curricula to meet societal changing demands and address

contemporary climatic and other variables.

1.5. Forest & Range Research Institutions

Agricultural, Forestry and Range research in KSA started in 1985. It is undertaken by many specialized research institutions, or units with university colleges, each with set mission and objectives. The most important of these institutions are:

1. King Abdel Aziz Centre for Science & Technology,
2. Prince Sultan's Centre for Research on the Environment, Water & the Desert,
3. Wildlife Research in Taif,
4. Forestry Research Unit in College of Agriculture & Nutrition in King Saud University, with a programme to conserve & develop forest resources,
5. Agricultural Research Unit in Agriculture Department of Meteorology & Environment College of King Abdel Aziz University to research forest-tree propagation,
6. Range Research Unit of King Saud University,
7. National Research Centre for Research on Water & Agriculture.

The research centers are well endowed with laboratories and other facilities. Their endowment with qualified researchers is below optimum.

The driving forces behind the initiation of forestry/range activities are largely national, augmented by external others. The arid nature of the country, the rapid development of human and industrial centers and general infrastructure and their encroachment of the scanty vegetal/ tree cover are perhaps the most evident internal factors. The accession of the Kingdom to international conventions & treaties is the overriding external factor.

Evidently research programmes are devoid of activities to do with emerging issues as climate change, environmental or natural resource accounting. Consequently HR do not possess any such capabilities.

Table 23: Research capacity in Forestry/Range/Agriculture in KSA in 2010

Research Institute	Dip	B.Sc.	M.Sc.	Ph.D.	Total
1.King Abdel Aziz Complex for Research in Science & Technology,	655	897	217 ¹	157 ²	1926
2. Wildlife Research Centre, Taif 100					

1. Only 10 in Forestry/Range, 2. Only 7 in Forestry/Range

1.6. Other Institutions

Nfp/Strategy stipulated the involvement of other actors such as private sector, community and non-governmental organizations in forest/range resources management.

The Range & Forests Administration of The Ministry of Agriculture has always been and remains the prime line ministry in charge of forestry and range sector. Other entities however have a complementary and overlapping role in environmental conservation, tree planting, establishment and management of parks and greeneries. These entities include The Ministerial Committee

for the Environment, The National Commission for Wildlife Conservation & Development, The Meteorology & Environmental Protection Administration, Supreme Commission for Tourism, the Ministry of Municipal & Rural Affairs. Many private sector agricultural and industrial companies and individuals are actively involved in tree planting and tending in the form windbreaks, shelterbelts, palm groves and horticulture orchards.

2. Sudan

2.1. Forest Legislation

The Woods & Forests Directorate (WFD) was established in 1902 with the start of the colonial rule in the Sudan. The department, under the principles of sustained yield in perpetuity and rational exploitation of the resources, commenced to manage wood- stations along the Nile and its tributaries to supply steam paddle boats with firewood and establishing forest reserves where future felling and regeneration can be concentrated, protect the forests against fires and introduce fast growing tree species. A substantial number of legislations have since been promulgated addressing such issues as forest reservation, levying of a royalty on wood collection from outside forest reserves, sharing of authority over, benefits from and responsibility towards forest resources and promulgation of a series of forest policy statements. The most prominent of these legislations were perhaps:

1901: Enactment of the first forest act,

1932: Announcement of the first policy statement together with enactments of provincial & central forests ordinances,

1939: Endorsement of the Royalty Ordinance,

1948: Reform of the provincial forest act to delegate power to the local level,

1971: Endorsement of the local people government act,

1972: Endorsement of the Southern Sudan self-autonomous government,

1980: Endorsement of the regional government Act,

1981: Endorsement of the local people government Act,

1985: Re-centralization of central forests authority,

1986: Amendment of the 1932 forest policy & adoption of 1986 forest policy,

1989: Enactment of Forests National Corporation (FNC) and new forest act,

1994: The adoption of the federal system,

2002: Endorsement of the forests and renewable naturalresources law replacing the forests & (FNC) acts of 1989,

2006: Development of a new forest policy under the process of approval,

2007: Agricultural Revival & Revitalization,

2011: Cessation of Southern Sudan.

2.2. Evolution of Forest Policy

Since 1932, the forestry policy in Sudan went through three far reaching revisions. Internal socio-economic, administrative and political variables heralded the formulation and revisions. External factors had a catalytic role:

The first forest policy (1932)

Right on the onset of Anglo-Egyptian condominium rule of Sudan (1898-1956) dichotomy of interest and hence conflict over the management of and benefits from forest & range resources emerged between the central government and provincial authorities. The central authorities were anxious about wood supply for domestic and services sectors of people in towns, construction and running of national infrastructure. Fuel-wood (firewood & charcoal), telegraph & telephone transmission poles, building poles are the sought commodities together with sawn timber in the form of railway sleepers and construction timber. Provincial authorities on the other hand were more concerned about supplies of fuel-wood, Non-wood Forest Products (NWFP) and browse material for sedentary rural and nomadic populations and their herds of livestock

The situation necessitated the division of functions and authority between the central and local entities. That was clearly elaborated by an announced forest policy statement for 1932 augmented by two acts; the Central and the Provincial Forest Ordinances 1932. Accordingly, the Central Directorate of Forests and the Governors of the Provinces were respectively entrusted to satisfy the country's and the provinces' needs for forest products from central and provincial forest reserves. The status of the forest reserves can only be repealed (de-reserved) by the Governor General for over-riding national interests.

The Forest Policy Revision (1986)

The forest policy of 1932 is considered unique in its nature as it constituted the first attempt to divide authority over, benefits from and responsibilities towards natural resources between the central and provincial authorities. The Forest Policy of 1932 remained under operation till it was amended and replaced by a new forest policy in 1986. The latter was prompted by internal happenings and catalysed by external factors. A change of government from a military regime to a parliamentary democracy initiated a wide public debate over the whole question of governance, the economy and the environment. That coincided with a Forestry Sector Review (FSR) carried out in 1984/86 by a joint team consisting of representatives of Government of Sudan (GOS) and overseas aid agencies spearheaded by the World Bank (WB) and including United States International Aid Agency (USAID), The Netherlands, FINNIDA, Canadian International Development Agency, Danida, Overseas Development Agency (U.K.) , GTZ, Norwegian Ministry of Development Cooperation, Food & Agriculture Organization of the United Nations (FAO) and UNDP. The FSR instilled the then emerging concepts of popular participation in natural resources management. It also introduced the then global mechanism of Tropical Forest Action Plan (TFAP) which subsequently emerged as National Forest Programme (nfp). The 1984 FSR was considered Sudan's phase 1 of nfp.

The 1986 forest policy highlighted the role of forests in environmental conservation and promotion of popular participation through the involvement of local communities in forestry

activities such as the establishment and ownership of community forests, private forests and institutional forests in addition to the public Federal & State (Provincial) forest reserves. The new policy also emphasized the role of forest extension and availability of tree seedlings.

Forest Policy and Forest Law (2006)

In 2005, a new forest policy and law proposals were formulated through support from the FAO project (TCP/SUD/2903: Revision of Forest Policy, Legislation and Institutional Reorganization in collaboration with FNC, Sudan). The policy was developed based on participatory and collaborative approaches, where a wide spectrum of stakeholders had been consulted and contributed to the development of the sector vision, national goals, policy priorities and specific objectives based on the policy priorities.

A number of national drives were behind the initiation of policy revision. External factors including the FAO TCP project had a catalytic and facilitation effects. The national drivers behind the review of forest policy encompassed:

- The national quest towards poverty alleviation and improvement of people's well being,
- The national pursuit for amelioration of physical environment and combating desertification
- Maximization of the positive and mitigation of the negative impacts of exploitation of oil resources,
- Reform for stabilization and liberalization of the national economy,
- The Comprehensive Peace Agreement (CPA) between the North and Southern parts of the country,
- The demand for better governance,
- Commitments to international conventions & treaties.

The Draft 2006 Forest Policy is yet to be endorsed by the legislature. The Mission, National Goals and Specific Objectives of the 2006 Policy Draft are outlined in Annex 12.

2.2.4. All along Sudan kept abreast with international conventions and treaties. The country has thus far ratified and became part to:

- Convention on International Trade in Endangered Species of Wild Fauna & Flora (CITES),
- RAMSAR Convention on Wetlands,
- Convention on Biological Diversity (CBD),
- International Convention to Combat Desertification,
- International Framework Convention on Climate Change (IFCCC),
- Kyoto Protocol Related to Climate Change.

Sudan had since 2003 endorsed the C&I for SFM. A national team composed of almost all forestry institutions (Public Forest Service, Forestry Research and Forestry Education) in addition to Civil Society Organizations and NGOs, guided by RNE C&I directives carried out the task of formulating C&I for Sudan. These were submitted by FNC to the Federal Minister of

Agriculture & Forests who endorsed them and directed they be put into action.

The last three decades have witnessed an increasing recognition of the role of forest & range resources and the importance of their integration in the National Development Plans & Agenda.

Agriculture is seen as the cornerstone in supporting development and improving the welfare of society and is for this reason given high priority in the government strategies. With increased awareness of the importance of the forestry sub sector in development programmes, the government has recently taken an important measure to integrate environmental concerns within its strategic development programme. Through this a designated area to the tune of 25% of gross area of the country was pledged for natural resources particularly forests & range lands and national parks inclusive of forest reserves, institutional, community and private forests, and a fixed percentage of agricultural schemes namely five per cent of irrigated land and 10 per cent of the rain fed land put under forest trees in linear plantings, shelterbelts & windbreaks...

Recent national development initiatives which echoed these provisions for natural resources including forestry & range lands include the National Comprehensive Strategy (1992- 2002), Sudan's Quarter Century Strategic Plan (2002-2027), The National Poverty Eradication Strategy (NPES, 2004), The Executive Programme for Agricultural Revival (Green Revival) (2007-2011) and Agricultural Revitalization Program (2008-2011).

2.3. Forestry Institutions

The Forest Administration

Evolution of organization structure (hierarchy) of Forest Service:

Since its inception in 1902, the WFD of Sudan had undergone substantial changes in organization structure, functions, affiliation, human resources development etc. These are summed up in Annex 13.

The period 1902-1950

On inception in 1902, the WFD was part of the Department of Agriculture. It was run by a British Director, two Egyptian officers and some Sudanese labourers. The government continued to recruit foresters from various European countries. The year 1946 saw the establishment of Forest Rangers School (FRS) with a batch of 10 retired army officers who graduated as Forest Rangers (FR) in 1948. In 1949, three Sudanese students were sent off to study forestry in Scotland, UK.

On the establishment of the Ministry of Agriculture in 1948, the Forests Department (FD) was structured to have four divisions and two circles. A silviculturist was added to this arrangement in 1950 and afforestation and saw-milling were segregated. The administrative structure then comprised: Head of Department, four Conservators of Forests (CF), 11 Assistant Conservators of Forests (ACF), one silviculturist, five sawmill technicians, six Forest Officers (FO) and 23 FR.

The period 1951- 1975

The year 1951 saw the segregation of Agriculture and Forest Departments whereby the Director of Forests Department (DFD) answered directly to the Minister of Agriculture. The organization structure of FD comprised six Divisions (Eastern, Western, Equatorial, Khartoum & Northern, Upper Nile and Silviculturist).

The process of Sudanization of senior forestry posts started in 1954 and the country acceded to independence in 1956. On that date the FD had the manpower indicated in table 24.

Table 24: FD manpower in 1956

Post title	Number before independence day	Number after independence day
1. Chief Conservator of Forests (CCF) (Bashmuhafiz)	1	1
2. Assistant Bashmuhafiz	1	1
3. CF	4	4
4. Silviculturist	1	1
5. ACF	10	2
6. Utilization Officer (UO)	1	1
7. Local Government Officer	-	1
8. Deputy Assistant Conservator of Forests (DACF) (on study abroad)	4	11
9. FO	-	8
10. District Forest Officer (DFO) "Nazir"	9	9
11. FR	19	19
12. Assistant Forest Ranger (AFR)	15	15
13. Forest Ranger (under training)	15	15
14. Sawmills Manager	4	3
15. Assistant Sawmills Manager	2	3
16. Mechanical Engineer	2	2
17. Saw-doctor	1	1
18. Forest Overseer (FO)	34	40
19. Forest Guards (FG)	300	300
Total	423	437

Source: Forest department annual report in 1955/1956,

Period from 1956-1974

With independence in 1956, the title of CCF was changed to Director of Forests (DF). In the mid 1960s, the FD work-force comprised the posts and manpower detailed in table (25).

Table 25: Posts & Manpower of Sudan's FD in mid 1960s

Post title	Number
1. DF	1
2. Deputy Director of Forests (DDF)	1
3. Assistant Director for Forestry Research & Education	1
4. Assistant Director for Forest Development	1
5. CF	5
6. Forestry Research Officer	1
7. Gum Arabic Research Officer	1
8. ACF	18
9. Engineers	7
10. FO	7
11. Sawmill manager	1
12. DFO	14
13. FR	76
14. AFR (under training)	25
15. Assistant sawmills manager	1
16. FO	49
17. Surveyors	3
18. FG, permanent and daily paid laborers	> 3000

At the beginning of 1970s', three new Divisions were established in FD HQs in Khartoum: Planning, Forest Inventory and the Khartoum Green Belt, in addition to the previously mentioned six Divisions.

In the mid of 1970s' (1973- 1975), the Forestry Education and the Forestry Research Divisions were segregated from the FD. The former was affiliated to the Department of Higher Education of the Ministry of Education, while the latter was affiliated to the Agriculture Research Corporation (ARC) of the Ministry of Agriculture, Food & Natural Resources (AFNR).

Period from 1975-1985

In 1975, a new hierarchy was approved for the Ministry of Agriculture which was renamed Ministry of Agriculture; Food & Natural Resources (MAFNR) embracing three agencies namely: Agricultural Services, Natural Resources (NR) and the Animal Resources. The three agencies were composed of a number of corporations, institutions and general administrations made up of twenty eight administrations.

The NR agency comprised the FD, Range & Pasture Administration (RPA), Soil Conservation and Land Use & Water Programming in addition to the Wildlife Administration.

The FD HQs hierarchy constituted of five Administrations (Afforestation, Utilization, Management & Inventory, Gum Arabic and Wind-breaks & Shelter -belts) in addition to two units (Planning and Finance & Administration).

In 1979, in view of the preparatory steps taken to facilitate the adoption of the decentralization

process in the country, two consecutive Presidential Decrees (PD) were issued which amended and relocated some of the central ministries authorities to the regional levels. The implications of that on the FD resulted in the amalgamation of the Afforestation and Wind-breaks & Shelter-belts in one administration called Afforestation & Wind-breaks.

In response to the adoption of the regional government system in 1980, a new PD which was concerned with the establishment and specified the mandates of the central ministries was issued. The adoption of the regional government system implied the division of the country into six Regions namely; the Central Region, the Eastern Region, the Northern Region, Darfur Region, Kordofan Region and Southern Region. In each of those regions, a regional government which comprised a number of regional ministries was established. The MANR was one of those regional ministries. According to that PD, the central Ministry of Agriculture & Irrigation (MAI) was established under which the FD was affiliated to the agriculture agency responsible directly to the Under-Secretary of agriculture a similar administrative situation as in the period prior to the establishment of the ministry of agriculture (1910-1948).

In 1982, the Wildlife Administration was segregated from the MANR and affiliated to the Ministry of Interior as a regular force administration.

Period from 1985-1995

In 1985, after a popular uprising in April 1984, the MAI was replaced by the MANR. The organization structure of the new ministry comprised of the Natural Resources Administration constituted of Forestry, Range & Pastures and Soil Conservation Administration.

Period from 1989-2010

The FSR carried out in 1984 has led to perhaps the most important development in the field of forestry institutions in the Sudan during the 20th Century. The establishment of the Forests National Corporation (FNC) through the Act of Parliament in 1989 completely replaced the National Forests Administration, with a para-statal corporation with defined functions and organizational structure.

The 1989 Forests National Corporation Act and Forests Act defined FNC's functions as:

- i. To lay down the general forestry policies.
- ii. To assess, develop and provide good exploitation of the forests of the country.
- iii. To accomplish full protection of the environment
- iv. To make the rules and methods which secure the good utilization and development of forests?
- v. To propose laws which achieve the implementation of the approved forest polices.
- vi. To provide technical supervision to the Sudan's' forests.
- vii. To disseminate awareness about forests among the Sudanese and investors.
- viii. To increase the reserved forest area (up to 20% of the total area of the country), through planting trees and encouragement of the Sudanese to establish of community, private and other type of forests.
- ix. To develop Gum Arabic and other types of natural gums
- x. In close coordination with the concerned institutions, coordinate the land use in the country and desert combating.

xi. To encourage applied research.

xii. To enforce revenues and royalties on all forest products.

The FNC started to fulfill its set functions with an organization structure constituted of six administrations (Planning, Technical Support, Afforestation, Gums & NWFP, Utilization and Finance & Administration). At its HQs hierarchy in Khartoum, sits The Management Board, Director General (DG), Deputy Director General (DDG) with Secretariat and Legal Advisor. There are Forests Directorates with varying organizational structures in the 26 States of the country.

With the advent of Federal system of government in 1994, the FNC established Federal and State (Provincial) organizational structures in all 16 States of Northern Sudan to manage federal and local forest resources. It also established Technical Sectors located at selected State capitals with set mandates. The latter encompassed collation of data & information, mapping and formulation of management plans for all types of forests.

The development of Comprehensive National Strategy (1992-2002), the adoption of the federal system of government in 1994 and the associated calls for sharing of authority over, benefits from and responsibilities towards the forest & range resources, the endorsement of the 1998 constitution, the Comprehensive Peace Agreement (CPA) with Southern Sudan in 2005, in addition to other macro-economic and social reforms and later the breaking away of Southern Sudan have all constituted drivers of change in the country as a whole which necessitates the need for FNC to revise and adopt forest policy, legislations and institutional setup to cope with the variables.

Human Resources Development

The cumulative build-up of Human Resources (HR) during eleven decades of existence of Sudan's forest service is depicted in table (26).

Table 26: Cumulative HR buildup during various stages of Sudan's Forest Service

Year	Expats Nationals	Nationals					Total
		University graduates	Technicians	Forest overseers	Forest guards	Others	
1905	12	-	-	-	-	-	12
1938	9	-	50	-	88	-	147
1955	17	5	92	34	300	-	448
1961	-	27	132	49	3000	-	3208
1995	-	189	178	94	4000	22	4483
1999	-	206	183	378	1681	1786	4234
2010	-	309	56	-	2381	345	3100

Table 27: Further analyzes FNC's HR capacity into specialization fields¹

Year	B.Sc.	Post Graduate Diploma	M.Sc.	Ph.D.	Total
2010	179	3	121	6	309

¹ A total of (22) staff member has specialized in aspects other than forestry sciences. Specifically there are 18 Master degrees in Environmental Studies, Three in HRD and one in Accounts.

A close scrutiny of tables (26) and (27) indicate that:

a. The HR situation is not optimal if not outright inadequate. Professional and technicians are spread thin over expansive forest tracks. There is no shortage of graduates to employ but the stringent economic stand of FNC does not allow,

b. There is a steady decline in the ratio of Forestry Technicians (Diploma holders) to Professionals (university graduates) from 4:1 up to the early 1960s, to less than 1:1 by the end of the first decade of the 21st Century. This either implies that non-planning technical tasks such as nursery management, tree planting etc are relegated to a technical level of personnel below that of a Diploma holder technician or are undertaken by professionals. In either case injustice is inadvertently dealt to the forestry profession and its constituent activities. Under the first assumption forestry activities are implemented at below optimum standards. Under the second assumption, a professional forester is performing a task he/she is over qualified for which translates into a misappropriation of talent and resources.

The irregularities in FNC HR structure can be attributed to:

i. Employment terms which do not equate professional progress of degree and diploma holders,
ii. Shrinkage of public sector support to forestry which tend to spawn non or under employment of graduates.

iii. High education policies which do not link intake and graduation to market demand which culminated in the phasing out of Diploma programs in many spheres including forestry.

However, the phenomenon of HR structure irregularities is not unique to Sudan. Temu et al (2005) have pointed to the same in Sub-Saharan African and South Eastern countries.

c. Post graduate specializations are mostly within forestry subject matter. Foresters in Sudan and elsewhere in Near East Region (RNE) are faced with quite an array of challenges. Coming to grips with such contemporary issues as climate change, integration of forestry & range resources, wild land fires and rapidly changing socio-economic and political realities are but some of those challenges. Available opportunities for further studies need to be allocated to these topics.

d. There is loud cry from within and without higher education circles to revise high education policies and revamp curricula.

FNC Linkages

The FNC has a proven good track record of maintaining good linkages with relevant institutions within and outside the country. Sudanese Forestry Education and Research institutions are represented in FNC's Management Broad. Representatives of both institutions besides those of Wildlife Administration are always involved in FNC's studies, workshops, seminars & other professional gatherings together with formulation of management plans. The FNC maintains good bonds with such reputable universities as Helsinki University.

Range & Pasture Administration

The Range & Pasture Administration (RPA) was established in 1954 under the umbrella of the Ministry of Animal Wealth. In 1973, the RPA was affiliated to the Ministry of Cooperation & Rural Development and in 1975, the RPA was affiliated to (MAFNR). In response to the adoption of the regional governments in 1980, different regional ministries were established. The regional ministries of agriculture and natural resources were one of those regional ministries. The central

MAI was established in 1982 under which the RPA was affiliated to the Agriculture Agency responsible directly to the Under-secretary of Agriculture.

The adoption of the federal system in 1994, impacted the RPA institutional setup, affiliation and functions. As part of the agriculture services, the RPA authority was decentralized. RPAs were established at States levels affiliated to the State Ministries of Agriculture. The federal RPA administration was put under the responsibility of the Federal MAF affiliated to the General Administration for Natural Resources. The federal RPA comprises of three Divisions: Natural Range, Irrigated Pasture and Range Farms in addition to three units namely; Technical Studies & Supervision of Range Farms, General Demonstration Range Farms and the Commercial Pasture Farms.

Objectives of the RPA

Since its establishment, the objectives of the RPA were as follows:

- i. Propose the general policy for range and pasture administration and prepare and endorse the range and pasture federal law,
- ii. Protection of natural ranges and opening of fire line network,
- iii. Conservation of genetic resources and the establishment of nurseries for propagation of fodder seeds,
- iv. Collection of natural fodder seeds and rehabilitation of deteriorated areas,
- v. Contribute to the development of externally funded project and supervise their implementation,
- vi. Survey and mapping of range resources on national level and contribute to the development of land use planning,
- vii. Conduct surveys and environmental or related studies,
- viii. In coordination with the States RPA prepares range programs,
- ix. Attract donation from international organizations and agencies to implement pilot projects,
- x. Provision of capacity building program for the staff at central and State levels,
- xi. In coordination with the related authorities, open animal migration routes,
- xii. Conservation of environmental balance and combat desertification and protection of the range land and watershed within the range lands,
- xiii. Establishment of pilot range farms as alternative to the traditional common ranges,
- xiv. Create strong ties and relations between nomads and range resources through effective range extension programs.

Drivers of Change

Just like the forestry sector, major driving forces have impacted RPA and triggered substantial changes in the R&P sector. These changes have presented the range and Pasture sector with new challenges but have also resulted in emerging opportunities that would enhance the sector's contribution to the country's livelihood and sustainable development. It also resulted in challenges that also vary over time but all require being addressed, with determined priorities,

by RPA in the short, medium and longer terms. The major driving forces are not limited to but include institutional, socio-economic, environmental, technological and livestock population variables.

HR of RPA

Diploma	B.Sc.	M.Sc.	Ph.D.	Total
-	26 ¹	13 ²	1 ³	404

1. Two in Forestry, nine in R&P, 15 other: Environmental studies, Agricultural Engineering, Plant Protection, Sociology, Crop Production and Agricultural Economics.

4. None in cotemporary issues such as climate change, integration of Range & Forestry, Wild land fires etc.

Challenges of the RPA

The RPA currently faces a number of challenges the most salient of which are:

- The need to enlighten concerned stakeholders, decision makers and the population at large about the intrinsic natural and man-induced constraints which threaten the very existence of the resource such as:
 - Natural phenomena such as rainfall fluctuation, aridity, climate change and others,
 - National developments projects i.e. petroleum exploration, dams, road construction and mega-irrigation schemes like Kenana and Rahad that are all being implemented at the expense of natural rangelands,
 - Lack of national functional land use plan,
 - The fluctuating institutional situation of the RPA and its' affiliation.
 - Lack of policy statement that reflects the of the government willingness to conserve and develop R&P resources and which reflects the vision of the Nation with clearly identified National Goals and Specific Targets.
 - Although the Forests & Natural Resource Act 2002 included some articles emphasizing protection and development of range lands, animal migration routes and other related issues, the lack of specific R&P law is an evident impediment to any tangible progress.

Emerging Opportunities

In 1999, different proposals and plans were echoed aimed at inducing institutional reforms to improve the situation of RPA these included:

- A proposal for the constitution of a National Council for Rangelands,
- Submission of a draft plan for the creation of a para-statal corporation
- Or commission for R&P,
- Upgrading of the RPA to a National Corporation,
- Establishment of National Corporation for Forests & Rangelands,
- An Independent Corporation for R&P was recommended by Parliament's Committee on

Agriculture & Animal Resources Affairs.

Forestry Education Institutions

Forestry education started as in-service training within the forestry service in the mid 1940s'. In 1946, FRS was established and 10 ex- army officers were absorbed as students and graduated in 1948 (Bayuomi et. al. 2001). In 1949 three Sudanese students were sent for the first time to study forestry sciences in University of Edinburgh, Scotland, UK. Others were soon sent to Pakistan and Australia.

FRS awarded a Certificate in forestry in two years. In 1960 FRS was developed into the Forest Rangers College (FRC).

Professional University level forestry education started in 1974 when a Department of Forestry was established within the Faculty of Agriculture, University of Khartoum to award a B.Sc. (For.) in five years of post secondary education. In 1993, the Department was upgraded to Faculty of Forestry to award a B.Sc. (Hon.).

The early 1990s witnessed a substantial expansion in higher education under the umbrella of 'High Education Revolution (HER)'. Some 26 government and seven private universities were established. A number of the new universities had full-fledged faculties/colleges for forestry per se or an option of forestry, range sciences, natural resources or environmental studies. The evolution of technical and professional forestry education in Sudan is portrayed in annex (14).

The Functions of Forestry Education

The core of HER philosophy is that higher education is necessary for the creation, dissemination and application of knowledge and for building technical and professional capability. The core mission for higher education is to educate, train, undertake research and thereby contribute to sustainable development and improvement of society as a whole. The objectives of forestry education included the following:

- To provide qualified professional and technical cadres for the forestry service.
- To provide specialized cadre to carry out scientific research.
- To undertake on the job training and refresher courses for foresters.
- To transfer knowledge and technology to improve forest productivity.
- To enable graduates to plan and manage forests in a sustainable manner.

Faculties & Colleges of Forestry Education & Related Fields:

Currently there are seven faculties/colleges that offer degree courses in forestry & related subjects. The total number of students graduated annually from these colleges exceeds 200. These colleges, their affiliations, locations, the degrees they award and dates of their inception are listed below:

- i. Faculty of Forestry and Range Sciences, University of Sudan for Science and Technology, B.Sc. (For, Range), M.Sc. Ph.D., (1962)
- ii. Faculty of Forestry, University of Khartoum, B.Sc. (For), M.Sc. Ph.D., (1974)
- iii. Department of Forestry, College of Natural Resources and Environmental studies, University

of Juba,

iv. College of Natural Resources and Environmental Studies, University of Kordofan

v. College of Natural Resources and Environmental Studies, University of Sennar

vi. College of Range and Forestry Science, University of Upper Nile

vii. College of Environmental Sciences and Natural Resources, University of El Fashir.

Status of Forestry Education:

The current status of forestry education in Sudan is deemed to be less than satisfactory. Almost all forestry education institutions share common constraints:

- Lack of adequate resources to rehabilitate/ upgrade infrastructure & facilities,
- Lack of training/capacity building opportunities for faculty members to acquaint them with happenings elsewhere,
- Weak linkages and coordination with relevant institutions.

The aforementioned constraints coupled with increased student enrolment, degraded education at secondary school level have resulted in a degradation of standards of graduates which in turn is reflected in the growing unemployment and poor graduate performance.

Forestry Research Institutions

The Forestry Research Center (FRC)

Forestry research was born within the forestry service and started in the Sudan in the period 1950-1955 as observation trials led by a single researcher based in Wad Medani (Bayuomi et. al. 2001). It was focused on Silviculture of some indigenous and exotic tree species such as *Acacia nilotica*, *Khaya senegalensis*, *Azadirachta indica*...etc. In 1958, a research section was established under the FD, focused on Gum Arabic research. Later in 1962-1968 the (G o S) and FAO with support of the UN Special Fund jointly established a Forestry Research & Education Institute (FREI) at Soba in Khartoum. That was a nucleus for a research organization fairly well-equipped with most of the necessary facilities for four research areas namely; Arid Zone Research, Silviculture, Timber Technology and Forest Botany. Three research centers were subsequently established; one for Eastern Sudan (Wad Medani), the second for Western Sudan (El Obied) and the third for arid-lands of Northern Sudan (Soba, Khartoum).

Substantial research work was carried out during this period and the results were published in some 37 publications (Forestry Research and Education project pamphlets).

ARC Affiliations

As of 1974, the FREI was affiliated to the Agriculture Research Corporation (ARC) of MAFNR under the name of Forestry Research Center (FRC) with its HQs in Khartoum and researchers located within the (ARC) provincial stations. In 2002 Agriculture Research Corporation (ARC) was affiliated to the Ministry of Science & Technology (MST). In 2010 ARC was re-affiliated to MAF.

FRC Vision & Mission

The Forestry Research Centre's vision is directed towards improving forests, forest products,

forest ecosystems and agroforestry in a sustainable manner and thereby improving the livelihoods of rural and urban communities. Hence, the mission of FRC is to conduct on-station, on-farm and laboratory research for improving the productivity and quality of forests and forest products.

FRC Objectives

FRC objectives are to develop technologies for improving forest resources & products through sustainable management for better production and thereby improve rural and urban livelihoods. Approach is multidisciplinary implemented by different research stations and outstations.

FRC Organization Structure

FRC organizational structure descends from ARC which in turn descends from MST. Under FRC there are National Tree Seed Centre, Research Sections @ Soba and Research Sections in States. Research Sections @ Soba comprise Arid Zone Research, Botany and Timber Technology.

HR of FRC:

Degree/Date	Diplomas	B.Sc.	M. Sc.	Ph.D.	Total
On Establishment	7	-	6	-	13
2011	2 ¹	14 ²	28 ³	13 ⁴	57

¹. Both in Forestry,

². All 14 in Forestry,

³. 25 in Forestry, one in each of Natural Resources, Ornamental Plants and Soil & Water,

⁴. 13 in Forestry, one in each of R& P, Botany and Soil & Water.

FRC Research Programmes

Outstanding on-station and on-farm research programs undertaken by FRC to date include: Dry-land research, Agro-forestry, Seed physiology & technology, Silviculture, Forests systematic & biodiversity, Tissue culture of trees, Gums & resins, Wood & NWFP, Ecology, desertification & climate change and Socio-economic research.

Main changes in Forestry Research Policy

These include:

- Commitment to and use of improved forest seeds.
- Fulfilment of the 25-years strategy requirements together with policies and programs of the modern agricultural developments in the country.

FRC Linkages

FRC has internal, regional and global formal linkages with FNC, ARC centre, FAO research division (Forestry), National Centre for Research – Sudan, WLRC, Industrial Research Centre, ICRAF, ICEFRI (Kenya), Forestry Research- Ethiopia. DANIDA Forestry Research and VITRI-Finland.

FRC Networks

FRC is part of the following regional & global networks:

Natural Gums and Resins in Africa (NGARA), DANIDA, FAO, UNDP, Program for Plant Genetic Resources (IPGREN), International Union for Forestry Research Organizations (IUFRO),

FRC Main Current Challenges

These include: Climate change. increasing drought and desertification, Food insecurity, Poverty together with Technology transfer and adoption at national level.

Efforts to bring about changes in FRC

These efforts encompass: Prioritization of research programs, encouragement of joint/framework research, preparing proposals for sound projects for local and international funding, Capacity building for researchers & technicians, organization of workshops, scientific forum, seminars besides encouragement of publications (Books, Scientific journals, and manuals).

Efforts to bring about changes in FRC Research Policy

Such efforts include: Policy change to increase resources allocated for research (a fixed % of GDP), Raising institutional capacity and Approval and execution of the new FRC structure and strategy which entails recruitment of trained staff.

Wildlife Research Centre

The Wildlife Research Center (WLRC) was established in 1975 under the umbrella of the ARC which was affiliated to the MANRAW. In 1996, the WLRC was put under the Animal Resources Research Corporation (ARRC) which was affiliated to the ministry of Animal Resources (AR). In 2001, a third affiliation of the WLRC took place in 2001, when the WLRC umbrella, ARRC was affiliated to the MST. Finally in 2010, the WLRC was affiliated to the ministry of Animal Resources & Fisheries (ARF).

WLRC Objectives

The WLRC was established with set mission and main objectives which could be summarized as follows;

- i. To conduct reconnaissance surveys of wild animals in all parts of the Sudan and explore new sites with viable wildlife populations or with suitable habitats capable of supporting wildlife. Recommendations will be made with regards to the protection of those areas and their declaration as protected national parks or game reserves and sustainable development projects.
- ii. Conduct periodical surveys in protected areas to monitor the changes in population and/ or habitat and to recommend actions required to achieve the management objectives.
- iii. Monitor the changes in the population of different wildlife species and make the necessary adjustments to the level of protection conferred on each species.
- iv. Conduct research to improve the habitat for wildlife in the national parks and game reserves and to reclaim disturbed land around these areas.
- v. To adopt a multidisciplinary approach encompassing research on forestry, range, livestock and socio - economical studies of the local community due to their direct impact on the wildlife resources.

- vi. Enhance knowledge and disseminate information on the importance of sustained development to the conservation of the environment and the wildlife resources.
- vii. To renovate the existing system of management of the wildlife resources by the establishment of an information network and the application of modern technology and information system.

The current capacity of WLRC is not adequate and not satisfactory. The center started with four B.Sc. holders in 1975 and ended up with eleven core staff having one Ph.D., four M.Sc., five B.Sc. and one diploma. However, efforts were made to build optimal capacity which includes:

- Assessment of capacity needs,
- Training programs,
- Application for recruitment of new staff.

WLRC Policy

Since its establishment in 1975, the WLRC was working to achieve the above stated targets, but without a clear policy to support its activities. However in 2004, a policy was formulated and approved in 2005. The main objectives of the new policy are as follows;

- Emphasis on the development of the center, the establishment of departments and research stations with the aim of extending research services in all States including Southern Sudan,
- Upgrading the technical skills of the staff for the execution of applied research programs towards better management and conservation of Wildlife resources on sustainable basis.

The WLRC carried out a number of research programs. Out of these are the following

- i. Effects of aerial spray with insecticides on Wildlife in Khartoum State,
- ii. Assessment of the impact of local population inhabiting villages inside the Dinder National Park (DNP),
- iii. Resource Assessment of Rahad Game Reserve.
- iv. Human settlement in Radom National Park.
- v. Evaluation of the impact of the proposed Rahad and Kenana canals on DNP,
- vi. National plan for drought and desertification control.
- vii. Wildlife habitat assessment and drainage system of DNP remote sensing techniques.
- viii. Ecological base-line surveys for DNP,
- ix. Management plan of DNP,
- x. National strategy of Natural Resources in Sudan.
- xi. Teaching and supervision of students.

WLRC Challenges and Constraints

The WLRC is exposed to a number of drivers of change such as the economic reform for stabilization and liberalization, the CPA, the demand for better governance and commitment

to international conventions. These drivers have impacted the WLRC just like other forestry institutions in the country and presented the center with new challenges. Therefore, the center policy witnesses the following changes:

- The issue of private sector investment in Wildlife, provision of technical advice to private game farms.
- Establishment of pilot game farm research unit.
- Establishment of experimental lab for Wildlife diseases.
- On-going training and research programs.

The main current challenges facing the WLRC are largely dependent on the government related authority to build interest in the different values of wildlife; its obligation and commitment towards regional and international wildlife agreements, biodiversity conservation & sustainable development.

The WLRC, just like other forestry institutions in the country is jeopardized by:

- Lack of financial resources,
- Limited infra-structure and facilities,
- Limited human resources,
- Limited field and lab equipment.

Regardless of these, efforts were exerted by WLRC to bring about changes which includes; updating the policy and action plan, follow government scholarships for post graduates studies and training of personnel. However the following specific priorities need to be addressed at national and international levels:

- i. The National authorities should complete the WLRC main building in Shambat in addition to the rehabilitation or establishment of WLRC research stations in addition to the provision of furniture and utilities.
- ii. Provision of communication and transportation means.
- iii. HRD,
- iv. Relevant international development partners are requested to assist in HRD and attraction of investment in wildlife.
- v. Other Institutions:
 - Private Sector
 - NGOs & Voluntary Organizations

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3. Syrian Arab Republic ¹

3.1. Forestry Legislations

Contemporary Forestry activities in Syrian Arab Republic (SAR) are governed by Legislative Decree No. 66/1953. This was subsequently followed by Forest Police Law enacted through Legislative Decree No. 86/1953, amended in 1962, 1969 and 1970. Decree No. 66/1953 was strictly regulatory, focused mainly on prohibitions, limitations and sanctions; and as such restrictive and repressive. It neglected the social dimension of forests, for example by prohibiting the traditional customary rights of forest users. It did not contain any specific provisions regarding forest policy, administration, inventory, management plans, private forestry, research, training & extension, social forestry & public participation or environmental impact assessments. Because of the repressive character of this law, the forest areas in Syria have seriously declined during the past decades and many of them have lost their socio-economic and environmental values.

This law was replaced by Forest Law of 1994 which brought some improvements to its predecessor such as guaranteeing free user rights to people living in forest villages. These rights include: the use of dead wood found on the ground, wood for repair of dwellings and the making of agricultural tools, fuelwood, and grazing activities, except for goats and sheep.

The Law however still sustains the main weaknesses of the previous one concerning policy, social forestry, public participation & involvement, private forestry, research & extension.

Another law on Environmental Protection was adopted in 1994. It provides, in general terms, for the protection of flora, fauna, soil and natural resources. It empowers competent authorities to issue standards, specifications and regulations for the protection of flora and fauna and for the sites of protected areas in order to ensure environmental balance and the conservation of living organisms. This law positively impacts forestry in SAR.

In 2007 a new Forest Law was approved, defining the principles for exploitation of both public and private forests, focussing on forest protection in relation to investment, fire management, and agricultural expansion & encroachment aspects. It reiterated the state ownership of the bulk of forest estate. However it guaranteed some use rights of private forests owners and dwellers of forest neighbourhoods. With the assistance of some international programmes, the 2007 law also provided a good framework for involvement of local communities.

3.2. Evolution of Forest Policy

Up to 2008, no forest policy has been officially adopted by the Government of SAR to prescribe long term objectives in the forestry sector. Hence, there was no structured, detailed national

1 Compiled from:

1. Questionnaire for the purpose filled in and Consultancy Report by Mohamed Cheikho, FAO National Consultant on Forestry Institutions. February 2011.

2. Consultancy Report on "Forest Institutions in Syrian Forestry Sector", by Ghalia Martini, FAO National Consultant, in the context of TCP/SYR/3103(D): 'Forest Sector Policy and Institutional Development'. July 2009.

3. Draft Forest Policy for Syrian Arab Republic by I. Nahal (2009).

strategy formally laid down for the development and conservation of the country's forests. The annually implemented forestry programs consisted of no more than targets to be achieved and budgets to undertake them.

Driving Forces for Policy Formulation

A number of internal and external factors have interacted to advocate, bring about and eventually expedite the drafting of a forest policy:

- Internally, rural communities particularly forest neighbouring communities repeatedly expressed the perception that they can immensely benefit from forest goods and services and reciprocally contribute to forest well-being through participatory forest and fire management;

- Since the early 1990s FD has benefited from a number of donor assisted FAO implemented projects such as GCP/SRY/010/ITA, and GCP/SYR/012/ITA which have infused the emerging concepts of participatory forest and fire management. Of late and within the framework of the project 'Forest Sector Policy and Institutional Development' (TCP/SYR/3103) a series of activities and training workshops on forest sector policy and institutional development were carried between February 2008 and February 2009. In addition some exercises were undertaken by the MAAR with support from FAO whereby local and international experts dwelt on the forest sector policy and institutional development to bolster the capacity of various stakeholders, for the joint development and implementation of country-led National Forest Program (nfp) process.

Participatory Approach

A participatory approach involving a wide-spectrum of stake-holders had thus been followed in drafting the National Forest Policy for SAR. A Central Working Group together with several Provincial others were formed with representatives of the relevant line ministries and institutions, Government and Non- Government Organizations, local communities and private sector. Workshops were organized at Aleppo, Damascus, Daraa, Idleb, Latakia, and Tartous.

The workshops discussed such aspects as:

- (A) The need for a new approach and orientation of the National Forest Policy in Syria,
- (B) Definition, objectives, basic principles and strategies for such Policy,
- (C) Institutional and legislative reforms in accordance with the new National Forest Policy.

SAR Forest Policy Framework

Objectives, basic principles, strategies and action plans for National Forestry Policy for SAR are elaborated in Annex (15).

Approval of National Forestry Policy for SAR.

The National Forestry Policy for SAR was approved by the Government in December 2010.

3.3. Forestry Institutions

The Forest Administration:

Since its inception in 1869 the forest service of Syria had undergone sizeable changes in organizational structure, functions, affiliation, human resources development etc. which encompassed:

The period of the Ottoman Empire

During this era, the forestry institution was attached to the Directorate of Agriculture. The forest institution was made up of forest inspectors, forest guards' & commanders and villages local committees.

The main mission of the forestry institution during this era was to manage the exploitation of wood, charcoal-making and levy taxes on wood removals.

The period of the French Mandate

The forestry institution has been transformed in 1926 into a committee for forest supervision. This committee was attached to the Ministry of Agriculture & Economy. The mission of the committee was to protect the newly replanted forests.

In 1935, Syrian forestry institution was transformed to be called Forests Directorate (FD) at national level and forests sections at departmental level. Departmental forest sections consisted of forest inspectors, technicians and forest guards.

The mission of FD during this period was to apply forests law, protect forests beside the rehabilitation of degraded forests.

The period since independence

In 1953, after the independence of Syria, FD was attached to the Ministry of Agriculture which was established in 1948. And after the revolution of March 8th, 1963 FD was attached to the Ministry of Agriculture & Agrarian Reform (MAAR).

The main mission of FD during this period was to protect forests and to supervise the exploitation of public and private forests.

FD Affiliation & Organizational Structure

Presently, FD is affiliated to the Administration of the Natural Resource within MAAR. The Natural Resource Management contains the FD together with three others namely: Badia & Rangelands, Soils & Water and State Properties & Agricultural Reform Directorates. The FD consists of five Divisions:

- A) Afforestation Division consisting of two Sections: i) Seeds & Nurseries, ii) Afforestation,
- B) Protection Division consisting of four Sections: i) Forest Police ii) Forest Fires iii) Forest Law iv) Communication.
- C) Forest Management, Organization & Investment Division consisting of three sections: i) Forest Management ii) Silviculture iii) Private Forests.
- D) Biodiversity & Reserves Management Division consisting of four Sections: i) Biodiversity & Ecological Data –base, ii) Protected Areas, iii) Eco-tourism, iv) Awareness and Forest Extension.
- E) Forest Studies Division which consists of two Sections: i) Forestry Studies, ii) Cartography and GIS.

In addition there is a Secretarial Section for management affairs. This section contains three sectors i) Documentation ii) Monitoring & Evaluation iii) Mail & Communications

The main mission of the present FD is to manage four projects at national level: Silviculture, Forest Improvement, Forest Protection, and Fire Control & Green Belt Projects.

Provincial Forests Directorates

The Syrian FD also contains Forest Departments in each Governorate. These Provincial Departments are affiliated (in addition to the Central FD) to Regional Directorates of Agriculture & Agrarian Reform.

The Forest Guards

Also there are Forest Guards. The main work of the guards at present is to watch for forest fires, prevent the entry of cattle as well as people who may cut trees or try to make charcoal. They also control the methods used in the implementation of permits issued by the FD for the legal use of forest resources. In fact all activities in forest areas need a permit of the FD. The FD in the region has the authority to make periodical surveys but the final authorization and permit to use the resources rests with the Director of Forestry and the Manager of Natural Resources in Damascus.

Human Resources (HR) of FD

The Current HR of FD consists of 2300 persons as detailed in table (28).

Table 28: HR of FD

Technical & Professional				Non-Technical	
Diploma	B.Sc.(For)	M.Sc.	Ph.D.	Total Technical/Professional ¹	Skilled /Unskilled labour
19	27	6	4	56	2244

¹. *Diplomas: Technical & Professional is 10:37=1:2.*

The HR of FD is on the whole adequate in as far as forest protection particularly in fire management. However, the capacity is weak in contemporary issues such as climate change impact on forests, integration of range & forests and the concept of popular participation in forestry matters.

FD Linkages

The FD has some formal internal, regional and global linkages:

- i. Internally, FD is linked to other land using institutions, agricultural research, higher education institutes and civil defence corps.
- ii. Regionally FD through the MAAR is closely linked to:
- iii. The Arab Forest & Range Institute (AFRI), a subsidiary of the Arab League of States. AFRI is hosted by Syria.
- iv. Neighboring Turkey in Forest and Fire Management aspects.
- v. At the global level FD enjoys cordial and collaborative relations with the donor community and relevant UN Development Agencies such as FAO.

Challenges Facing FD

The main challenges facing FD in Syria centre round:

- i. Legislative revisions to accommodate the emerging principles stipulated by the newly formulated National Forest Policy particularly popular participation in forest and fire management,

ii. Capacity building of staff to accommodate the vagaries of desertification, water deficit, soil erosion and climate change.

Other Forestry Related Institutions

- The High Commission for Afforestation (HCA): The HCA was established by Presidential Decision No. 108 of 1977 with a mandate to promote the planting of both forest and fruit trees, with the eventual goal of reaching 15% forest cover. Five ministries as well as five popular organizations participated in the HCA. Annual targets aimed at planting up to 30 million forest trees and 12 million fruit trees on 24,000 ha. Afforestation efforts led by the HCA were implemented by MAAR. In 2002, the HCA was dissolved, with MAAR taking over additional responsibility for planning, as well as implementing, afforestation programs.

- Environment Protection Agencies

These are bodies concerned with environmental aspects including forests.

• The Higher Council for Environmental Safety (HCES): HCES was established by Decree #11 of 1991. Headed by the Prime Minister, it is the highest-level decision-making body on environmental matters, with the power to adopt environmental policies, regulations and standards as well as to prohibit any environmentally damaging activities,

• The General Commission for Environmental Affairs specially charged with preparation of environmental plans and laws, the assessment of environmental problems, the prevention and control of ecologically harmful activities, and the promotion of environmental public awareness,

- The Extension Department of MAAR, dealing with extension activities related to the forestry sector, in close cooperation and coordination with FD,

- The MAAR Training and Qualification Department, responsible for the organization of training courses related not only to agriculture & animal husbandry, but also to forestry activities.

- The MAAR Range Department, responsible for fodder shrub production and plantation in steppe areas. The department promotes sustainable use of natural resources in these areas, especially by preventing overgrazing through the creation of protected areas in the most endangered zones.

-At the national level, a number of steps have been taken towards establishing a policy, legal and institutional framework for conservation of biological diversity. The Ministry of Local Administration and Environment (MLAE) was created and given broad responsibilities to define rules and regulations in the area of environmental protection. In 1996, MLAE established a National Biodiversity Unit (NBU). The NBU has acted as the national executing agency for the preparation of the National Biodiversity Strategy and Action Plan (NBSAP).

- Protected Areas

Legal, policy and institutional steps towards the establishment of an effective system of protected areas (PAs) have taken longer to develop, despite their critical importance as a tool for conserving biodiversity including Forests. By the end of 1993, only two PAs (total appx. 35,000 ha) had been established in Syria: Al Talila (1991) and Jebel Abdul Aziz (1993).

The 1994 Forestry Law gave MAAR the right to establish three specific types of protected areas:

Nature protected areas (NPAs)

NPAs are created for the protection of a forest or an ecosystem because of its biodiversity.

Grazing, cutting and agricultural practices are prohibited in nature protected areas.

Restoration protected areas (RePAs)

RePAs are created in areas affected by soil erosion or sand dune invasion, or any other kind of degradation which makes it necessary to stop all agricultural activities in the area. In many cases these areas are planted with trees.

Rangeland protected areas (RaPAs)

The Directorate of Badia, pasture and steppe undertakes the following functions:

- Deals with matters relating to the natural pasture, fodder, water and animal husbandry in the Badia.
- Manages the fodder fund to supply livestock producers with credit to buy feed.
- There are currently within the Badia Directorate three projects for the distribution of pastoral seedlings, digging wells, installation and maintenance.
- The Badia Development project and the Tanf project both in the Badia aim at receptively reclaiming three million and 600.000 thousands ha in the Badia. The Tanf project provides for sheep breeding and water harvesting. Each of the projects is a separate directorate.

RaPAs are created in the steppe, or Badia, to protect the pasture for sheep grazing. These protected areas are planted partly with *Atriplex* or *Solsola* shrubs to increase their carrying capacity for grazing. Reseeding methods are also used to rehabilitate degraded parts of the protected area. RaPAs are open for periodic controlled grazing during the dry season and in dry years. They constitute a feed reserve for sheep and demonstration sites for herders.

From 1994 to 1997, MAAR gazetted only one NPA (1,350 ha), the Cedar and Fir protected area in Slenfe. Meanwhile, two wetland PAs (total appx. 1,600 ha) were established during this period by the Ministry of Irrigation. From 1998 to 2002, eight new NPAs (total appx. 80,000 ha), all within forested or degraded forest ecosystems, were gazetted by MAAR, along with a significant extension to the area of the Jebel Abdul Aziz NPA. Also, in 2000, a Marine Protected Area (MPA) was established by the Directorate of Ports at Um al Toyour.

Forestry Educational Institutes

Diploma Forestry Education

The Arab Forest & Range Institute

The Arab Forest & Range Institute (AFRI) was established in 1959, through an initiative from FAO Committee on Forestry (COFO) as Near East Forest Rangers School. In 1969 the Institute was transferred to the League of Arab States (LAS). Since 1976, the Institute has been supervised and financed by the Arab Organization for Agricultural Development (AOAD), a subsidiary of LAS.

AFRI had been and remains the only Pan Arab Forestry & Range Institution that offers an outstanding mid-level professional education and training in Forestry, Range Sciences, as well as Ecology & Biodiversity. Through the two-year course study, AFRI students may obtain a Diploma in Forestry, Range Management, and Ecology & Biodiversity. Currently, the institute

has 60 students enrolled and more than 1350 alumni. AFRI is located in the Lattakia, a SAR coastal city. AFRI campus is situated in an impressive setting of forest trees, Botanical Garden, Nursery, Research Stations and a number of Agricultural bureaus and offices. Forestry, range and biodiversity classes take advantage of these facilities for hands-on training, education and research opportunities. AFRI complex contains modern classrooms, laboratories, computer facilities, library, well equipped conference rooms and recreational facilities. All constitute an ideal serene environment for living and learning.

The overall mission of the AFRI is to help students and on-job trainees develop science-based knowledge, field expertise, extension skills, and professional ethics in understanding and managing forest, range resources and biodiversity issues within the context of sustainable management of renewable natural resources.

AFRI is governed by a Board of Directors (BD) which includes the Deputy Director General of AOAD as a chairman, rotated representative members from Arab Countries namely, Directors of Forest and Range Directorates, and the Institute Director. The BD meets once a year to review work program, budgetary matters and academic affairs. Approved agenda is endorsed by AOAD Director General for implementation. Instruction is provided by AFRI full time faculty members from various Arab Countries and by part-time host country university scholars. With more than 28 nationally and regionally recognized faculty members, AFRI ensures excellence in education and distinguished professional hands-on training on the management of forest and range resources and Biodiversity related issues. The institute has come to be recognized as one of the leading professional training institutes in the Arab Region. After more than forty years of its establishment, the determination to offer high standard professional training in fields of forestry, rangeland management and biodiversity still stands firm. Through its two year program and on job training activities AFRI graduates and trainees are very well known throughout the Arab Region for the quality of their work. They are making a significant contribution to the better management of forest and rangeland resources as well as biodiversity in their home countries. Currently, AFRI is devoting great effort to institutionalize cooperation with universities, research centers and regional and international organizations.

University Forestry Education

The first higher forestry education in Syria started in 1992 at the University of Aleppo, and was structured to train forest engineers in a five-year period of studies. The first group of forest engineers graduated in 1994. Nowadays, forestry studies are also given at other Syrian Universities.

Post-graduate forestry studies are developing in the form of:

- a) Diploma in Forestry & Ecology of one year,
- b) A Masters Degree in Forestry & Ecology consisting of two years to prepare a thesis in a Forest & Range researches.

Only a few M.Sc. and Ph.D. degrees have been awarded by the Department of Forestry at Aleppo University due to staff and infrastructure limitations. The Department awarded the first Ph.D. in 1999. The name of the Department of Forestry & Ecology changed to Renewable Natural Resources and Ecology Department (RNRED) in the academic year 2007-2008. The Department has four specialized Branches (Rangeland, Forestry, Hydrology, and Ecology).

RNRED also conducts research in the different fields of silviculture, environment, and wood

technology sciences. The department has laboratory facilities for wood testing and experimental nursery for tree breeding and genetics and species trials. In addition there are Institutes related to the Ministry of High Education which are distributed in some Syrian governorates that educate forest and natural resources sciences as a part of their curricula.

Forestry Research Institutes

The General Commission for Scientific Agricultural Research (GCSAR), is SAR's primary agricultural research agency. The commission was established by Law n° 42/2001 under the MAAR through a merger of nine former research entities, one of them the Division of Forestry Research of FD. This moved the forest research in Syria to a more advanced level and empowered it to modernize scientific and administrative structures and develop research programs.

The GCSAR is a semi-autonomous body focusing on field crops, vegetables, natural resources (soil and water), forestry, horticulture, pesticides, plant protection, livestock, food industry, and socioeconomics. The commission encompasses seven research administrations, two technical administration, seven technical departments, and eighteen regional centers.

GCSAR is governed by a board that is chaired by the Minister of Agriculture and Agrarian Reform and comprises the Director General, Deputy Directors, and administration heads of GCSAR; Deans of Colleges of Agriculture and Veterinary Science; Scientific Experts appointed by the Minister; Directors of Extension & Planning within MAAR; and Representatives of Farmer Organizations and the State Planning Commission. GCSAR is also responsible for formulating national agricultural research policy. With the merger, it inherited all existing facilities resulting in a network of 18 provincial research centers, 54 research stations, and more than 150 smaller research facilities. Plans are under way to further consolidate this extended network.

The Administration of Natural Resources Research (ANRR) is constituted of 11 departments one of them is the forestry department:

1. Surface Water Resource Management Research,
2. Water Planning and Designing of Irrigation Systems,
3. Drainage and Irrigation Water Quality,
4. Environment and Pollution,
5. Soil Physics & Chemistry,
6. Soil Conservation/Rehabilitation and Land Reclamation Research,
7. Soil Fertility,
8. GIS and Remote Sensing Research,
9. Forestry Research,
10. Rangeland Development and Management Research,
11. Water Requirements and Irrigation Techniques Research.

As can be noticed from the names of the departments of ANRR-GCSAR the involvement of most of their departments is directly or indirectly in land resources use and planning.

The mission of the GCSAR-ANRR is:

- Conserving, developing and improving natural agricultural resources,

- Rationalizing the use of water, lands, fertilizers and vegetation,
- Focusing on the development of modern irrigation methods and their propagation among farmers;
- Applying GIS systems and analyzing agricultural soils for farmers for balanced and rational fertilization as actually needed.

All assignments are for improving the quality of agro-products and reducing production costs.

The total number of GCSAR HR is 4687 distributed as depicted in table (29).

Table 29: HR of GCSAR

GCSAR Scientific Cadre during 2008						
	Total	Ph.D.	M.Sc.	Diploma	B.sc.	Supporting staff
Number of Person working at the central administration	846	42	53	103	251	397
Number of Person working at the central independent division	102	12	12	14	31	33
Number of Person working at the research centres in the Governorates	1872	57	80	189	545	1001
	2820	111	145	306	827	1431

Resource: Elaborated from MAAR publications

The GCSAR cooperates with the International Centre for Agricultural Research in the Dry Areas (ICARDA), Arab Centre for Studies of Arid Zones and Dry lands (ACSAD), International Centre for the Improvement of Wheat and Maize (CIMMYT), Food and Agricultural Organization (FAO).

The GCSAR implements several projects in collaboration with United Nations Development Program (UNDP), Global Environment Facility (GEF), International Fund for Agricultural Development (IFAD), European Union (EU), Japan International Cooperation Agency (JICA), International Centre for Bio-saline Agriculture (ICBA), United Nations Industrial Development Organization (UNIDO) Arab Commission for Agriculture Investment and Development, Swiss Agency for Development and Cooperation (SDC) International Olive Oil Council (IOOC) and Arab Organization for Agricultural Development (AOAD) in addition to Universities and Scientific Agricultural Research Institutes and Organizations in Syria.

4. Tunisia

4.1. Forest Legislation

The Forests Service of Tunisia was first established by decree in 1883. A number of legislations have since been promulgated addressing such issues as forest management & exploitation, charcoal production, use of fire in forests & neighbourhoods, hunting, sand-dune fixation, establishment of national parks, levying of taxes on forest products, conservation of resources (wild & cultivated olives), soil conservation, establishment of relevant forestry institutions and formulation of forests policy. The most salient of these legislations were perhaps:

1920: Grazing in use right,
1936: Creation of National Park,
1958: Restriction of goat-raising in forest lands,
1958: Observation/celebration of forests day,
1966: Promulgation of first forest code,
1966: Promulgation & Ratification of Act establishing the Livestock & Pasture land Authority,
1966: Creation of National Institute for Forest Research (NIFR)
1970: Creation of Silvo-Pastoral Institute of Tabarka, to train Forestry Technicians.
1974: Promulgation & Ratification of Forest Act on Forest Management Plan,
1981: Establishment of Silvo-pastoral Development Authority in North-West Tunisia,
1994: Reorganization of GDF
1994: Creation of National Institute for Research in Agricultural engineering, Water & Forestry,
2005: Forest Act Establishing Concessions in Public Forest Land,
2006: Ministerial Decree establishing Research Laboratory @ Silvo-pastoral Institute, Tabarka,
2008: Ministerial Decree approving concession contracts (eco-tourism Project) in State Forest Domain.

4.2. Evolution of Forests Policy

Since 1842, the forestry policy in Tunisia evolved through five different phases marked by important organizational, legislative and/or strategic decisions which have impacted the forestry policy in the country. International influence was apparent in many cases of the decision making process, which in this analysis is taken into account.

Phase 1: Period before the Independence (1842- 1956)

The main objectives of the forest legislation during this era were definition of the limits of the forest domain and protection of the forest resources.

Phase 2: From 1956 to 1970

This period was marked by placing the forest sector high in the national priorities in the framework of the National Development Plans. This period was also characterized by strong political will to build the country and establish economic foundations. The independent Tunisia gave high priority to the control of erosion and combating of desertification and to the creation of employment opportunities.

Phase 3: Period from 1971 to 1987: Reinvigorating the Forest sector

This phase corresponds to the implementation of large development projects. In this context, priority was given to the development of natural forests and implementation of large projects dealing with forest production

Phase 4: Period from 1988 to 2001: Rethinking the Way Forward and Redefinition of Orientations

This decade has deeply reshaped forest policy and remains at the origin of the main orientations for the development of the forestry sector until today. The national decisions on the forest sector have been largely influenced by the shifts at global level towards sustainable forest management concepts, particularly those emanating from The United Nations Conference on Environment & Development (UNCED) and the Earth Summit in Rio de Janeiro in 1992. At this stage the forest policy emphasized the involvement of the local populations in the development of the sector and on the preparation of methodologies and tools to improve their participation. A number of pilot projects were implemented on approaches to integrated and participatory development of the forestry resources with the aim of achieving sustainable, planned, participatory, and integrated & community based development programs in the forest areas. These activities were carried out in the framework of the cooperation project (UTF/ TUN/ 033): Implementation of Participatory Action for Integrated Development with Food & Agriculture Organization of the United Nations (FAO). Other activities were carried out under several other projects co-financed by external donors such as the Silvo-Pastoral Development Project in Kairouan, The Forest Openings Development Project for Local Populations, The Development Project of the Forest Areas co-financed by the German Bank (KfW), and the Mountainous Areas Development Project in the North West of the country.

The era also witnessed a consolidation of the forestry program. That encompassed the implementation of the First Inventory of Forest & Rangeland Resources (1987- 1993), Development & Implementation of the National Strategy for Forestry & Desertification Control (1990-2001) and Implementation of the Forest Development Project - phases 1 & 2 - with the support from the World Bank (WB). Three strategic studies were prepared accordingly during the period of 1997-2000 including: (i) Study on Firewood, (ii) Study on the Industrial Sector using Local Wood and (iii) Study on Non-Wood Forest Products (NWFP).

Phase 5: Period from 2001 to date

This phase was marked by actions for modernizing the forest sector and assuring greater openness towards its environment with courteous support from international donors and organizations, such as the WB, GTZ and FAO. Modern and state-of-the-art technologies were introduced and adopted including mechanized plantations, modern nurseries for the production of quality seedlings with implementation of research-development programs through a number of specialized institutions.

Moreover, the concept of joint forest management promoting involvement of the local forest populations and the private sector in funding and forest management was increasingly developed and applied. Strategic partnership between the public and private sectors is an important decision in forest policy in conformity with the global guidelines, conventions & treaties. The following are but examples of such an alliance:

- Launching in 2002 of the project for integrated management of the forests, co-financed by the JBIC according to the participatory approach covering an entire forest area with a principal component dealing with the socio economic development of the forest population,
- Upgrading of the Sub-Directorate of Forest Management into Directorate of Socio-economic Development of Forest Populations which is responsible, among other tasks, for assistance of the forest populations and their involvement in the forest development programs,
- Start in 2003 of the project of Sustainable Management of Forest Ecosystems with support

from GIZ in order to seek new forms of partnership between the stakeholders involved in conservation, management and use of forest resources. Among other purposes, the project aimed at developing methodologies and tools for participatory and integrated forest management, transferring activities and responsibilities of forest management to the local population and to private sector and promoting pilot initiatives of public- private sectors partnerships

All along, Tunisia was kept in pace with global environmental and forest happenings. The country had hitherto signed and ratified most of the contemporary global & regional conventions/treaties. Annex 16.

4.3. Forestry Institutions

For the purpose of this analysis, Forestry Institutions in Tunisia are clustered in four groups of structures namely: The Forest Service responsible of formulation and implementation of the forestry policy, Forestry Education & Training Structures, Forestry, Environmental & Natural Resources Research Structures and other relevant institutions which encompass forest users and local communities.

The Forests Administration

The management of the forest and rangelands was assigned to the General Directorate of Forests (GDF) within the Ministry of Agriculture & Environment. The last restructuring of the GDF goes back to 2001. Accordingly the new organization chart of GDF portrays four Directorates, eight sub-Directorates and six Services (Annex 17). Thus besides the creation of a new Directorate in charge of the socio-economic development of the local population in the forest areas, the other three Directorates are: Directorate of Forest Conservation, Directorate of Silvo-pastoral Development, and Directorate of Law Enforcement & Monitoring. Parallel to that, the GDF has a unit with rank of Directorate for the management of external financial assistance.

At the regional level, GDF is represented within the Regional Offices for Agricultural Development (ROAD) by Forest Districts (FD); one FD per Governorate, subdivided at lower administrative levels into Intervention Units. The FD is administratively and financially attached to the ROAD and technically to the GDF. Under this scheme, the GDF conceives, supervises and controls forest development activities carried out at the regional level. The FD implements the annual work plan within the limits of the budget allocated and under the supervision of the ROAD.

Main stages of the Evolution of the Organization of the Forest Department:

The Forests Administration is among the first administrative set up in Tunisia. Its creation goes back to 1883. Its affiliation, mandate and structure went through nine revisions namely:

- 1883: Creation of the Forest Service under control of the General Directorate of Public Works,
- 1947: Re-organization of the Ministry of Agriculture and the creation of sub-Directorate of Agriculture to which the Forest Service was attached,
- 1963: Re-organization of the State sub-Secretariat of Agriculture with four Directorates; Economic, Technical, Administrative & Financial in addition to the Directorate in charge of National Authorities of Management & Sustainable Development. The Forest sub-Directorate was under the Technical Directorate,
- 1965: Re-organization of the State sub-Secretariat of Agriculture with four Directorates of Hydraulics & Development, Agricultural Production, Research & Training and Agricultural Development. The Forest sub-Directorate was part of the Hydraulics & Development Directorate.

- 1970: Forest sub-Directorate was upgraded to a Directorate with three Divisions (or sub-Directorates) covering: Studies & Forest Engineering, Forest Production and Forest Police.

1977: Organization of the Directorate of Forests into five sub-Directorates: Production, Studies, Control, Forest Police and Soil, Water Conservation & Reforestation.

- 1987: Modifying the Organization Chart of the Forests Directorate focusing on forest rehabilitation, management of natural rangelands and protected areas. Thus, the Forests Directorate was reorganized into six subdivisions in charge of Inventory, Rehabilitation Studies, Reforestation, Rangelands, Hunting & National Parks and the subdivision of Control & Forest Regulation. The soil and water conservation aspects were assigned to a new independent directorate.

- 1990: Establishment of GDF with three Directorates in charge of Forest Conservation, Forest Control and Silvo-pasture Development. In addition, a unit for project management was created with rank of Directorate to implement the forest development project co-funded by the WB.

- 2001: Re-organization of the Ministry of Agriculture, Hydraulic Resources & Fisheries which included reorganization of the GDF. Thus, GDF was structured into four central Directorates in charge of Forest Conservation, Law Enforcement & Control, Silvo-pastoral Development and Socio-economic Development of local populations.

The total number of technical cadre of Tunisian Forest Service totals 395 made up of 263 various levels of technicians and 132 various levels of Forest Engineers (professionals).

All in all the number is deemed adequate. However, very few of the professionals have received post-graduate education in aspects other than forestry. Within the forestry sphere, some have obtained post-graduate training in one of the contemporary pressing issues; popular and private sector participation in forest management. Other contemporary issues such as climate change, integration of forest & range resources are still to receive allocation of HR to master.

The General Directorate of Management and Conservation of Agricultural Lands (GDMCAL)

GDMCAL is a technical department of the MAWR. Its duties and organization are defined by the Decree n° 419 or 2001 related the Mission of the Ministry. GDMCAL is responsible of all activities related to soil and water conservation, rehabilitation and improvement of agricultural lands with an ultimate aim to promote and sustain investments and to improve farm productivity and rural population's income.

It contributes towards the implementation of the national strategy for integrated agricultural development and the strategy for forest development; in particular through its anti erosion programs for watershed management and tree planting in agro-forestry activities for soil and water conservation.

GDMCAL, like GDF is an important provider of contingent employment through its various administrative site workers widespread all over most unfavorable rural areas deprived of other opportunities. In spite of many GDMCAL has recently recorded many successes and experiences in terms of promotion of job provision for workers and giving opportunity of partnership relations in matters of resources preservation and rural environment protection .

The project GCP/TUN/028/ITA entitled "Soil & Water Conservation Program in the governorate of Kairouan , Siliana and Zaghouan " which ended in 2006, developed tools to help decision makers to provide opportunities to diversify and to improve incomes to be diffused and capitalized .

Forestry & Range Educational Institutes

Professional agricultural and forestry engineers

Up to 1980s professional foresters in Tunisia were trained abroad, largely at the National Forestry School of Engineers in Sale-Rabat, Morocco and in other training institutions in France as well as in the United States of America.

Since (1985) Professional Agricultural/Forestry Engineers are trained at the National Institute of Agronomy of Tunisia (NIAT). Students with BAC study for six years and graduate as Principal Engineers with a Bachelor Degree in Agriculture or Forestry.

Forestry Technicians

Principal Technicians are trained at the Silvo –Pastoral Institute of Tabarka (SPIT). SPIT was established in 1970 as a high education institute. On inception SPIT was affiliated to the Ministry of Agriculture. It was subsequently affiliated in 1996 to the Ministry of Higher Education, Scientific Research & Technology.

SPIT was established with a defined mission and objectives of bestowing sound technical level education to baccalaureate certificate holders and rendering of other relevant services to the forest communities. Educational and other services rendered by SPIT include:

- Training of Forest Engineers in collaboration with NIAT,
- Training of Technicians in forestry
- Continuous training and refresher courses
- Consultancies and expertise in forestry and eco- tourism.

With an overall Theory: Practical ratio of 75:25, the curriculum for SPIT was developed over three phases through technical cooperation with Swiss Agency for Development. A new specialization in Environmental Tourism was introduced in 2001. SPIT intends to launch a M.Sc. course in Environmental Tourism.

The curriculum emanates from an approved educational policy which advocates the consolidation of environmental heritage and outreach awareness raising program through distant learning.

Admission to SPIT is administered by the Ministry of Higher Education, Scientific Research & Technology. Admission requirements include a baccalaureate certificate in experimental sciences. Training is given for duration of three years within the field of forestry with Options of Forestry and Eco-tourism for an average annual intake of 60 students. They graduate as high level forestry technicians with a Diploma in Forestry.

SPIT is managed by an administrative hierarchy presided over by a Director General (DG), Undersecretary, Director of Studies, administrative staff and teachers.

Since 1996, an Academic Council was appointed that elects the DG. Heads of Departments are elected by teachers.

SPIT has an aggregate faculty of 19 staff as detailed in table (30) together with 20 visiting lecturers.

Table 30: SPIT Aggregate Faculty (Academic staff) ²

Degrees	Diploma	B.Sc.	M.Sc.	Ph.D.	Total
On establishment (date)					
Current (2011)		2	3	14 ¹	19

¹. Six PhDs in Forestry Sciences, two in Range Sciences and six in other related subjects such as Remote Sensing, GIS, Animal Production and Wildlife.

Student enrolment throughout SPIT life is portrayed in table (2).

Table 31: Student enrolment over institution's life²

Student enrolment	Diploma				Bachelor			
	Enrolled		Enrolled		Enrolled		Graduates	
	Male	Fem.	Male	Fem.	Male	Fem.	Male	Fem.
On Establishment (1972)	23		23					
Five years later (1975)	80		80					
Ten years later (1982)	168		168					
Fifteen Years later (1987)	235		235					
Twenty years later (1992)	284		284					
Current (2010)	8	12	8	12				
Total								

². Relating tables (30) and (31), SPIT has a staff: student ratio of 5.

SPIT is provided with adequate laboratories dealing with Biotechnology, Agro-forestry, Management & Silviculture, Soil Sciences & Environment, Genetic Resources & Biology, Mapping /Geographic Information System (GIS) together with Adequate student recreational facilities

SPIT activities are coordinated with GDF, Research Centres and other local and regional educational institutes.

SPIT Staff undertakes research through student supervision and directly by academic staff.

The Agency for Vocational Training in Agriculture and Extension (AVTAE)

AVTAE is a public institution with an administrative character created in 1990. Its internal structure was modified by the Decree of 21 December 1999. It falls under the Ministry of Agriculture & Water Resources (MAWR). Its duties include: contribution to formulation and implementation of national policy related to extension, vocational training and refresher courses in the field of agriculture, fisheries and forestry; coordinate related programs at regional level and support the ROADS and the vocational training centers; produce and disseminate audio-visual support

material and assist farmers to perform extension activities and promote professional associations.

The Vocational Training Center in Remel, created in 1968 within the framework of Tunisia-Finland cooperation as forest exploitation school is the only one of forestry controlled by AVTAE. The center was dedicated to refreshing and capacity development for specialized labors and labor supervisors to meet the needs of the Forestry Administration and the private sector. The center provides vocational training of about 20 loggers per year.

Forest & Range Research Institutions

The Institute for Arid Zone

The Institute for Arid Zones in Medanin is part of the Forestry Administration landscape as it involved in research in agriculture and environmental fields particularly through topics on rangelands management and desertification control. IAZ was established by law in 1976. It was affiliated to the Ministry of Agriculture and was assigned the following mission:

- Carry out applied research that contributes to the development of agriculture, protection and conservation of natural resources, and control of desertification in the arid and desert areas,
- Provide training and education services to improve the skills of technicians and research staff specialized in agriculture in arid areas and desertification control,
- Participate in extension programs and technical assistance to the agriculture sector in order to conserve natural resources and prevent desertification,
- Carry out studies for integrated development projects in the South of Tunisia,
- Facilitate and coordinate activities and works of different organizations involved in arid areas.

IAZ encompass four regional centers. It is endowed with a technical staffs at the pinnacle of which are eight Ph.D. holders. HR situation of IAZ is depicted in table (3).

The management and functioning of the institute is entrusted to a management board composed of representatives from organizations concerned with development of the South of Tunisia such as training and/or research institutions, regional / national development authorities, ROAD and different national/regional specialized institutions.

The work plans and programs are designed by a scientific board composed of qualified members elected or designated as per the Decree n°97-938 of 19 May 1997 related to scientific, administrative and financial organization of public establishments undertaking scientific research and to the modalities of their functioning. The programs of IAZ are implemented within the framework of local, national, regional and international cooperation. HR situation of IAZ is depicted in table (3).

National Institute of Research on Rural Engineering, Water and Forestry (NIRREWF)

Research in forestry is entrusted to NIRREWF, which was created in 1996 after the merging of the National Institute of Forestry Research (NIFR) and the Research Center of Water and Rural Engineering. NIRREWF which benefits from financial autonomy is affiliated to the Institution for Research and Higher Agriculture Education.

NIRREWF is organized in two laboratories. The first deals with use of marginal waters, management of irrigation systems and hydro-agriculture management. The second is dedicated to ecology and silvo –pastoral management. NIRREWF also has three research units for silviculture, protection & valorization of forest resources, improvement & development of agro-

forestry-pastoral systems and agricultural machinery.

Most of the research topics covered are closely linked to solving technical problems encountered in the field. Research works on economic and sociologic aspects are still modest despite their importance in the sector. Generally, research topics concerning forestry are related to ecology, production and valorization. Currently NIRREWF has 40 permanent researchers and 16 temporary researchers, six engineers and 50 technicians. HR situation of NIRREWF is depicted in table (32).

Table 32: HR situation in major research institutions in Tunisia 2010

Research Institute	Dip.	B.Sc.	M.Sc.	Ph.D.	Total
Institute of Arid Zone Research	30	65	35	70	200
National Institute for Research in Rural Engineering, Water & Forestry	50	6	20	20	96

Agriculture Research & High Education Institution (ARHEI)

ARHEI was established by the Law in 1990. It managed by the Council for Agricultural Research & High Education. By delegation from the MAWR, it is entrusted with the supervision research and high education establishments and schools and provides them with administrative and financial support for all agriculture research and scientific and pedagogic performance. This is done in coordination with the Ministry of High Education.

Regional Centers for research-development of Beja (North- West) for the sub-humid eco-zone and Kef (North-West) for the semi-arid eco-zone represent ARHEI and research institutes at the regional level and have duties to coordinate all research activities in these regions. These activities are undertaken within the framework of general memorandum of understanding and specific contracts between ARHEI and these centers. These centers work along channels of coordination between researchers and extension structures operating in the region.

Other Relevant Institutions

The Technical Center for Wood Industry and Furniture (TCWIF)

TCWIF is a legal entity of a public economic interest subjected to the provisions of the code of commercial companies with financial autonomy. It falls under the supervision of the Ministry of Industry, Energy and Small & Medium Enterprises. TCWIF was established by decree of the Minister of Industry in 1996 in response to the requirements of the profession in accordance with the Law n°123 of 1994 related to technical centers in the industrial sectors. TCWIF started operating in 1997.

TCWIF is administered by a management board composed of twelve members of whom three quarters represent the business and one quarter represents the public administration.

TCWIF defines its activities along three axes:

- Places its know-how and expertise at the disposal of other enterprises through technical assistance, advise, training and trials,
- Undertakes actions to raise performance of the sector to enable it to consolidate its position in

the local market and to find new market opportunities through definition of norms, quality control, and state-of-the-art technology,

- Generates, centralizes , manages and disseminate scientific & technological information, research & development , technological monitoring and documentation

TCWIF involvement is based on its laboratories and its team composed of engineers, technicians and highly skilled managerial staff whose competences and know-how are diversified allowing to manage, analyze and innovate in the fields of wood and furniture.

The Development Groups of Forest Users (DGFU)

The first association of the forest dependent population goes back to 1996; eight years after the revision of the Forest Act in 1988 which brought new provisions (art. 43 and 44) that allow forest users to organize themselves into Associations of Common Interests or Development Groups. Fifty Associations of Common Interests (AFICs) were created with the assistance from development projects and foreign funding such as from KFW and WB. In 2002 and following a wide national consultation for the promotion of socio-professional organizations (Associations), the Ministry of Agriculture elaborated a national strategy defining two models of organization of forest dependent populations namely Agricultural and Fisheries Development Groups (AFDG) and Mutual Agriculture Services Enterprises (MASE).

At this moment, the number of associations operating in forestry is 38, located mainly in the governorate of Jendouba (11), Béja (5), Nabeul (1), Kef (4), Siliana (2), Kairouan (6), Kasserine (4), Sidi Bouzid (2), and Zaghuan (3). The forest dependent population affected by these grass-root organizations is 4099 men and 359 women. Two hundred twenty eight (228) lead persons (6 per each organization) are elected or chosen to manage these local structures. The GDF continues endeavors to involve these socio-professional organizations in the management of the forest resources through contracts and direct agreements to implement forestry works. The Associations operating in forestry are still facing difficulties to be a real development partner and manager of forestry resources.

The AFDGs are regulated actually by the following laws and Decrees:

- Law n°43 for 1999 related to Development Groups in the sector of agriculture and fisheries,
- Decree n° 99 for 1999 concerning the statutes of these groups,
- Law n°2004 for 2004 modifying and complementing the Law n°99 for 1999 concerning AFDGs,
- Decree n°2006 for 2006, approval of the modification of statutes of AFDGs approved by the Decree n°99 for 1999,

Moreover, other types of associations of forest users and farmers as well as trade union organizations have existed for some time as summarized in table (33) below:

Table 33: Organizations in the private sector (associations of forest industry)

Name	Contact information	Field of activity /interest
Chamber of loggers and charcoal makers	Tunisian Union of Industry, Commerce & Crafting (TUICC).	Timber and wood exploitation
Chamber of harvesters of essential oils	TUICC	Use of secondary forest products (Rosemary, Myrtle (Myrtus comminus) ...
Technical center for timber and furniture	TUICC	Sawmills
Tunisian Union of Agriculture and fisheries	TUICC	Beekeepers, tree planting (wind- breaks, agro- forestry , linear plantations)

Regional Offices for Agricultural Development (ROAD)

ROADs were created by the Law n° 88 for 1989 with the statute of a public establishment of an administrative character. They represent MAWR at the regional level. In each Governorate, there is one ROAD under which the main services of the Ministry are clustered. The ROAD is headed by Senior Officer with the rank of General Director of Central Administration, assisted by a consultative council. Each ROAD is composed of divisions and districts. The Head of the ROAD is nominated by the Minister of Agriculture and carries on his/her duties under his supervision in coordination with the concerned Governor of the Region. The Head of ROAD is empowered to establish contracts and for that reason, is supported by market commission with a substantial level of competency.

The ROAD is mandated to design and implement agricultural development projects and programs and is responsible of their execution. It is provided with adequate human and financial resources, equipment and also legal tools that allow it to play an essential role in the development of agriculture in its region. The ROAD intervenes at the local level through Territorial Extension Units (TEU) and extension cells called agricultural outreach cells at the community level. The ROAD supervises through the Service of funding and incentives, allocation of grants and credits. The activities carried out by the staff of the ROAD in forestry are supervised by both of the Head of "Arrondissement" of Forests and the head of "Arrondissement" of Soil and Water Conservation.

The ROAD needs for partnership was repeatedly expressed during the last decades especially after the participatory and integrated approach was adopted as the implementation methodology to execute development projects and programs.

The relationship was formalized through work conventions with Regional Development Authorities and research and education institutes with the objective of having streamlined activities, more articulated programs and interventions. However, it should be noted that the conventions were developed mainly to identify the fields of competency and the sharing of agricultural public services in the region. It does not reflect a real optimization of resources and effective complementarities in the field and between programs.

The General Directorate of Investment and Professional Organizations (GDIPO)

The Institutional responsibility for follow up and assessment of national mid-term investment program is assigned to the GDIPO. The main duties of this General Directorate are:

- Preparation and follow up of implementation of the investment budget of the Ministry of Agriculture and Environment.
- Contribution to the preparation of cooperation programs of the Ministry
- Planning of Agricultural loans and follow up of their implementation, collection and analysis of data related to loans and investment in agriculture
- participate in elaborating procedures related to incentive investment in agriculture sector
- Promotion of agriculture professional structures, follow up and monitoring of their activities and guidance for their proper functioning.
- Participation in establishing agreements with funding institutions and donors in the framework of international cooperation.

The Authority for Silvo-Pastoral Development of the North-West (OSPDNW)

OSPDNW was created by the Law n° 17 of 1981 as a public establishment with an industrial and commercial character. The Law n° 74 of 1996 modified the statute of the Authority to become a public establishment with non administrative character. Its main mission is to promote agro-silvo-pastoral development in the region where it acts in the five Governorates of North-West: Béja , Jandouba, Siliana , Kef and Bizerte .

Since its creation, the Authority benefited from several foreign funding resources such as from WB, KFW and European Union. Its activities cover: structuring rural areas into communal development sites; creating rural infrastructure; soil and water conservation; forest plantations and agro-forestry; promoting income generating activities and rural micro enterprises; training and assistance to local communities.

Authority of Livestock and Pasturelands (ALP)

The Authority of Livestock and Pasturelands is a public establishment with a non administrative character. It falls under the MAWR. It is entrusted with the development and promotion of livestock at national level.

ALP contributes to improve private rangelands and value of production chains. It assists producers through vocational training, extension and organization of their associations. It entertains partnerships with most of the stakeholders in livestock, rangelands improvement and support services to livestock farmers.

The Agency of Promotion of Investment in Agriculture (APIA)

APIA is a non administrative public establishment under the MAWR. The main axes of its mission are to promote the private investment for more production and improved productivity in the fields of agriculture, fisheries and related services. In addition to the identification of investment opportunities and ideas for viable projects and promotion of partnerships, the APIA assists investors to set up their projects and provides them guidance, grants, loans and incentives as per regulations provided in the investment code. The APIA supports capacity building of young investors in project management.

Non-Governmental Organizations (NGOs)

Local or international NGOs are closely associated with the forest sector. They endeavor to

share their knowledge or activities for non lucrative purpose and for no benefit share .The Law n° 154 for 1959 stipulated how NGOs can get authorization from the Ministry of Interior, the Law of 2 August 1988 replaced that authorization system with declaration regime. Among the main NGOs operating in rural areas, are the Kairouan Association for Development, the Association for the Promotion of Employment & Lodging, the Association of Support for Self-development Foundation for Self-development & Solidarity, Tunisian Foundation for Community Development, Kef Foundation for Rural Development, World Wildlife Fund (WFF- Tunisia) etc...

Most of NGOs are short of human resources and material to provide significant support to rural populations and to the youth in particular. The involvement of NGOs in the process of integrated agriculture and forestry projects is increasing. Collaboration of NGOs with public institutions in charge of rural development is established through conventions.

Public Communities

The lack of organized communities in the rural areas has led the Government to structure them into functional bodies. Among these, we find the Rural Council at the sector (Imada) level, the Local Development Council at the delegation level and the Rural Development Council in the areas without municipality

Regional Council (ReC) were created by the organic Law n° 11 of 1989 . They are the voice of the public community. Contrary to municipal council, the ReC is not directly elected by the population. But its members were elected for other instances. In fact, it includes, elected representative of the governorate to the House of Deputies, the presidents of elected councils in the municipalities, and the presidents of rural councils. The other members of ReC are head of services of public administrations in the region and renowned persons in economic, social, cultural and education fields.

Local Development Councils (LDC) were created by Law n°94687 for 1994 in each delegation (sub-region of the Governorate). It is called "local development council" under the chairmanship of the delegate. The board consists of the presidents of municipalities (communes) and the presidents of the rural councils in the delegation; heads of territorial areas (Imadas) and representatives of local public services in the state administrations within the delegation. The Chair of the LDC can invite any person whose presence is deemed useful. He/she examines all issues of development related to the social, economic, cultural, and education fields in his area of jurisdiction. In particular he/she reviews local development programs and projects, monitor the preparation and implementation of programs related to environment protection, efficient use of natural resources and their preservation and conservation.

The LDC is a consultative body whose role is restricted to provide advice and guidance. It is responsible for reviewing all matters relating to economics, social, cultural and education in the delegation. It advises on programs and local development projects and makes proposals for setting priorities and planning. It participates in the development and implementation of programs of propriety, protection of the environment, nature conservation, rationalization of exploitation of the natural resources and their conservation. It participates in developing the regional development plans for the aspects regarding the delegation

Rural Council (RuC);

The RuCs were created by the same organic law of 4 February 1989 that created the ReC. It has a purely advisory role. Creation of the RuCs was motivated by the same concern of the state to involve the grassroots level in the planning and development and in defining local priorities.

The RuCs are created in the areas without municipality. They offer opinion on issues in the areas in economic, social, culture and education, express the concerns and needs of the population and, make proposals and participate in programs related to propriety and hygiene. The Chair and members are appointed by the Governor for a period of three years, with one member per thousand inhabitants with a minimum of five and a maximum of 10 members

Other Public Institutions Related to Forestry

Despite its diversified responsibilities, the GDF is requested to collaborate with other departments and Ministries as portrayed in table 34.

Table 34: Cooperating Ministries to promote forest sector

Ministry	Duties linked to forestry
Ministry of Environment and Sustainable Development	Protection and conservation of natural resources; recreation areas and urban and peri-urban plantations (urban parks , streets and avenues of environment , etc); focal point for different conventions (UNFCCC UNCBD, UNCCD)
Ministry of Industry	Harvest of Alfa steppes and processing in the industrial plant for pulp or paper using alfa fibers and processing of other forest products like timber, cork and NWFP products
Ministry of Commerce & Processing	Export/ import forest products
Ministry of education	University training (Ecology; botany)
Minister of Employment and Vocational Training	Vocational training centers
Ministry of Trade & Tourism	Ecotourism development and promotion (nature tourism , visits to national parks , hunting)
Ministry of Planning & International Cooperation	Planning forestry development , validating and follow up of projects
Ministry of Finance	Funding forest programs, follow up of budget and receipts
Ministry of State Property & Land Affairs	Tenure problems and expertise for temporary occupations and concessions in the forest land

ANNEXES

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Annex 1: Key Socio-Economic indicators

Country	Per capita income in US\$ PPP (2008)	Population (in millions in 2008)	Population growth rate	Population density (persons/km ²)	Percentage of urban population	Share of agriculture and allied activities in GDP (2008)	Democracy Index (2010)*	HDI Ranking (2011)
Algeria	8036	34.37	1.5	14	65	7	3.44	96
Bahrain	34899	0.78	2.1	1021	88	ns	3.49	42
Egypt	5425	81.53	1.8	82	43	13	3.07	113
Iran	11666	73.31	1.2	45	68	10	1.94	88
Iraq	3477	30.10	2.1	69	66	-	4.00	132
Jordan	5474	6.14	3.3	70	78	3	3.74	95
Kuwait	39941	2.92	2.4	164	98	0	3.88	63
Libya	16208	6.29	2.0	4	77	2	1.94	64
Lebanon	11777	4.20	0.8	410	87	5	5.82	71
Mauritania	2084	3.22	2.4	4	41			
Morocco	4263	31.61	1.2	71	56	15	3.79	130
Oman	24799	2.78	2.2	9	72	ns	2.86	89
Qatar	84350	1.28	3.1	111	96	ns	3.09	37
Saudi Arabia	23991	25.20	2.1	12	82	2	1.84	56
Sudan	2155	41.35	2.3	17	43	26	2.42	169
Syria	4583	21.23	3.5	116	54	20	2.31	119
Tunisia	7956	10.17	1.0	65	66	10	2.79	94
UAE	37422	4.48	2.8	54	78	2	2.52	30
Yemen	2416	22.92	2.9	43	31	20	2.64	154

*Democracy index values are a composite of a number of indicators with 0 representing the least democratic and 10 as highly democratic.

Annex 2: Forests and Woodlands in the Near East countries

Country	Forest area 1000 ha				Percentage of land area under forests (in 2010)	Other Woodland in 2010 (1000ha)	Percentage of land area under other woodland
	1990	2000	2005	2010			
Algeria	1667	1579	1536	1492	1	2685	1
Bahrain	NS	NS	NS	1	1	NS	NS
Egypt	44	59	67	70	0	20	NS
Iran	11075	11075	11075	11075	7	5340	3
Iraq	804	818	825	825	2	259	1
Jordan	98	98	98	98	1	51	1
Kuwait	3	5	6	6	0	0	0
Libya	217	217	217	217	0	330	NS
Lebanon	131	131	136	137	13	106	10
Mauritania	415	317	267	242			3
Morocco	5049	5017	5081	5131			1
Oman	2	2	2	2	0	1303	4
Qatar	0	0	0	0	0	1	NS
Saudi Arabia	977	977	977	977	0	1117	1
Sudan	76 381	70 491	70 220	69 949	29	50224	21
Syria	372	432	461	491	3	35	NS
Tunisia	672	837	924	1 016	6	300	2
UAE	245	310	312	317	4	4	NS
Yemen	549	549	549	549	1	1406	3
Total	98701	92914	92753	92595	6.3	63181	4.3
World	4168399	4085168	4060964	4033060	31	1144687	9

Annex 3: Key developments in forest policy and legislation in the four case study countries

Country	Year	Key developments
Saudi Arabia	1966	Establishment of the Range Department
	1971	Establishment of the Forest Department
	1977	Range & Forest Act prohibiting activities in forest lands
	1978	Enactment of Range & Forests Act and Regulations
	1983	Establishment of Rangelands Affairs Commission
	1998	Prohibition of trading in locally produced wood or charcoal
	2007	Endorsement of National Forest Strategy & Programme.
Sudan	1901	Enactment of the first Forest Act
	1932	Announcement of first Forest Policy Statement together with enactment of Provincial & Central Forest Ordinances
	1939	Endorsement of Royalty Ordinance
	1986	Endorsement of National Forest Programme & Amendment of 1932 Forest Policy
	1989	Enactment of Forests National Corporation & New Forest Act
	2002	Endorsement of the Forests & Renewable Natural Resources Law replacing the (FNC) & Forests Acts of 1989 and renaming the FNC as National Forests and Natural Resources Corporation, broadening the mandate including management of range lands
	2006	Formulation of new forest policy (which is under consideration)
	2011	Cessation of Southern Sudan
Syria	1869	Inception of Forest Service
	1953	Establishment of Forests Directorate
	1953	Enactment of Forest Police Law
	1994	Enactment of new Forest Law
	2007	Enactment of Forest Law defining principles for exploitation of public and private forests
	2010	Approval of Forest Policy
Tunisia	1883	Establishment of Forest Service
	1920	Grazing in Use Rights
	1958	Restriction of goats –raising in forest lands
	1958	Annual Forest Day Celebration
	1966	Promulgation of Act establishing Livestock & Pastureland Authority, Promulgation of first Forest Legislation, Establishment of National Institute for Forest Research
	1970	Creation of Silvo-pastoral Institute of Tabarka to train Forestry Technicians
	1994	Creation of National Institute for Research in Agricultural Engineering, Water & Forests
	2001	Reorganization of General Directorate of Forests
	2008	Ministerial Decree approving Concession Contracts (Eco-tourism project) in State Forests Domains

Annex 4 : Forest policy objectives in the four focus

Country	Policy Objectives	Remarks
Saudi Arabia	1. Conservation of forests and enhancement of the vitality of ecological systems to assure sustainable continuity of their environmental and economic benefits for all forms of life including humans for both present and future. This is further elaborated in 11 specific objectives with corresponding projects & activities.	Forest policy aspires to embody the SFM principles.
Sudan	1. Reservation, establishment and development of forest resources for the purposes of environmental protection and meeting the needs of population for forest products, 2. Divided authority over, benefits from and responsibilities towards natural resources between the central and provincial authorities, 3. Conceptualisation of multiple use of forests	The Forest policies of Sudan 1932, 1986, Draft 2006 addressed the broader principles of SFM
Syria	1. Sustainable management of forests for an optimum benefit of their multiple functions, economic, ecological, social, cultural and aesthetic, for the present and future generations. 2. Design and implementation of forest management plans oriented to an integrated and sustainable development of the forest resource, within the broader context of rural development, 3. Protection of the forests against wild and arson fires, pests and other damages, through integrated and community-based forest fire management. 4. Conservation of the renewable natural resources (soil, water, natural vegetation), through integrated watershed management, sustainable forest management and combating desertification, 5. Conservation of plant and animal diversity and genetic resources, through rational forest management,	The Syrian Forest policy & nfp (2010) aspire to address the general principles of SFM
Tunisia	Forest strategy of 2001, five main functions are assigned to the forests including: (i) Protection: Water and soil conservation, protection of hydraulic structures and combating desertification (ii) Social: Forest population exploits forest and range products. The sector also avails some eight million (iii) Economic: Wood and non-wood forest production, (iv) Recreational functions for urban population and tourists (v) Environmental: Nature & biodiversity conservation. All of this through: 1. Strategic partnership between public and private sectors in conformity with global guidelines for sustainable development: UNCBD, Cartagena Protocol for Bio-safety and Kyoto Protocol on Climate Change 2. Development of forestry sector and strengthening the partnership between the General Directorate of forests and local communities	Forest policy embodies the broader concept of SFM and participation by wide spectrum of stakeholders

¹. Al Sharif, A.G., ELDool, Y.A., Al Mani, F., Al Kholi, A. (٢٠٠٤). Forestry Outlook Study for the Kingdom of Saudi Arabia. Natural Resources Admin. Min. Agriculture. Riyadh, KSA.

². Unpublished country reports. ³. PFN: Tunisian Forests.

Annex 5: Salient Forest/Range Legislations in Selected RNE Countries:

Country	Year	Enacted Legislation
KSA	1966	Establishment of Range Department
	1971	Establishment of Forests Department
	1977	Range & Forest Act prohibiting activities in forest lands
	1978	Enactment of Range & Forests Act and Regulations
	1983	Establishment of Rangelands Affairs Commission
	1998	Prohibition of trading in locally produced wood or charcoal
	2007	Endorsement of National Forest Strategy & Programme.
Sudan	1901	Enactment of first Forest Act
	1932	Announcement of first Forest Policy Statement together with enactment of Provincial & Central Forest Ordinances
	1939	Endorsement of Royalty Ordinance
	1986	Endorsement of National Forest Programme & Amendment of 1932 Forest Policy
	1989	Enactment of Forests National Corporation & New Forest Act
	2002	Endorsement of the Forests & Renewable Natural
	2011	Cessation of Southern Sudan
Syria	1869	Inception of Forest Service
	1953	Establishment of Forests Directorate
	1953	Enactment of Forest Police Law
	1994	Enactment of new Forest Law
	2007	Enactment of Forest Law defining principles for exploitation of public and private forests
	2010	Approval of Forest Policy
Tunisia	1883	Establishment of Forest Service
	1920	Grazing in Use Rights
	1958	Restriction of goats –raising in forest lands
	1958	Annual Forest Day Celebration
	1966	- Promulgation of Act establishing Livestock & Pastureland Authority,
	1970	Creation of Silvo-pastoral Institute of Tabarka to train Forestry Technicians
	1994	Creation of National Institute for Research in Agricultural Engineering, Water & Forests
	2001	Reorganization of General Directorate of Forests
	2008	Ministerial Decree approving Concession Contracts (Eco-tourism project) in State Forests Domains

Annex 6: National Forest Programme/Strategy, Kingdom of Saudi Arabia 2006:

The General Framework of the Strategy & Policies:

1. Forests are inseparable part of national development plans,
2. Contribution of forests to the development of villages and resettlement areas,
3. A strategy for forest protection concept as high priority,
4. Endorsement of forest areas in land use maps.

National goal:

Strengthen the vitality of forest ecosystems to ensure their rendering their environmental and socio-economic benefits on sustained basis for the benefit of all living things including humans.

Specific Objectives & Policies:

1. Delineation of forests & their conservation,
2. Start to implement SFM with the purpose of forest protection & development,
3. Protection of watersheds and courses together with all natural resources (soil, vegetation and wildlife),
4. Assurance of forest regeneration and increase of their extent through natural or artificial regeneration for the sake resource sustention,
5. Provision of institutional support for Forests Administration and agencies concerned with trees to increase their effectiveness in implementing the programme,
6. Desertification control & mitigation of its effects,
7. Provision of forest goods and services through SFM,
8. Support to agricultural production; plant and animal sectors thereof,
9. Provision of sites for recreation and internal tourism and support people's welfare at present and in the future,
10. Reduction of pollution around residential and industrial centres,
11. Conservation of biological diversity and forest heritage.

Procedures to be followed in implementing the strategy:

A. Obligatory mechanisms:

1. Application of forest & range laws and regulations,
2. Enhance the capabilities of agencies concerned with trees in term of human resources and equipment,
3. Establishment of a forestry research centre and support thereof to provide technical data base,
4. Promulgation of laws to allocate land for reservation of government, institutional and private forests,
5. Reconciliation of KSA Forestry Strategy with international agreements ratified by the Kingdom,

B. Optional Mechanisms:

1. Allocation of funds for establishment of government forest plantations,
2. Encourage establishment of institutional & private forests,
3. Encourage the establishment of shelterbelts around towns, villages, major roads and railways, using TWW,

C. Complementary Mechanisms:

1. Support the Strategy through popularisation of Islamic Vision of Environmental Conservation,

2. Ensure the participation of relevant entities,
3. Extension & awareness raising,
4. Education & Training,
5. Involvement of Regions Emirates and civil Society Organizations in the quest to protect the environment,
6. Provision of free or subsidized tree seedlings together with technical support to encourage farm owners establish wind breaks and shelterbelts.

Risks:

Monitoring & evaluation and Revision of Strategy.
Associated costed projects.

Annex 7: National Forest Policy Syrian Arab Republic 2010:

1. Objectives:

1.1. Main & Long-term Objective:

The main and long-term objective of the NFP is the sustainable management of forests for an optimum benefit of their multiple functions, economic, ecological, social, cultural and aesthetic, for the present and future generations.

1.2. General Objectives:

The General Objectives of NFP are:

1.2.1 Productive, Technical and Silvicultural Objectives:

1.2.1.1. Design and implementation of forest management plans oriented to an integrated and sustainable development of the forest resource, within the broader context of rural development,

1.2.1.2. Protection of the forests against wild and arson fires, pests and other damages, through integrated and community based forest fire management.

1.2.2. Environmental Objectives;

1.2.2.1. Conservation of the renewable natural resources (soil, water, natural vegetation), through integrated watershed management, sustainable forest management and combating desertification,

1.2.2.2. Conservation of plant and animal diversity and genetic resources, through rational forest management, establishment of protected areas, arboretums and tree seed orchards,

1.2.2.3. Support of the forest plantation policy, including the urban and peri-urban plantations, particularly the protective plantations, for soil and water conservation, rehabilitation of degraded lands and protection of soils and orchards against winds.

1.2.3. Socio-economic objectives:

1.2.3.1. Improvement of the forest communities' income and their social and cultural conditions,

1.2.3.2. Support for private and community forests, in accordance with the participatory approach concept in forest management, exploitation and protection.

2. Strategies:

2.1. Productive, Technical and Silvicultural Strategies:

2.1.1. Survey and classification of forests in the Country,

2.1.2. Preparation of integrated and sustainable forest management plans in the various eco-geographic zones of the Country,

2.1.3. Preparation of integrated management plans for the various forest protected areas,

2.1.4. Determination of the criteria & indicators for sustainable forest development and management,

2.1.5. Support and development of the forest plantations programmes, especially the protective forest plantations,

2.1.6. Support and development of the traditional agroforestry systems.

2.1.7. Optimum benefit of the wood and non-woody forest products,

2.1.8. Delineation of the forest lands in the various regions of the Country,

2.1.9. Setting-up of integrated and community-based forest fire management plans, according to the approved National Strategy of Integrated Forest Fire Management.

2.2. Environmental Strategies;

2.2.1. Conservation and development of biological diversity & genetic diversity in forest

ecosystems.

2.2.2. Support and development of the forest protected areas.

2.3. Socio-economic Strategies:

2.3.1. Applying the participatory approach concept in the integrated forest management plans.

2.4. Education, Research & Information Strategies:

2.4.1. Development of forest education at different levels in the primary, intermediate and secondary schools, at the Universities and Institutes, in harmony with the basic principles and objectives of the NFP.

2.4.2. Development of interdisciplinary applied forest research, in cooperation between FD, Universities and Research Centres, and through sustained interactions between scientists, policy-makers and practitioners, for a continuous flow of multiple benefits that contribute directly to the well-being of people and to achievement of overall rural development objectives,

2.4.3. Capacity building and training at different levels,

2.4.4. Development of the forest information & extension, through a participatory innovative development and extension, which give a new role to the extension workers (facilitators) in analyzing problems with the local people and identifying areas which require further research and input from technical specialists.

2.4.5. Sensitizing the public regarding the importance of forests and trees as national natural resource and heritage.

2.5. Organizational Strategies:

2.5.1. Setting-up of a forest data system in the FD of MAAR oriented to forestry development which will help in: forest classification, management system options, forest tree selection for plantations, weather prediction for forest fire management and control,

2.5.2. Setting-up of monitoring and assessment systems, using modern technology, such as remote sensing,

2.5.3. Coordination of the forest resource development in cooperation between the various concerned parties, through the proposed National Coordination Committee (NCC).

2.6. Institutional & Legislative Strategies:

2.6.1. Reform of the Forestry Institutions, particularly the FD in relation to its structure, capacity planning, staff competence etc,

2.6.2. Reform of Forest Legislation, in accordance with the principles and objectives of the NFP, the present situation of the forest resources and the International Conventions and Standards related to sustainable forest management which will support lawfully the implementation of the Forest Policy.

The reformed legislation must not create conflicts, but rather be supportive and create synergies with the Constitution and the basic Laws in the Country, such as the Environmental Law.

Forest Policy development must be followed by legally binding norms. Changing in national policies, putting more emphasis on sustainable forest resource development must lead to a systematic review and to modification of legislation, and whether it specifically addresses forests or has an indirect impact on forestry.

3. Plan of Action:

3.1. Short-term Plan (Three years)-Priority Actions:

3.1.1. Setting-up of a NCC for Forest Development, composed of representatives of the various concerned parties, under the chairmanship of the Minister of Agriculture and Agrarian Reform.

3.1.2. Reform of the FD in accordance with the NFP,

3.1.3. Setting-up of a National Committee for Applied Research in Forestry, composed of representatives of the FD, the Department of Forestry at the Faculties of Agriculture and the Research Centres, under the chairmanship of the Deputy Minister of Agriculture and Agrarian Reform,

3.1.4. Reform of the Forest Legislation in concordance with the NFP,

3.1.5. Setting-up of Voluntary Popular Groups for forest fire protection and control in the Baer-Bassit pine forests,

3.1.6. Training at different levels oriented towards sustainable forest development and management and NFP implementation, in cooperation with the Departments of Forestry at the Faculties of Agriculture,

3.1.7. Capacity building and information development, in cooperation with the irrelevant parties.

3.2. Medium-term Plan (five years):

3.2.1. Survey and classification of forests in the different eco-geographical zones in the Country, in cooperation between the FD, the Departments of Forestry at the Universities, the Research Centres and the General Authority of Remote Sensing,

3.2.2. Preparation of an integrated participatory management plan for the Baer-Bassit pine forests, in cooperation between the FD, the Departments of Forestry at the Universities and the Forestry Research Centres,

3.2.3. Preparation of an integrated management plan for the main forest protected areas, in cooperation between the FD and the Ministry of States for Environmental Affairs,

3.2.4. Determination of the criteria & indicators of sustainable forest development and management, in cooperation between the FD, the Department of Forestry at the Universities and the Forestry Research Centres,

3.2.5. Development of the Forest Data Bank at the FD of MAAR,

3.2.6. Delineation of the forest lands in the different Governorates.

3.3. Long-term plan (eight years):

3.3.1. Establishment of Arboretums for forest trees in different ecological sites, in cooperation between the FD, the Department of Forestry at the Universities and the Forestry Research Centres,

3.3.2. Establishment of seed orchards for the main forest species used in forest plantations, in cooperation between the FD, the Departments of Forestry at the Universities and the Forest Research Centres,

3.3.3. Development of the forestry programmes at the primary, intermediate and secondary Schools, in cooperation with the Ministry of Education, in accordance with NFP,

3.3.4. Development of the forestry education at the Departments of Forestry at the Universities, in concordance with the NFP.

Annex 8: Manpower Assessment Needs by Forests National Corporation of Sudan 1989.

Work norms assumptions in forecasting manpower requirements by FNC-Sudan 1989:

- * Field level activities are carried out under the responsibility of a forest technician (holder of Diploma in Forestry), thus work norms are considered in relation to the technician level of manpower,
- * Supervision ratios for forest ranger(technician), the overseer (vocational staff) and skilled labour (forest guard) are as follows:
 - 1 technician to 3 or 4 vocational staff,
 - 1 vocational staff to 8 or 10 forest guards.
- * It is envisaged that forest guards will perform their job relying on their feet. The area that can be covered by a unit of forest guard consisting of a team of two, is put at a maximum of 9 km² and a minimum of 6 km², equivalent to 900 ha and 600 ha. Thus the size of non-riparian forest that can be managed by a technician is calculated as:
 - 1 technician to 3 vocational staff, and 1 vocational staff to 10 forest guards, with a unit of forest guard protecting 900 ha,
 - Hence, 1 technician can be made responsible for 13,500 ha,
- * The ratio of professionals to technicians is 1:1.6
- * Increase in the area of gazetted forest reserves from under 1% of the total area of the country (600,000ha) to 15% of the total area of the country by 2005 (30 million ha) at an annual rate of 1.8 million ha.
- * An organizational hierarchy considered in relation to activities. The latter are divided into management, planning and technical backstopping (Activity 1) and implementation and application (Activity 2). Proposed hierarchy:

Organization hierarchy	Activity code	Educational level
Department/Region	1	Degree
Division	1	Degree
Section/Province	1	Degree
District (Circle)	1 and 2	Diploma/Degree
Range	2	Diploma

Annex 9: Forestry/Range Faculties/Colleges in selected RNE countries 2010

Country	Faculty/College & Degree Awarded	Location	Date Established
KSA	1. College of Agriculture & Nutrition, King Saud University. B.Sc., M.Sc. Agr*.	Riyadh	1965
	2. College of Agriculture & Nutrition, King Faysal University. B.Sc., M.Sc. Agr*.	Al Ehsa	1975
Sudan	1. Faculty of Forestry & Range Sciences, Sudan University for Science & Technology. B.Sc. For & Range, M.Sc., Ph.D.,	Soba	1962
	2. Faculty of Forestry, University of Khartoum. B.Sc. For., M.Sc., Ph.D. ,	Shambat	1974
	3. Dept. of Forestry, College of Natural Resources & Environmental Studies, University of Juba, B.Sc. For, M.Sc.,	Juba	1978
	4. College of Natural Resources & Environmental Studies, University of Kordofan. B.Sc. For.,	El Obeid	2002
	5. College of Forestry & Range Sciences, University of Bahr El Ghazal. B.Sc. For.,	Wau	2003
	6. College of Range Sciences, University of Bakht er Rida. B.Sc.	Bakht er Rida	2005
	7. College of Environmental Sciences & Natural Resources, University of El Fasher. B.Sc.	El Fasher	2006
	8. College of Natural Resources & Environmental Studies, University of Sennar B.Sc. For.,	Abu Naama	2007
	9. College of Range & Forestry Sciences, University of Upper Nile. B.Sc.	Malakal	2008
SAR	1. Arab Forestry & Range Institute. Diploma in Forestry & Range, Biodiversity.	Lattakia	1959
	2. Faculty of Agriculture, Aleppo University. B.Sc. For., M.Sc. Ph.D.	Aleppo	1992
Tunisia	1. Silvo-Pastoral Institute. Diploma in Forestry/Range	Tabarka	1970
	2. National Institute of Agronomy. B.Sc. For	Tunis	1985

- Both provided Agriculture graduates for Range/Forest Administration.

Annex 10: Academic Staff and Qualifications in some Forestry/Range Faculties/ Colleges in selected RNE countries 2010

Country	Faculty/College/University	Dip.	B.Sc.	M.Sc.	Ph.D.	Total
KSA	All four Colleges of Agricultural Sciences in Kings Saud, Faysal and A/Aziz Universities.	196	101	46*	70*	413
Sudan	1. Faculty of Forestry & Range Sciences, Sudan University for Science & Technology.	1	2	8#	29#	40
	2. Faculty of Forestry, University of Khartoum.					
	3. College of Natural Resources & Environmental Sciences, University of Kordofan.	3	12	12	18©	45©
		1	12	55	27	105
Tunisia	1. Silvo-Pastoral Institute, Tabarka	-	2	3	14	19

• Only a few On Forestry /Range

Majority of Forestry/Range

© Majority on Forestry Sciences

Annex 11 : Student enrolment/graduates in some Colleges of Agriculture (A), Environment (E), Forestry (F) and Range (R)

Country	Duration	B.Sc.				Diploma					
			Enrolled		Graduate			Enrolled		Graduate	
			♂	♀	♂	♀		♂	♀	♂	♀
KSA ¹											
	On inception	E			180	18					
	5 yrs later				280	38					
	10 yrs later				347	145					
	20 yrs later				493	159					
	2100				493	159					
Sudan ²	On Inception						F	9	-	9	-
	5 yrs later						F	6	-	6	-
	10 yrs later						F	13	-	13	-
	20 yrs later						F	54	-	54	-
	2010	F/R	40	56	37	52		-	-	-	-
Tunisia ³	On Inception						F/R	23	-	23	-
	5 yrs later						F/R	80	-	80	-
	10 yrs later						F/R	168	-	168	-
	20 yrs later						F/R	284	-	284	-
	2010						F/R	8	12	8	12

1. Environmental Studies

2. Forests Rangers College, Subsequently Forestry & Range College, Sudan University for Science & Technology

3. Silvo-Pastoral Institute, Tabarka.

Annex 12: Forest Policy for 2006

Vision for the Sudan's Forestry Sector:

Forestry resources will be used in a wise, efficient and sustainable manner according to the values and in response to the needs of the people of Sudan, thus creating jobs and opportunities for trade that will help eradicate poverty, achieve food security, and bring about improvements to the country's physical environment.

National goals and Policy priorities derived from the society's main issues and concerns as expressed by the major stakeholders; the national political and development agenda; and the international environmental agenda were as follows:

- Governance of the Forestry Sector
- Population Welfare
- A greener Sudan
- Maintaining competitiveness
- Peoples Participation
- Land use and tenure conflict resolution
- Development of jobs and income generation programs
- Conservation of Biodiversity

Specific Objectives derived from the issues raised by the different stakeholders and aimed to contribute to the realization of the national policy goals were as follows:

Objective 1: To adapt the stipulated functions of the Forests National Corporation (FNC) to meet the national challenges, continue to build its capacity to meet those functions and strengthen state forestry administrations, to maximize their contribution to the national goals while fully fulfilling their state duties. Both government levels work to empower local communities and private sector in order to contribute effectively to forest sector development”.

Objective 2: To improve the greening of marginal areas through intensive protection of natural forests and through reforestation of marginal areas. The overall objective is to diminish desertification factors, redress the socio-economic impacts of desertification, the negative impacts on biodiversity conservation and ultimately improve the country's economy, people's wellbeing and people's resilience to the effects of desertification.

Objective 3: To effectuate the protection, enrichment and sustainable management of the existing 2623 forest reserves and to establish new reserves in order to meet the country's demand for forest goods and services, while enhancing people's involvement in curbing deforestation and increasing the effectiveness of long term investments and actions in all types of forests. Participation of all actors including local communities, private and local institutions will be enhanced.

Objective 4: To complement the efforts and strategies of other sectors aimed at achieving the goals of the Sudan National Biodiversity Strategy and Action Plan and to secure conservation of biodiversity related to forests through formal contributions and by incorporating the full participation of local communities.

Objective 5: To establish a land tenure system conducive to increasing long term investment in the forestry sector and ensure the continuity of activities that guarantee sustainable forest use.

Objective 6: To transform NWFPs current collection and free access system of production and use into an organized production sub sector based on sustainable management units whose

products and services attain maximum added value, respond to market demand, and compete favorably with open market prices.

Objective 7: To inventory, assess the state of forests production and evaluate the production capacity of the existing industrial facilities in order to reconstruct a profit oriented, highly technical, modern and competitive private sawmilling industry based on wood supplies from sustainably managed forests. Also, establish other industrial enterprises in the sector based on the competitive advantage of the different forest based products and services.

Objective 8: To ensure that the development of the oil industry will lead to the improvement of the country's forest cover through lowering the dependency on biomass energy, diminishing the need for wood fuels and through providing funds that contribute to better forestry develop

Annex 13: Historical development & evolution of the forest service in Sudan and its respective affiliations 1902-2011

Period	Name of forest service	Affiliation
1902- 1910	Department of Wood & Forests (DWF)	Admin. Undersecretary of the Colonial Government
1903 - 1910	DWF	Department of Agriculture & Lands (DAL)
1910 - 1929	DWF	DAL
1929 – 1948	Depart. of forests	Department of Agriculture & Forests (DAF)
1948 - 1951	Department of Forests	DAF
1951 – 1956	Department of Forests	Ministry of Agriculture
1966 – 1970	Department of Forests	Ministry of Agriculture & Forests
1970 – 1971	Department of Forests	Ministry of Cooperation & Rural Development
1972 – 1973	Department of forests	Ministry of Natural Resources & Rural Development
1973 – 1974	Department of Forests	Ministry of Agriculture, Feed & Natural Resources
1975– 1981	Forests Administration (FA)	Ministry of Agriculture & Natural Resources (MANR)
1982 – 1985	Central Forests Administration (CFA)	Ministry of Agriculture & Irrigation
1985 – 1987	CFA	MANR
1987 - 1994	CFA, (Forests National Corporation (FNC 1989)	Ministry of agriculture, Natural Resources & Animal Wealth
1995	FNC	Ministry of Environment & Tourism
1996 – 2010	FNC	Ministry of Agriculture & Forests
2010	FNC	Ministry of Environment, Forests & Physical Development

Annex 14: Evolution of technical and professional forestry education in Sudan

Annex : Forestry technicians Institute – cum- Faculty of Forestry & Range Sciences, Sudan University for Science & Technology, Soba:

Evolution:

1946: Forest Rangers School (FRS), located @ Soba and affiliated to FD of MAF,

1960: Forest Rangers College (FRC), located @ Soba and affiliated to FD of MAF,

1973: FRC, located @ Soba and affiliated to Khartoum Polytechnic (KP) of The Ministry of Higher Education (MHE),

1975: FRC changed to Forestry Technicians Division (FTD), located @ Soba and affiliated to Khartoum Polytechnic of The Ministry of Higher Education (MHE),

1977: Diploma in Forestry awarded in three instead of two years,

1990: KP upgraded into Sudan University for Science & Technology (SUST), within MHE.

1996: FTD, upgraded into College of Forestry Sciences (CFS), awarding B.Sc. (For),

1998: New Curriculum adopted, name changed to College of Forestry & Range Sciences (CFRS),

2003: B.Sc. (For) upgraded to B.Sc. (Hon.) in Forestry & Range Sciences (CFRS),

On establishment, CFRS had set Vision, Mission and Objectives,

HR of CFRS:

Degree	Diploma	B.Sc.	M.Sc.	Ph.D.	Total
On inception	-	-	-	-	-
2011	1 ¹	2 ²	8 ³	29□	40

1. One in Agriculture, 2. One in Forestry, one in Range Sciences,

3. Three in forestry, five in Range Sciences, 24 .□ in Forestry, 5 in Range Sciences.

Student enrolment and graduation at FRS- CFRS:

Year	Diploma				B.Sc.			
	Enrolment		Graduation		Enrolment		Graduation	
	♂	♀	♂	♀	♂	♀	♂	♀
On Inception (1946)	9		9					
Five years later (1951)	6		6					
Ten years later (1956)	13		13					
15 years later (1961)	14		14					
20 years later (1984)	54		54					
2011	-				40	56	37	52

1. Staff/student ratio: 401:9=360/

Infrastructure:

None of the infrastructure facilities such classrooms, laboratories, training forest/nursery etc were deemed adequate. There are no student recreational facilities.

Curriculum:

The prescribed curriculum of FRS of 1946 had been progressively revised.

The latest such revision was in 2009. The revision was effected through a fairly wide participatory approach where most relevant institutions were involved. These included: Universities, Research Centres, FNC and RPA.

Annex 15: Global & Regional Conventions/Treaties signed/ratified by Tunisia:

Convention Title	Date of signature	Ratification date	Effective entry date
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)		11/05/ 1974	13/04/1987
Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO)		11/12/1974	
African Convention to Protect Nature & Natural Resources		04/11/1976	
RAMSAR Convention on Wetlands	24/11/1979	03/03/1980	
Protocols Concerning Protected Areas in Mediterranean Basin	03/04/1982		
Bonn Convention on Migratory Species	27/05/1987		
Convention on Biodiversity (C o B)	13/06/1992	03/05/ 1993	26/12/1996
Cartagena Protocol on Bio-safety	19/04/2001	22/01/2003	11/09/2003
International Convention to Combat Desertification (CCD)	11/06/1994	11/10/ 1995	
Convention on Climate Changes (CCC)	13/06/1992	15/07/1993	21/03/1994
Kyoto Protocol Related to Climate Change		22/01/2003	



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