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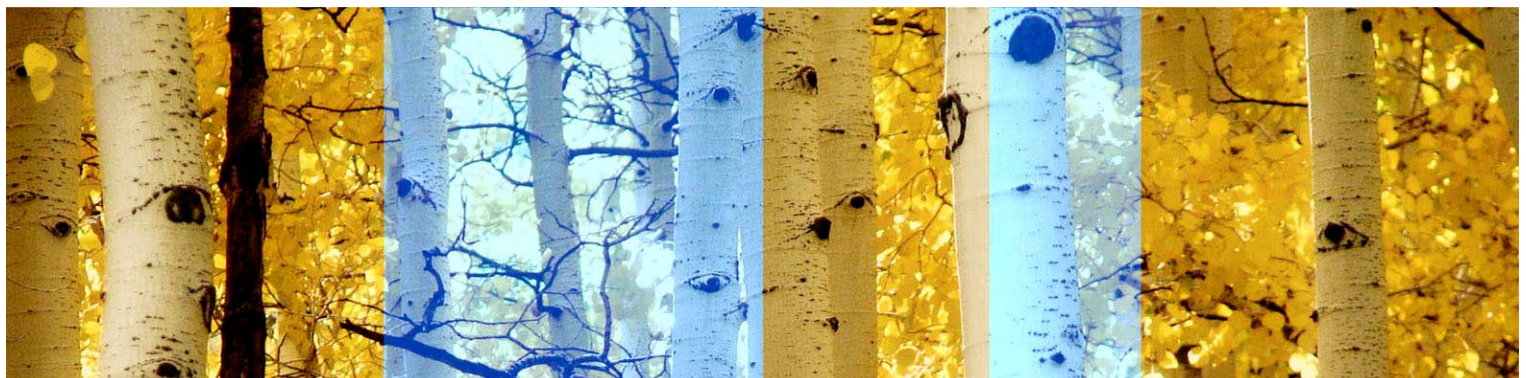
Financing for Sustainable Forest Management in Tunisia

Country Case Study

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Dr. Hamed Daly-Hassen

November 29, 2012





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ABBREVIATIONS

AFD	Agence Française de Développement
AFIC	Associations of Common Interests
APIA	Agence de Promotion des Investissements Agricoles
APII	Agence de Promotion de l'Industrie et de l'Innovation
BID	Banque Islamique de Développement
CBD	United Nations Convention on Biological Diversity
CDM	Clean Development Mechanism
CITES	Convention on International Trade in Endangered Species
CNDD	Commission Nationale de Développement Durable
CNLCD	Conseil National de lutte contre la désertification
CRDA	Commissariat Régional de Développement Agricole
CRDI	Centre de Recherches pour le Développement International
DGF	Direction Générale des Forêts
DGFIOP	Direction Générale du Financement Investissements et Organismes Professionnels
EU	European Union
FA	Forest administration
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
FFEM	Fond Français pour l'Environnement Mondial
FIDA	Fonds international de développement agricole
GBO	Gestion du Budget par Objectif
GDA	Groupeement de Développement Agricole
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German cooperation)
HDI	Human Development Index
IBRD	International Bank of Reconstruction and Development - World Bank
INAT	National Agronomic Institute of Tunisia
INRGREF	Institut National de Recherche en Génie Rural, Eaux et Forêts
INS	Institut National de la Statistique
ISPT	Institut Sylvo-Pastoral de Tabarka
JBIC	Japan Bank for International Cooperation
KFW	Kreditanstalt für Wiederaufbau (German government-owned development bank)
NFP	National Forest Program
NGO	Non-Governmental Organization
NWFP	Non-wood forest products
ODA	Official Development Assistance
ODESYANO	Office de Développement Sylvo-Pastoral du Nord-Ouest
OEP	Office de l'Elevage et des Pâturages
ONAGRI	Observatoire National de l'Agriculture
OPDI	Pilot Operations for Integrated Development
OTD	Office des Terres Domaniales
OTEDD	Observatoire Tunisien de l'Environnement et du Développement Durable
PCF	Projet des clairières forestières
PDAI	Integrated Agricultural Development Projects
PDF	Forestry Development Project
PDRI	Integrated Rural Development Program
PDZF	Projet de Développement des Zones Forestières
PES	Payments for environmental services
PGAP	Projet de Gestion des Aires Protégées



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PGIF	Project of Integrated management of Forests
PGRN	Natural Resource Management Project
RAMSAR	Convention on Wetlands
REF	Régie d'Exploitation Forestière
SFM	Sustainable forest management
TEV	Total economic value
UNCCD	UN Convention for Combating Desertification
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Programme
UNFF	United Nations Forum on Forests
USD	United States Dollar
WB	World Bank
WFP	World Food Program



EXECUTIVE SUMMARY

Introduction

Since the mid-20th century, successive afforestation programs have been undertaken in Tunisia. As a result, **forests and woodlands have increased from 0.4 million ha in 1956 to 1.3 million ha in 2010**. Tunisia's forest coverage now corresponds to about 8% of its total territory. In general, deforestation and forest fires are quite limited according to the Direction Générale des Forêts (DGF). About **7% of Tunisia's total population** (760 000 inhabitants) **live within or in the vicinity of forest areas**. They are characterized by high rates of unemployment (30%) and poverty (46%) and remain dependent on forest resources for about one third of their income. The disadvantage of this situation is the inevitable overuse of resources which usually results in the degradation of forest ecosystems.

Grazing is the major economic activity in most forest areas. The forests also provide the important service of watershed protection. Moreover, forests offer a variety of non-timber forest products such as fuelwood, cork, pine kernels, and medicinal and aromatic plants. **In contrast with their environmental and socio-economic importance, Tunisian forests play a minor role as a source of timber supply** (less than 10% of the timber demand).

Tunisian forest policy aims essentially at the preservation and extension of forest resources. These objectives have always been linked and in harmony with the country's development policy, especially in fighting unemployment and poverty. However, the main challenge of forest management in Tunisia is how to reconcile the conservation of forest resources on one hand with socio-economic development on the other. Another challenge lies in the inclusion of private owners in silvopastoral development projects.

Sources of Forest Financing

The investment budget allocated to the development of the forestry sector (USD52.2 million in 2010) includes the national investment allocation (USD47.2 million) and other projects funded by Official Development Assistance (ODA) (USD5 million). The ODA projects aim for the sustainable management of forest resources, and improving the livelihoods and income of the local population. Annual private investments are estimated to be around USD6.1 million for the period 2010-2014. They are for creation of wind breaks and the planting of pastoral trees and cactus species on small areas on agricultural properties. However, despite incentives attributed to forest and pastoral tree species plantations, no pastoral or forestry projects were implemented by private land owners nationwide. This can be explained by the low profitability and regulations that make the land owners feel that they lose the control of their land, as well as their decision making power.

Eco-tourism could represent an additional income for local populations, and therefore could reduce the pressure of forest use. Several studies and projects have aimed to promote eco-tourism, but so far they have not succeeded in developing the activity. There is room for private enterprise to develop concessions in public forests for silvopastoral development, management of hunting areas and ecotourism. However, their development has been quite hesitant. Only two concessions were granted for a total investment of USD1.0 million in 2012. There is a need for improved dialogue between the different administrations about the management of touristic activities in forest areas. There are also concerns that the development of tourism will be accompanied by environmental damage, especially in the coastal areas that are currently tourism destinations.

Public Revenue Generation, Fund Allocation & Related Challenges in the Forest Sector

The total public sector gross revenue generated by forest products was USD9 million in 2010. The majority of the payments are transferred to the State budget account. The share of revenue received by the State-owned company, Régie d'Exploitation Forestière (REF) varies but is typically between 8% and 14% of the total revenue. It is usually not sufficient to ensure



the cost of harvesting. A comparison between investment and net revenue from forest products showed that the government made a net expenditure of USD43 million in 2011. No innovative financing sources were found even though there is the potential to apply payments for watershed services (PWS) schemes.

Funds are theoretically granted only to actions falling under the strategic priorities set in the national development plan. However, **in practice there is a large discrepancy between the distribution of approved funds required for execution of strategic priorities and the real expenses incurred for developing the forestry sector.** The most important part of the approved budget is allocated to silvopastoral plantations and forest surveillance. Subsequently, **the implementation of sustainable forest management (SFM) depends largely on official development assistance ODA.** Moreover, **a large proportion (more than 80%) of the national investment is assigned to the payment of employment** i.e. creating a quasi-social program which has led to inefficiencies and to a failure to meet the national forest policy objectives. Other gaps in financing are related to the loss of state revenue due to insufficient funding for harvesting certain products, and the lack of private sector financing.

Success in Increasing the Forest Area & Lessons for Other African Countries & LFCCs

In Tunisia, afforestation is focussed mainly on watershed management and protection of water infrastructure which are also important investment areas for the agricultural sector. Afforestation activities are also in harmony with the country's development policy, especially in fighting unemployment and poverty. This activity has also received support from research with the first forest research station having been established in Tunis in 1957, just one year after independence. Therefore, **afforestation activities have been and are supported by policy makers and by expert and research bodies. This political attention has driven a high increase of forest area in Tunisia** (2.8% per year on average for the period 1990-2010, FAO). The regime change has not affected SFM financing because the **forest sector is considered as one of the main employment sectors in forest areas. However, the lack of monitoring and evaluation reduces the efficiency of forest activities.**

Tunisia has succeeded in harnessing international funding because it has placed the development of forest areas that are inhabited by 20% of the rural population among its priorities. Therefore, a forestry project can take priority over other development projects related to transport or water distribution.

In order to place SFM on the national policy agenda of other African countries and LFCCs, the policy makers need an awareness of the contribution of forest goods and services in e.g. watershed conservation, socio-economic development of forest areas, biodiversity conservation and human wellbeing. According to the Tunisian experience, afforestation and SFM activities should also be coupled with rural development, and particularly with the development of infrastructure facilities and employment for the local population, otherwise there is a risk of degradation of planted areas.

Key Recommendations

The priorities as defined in the National Forest Program (NFP) process, and related financing and detailed in the NFP investment program, were not followed in the national budget at least for 2012. It is recommended that a new approach of results-based budgeting be practised. This budgeting method will enhance the linkages between the public budget, the priority activities and the finances required for developing the forest sector. The new approach of results-based budget management is likely to prevent the payment for labour for activities other than those indicated in the forestry program.

The state-owned autonomous commercial enterprise for forest exploitation, Régie d'Exploitation Forestière (REF) should receive sufficient funds, as well as human and material resources in order to increase the contribution of the forest sector to the national economy.



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Funding should be made available to resolve the conflict between private forest owners and the forest administration over the use of their privately owned lands. **Compensation systems designed to offset income losses suffered by local forest users should be adopted** to remove the conflict with the local population which is inhibiting the achievement of forest management and conservation goals.

Establishing common development and research programs and exchanging experience between North African countries will provide major opportunities for improving financing of SFM, marketing of common products such as cork, improving efficiency in preventing forest fires and for biodiversity conservation.



1. OVERVIEW AND KEY FACTS

1.1 Introduction

Although forests and degraded woodlands cover only 8% of Tunisia's total surface area (FAO 2010), they play a prominent socio-economic role in the country by offering shelter for local inhabitants and providing them with fuelwood, grazing and work opportunities. Moreover, the forest sector employs about 2.2% of the country's total labour force, in addition to its important role in environmental protection and conservation of biodiversity.

About 7% of Tunisia's total population (nearly 760 000 people) live within or in the vicinity of forest areas (FAO/DGF 2012a). Local inhabitants are officially designated as 'forest users', with legal use rights, because they rely on forest resources to fulfil most of their daily basic needs. Nearly one third of their income is coming from the use of forest resources (grazing livestock, fuelwood and fruit collection, charcoal and honey production).

Forage provided by forests and woodlands constitutes the most important benefit, offering about 17% of total dietary needs of livestock through direct grazing. Furthermore, forests contribute significantly to watershed protection by preventing dams from soil erosion and sedimentation. Also, forests and other woodlands play an important role in promoting tourism, a major economic activity in Tunisia. Because of these multiple roles linking the forest sector to other important sectors of the country's economy, the National Forest Program (NFP) has always aimed at better integration of forest policy into national policies addressing sustainable development (FAO/DGF, 2007).

Domestic financing is the major source of public expenditure (86% in 2010) in the forest sector, although Tunisia has also been successful in attracting ODA funds. Tunisia has a great deal of experience in the establishment of partnerships with international organizations and NGOs. In addition, it has demonstrated its ability and know-how in the mobilization of external support through the conception of projects in collaboration with FAO, WB, EU, GIZ, GEF, etc. This rich experience needs to be extended with the development of international financing mechanisms.

The diversified supply of products and services provided by Tunisian forests and woodlands, and their multifaceted regulatory role, raise important inter-linkages between forests and other economic sectors. Thus, challenges facing forest resources make Tunisia an interesting country case study. Data on goods and services provided by forests and other woodlands of Tunisia are well documented thanks to a nationwide investigation which was carried out recently (DGF/FAO, 2012b).

1.2 Basic Facts

Tunisia is situated in the eastern part of North Africa. It is bounded by Algeria in the west, by the Mediterranean Sea in the north and east, and by Libya in the southeast. Tunisia is at the crossroads of Europe, the Middle East and Africa. Covering a surface of 162 155 km², Tunisia hosts various distinct landscapes, ranging from forested mountainous regions in the north and west, to a desert zone in the south. Steppes are encountered in the central region, as well as wide plains in the north east and in the Sahel region. The average altitude of most high plateaux and mountain ranges is about 700 m above sea level (asl) with the highest peak situated at 1 544 m asl (Châambi) (from INS official website¹).

The Tunisian climate is typically Mediterranean with hot and dry summers and cool and wet winters. Precipitation is very irregular, and the annual rainfall varies considerably from north to south. According to Emberger (1960) there are five bioclimatic zones while moving from the most arid to the most humid areas based on annual rainfall. Firstly, the desert (or Saharian) stratum which lies in the South receives less than 100 mm/year. It is followed by the arid zone

¹ <http://www.ins.nat.tn/indexen.php>, Tunis



lying between the isohyets 100-400 mm/year, the semi-arid zone (400-600 mm/year), the sub-humid zone (600-800 mm/year), and finally the humid stratum in the north which receives more than 800 mm/year (Ministry of Environment², FAO 2000). Only one third of the Tunisian territory enjoys rainfall of greater than 400 mm per year. The main land uses in 2009 were permanent meadows and pasture (31.2%), permanent crops (14.4%), arable land³ (17.4%), forest areas (6.1%) and other lands (30.9%) according to FAOSTAT⁴.

The total population of Tunisia was 10.65 million in 2011 (INS) and its annual growth rate is relatively low (1%) thanks to a strong long-term family planning program initiated in the early 1960s. The proportion of rural population is 33.8%, and the population living in the forest area represents about 7.1% (760.000 inhabitants) of the total population. Population density per km² is 68.9 nationwide, whereas in forest areas this average value reaches 86.7 (FAO/DGF 2012a). The population is composed of Arabs (98%), Europeans (1%), Amazighs, Jews and others (1%) (INDEXMUNDI)⁵. Arabic is the official language of the country and the mother tongue of Tunisian natives, while French is the second most spoken language in the country.

Tunisia produced GDP of USD45.9 billion in 2011, representing a per capita ratio of USD4 300(World Bank⁶). This is equivalent to a nominal GDP of USD 9 500 per capita in terms of international purchasing power parity. In 2009, the major GDP contributors were manufacturing industries (18.6%), agriculture and fisheries (9%), non-manufacturing industries (14.5%) and services (43.3%) (INS). In 2011, Tunisia ranked 94th on the Human Development Index (HDI) scale, with a value of 0.698, despite its classification among the countries having high human development rates. Gross fixed investment represents 25.2% of the nation's GDP. Foreign direct investments and net ODA attributed to Tunisia were relatively low, with 4% and 1.3% of GDP respectively in 2009 (UNDP⁷). The current trade balance is negative with -UDUSD5 940 million in 2010, while the import-export ratio amounted to only 73.9% during the same year.

The main export commodities are clothing and other consumer products, semi-finished goods and textiles, energy products, and electrical and other equipment (Figure 1.1). In 2010, the main partners for export were France, Italy, Germany, the United Kingdom, Libya and Spain (Figure 1.2). Import commodities included textiles, chemicals and other intermediate products, machinery and equipment, hydrocarbons, food and feed stuffs (Figure 1.3). The main import partners are France, Italy, Germany, Spain and China (Figure 1.4) using 2010 as a reference year (INS).

² <http://www.environnement.nat.tn/sid/index.php>

³ Referring to FAO, arable land includes land under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or for pasture, land under market or kitchen gardens, and land temporarily fallow

⁴ http://faostat3.fao.org/home/index.html#VISUALIZE_BY_AREA

⁵ http://www.indexmundi.com/tunisia/ethnic_groups.html

⁶ <http://data.worldbank.org/country/tunisia>

⁷ <http://hdr.undp.org/en/statistics/hdi/>



Figure 1.1 Exports per Type of Use in 2010

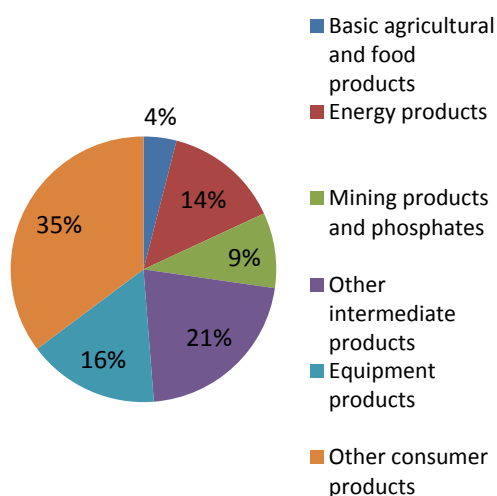


Figure 1.2 Exports per Country in 2010

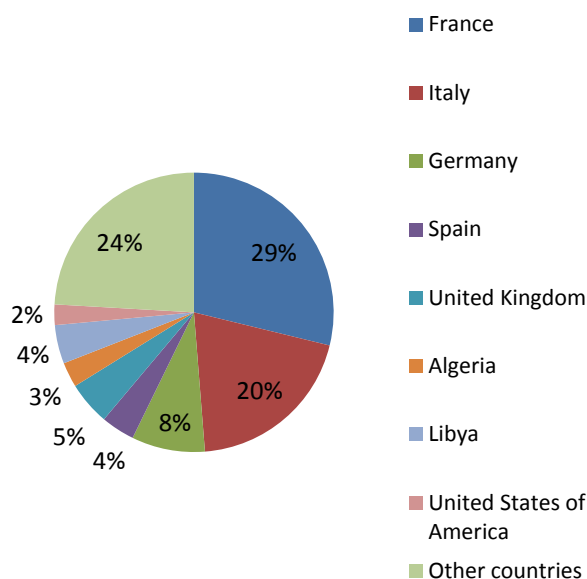


Figure 1.3 Imports per Type of use in 2010

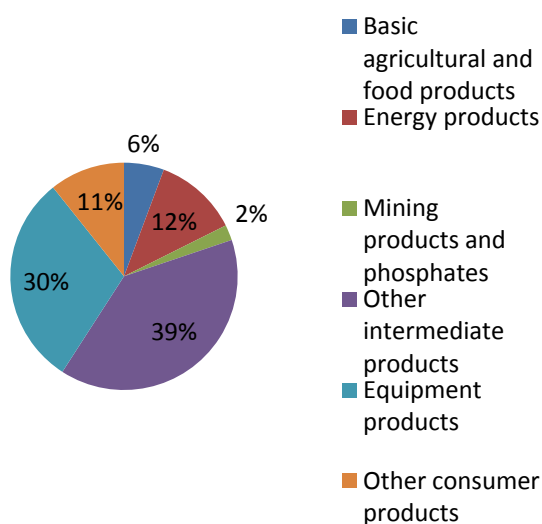
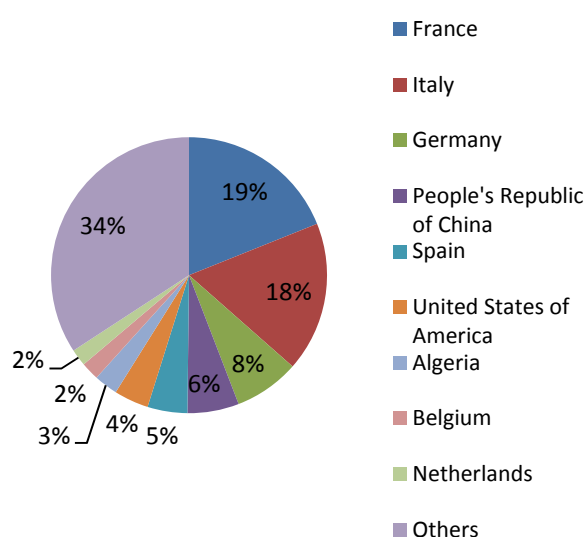


Figure 1.4 Imports per Country in 2010



Source: Data from INS www.ins.nat.tn

Woody vegetation covers a total surface area of 1.306 million ha, which includes 1.006 million ha of forests (mainly Aleppo pine, cork oak and eucalypt species), and 0.3 million ha of shrublands and other woody areas (FAO 2010). Deforestation and forest fires are quite limited, and were estimated at 411 and 711 ha, respectively in 2010 (DGF).

Successive afforestation programs have been undertaken in Tunisia since the mid-20th century, after several decades of rampant deforestation elicited by expansion of crops and



urbanization. As a result, forests and woodlands have increased from 0.4 million ha in 1956 to 1.3 million ha in 2010. The most important programs for forest plantations were implemented between 1990 and 2010. During the last decade (between 2000 and 2010), nearly 185 000 ha was planted with forest and pastoral tree species (FAO 2010). Most forested area is under public ownership, while only about 54 000 ha is privately owned. Afforestation in private lands was forcibly undertaken only during the 1960s and early 1970s under strong administrative interventions mainly for soil conservation purposes, including the fixation of coastal sand dunes.

In public forestlands which are controlled by the state and administered by the General Directorate of Forests, the local communities retain some legal usage rights. The latter include the collection of dead wood and brushwood, livestock grazing, non-commercial use of other non-woody forest products (NWFP), and cropping in gap parcels bare of woody vegetation. However, no access is allowed in new plantation parcels and where regeneration of forest is underway. Despite theoretical limitations supposed to be imposed on usage rights by the Tunisian forest code, the excessive socio-demographic pressure and the administration's lack of means to carry out proper surveillance have led to the perpetuation of open access status to forest resources. This has encouraged the excessive use of forest resources by local users and the subsequent degradation of forest ecosystems (Daly and Ben Mansoura 2005).

1.3 Forests and Trees in the National Economy

Grazing is the major economic activity in most forest areas. Another important service provided by Tunisian forests is watershed protection. Due to the permanent vegetation cover, water and wind erosion of agricultural lands and sedimentation of water reservoirs are prevented and the risk of floods is reduced. Forests also provide a habitat for many endangered animal and plant species⁸. The forests' role in maintaining biodiversity and species richness was strengthened in recent years with the expansion of natural reserves and parks. Also, forests offer a variety of non-wood products such as cork, edible food, and medicinal and aromatic plants. In comparison with their environmental and socio-economic importance, Tunisian forests play only a minor role as a source of industrial wood supply. However, forests contribute significantly to satisfy the fuelwood needs of local populations (Daly-Hassen, Ben Mansoura, 2005).

The added value of the forest sector is relatively small at only USD44.2 million (ONAGRI⁹). Thus, its contribution to GDP is low (0.1%). This situation is related to the fact that most of the forest products and services are not marketed. Only a few processing industries use local wood and cork to produce particleboard, fiberboard, pallets and cork products. All other wood processing, furniture and paper industries utilize mainly imported raw materials. The added value from wood, cork, and the paper industries¹⁰ was estimated to reach USD 403 million or 0.9% of GDP in 2008 (APII 2010). The wood industry, which was heavily protected with tariff barriers up until 1995, suffers today from its vulnerability against international competition. As a result, the contribution of wood and paper industries to GDP decreased from 1.7% in 1995 (FAO/DGF, 2001) to 0.9% in 2008. Tunisian forests continue to be an important source of income for poor people living in and around them, despite their low economic efficiency. The forest sector provides occasional employment (i.e. about 100 days per year) to nearly 70 000 workers, corresponding to about 2.2% of the total active population in Tunisia. By contrast, wood and wood processing industries employ only 0.9% of the active work force in 2008 (APII¹¹, INS).

The main marketed products provided by the forest sector are cork and wood. The quantity of cork sold reached 6 200 tons in 2010 giving a gross benefit to the government of

⁸ Sandarac (*Tetraclinis articulata*) and *Acacia tortillis* trees, *Gazella leptoceros*, Ichkeul buffalo, Barbary deer, Barbary bighorn sheep, goose, Oryx, Addax, Ostrich, etc.

⁹ <http://www.onagri.tn/>

¹⁰ This value is not included under the forest sector.

¹¹ <http://www.tunisieindustrie.nat.tn/fr/home.asp>



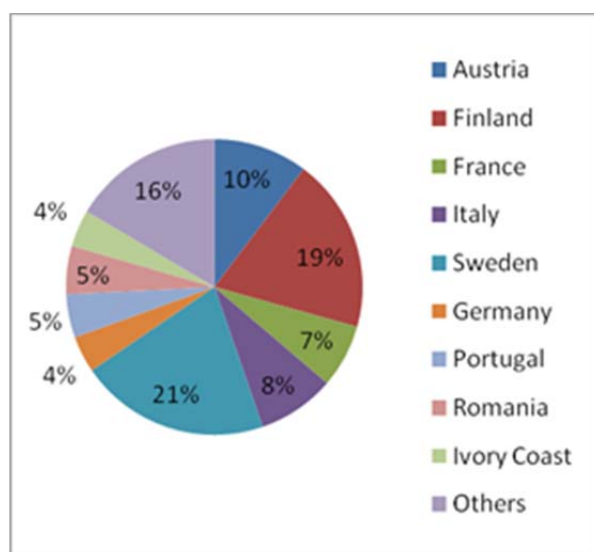
USD4.1 million. The volume of roundwood sold by the forest administration to harvesters and local industries is 174 000 m³, and its gross benefit is estimated to be around USD3.4 million (FAO/DGF 2012b). In total, the gross revenue generated by forest products amounted to USD9.1 million in 2010. The proceeds were funnelled mainly to the Tunisian budget. In addition, there is an important quantity of fuelwood (611 000 m³) which is directly collected by local users that must be taken into account. Other non-wood forest products include forage (5.8 million forage units¹²), aromatic and medicinal plants (82 000 ha), grain of Aleppo pine (2 408 tons), pinyon pine kernels (335 tons), mushrooms (62 tons), and snails (88 tons) in 2010.

Wood Imports

Despite the expansion in forest cover during the last five decades, Tunisia remains highly dependent on wood imports to satisfy its high demand for timber. The consumption of wood and wood-based products was estimated at 1.7 million m³ roundwood equivalent in 2005, and it is predicted to reach 3 million m³ by 2030 (Daly et al. 2008). The main wood products imported in 2011 were sawn wood (496 000 m³), wood panels (132 000 m³), wood pulp (102 000 tons), paper and paperboard (211 000 tons). Indeed, wood pulp is not produced in the country. The total value of these imported products amounted to USD633.7 million in 2010, representing 2.8% of all country imports (INS). Imported wood and woody products can be classified into three categories according to the importance of their value and country of origin:

- Timber products with a monetary value estimated at USD229.8 million in 2010, representing 36.3% of all woody material imports. The main suppliers of timber product imports are: Sweden, Finland, Austria, Italy and France (Figure 1.5).
- Wood pulp valued at USD74.7 million in 2010, represented 11.8% of all imported wood products. The main suppliers are the US (29%), Morocco (18%), Finland (14%) and Russia (12%).
- Paper and paperboard with a combined value of USD328.7 million were imported in 2010, (51.9% of imported wood and wood products). The main sources are France, Italy and Spain (Figure 1.6).

Figure 1.5 Import of Timber Products by Country in 2010

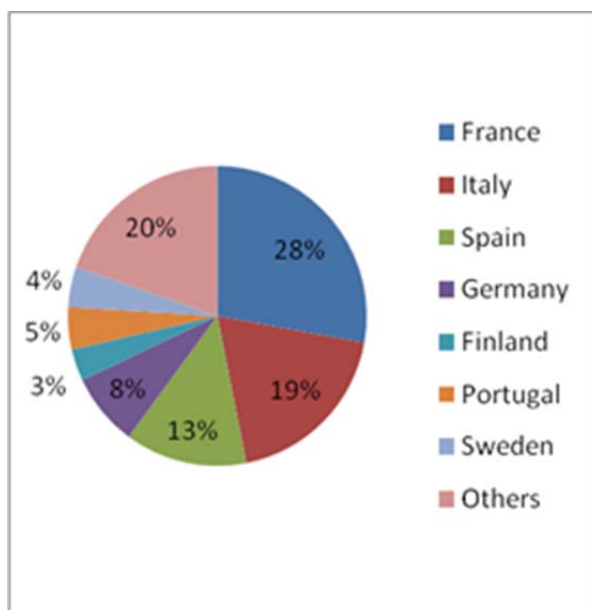


Source: Data from INS www.ins.nat.tn

¹² The energetic value of 1 forage unit is equivalent to 1 kg of barley



Figure 1.6 Import of Paper & Paperboard by Country in 2010



Source: Data from INS www.ins.nat.tn

Wood Product Exports

The total value of wood and cork products exported was USD251.9 million in 2010, representing 1.5% of Tunisia's total exports. They are distributed as follows:

- Paper and paperboard (86.6%)
- Wood products (8.1%)
- Cork products (3.2%)
- High quality paper pulp manufactured from esparto grass (2.2%).

Other non-wood forest products such as essential oils, mushrooms, snails, carobs, and pine kernels are also exported. Their export value amounted to USD2.7 million in 2010.

The trade balance of forest products is negative with minus USD381.9 million in 2010, while the value of exports is only about 40% of the value of imports. Forest products contribute a deficit of 6.4% towards the nation's overall trade balance. Thus, some measures should be taken to satisfy the predicted increase in timber demand and thereby reduce the import value. Steps could include forest management for timber production, and improvement of the competitiveness of the wood industries (Daly-Hassen et al. 2008).

An economic valuation of forest goods and services was attempted by using the Total Economic Value (TEV) concept. Direct values which were covered included wood products (timber, fuelwood), NWFPs, grazing, recreation and hunting, while indirect values included watershed protection (effect on reservoir sedimentation and crop production) and carbon sequestration. Biodiversity conservation was also integrated as a non-use value. Social costs under valuation included forest fires, illegal acts, and damage caused by wildlife. Applied assessment procedures included the market price and cost-based methods, as well as methods based on people's behaviour.

In 2010, the TEV of Tunisian forests reached USD146 million, corresponding to USD123/ha (FAO/DGF 2012b). This TEV represents 0.3% of GDP, and 20 times the value of net benefits generated by forest products sold by the State. Grazed forage represents the main benefit at 59% of TEV, followed by the protection against soil erosion with 23%. Distribution among beneficiaries shows that about 61% of TEV benefited local forest populations, mainly through



livestock grazing, the major component of TEV. The whole Tunisian society was the recipient of 22% of TEV through soil and water conservation, while the international community received only 12% through carbon sequestration and biodiversity conservation¹³. Finally, the State was the recipient of the remaining 5% through the sale of some products, such as cork and wood in particular.

For local forest users (total population of 760 000 inhabitants), the average benefit obtained per household was USD560/year in 2010 (FAO/DGF, 2012a). The use of forest resources in a wide array of activities, mainly livestock raising, exploitation and processing of forest products makes an important contribution to the income of local households (an average of USD1 600/household in Khorgalia, Nefza in 2010). At the same time, the overuse of resources and forest fires usually exact a high social cost associated with the loss of current and future production, carbon emissions, land degradation and loss of biodiversity. In addition, the lack of sustainable management plans for wildlife stock can also cause significant damage to surrounding farmlands. These external costs reduce the total current benefits of forests by about 6% (FAO/DGF 2012b).

¹³ Local and national communities enjoy these benefits as well.

2. NATIONAL POLICIES AND INTER-SECTORAL LINKAGES

The Social and Economic Development Plan (2010-2014) is the main policy document for social and economic development in Tunisia. This policy aims at increasing the income per capita and reducing poverty, through the exploitation of all potential resources and the promotion of job creation in order to reduce unemployment. Other major social and economic objectives of the policy include the consolidation of social benefits, the integration of all regions of the country through improved complementary ties linking them, the introduction of an environmental economy, and the improvement of the quality of life.

According to this plan, achieving these goals requires greater efforts for the preservation of the country's natural resources and the rationalization of their use. This forms a basis for the conservation of biodiversity, the protection of land against erosion and desertification, as well as the reduction of the negative effects of climate change. It is only within such a framework that the establishment of economic activities in compliance with the requirements of sustainable development can be met. Forest clearly falls within the natural resources.

Tunisian forest policy is an integral part of the policy governing the agricultural sector where investments for water infrastructure are highly prioritized. The main priorities of the agricultural policy reside in achieving food self-sufficiency, improving competitiveness, developing exports, and promoting the conservation of natural resources.

Development plans for the forestry sector are always prepared in conjunction with the country's economic and social development plans which are re-examined every 5-years. Since independence in 1956, Tunisia is presently at its 12th development plan covering the period stretching between 2010 and 2014. For each 5-year term, a working group is designated to prepare the plan for developing forests, rangelands, and water and soil conservation¹⁴. This falls under the sectorial committee in charge of agriculture and protection of natural resources and the environment, in accordance with the procedure set forth by both the Prime Minister's cabinet and the Ministry of Development and International Cooperation. This plan is usually prepared in four successive steps:

- (1) Evaluation of the previous plan's achievements
- (2) Identification of the broad guidelines for the new plan
- (3) Identification of the new plan contents for policies, strategies, programs and projects
- (4) Formulation of the new development plan taking into account all regional and national proposals and priorities (FAO 2007).

The plan is then submitted to the National Commission for advice, after which it goes to the government for approval. Finally, the plan is validated through a national consultation of the Superior Council for Development (FAO 2007).

The forest sector aims essentially at the preservation and development of forest resources, and all forest management plans have always been in harmony with the country's development policy where fighting unemployment and poverty is of utmost importance. Both of these problems were substantially reduced with the support of the World Food Program (WFP) before 1980, and from the creation of forest jobs which was achieved after 1980.

In the 5-year plans, forestry is a component of a broader sub-sector including forests, rangelands and solid water conservation. This subsector is, in turn, part of the major sector dealing with agricultural development, fisheries, and natural resources. These levels of integration stress the interdependence between all the aforementioned sub-sectors and the different institutions in charge of their management. The broad guidelines and programs set for these sub-sectors make up the framework under which sectorial policies are designed and developed.

¹⁴ The working group of natural resources involves the main stakeholders : DGF (forests), DGACTA (management and conservation of agricultural land), ODESYPANO (sylvo-pastoral development) and OEP (livestock and grazing).



Several forest strategies and programs have been developed and implemented since 1990:

- 1) Strategy for afforestation and combating desertification for the period 1990-2001
- 2) National program of forest protection against forest fires (1992)
- 3) National master plan of silvopastoral development (1997)
- 4) National strategy for the development of the forest sector, period 2001- 2011
- 5) National strategy for forest conservation (2001)
- 6) National Forest program (NFP) (2007)
- 7) The five-year development plan 2010-2014.

According to the NFP, the most important issues of the forestry sector are the preservation and the development of forest resources, biodiversity conservation, socio-economic progress of forest dependent people, creation of green spaces and recreational forests in urban areas, as well as the respect of commitments vis-à-vis the international community (FAO 2007). Most recently, the development of the national strategy of forestry for the period 2012 – 2021 has started with the promotion of two new studies devoted to the characterization of forest communities and the assessment of the total economic value of forest ecosystems (GIZ 2012).

Initially, the Tunisian forest policy focused mainly on watershed management, especially the protection of reservoirs against siltation and of infrastructures against flood damage. Given the requirements and priorities set for achieving socio-economic development of forest areas, and given the necessity of compliance with international guidelines set for sustainable management of natural resources, the forest policy was modified (with the revision of the Forest Code in 1988) in order to initiate the process of involving forest communities in forest development using appropriate methods and tools for their participation.

Since then, the first forestry development strategy (1990-2001) and a second one (2002-2011) have been developed and implemented. The latter strategy advocated a partnership approach based on active participation of local communities in the planning process of state-owned forests, as well as the transfer of some forest activities usually carried out by the forest administration to local populations. It also paid attention to the necessity of achieving a balance between local population needs and resource conservation requirements. The implementation of these strategies needed huge investments that were provided either by funding from the national budget or through external financing of specific projects such as the Forest Development Project (PDF I and PDF II), the Integrated Rural Development Program (PDRI), the Natural Resource Management Project (PGRN), the Integrated Agricultural Development Projects (PDAl), ODESYANO and OEP projects, and Project of Integrated management of Forests (PGIF I and PGIF II).

These forest strategies have helped in increasing the extent of forest cover from 2.2% in 1956 to 5.9% in 1990, representing an average annual increase of 8 000 ha or 0.09% over a 34-year period. Similarly, the implementation of the revised policy in 1988 has allowed the forest cover to attain a level of 8.0% in 2010, representing an average annual increase of 17 000 ha or 0.10% (FAO 2010).

Since independence in 1956, some fundamental principles were adopted for the conservation of the forest resources and their expansion. Various forest policies and ambitious strategies of afforestation were undertaken with the support of policy makers. A tree celebration day was named, on which the President himself evaluates the increase in forest cover and makes some decisions in order to enhance the afforestation activities, among them fund allocation measures. In the presidential programme of the former president (2009-2014), it was indicated that the forest cover will increase from 12.9% (from the country surface area without considering deserted area) to 16% in 2020. In order to achieve this target, the national investment budget for the forest sector has been doubled for the 12th development plan (2010-2014). Similarly, the current political party in power has indicated in his electoral program the attainment of a similar cover rate of 16% in 2016. Thus, the increased forest cover is explained by the regular support of policy makers.



Tunisia is engaged in regional processes, with other Maghreb countries, and the Mediterranean. These different networks and projects include: Mediterranean network of Model Forest (MMFN), Mediterranean Centre of the European Forest Institute (EFIMED), Cooperation project on forest policy and climate change in the MENA region funded by GIZ, the Arab Maghreb Union (AMU). Opportunities of cooperation have been recently discussed, such as forest regeneration in North African countries by using treated waste water¹⁵, and the creation of a north African green belt (OSS, EU, 2012)¹⁶.

At the regional level a project called "Green Belt of North African countries" involving North African countries and Egypt was established in 1978 in order to prevent desertification. Cooperation has especially concerned activities such as planning, information collection, research activities, exchange of experience and capacity building. But, the limited financing means did not allow successful outcomes.

Despite the orientation towards a greater integration of strategies and action plans into national and regional development initiatives, the sectorial approach continues to characterize forest activities¹⁷. Insufficient cooperation between involved partners continues to exist, especially at the regional and decentralised levels. Exchanges are usually limited to the implementation of some projects and programs, especially in community development plans, integrated development projects, and projects for watershed protection. This situation has seriously limited both the implementation of projects and their expected results. In fact, action on cross and inter-sectorial linkages remains quite weak. There is a lack of coordination between sub-sectors of agriculture, in addition to inadequate agricultural policy coherence with policies devoted to other sectors. The partnership between forest and other non-forest sectors is developed only for the formulation and implementation of agricultural development projects using territorial and participatory approaches, and management of natural resources projects. The only known clear coordination is the distribution of funds among sectors (GIZ 2012).

The forest administration (FA) is usually invited by other sectors to develop environmental externalities in the forest strategy. This is because forests provide these environmental externalities that contribute to the development of sub-sectors related to watershed management, protection of water reservoirs and infrastructures, biodiversity conservation, recreation, climate change adaptation and mitigation, etc.

There are many examples of coordination at the national level (National Forest Program, Integrated forest projects, Network of Protected areas, Research-development, Fighting forest fires, Superior council of Hunting, National focal points of Conventions (Biological Diversity (CBD), Climate Change (UNFCCC)). Unfortunately, the other relevant sectors related to water, energy and tourism do not integrate the forest sector into their policies (GIZ 2011). For example, the link between forest and water dams sub-sectors is limited to the planting of forest tree species around water reservoirs without any real planning aimed at reducing sedimentation. Cooperation with the tourism sector is still at its inception and limited to only the management of tourist activities. Cooperation with the energy sector is totally absent, although there is a common goodwill to reduce fuelwood consumption (about 14% of all energy consumed is satisfied by fuelwood) and to substitute the use of this commodity with other energy sources. Therefore, there is a need to establish permanent partnerships and linkages between the forest sector and all other relevant sectors. The National Forest program aims at such better integration of the forestry sector with other sectors through:

- (i) Integration of forest policy into national policies devoted to sustainable development in general, and particularly into the different strategies adopted by the major sector of agriculture, such as the protection of water reservoirs against siltation, the conservation of soil and water, crop protection, and forage production, etc.

¹⁵ Hammamet workshop 2010: <http://www.fao.org/docrep/013/am008f/am008f00.pdf>

¹⁶ http://www.oss-online.org/sites/default/files/projet/initiatives_et_programmes_an.pdf

¹⁷ The implementation of forest activities is usually conducted by the forest administration without the involvement of the other sectors or coordination with them.



- (ii) Encouragement of afforestation in private lands through setting needed incentives for forest investment.
- (iii) Clarification of land tenure definitions and revision of some ownership regulations.
- (iv) Satisfaction of social demands in terms of urban green spaces and recreational forests. (FAO 2007).

Tunisia has signed and ratified international conventions related directly or indirectly to the management and sustainable development of the forestry sector. They include the CBD (and its Cartagena Protocol on Biosafety), UNFCCC (and its Kyoto Protocol), Convention to Combat Desertification (UNCCD), Convention on Wetlands (RAMSAR), as well as the Convention on International Trade in Endangered Species (CITES).

Tunisia has also taken the necessary measures to ensure compliance of its laws and regulations with all the aforementioned conventions. In addition, other initiatives focusing on the forestry sector have been ratified by Tunisia in order to promote sustainable development. These include e.g. the statement of Forest Principles, the United Nations Forum on Forests (UNFF) and the Committee on Forestry. In this context, forestry projects were designed within the framework of these conventions for the purpose of obtaining the necessary funds (i.e. creation of natural reserves, rangeland management and sand dune fixation, and adaptations of ecosystems to Climate Change¹⁸). Tunisia has prepared studies about the vulnerability of forest ecosystems to climate change, thanks to support provided by GIZ and the World Bank. Tunisia has participated in different international initiatives. This facilitates investment from different international organizations and NGOs in the forest sector in order to implement some principles, mainly SFM. Examples include: GEF, model forest, National Forest Program (FAO), World Bank, GIZ, etc.

In conclusion, though forests are under the agriculture sector, they are well considered in the national policy agenda and have specific policies and strategies highlighting the attention given. At the macro level, there is cross sectorial cooperation and acknowledgement of synergies of forests and other sectors. On the other hand, in practice within sector policies and implementation the cross-sectorial considerations are weak and especially so at the decentralized level.

¹⁸ The fact that Tunisia has participated to different initiatives encourages different international organizations and NGOs to invest in the forest sector in order to implement SFM principles. Examples: GEF, model forest, National forest program mechanism (FAO), World Bank, GIZ, etc.



3. FOREST LEGISLATION

The Forest Code, enacted in 1966 and revised in 1988, provides protection to woodlands by instituting a forest regime imposing restrictions on all uses of woodlands. The management and use of both public and private forests must abide by all forest laws and regulations. Local populations are allowed to benefit from usage rights restricted solely to the satisfaction of family needs from non-protected areas only, without causing any degradation. In return, local populations are held responsible for any inflicted damage, in addition to their commitment for combating forest fires.

The Forest Code regulations commit forest tree plantations to a long-term protection procedure, in addition to a multitude of strict administrative authorizations for eventual exploitation.

The 1988 forest laws and regulations provide incentives encouraging afforestation of private lands through a special fund. These regulations were later replaced by the country's unique code of Incentives to Investments. According to this Code, subsidy premiums are given for plantations of forest and pastoral tree species on privately owned lands. Premiums vary between 50% of the total cost (for a project with an amount of investment less than USD150 000) and 30% (if amount of investment is more than USD150 000).

The revisions of laws and regulations which have been made so far were intended to adapt them to the requirements of forest strategies developed since 1990. These revisions are centred on four major themes:

1. The consolidation of **use rights of local forest populations** so as to include their legitimate interests in management plans, and the organization of these populations into associations for the purpose of facilitating their participation/integration in the territorial management, in addition to promoting their socio-economic development (see below).
2. The encouragement of **private initiatives and investments**. First, there was a replacement of routine administrative authorizations with simple specifications for the purpose of harvesting private forest lands. Secondly, the authorizations and concessions of specific forest areas for undertaking silvopastoral activities or for implementing projects aiming at the preservation of the sustainability of forestlands (see below).
3. Ensuring the **compliance** of Tunisian forest laws with international conventions signed and ratified by Tunisia on all issues related to environmental conservation and sustainable development.
4. The **decentralization and devolution** of administrative activity and the transfer of some forest activities to local populations.

The orientation towards greater involvement of forest users in forest management issues was initiated back in 1996 by the legal creation of "Common Interest Forest Associations (AFIC)" where members are supposed to be consulted by the Forest Administration and directly involved as full partners in all forest development plans and operations. It was amended in 1999 by the Decree No. 99-1819 dated 23 August 1999 stipulating the creation of Agricultural Development Groups, called "*Groupeement de Développement Agricoles (GDA)*", and the Law No. 2004-24 dated 15 June 2004 specifying the mission of GDAs in the preservation of natural resources, in addition to the rationalization of their use (Article 4). However, rigidity and inadequate regulations have hindered the organization of local forest populations and limited their participation in the management of forest areas.

Concession System

A sound process for co-managing Tunisia's forest resources under a new concession system was introduced in 2005 through new legislation supporting a policy intended to devolve forestry activities to local communities, NGOs, and the private sector in general. Indeed, Article 75 of the Forest Code, as amended by Act No. 2005-13 dated 26 January 2005, allows temporary occupation and concessions of State owned forest areas due to "cause of public



utility”, for undertaking silvopastoral development projects or other activities intended to consolidate the preservation of forests, and the conservation of their original purpose and sustainability. The maximum duration for granted temporary occupation is five years renewable per periods of one year each. Temporary occupation permits are granted by the Minister in charge of Forests in conformity with specific conditions. The Ministerial Decree dated 29 June 2006 established the conditions for granting temporary permits in relation to public utility. By contrast, the maximum duration for a granted concession is thirty years renewable per successive periods of five years. The contract of concession is established between the beneficiary and the Minister in charge of Forests in accordance with specifications¹⁹ (République Tunisienne, 2011; FAO).

Protection & Enforcement

Control and repression of illegal acts of exploitation is carried out by local forest agents, with an average ratio of about 1 guardian per 200-400 ha. Major forest offenses which include clearing, logging, forest fires and plowing (conversion of forest land into agricultural or cultivation area) are usually transmitted to courts for judgment. Minor law violations are settled out of court through conciliatory fine transactions, with fine amounts reflecting the severity of damage. Usually, there is some tolerance and/or reluctance of forest officers and guardians to report offenses due to poor socio-economic conditions of forest law violators. Thus, the seizure of destruction tools and transgressing livestock are rarely implemented, nor are the demolitions of illegally built shelters for human habitats or damage reparation. Hence, statistics of forest offenses reflect only a fraction of the total violations actually committed. The driving forces of forest law violations are:

- (i) Continued increase in livestock numbers (animal husbandry constitutes the most important source of income and most herders own little or no grazing land)
- (ii) Necessity for satisfaction of basic daily needs in food and energy
- (iii) Poor awareness for forest conservation issues due to poverty (Maslow's hierarchy of needs) and ignorance
- (iv) *De facto* open access policy to State owned forests (e.g. usage rights for animal grazing are not defined)
- (v) Modesty of fines repressing transgressions, the lack of alternative sources for livelihoods, and the historical background and cultural heritage justify the overuse of all public resources
- (vi) The lack of involvement of local inhabitants in decision making processes.

In 2010, the number of transgressions against forests was reported to be around 3 000. The areas affected by different forest offenses were also quite significant: clearing (278 ha), conversion of forest to cropping land after plowing (210 ha), forest fires (202 ha), illicit occupation (30 ha), and logging of 13 000 trees (data from DGF). Illegal forest activities usually result in the acceleration of erosion processes and siltation of water reservoirs, reduced forage production levels, lowered forage quality and thus diminished animal productivity, loss of biodiversity and prevention of forest regeneration. They also result in reduced government income, especially from NWFPs, cork, and wood, reduced supply of vital needs for local inhabitants, and lower income, as well as reduced employment opportunities.

Just after the revolution of January 2011, Tunisian forests suffered from an acceleration of a variety of transgressions and depredations, such as illegal cutting, forest fires, clearing, destruction of fences surrounding some parks and alteration of existing infrastructure in recreational sites, and illegal construction of shelters and houses. For example, forest fires have affected a larger surface area compared to previous years (1700 ha in 2011 and 2400 ha in 2012). This acceleration was mainly due to the lack of forest law enforcement, long-term conflicting relationships between local populations and the Forest Administration, and the low involvement of forest users in decision-making processes. Currently, the control of the forest is

¹⁹ <http://www.fao.org/docrep/013/i1775e/i1775e03.pdf>



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more effective and forest degradation is decreasing, except in some areas (Sejnane) where forest tree cutting is practiced by poor communities that lack income opportunities.

4. FOREST MANAGEMENT AND INSTITUTIONS

4.1 Forest Management

Since 1990, the forest strategies and development plans of the forest sector have required implementation of an integrated and participatory forest management approach. Priorities assigned to these strategies and plans consist of ensuring:

- (i) Water and soil protection
- (ii) Socio-economic development of forest communities
- (iii) Production of wood and other products
- (iv) Perpetuation of other pertinent forest functions.

The definition of these priorities and their monitoring in forest management plans were supposed to completely change the mode of intervention and widen the array of stakeholders involved (such as forest managers, local populations, industry, and NGOs). In practice, deficiencies have arisen in the field of local inhabitants' participation and partnership with the administration for ensuring the sustainable and integrated management of forest resources. The role of local associations remains very weak. Indeed, forest associations (AFICs) and agricultural development groups (GDAs) are not effectively involved in most forest management activities. The involvement of GDAs in forest activities remains limited due to lack of resources such as capital and equipment, in addition to strict country regulations affecting government contracts. For instance, GDAs are granted contracts only in the total absence of competition from private entrepreneurs, and yet; they are subjected to prior ministerial authorization.

Benefits generated by activities carried out by GDAs cannot be regarded as profits, and therefore benefits cannot be distributed to GDA members due to the non-commercial nature of these associations. In terms of the harvesting and commercialization of forest products, the instituted regulations did not foresee the possibility of sales by mutual consent in favour of a given GDA. The political commitment is wholly inadequate for allowing participatory development programs to be properly undertaken, as set forth by current legislation and regulatory measures which are supposed to be facilitating policies.

The role of the private sector continues to be minor and remains limited to harvesting operations of some forest products and their commercialization, because development and management of public forests have always been controlled by the forest administration. The private owner cannot undertake any harvesting operation without prior approval by the forest administration. If harvesting might cause a negative effect on the environment (i.e. sand dune fixation), the approval of exploitation is usually denied. The private owner perceives the application of the 'forest regime' to his own land, once planted with forest tree species, as a serious constraint which would prevent him from managing his own land the way he sees fit. Currently, there is an unresolved conflict between private forest owners and the forest administration about the use of these privately owned forest lands. The solution lies in the transfer of more comprehensive exploitation rights to the owner with the provision of full respect of the forest regime.

Moreover, much of Tunisia's forest management plans are out-of-date, and may not get updated or implemented soon due to the lack of necessary funding (Ministry of Agriculture 2006). Criteria retained by the FA for management seek to ensure forest conservation and expansion, while maintaining the subsistence means of local households through usage rights, particularly livestock grazing. In contrast, households seek to increase their income from the use of natural resources and animal husbandry, in a context where the cost of household labour is assumed to be low, and where awareness about environmental conservation issues is negligible.



The main challenge in forest management is how to reconcile the conservation of forest resources on one hand and the socio-economic development of local inhabitants on the other hand. In other words, foresters have to demonstrate that improved forest management, with the active participation of local populations, can effectively increase the production potential, enhance forest resources, and improve livelihoods of local users.

Another challenge lies in the desired participation of private land owners in developing agro-silvopastoral development projects.

4.2 Forest Institutions

The Ministry of Agriculture, in charge of the forestry sector, manages the country's natural resources. This ministry is responsible for the formulation of environmental protection policies and the coordination of policy implementation by diverse partners involved in the protection, management, and development of the environment. Under the control of the Ministry, the National Commission for Sustainable Development (CNDD) is in charge of the coordination between different actors. In 1998 the CNDD established indicators of sustainable development, which are monitored by the Tunisian Observatory of Environment and Sustainable Development (*In French: Observatoire Tunisien de l'Environnement et du Développement Durable* OTEDD).

Within the Ministry of Agriculture, active organizations in the forestry sector include the General Directorate of Forests (*Direction Générale des Forêts* DGF) which is responsible for applying the forest code and for managing, protecting, and developing the state forests and other woodlands, in addition to grazing lands submitted to the country's forest regime. This administration is also responsible for:

- (i) Improving sand dune stabilization techniques
- (ii) Formulating adapted sylvopastoral management plans for forests and other collective rangelands
- (iii) Organizing the sustainable exploitation of wildlife
- (iv) Organizing and developing hunting, especially hunting by tourists and foreign visitors
- (v) Protecting nature and creating national parks and natural reserves.

As decided by the decree dated 13 February 2001, DGF's reorganization led to four administrative directorates (Annex 1):

1. Forest Conservation (Hunting, National Parks and Natural Reserves, and Forest Protection)
2. Silvopastoral Development (Forest and Rangeland Afforestation, Rangelands and Sand Dune Stabilization)
3. Forest Control and Regulations (Legislation and Regulation, Management of State Forests)
4. Socio-Economic Development of Forest Populations (Integrated Forest Management Studies, Forest economics, Training and Supervision of Populations)

The latter directorate was recently created for the purpose of promoting sustainable forest management in partnership with local forest populations.

At the regional level, forest management is carried out within 26 Regional Commissariats for Agricultural Development (*Commissariat Régional de Développement Agricole*, CRDA) covering every administrative district in Tunisia. Each district is further divided into a number of forestry Subdivisions (usually 2 to 4), and a total of 292 sectors (called triages in French) scattered nationwide and covering more or less dense forests and/or natural rangeland zones. Management at regional and local levels is carried out following integrated forest management plans and community development plans.



The State-owned enterprise for forest exploitation, *Régie d'Exploitation Forestière* (REF) is in charge of harvesting and commercialization of forest products from public forests. It is linked technically to DGF²⁰ while it enjoys managerial authority. Most forest products are sold by REF to private enterprises²¹ in auctions, while some products (such as fuel wood, and wild fruits are usually sold in small quantities according to fares²² (administrative prices), especially to local populations. It should be noted that the set fares have remain unchanged since 1995. Because of the rigidity affecting the legislation on forest products harvesting, collaboration between forest products' processors and the administration is difficult.

The regulations are aimed at discouraging the illicit harvesting of forest products, and as such are poorly adapted to the economic development of the forests. In fact, funding for harvesting of cork and wood comes to REF from the national budget and from programs designed at the national and regional levels, and from returns of small sales. The main returns (REF sales by auctions) of cork and wood are deposited in the national budget. Even if some harvesting activities are profitable (cork and wood harvesting) for the State owner, these activities are not regularly realized by REF as stipulated by the management plans. Thus, the cork and wood industries suffer from an irregular supply problem. As a result, forest resources remain under-valued.

In addition to REF, the forestry sector counts about fifty private forest products enterprises (cork, mushrooms, essential oils, etc.) as well as wood harvesting agents and charcoal producers.

The Silvopastoral Development Office for the North West (ODYSEPANO) is a public institution in charge of promoting agro-silvopastoral development in the five administrative districts of northwestern Tunisia. It was established in 1981, enjoys more flexible managerial procedures and is well organized. Its activities encompass:

- (i) Organizing the rural space in "terroirs" (lands surrounding a given village) where integrated²³ community development is implemented
- (ii) Developing basic infrastructure
- (iii) Promoting agriculture and soil and water conservation
- (iv) Implementing forest and agro-forestry plantations
- (v) Developing demonstrative agricultural units
- (vi) Providing technical training and required project management skills to communities.

This institution is usually in charge of the implementation of development assistance projects in the North-West areas (PNO), funded by international organizations.

The Office for Livestock and Pastures (OEP, Office de l'Élevage et des Pâturages) is a public institution whose mission consists of:

- (i) Improving livestock productivity
- (ii) Promoting fodder production and forage quality in privately owned lands
- (iii) Developing animal husbandry and fodder production techniques
- (iv) Monitoring and evaluating the animal husbandry sector and its contribution to economic development.

The National Research Institute for Rural Engineering, Water and Forestry (*Institut National de Recherche en Génie Rural, Eaux et Forêts* INRGREF) contributes to the development of

²⁰ It prescribes the products allowed for harvesting

²¹ The private enterprises buy the harvested product (in the case of cork) or the product at stumpage price before harvesting (timber and non-wood forest products)

²² These fares are applied in case of the impossibility of sales by auctions, and particularly if the products are sold to public or private persons for their own use, or unsold after an auction.

²³ Participatory and Integrated community development means that the planning and the implementation of the development project comprises all land uses of the terroir with the participation of the community, and given in a joint manner, so that, land use planning for terroirs is made for all uses simultaneously (agriculture, forest etc.) with community support.



national forest research. It organizes and executes all required scientific research while participating in the integration of obtained results into the economic and social fields. About 30 researchers work in two laboratories related to forestry research, namely: i) Ecology and silvopastoral improvement, and ii) Management and valorisation of forest resources. These two structures gather multidisciplinary teams of skilled and specialized researchers, some of whom enjoy overseas expertise and renowned international status. The main research domains are the adaptation capacity of forest ecosystems to climate change, selection of adapted forest and pastoral species, regeneration of forest tree species, growth modelling, fighting forest fires and insects, and economic valuation of forest goods and services.

The INRGREF has acquired a great deal of experience in promoting partnerships with national and international development agencies, as well as with other agricultural research institutions and universities in a wide array of countries, mainly in Europe and North Africa. Forestry researchers have published about 180 scientific papers at national and international levels during the last five years. The organization of scientific conferences and meetings in partnership with the forest administration offers a forum for debate between scientists, managers, and technicians, and constitutes a major support for enhancing the decision-making process related to sustainable forest management. Financing forest research is essentially assured by the national budget and specialized foreign sources.

The Silvopastoral Institute of Tabarka (*Institut Silvo-Pastoral de Tabarka* ISPT) was created in 1970. It is a school responsible for the training of specialized technicians in silviculture and rangeland management. It counts about fifty graduates every year. Some selected candidates are offered the possibility to continue studying for a full engineering degree at the *Ecole Nationale Forestière d'Ingénieurs de Rabat-Salé* of Morocco. Additionally, the National Agronomic Institute of Tunisia (INAT) contributes occasionally to the education (1996-2000) and continued training of forestry engineers.

4.3 Cross - sectoral Institutional Structures

Cross sectorial coordination mechanisms were put in place in order to promote the institutional and organizational implementation of these conventions (National committees, strategies, and focal points). At the institutional level, there is a National Commission for Sustainable Development (Commission Nationale du Développement Durable CNDD) which was created in 1993. This commission organizes a national meeting once a year. Its president is the prime minister who brings together all involved governmental and non-governmental stakeholders. The commission is assisted by a technical committee presided over by the Ministry of Environment and is composed of senior officials in charge of the environment from different ministries and public institutions²⁴. More information is needed on cross-sectorial linkages under the CNDD – so as to determine if it aims to consider these linkages and to bring the sectors together to facilitate positive synergies and avoid overlaps as well as negative impacts.

There is also a national council for combating desertification (*Conseil National de lutte contre la désertification* CNLCD) which was created in 1996²⁵ under the umbrella of the CNDD. It plays a national coordination role for combating desertification under the framework of the UNCCD. Annual meetings presided over by the Minister of Environment, and gathering different administrations (including the Forest administration and forestry research institutes), are organized once a year for discussing the main issues. In addition, workshops and meetings are regularly held between different sectors to discuss certain thematic areas at national (climate change, biodiversity) and regional (land management, desertification) levels. This type of coordination is usually ensured by the administration or the project development leader (focal point), and is best illustrated by the recent elaboration of the National Strategy of Climate Change (2012) under the coordination of the Ministry of Environment with the

²⁴ http://www.environnement.gov.tn/index.php?option=com_content&task=view&id=272&Itemid=252

²⁵ http://www.environnement.gov.tn/index.php?option=com_content&task=view&id=120&Itemid=143&limit=1&limitstart=6



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collaboration of GIZ. All involved stakeholders were represented and contributed to the formulation of instruments and tools for the implementation of this strategy.

5. PRESENT FINANCIAL FLOWS FOR SFM

The main sources of forest revenues are those generated from forest products and other income sources such as fines and concession fees, funds provided by the government budget and foreign aid, private domestic and foreign investments, and other alternative/innovative financing sources. There are no taxes applied in order to increase the revenue of the forestry sector.

Revenue Generation

Revenue from sales of forest products

Harvesting operations from public forests are planned by REF one year ahead of time for wood and cork in order to fulfil industrial demands and needs of local populations for fuelwood. Then, sales are also organized by REF for all forest products using auctions, mutual agreement, local sales based on official fares and invoicing. Forest revenues are generated from these four modes of sales and are funnelled either to the state budget account or to the state owned harvesting company (REF):

- Sales by auctions including cork, wood, and harvesting rights of rosemary and myrtle branches. The full revenue generated is transferred to the State budget account.
- Sales by mutual agreement (in cases where sales by auctions were unsuccessful). Payments are transferred to the State-owned company of forest harvesting (REF) account, and used as a source of income.
- Local sales based on fares of products issued from State-owned forests. Payments are transferred to the REF account, except those generated by hunting permits and transactions paid to the State budget account. Local populations buying forest products can transfer directly the amount of the purchase to the REF account or can pay the local foresters who take charge of this transfer.
- Sales by invoicing to public organizations based on official fares. Payments are also transferred to REF account.

The total gross State revenue generated by forest products was around USD9.0 million in 2010: This was distributed as follows: auctions (77.3%), mutual agreement (13.9%), local sales (8.3%), and invoicing (0.5%) (Table 5.1). The part of revenue received by REF varies generally between 8% and 14% of the total revenue, and the remaining proportion is directed to the state budget account. REF's share of the revenue is usually not sufficient to cover the costs of harvesting operations, having covered 71% of REF's harvesting cost in 2008, and only 33% in 2011. REF is compelled to seek other funds from the Ministry of Agriculture, and from different regional and national programs to ensure the execution of its activities, especially cork harvesting.

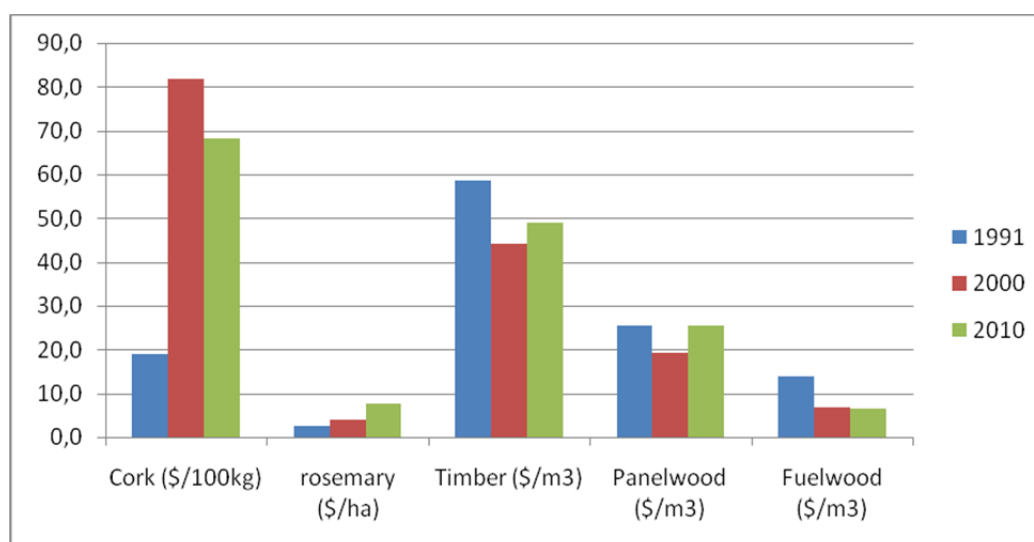
The gross revenue from forest products increased from USD8.1 million in 1991 to USD10 million in 2000, after which it decreased to USD 9 million in 2010 and USD 6.7 million in 2011 (using constant 2010 prices). This erratic fluctuation is mainly due to the variation in commodity prices showing an increase between 1990 and 2000 (especially for cork), and a decrease in wood prices following a surge in supplies (Figure 5.1), this situation become worse in 2011 after the regime change, with a sudden reduction of wood sales due to the disturbance of the auction. In 2009, the net revenue was about USD6.8 million, but dropped to USD4.2 million in 2011, because of a high rise in harvesting costs. In fact, the unit cost of cork harvesting has doubled between 2010 and 2011 due to a two-fold increase in worker wages and reduced workers' supervision after the revolution of January 2011 (Figure 5.2).



Table 5.1 Total Gross Revenue of Forest Products & Mode of Sales Distribution

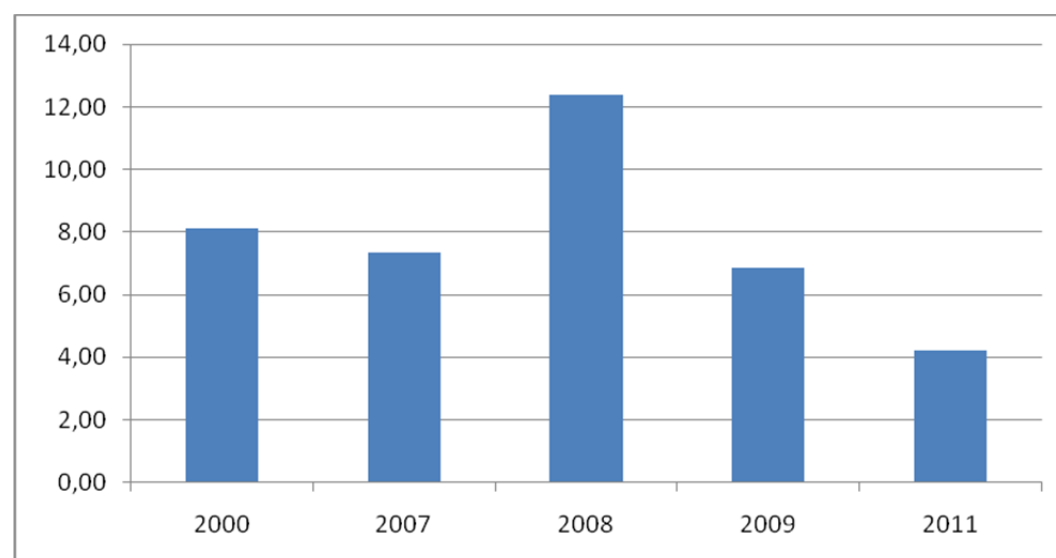
Year	2000	2007	2008	2009	2010	2011
	(USD '000)					
Auctions	9026	7281	12050	6436	6986	5800
Small sales	874	1462	1601	1145	749	454
Mutual agreement	206	253	320	350	1256	413
Invoicing	89	51	40	65	44	7
Total Revenue	10196	9047	14011	7995	9035	6674

Figure 5.1 Prices of Main Forest Products using 2010 Constant Prices



Source: Régie d'Exploitation Forestière (REF), annual report

Figure 5.2 State Net Revenue from Harvesting of Forest Products (Current USD million)



Source: Régie d'Exploitation Forestière (REF), annual reports (2010's report is not available)

Fees and fares on NWFP and park entrance fees

Local households enjoy free benefits from Tunisian forests represented by harvesting dead wood, grazing livestock, and extracting other forest products for their own consumption. Official fixed prices set by the State in 1995 are applied to sales of wood, NWFPs, and seedlings acquired for commercial use by either local inhabitants or outsiders. Some of these fixed prices are roughly equivalent to the current market price in 2012 (even though they have been applied since 1995) such as Aleppo pine kernels and carobs. Other fares are substantially lower than market prices, such as pinion pine kernels, mushrooms, and firewood. Price differences between market and official prices vary from one to ten-fold (Table 5.2) (FAO/DGF 2012a). For tree seedlings, about 1.8 million seedlings were sold in 2010 with a value of USD196 000, representing only 2.2% of the total forest revenue. In addition, the forest administration offers seedlings for free during one week a year devoted to the celebration of the Tree Day (in early November).

Table 5.2 Comparison between Market Prices & Official Fares of Forest Products

	Unit	Market Price 2010 (USD)	Fares Applied since 1995 (USD)
Fuel wood	m ³	13.3	5.6-9.3
Aleppo pine kernels (to be collected by the buyers themselves)	kg	0.1	0.04
Pinion pine kernels (to be collected)	kg	0.3	0.1
Mushrooms (to be collected)	kg	2.8	0.6
Acorns of cork oak (to be collected)	kg	0.1	0.1
Carobs (to be collected)	Kg	0.2	0.2
Seedlings (to be collected)	unit	0.7	0.1

Sources: REF, Forest service of Ain Draham

As noted by a recent study on economic valuation of forest goods and services (FAO/DGF 2012a), current fares should be reviewed yearly and must be classified into categories according to the nature of the beneficiary:

- The local population could benefit from the use of some products in exchange for voluntary labour contribution approved for needed forest management operations such as clearing shrubs. Imposing high fees for purchases made by local inhabitants is likely to result in lowered sales and greater illegal harvesting of forest products.
- For outside clients, fares should reflect the market price of the product, in addition to the environmental impact of the product use and exploitation.
- A 2010 regulation fixed the entrance fees to National Parks. The amount due is USD1.3 for adults and USD0.3 for students and children. Access is free on holidays for all citizens. However, the forest administration is not yet prepared for the application and imposition of this regulation, and is currently studying the possibility of co-managing parks with NGOs or private partners.

Fines

Fines are imposed for nearly half of all recorded illegal acts committed in Tunisian forests. The other half of forest law infractions is usually transmitted to courts for judgment. In 2010 the number of fine transactions was 1 419 for a total amount of USD91 000. This amount was transferred to the State budget. In fact, all fines applied are fairly modest with an average of USD64 per illegal act. According to regulations, fine rates vary from USD80 to USD400/ha for forest clearing, USD16 to USD48/ha for forest plowing and are twice the wood price for logging (Daly et al., 2005). Trade of illegal forest products affects mainly charcoal and pine nuts. The quantity of wood used in illegal charcoal production is estimated at 270 000 m³, a volume similar to that of wood sales made by the State. In Northern Tunisia, about 1/3 of charcoal consumed comes from uncontrolled sources (Daly et al., 2005).

Concession license fees

Concessions can be attributed for four major purposes:

- 1) Production of forestry and agro-forestry seedlings
- 2) Afforestation
- 3) Management of hunting areas
- 4) Ecotourism.

Approval for attribution of a given concession is based on different studies about the feasibility of the project, the possible social conflicts that may arise from the attribution, and the land tenure status. To date, only two concessions were attributed in 2011/2012 for a total investment cost of USD950 000, but they are not yet operational. Concession recipients should pay license fees to the State budget for the use of forest land for ecotourism. The first one will use 1.5 ha for 15 years, and plans to invest USD150 000. The beneficiary has to pay a total of USD670 per year as a license fee for the concession. The second one will use 10 ha for a period of 30 years and plans to invest USD800 000, provided mainly by bank loans. The recipient has to pay a license fee of USD4 670 per year for all the conceded area. Private entrepreneurs consider license fees to be very costly and keep asking for their revision downward. Other concessions were attributed, but not realized because of the high investment required for ecotourism projects, or due to the recent inclusion of conceded areas into natural parks. Studies for establishing two more ecotourism projects are currently underway.

Budgeting Process and Budget Level

Budgeting process

Each year, during April, investments for the following year in forestry and pastoral activities are calculated in the budget according to proposals formulated by institutions i.e. DGF and other organisms belonging to the Ministry of Agriculture, at both regional and national levels. The list of foreseen operations in the forestry sector along with their financial cost estimates are prepared by each region according to national strategy guidelines and 5-year development plan provisions. A first negotiation of drafted proposals is realized in May at the General Directorate of Financing, Investment, and Professional Organizations (*Direction Générale du Financement, Investissements et Organismes Professionnels* DGFIOP) in the Ministry of Agriculture. This body has the duty to verify that the planned budget is in accordance with the predicted activities and the real expenses incurred in recent years. The draft program is then submitted to the Ministry of Finance in June and July where it is negotiated with official representatives from the Ministry of Agriculture and other relevant sectorial stakeholders in order to approve the proposed programs and projects along with the necessary budget. The final program is then submitted to the Ministry of Finance in September and approved by the parliament in December of each year (DGFIOP personal communication, and FAO 2007). The approved budget is finally distributed to all Regional Commissariats of Agricultural Development (CRDA's).

Different organizations involved in the forestry sector have their own budgets and manage them independently: Institutions managing investment budgets include the forest administration (DGF) and other public institutions, such as ODESYANO, OEP, OTD, etc. Budgets for research (INRGREF for instance) and for higher education (i.e. ISP Tabraka) are considered separately in the sub-sector devoted to studies, research, and extension.

Budget level for forest and pastoral activities

The forest and pastoral budget comprises two major parts:

- The operating budget (USD19.3 million in 2011, *GBO unit, Ministry of Agriculture*) devoted mainly to public wages of permanent staff.
- The investment budget allocated to forest operations and activities (USD52.2 million in 2011). It includes the national program financed by the national budget (USD47.2 million) and other projects funded by loans and donations from bilateral or multilateral cooperation (USD5 million).

National Investment Budget

During the period 1992-2011, the national investment budget for forests and pastoral activities varied between USD20 and 47 million, with an average of USD31 million per year. The budget showed a significant increase between 1992 and 1999, then decreased between 2000 and 2006, after which it started increasing again (Fig. 9). This pattern of fluctuations is mainly explained by the projection of ambitious afforestation programs, which started in 1992, requiring a substantial increase in the national budget. However, the low rate of their implementation led to a subsequent decrease in the country's overall budget.

Official Development Assistance

Tunisia has succeeded in harnessing international funds because it has placed the development of forest areas that are inhabited by 20% of the rural population among its priorities. This means that a forestry project can have priority over other development projects related to transport or water distribution. Funds obtained from bilateral and multilateral Official Development Assistance (ODA) sources are quite variable. They attained an average of 29% of the total investment devoted to forest development and management during the period 1995-2006, and only 10% during the period 2007-2011 (Fig. 9).

Different ODA investment projects have significantly contributed to the development of the Tunisian forestry sector. Some of them focused on the forest sector *per se* such as the Forestry Development Projects I and II (PDF I: 1988 - 1994, and PDF II: 1995 - 2001), while others aimed at promoting the sustainable development of Tunisia's forests. Development programs and projects targeted the promotion of the participatory approach and local territorial management. They aimed at developing sound utilization of natural resources, including the improvement of local population livelihoods and revenues. They were primarily financed by the KfW/GTZ institutions. They gave rise to a number of specific projects such as:

- Forest development projects in mountainous areas of the Northwest (PDZF, *Projet de Développement des Zones Forestières*) 1991-2010
- Development of forest gaps (PCF, *Projet des clairières forestières*) 1983-2004
- Project of natural resources management (PGRN, *Projet de Gestion des Ressources Naturelles*) 1997-2004
- Pilot Operations for Integrated Development (OPDI) under the framework of PDFII 1998-2001
- The integrated forest management project I and II (*Projet de Gestion Intégré des Forêts* PGIF I: 2001–2006 and PGIF II: 2008-2014) financed by the Japanese Bank for International Cooperation (JBIC) (Table 5.3)



Table 5.3 Main Projects using Foreign Investment for Financing Forest Activities

Project	Period	Funding Sources	Amount (USD million)	Loans & Grants (USD million)	Loans & Grants/year (USD million)
PDFI	1988-1994	IBRD/ National budget	46.5		
PDFII	1995-2001	IBRD/ National budget	80.2	37.1	6.2
PGIFI	2001-2006	JBIC/ National budget	37.9	29.2	5.8
PGIFII	2008-2014	JBIC/ National budget	31.3	26.0	3.7
PCF	1983-2004	KFW/ National budget	37.1		
PDZF	1991-2010	KFW/ National budget	16.1		
PGAP	2002-2008	GEF/ National budget	9.9	5.2	0.9
MENARID	2013-2018	GEF/N. budget/ French Development Agency	9.1	4.3	0.9

Source : DGF, 2007 ; personal communication from DGF

Other development projects that focused mainly on the conservation of biodiversity were also implemented, such as the Project of management of protected areas (PGAP), and the Ecotourism and Conservation of Desert Biodiversity Project (MENARID). Financial assistance is available through investments and donations from various organizations such as the IBRD, GIZ, KFW, JBIC, GEF, AFD, FIDA, BID. Several projects financed by NGOs have also been launched, thanks particularly to support from Spain and Sweden. In 1992, the Netherlands and Sweden agreed to recycle the Tunisian debt into environmental protection projects, but this agreement never eventuated (FAO, 2003). Tunisian forests benefited from several other specific projects of technical cooperation with international organizations such as FAO, CRDI, GIZ, FFEM), and Model forests.

The awareness of policy makers of the contribution of forest goods and services in watershed conservation, the importance of the socio-economic development of forest areas, and biodiversity conservation, are needed in order to place SFM on the national policy agenda of other African countries and LFCCs. Based on Tunisian experience the support to forestry and SFM needs to be strongly linked with rural development, and particularly the development of infrastructure facilities and employment for local populations, along with political stability, otherwise, there is a risk of degradation of planted areas. The political awareness and acknowledgement of these crucial linkages has also facilitated the mobilization of donor funding.

Total Investment budget

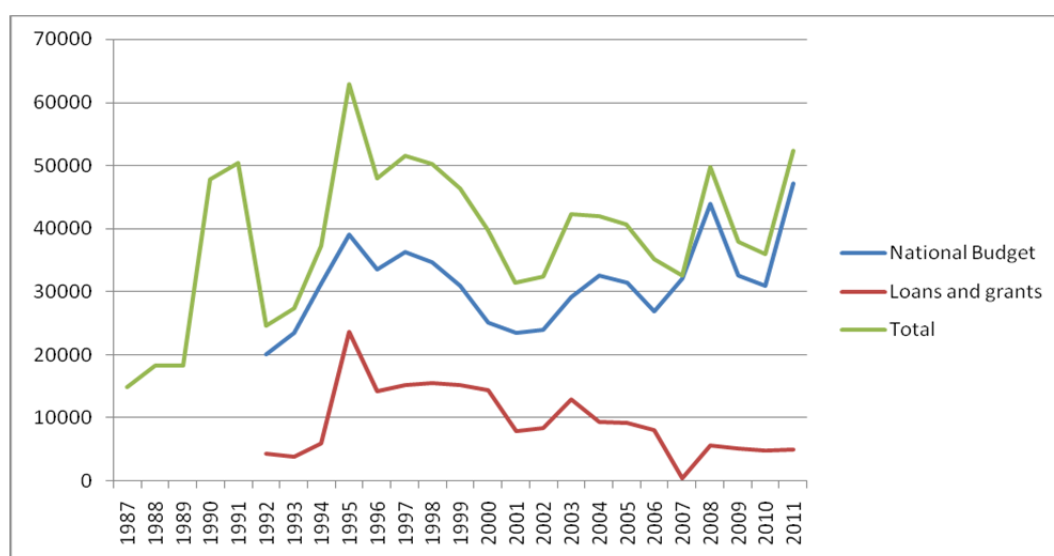
The investment budget during the 1990s was ten-fold greater than that spent during the 1980s (DGF 2007), attaining a peak in 1995. After that, the level of investment was quite variable at an average of USD38 million/year during the period 2001-2010 (Figure 5.3), corresponding to 6.8% of the agricultural sector's investments and 0.6% of the all public investments realized in the country. The main reasons for budget variation are the adoption of a new strategy focusing on costly afforestation programs and/or the reliance on foreign investment projects that are limited in time (for example, the variation of the budget during the period 2006-2008 was attributed to the delay taken in the finalization of the first phase of the PGIF project and the beginning of the second phase in 2008).



A comparison between investment and net revenue of forest products in 2011 showed that net revenue represents only 9% of the investment and that the government had made a net expenditure of USD 43 million in the same year.

Figure 5.3 Evolution of the Annual Budget of Investment for Forest & Pastoral Activities

(Current USD '000)



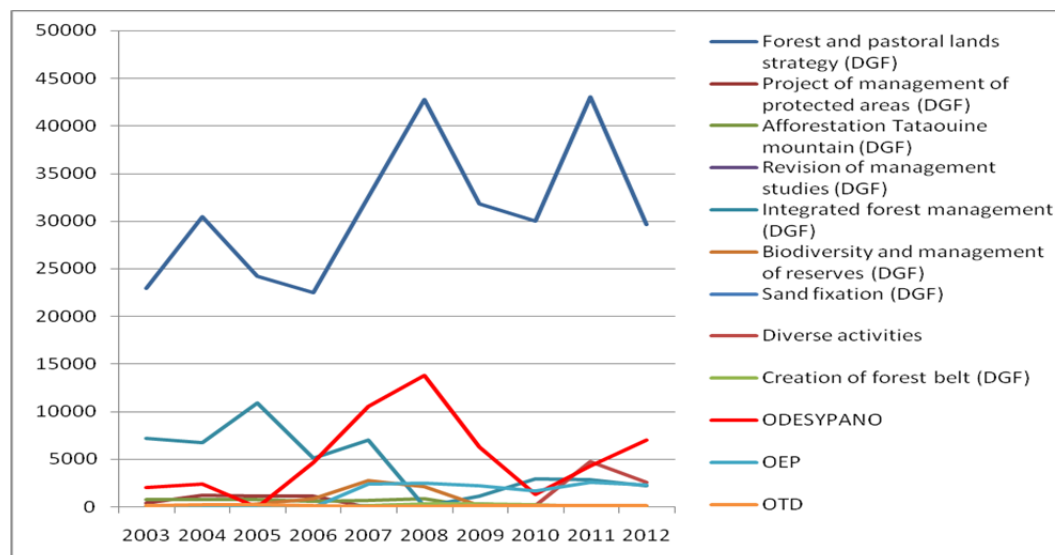
Source : DGFIOF database, Ministry of Agriculture

Total public investment for forest and pastoral activities was planned to reach USD44.1 million in 2012. This investment budget does not take into account the funds allocated to different integrated agricultural development projects (PDAl), which usually carry some forest related activities. Some USD29.7 million (67% of the total budget) was used for financing the national forest strategy. The remaining proportion of the required investment is mainly covered by forest activities planned by ODESYPANO projects (16%), the project of integrated management of forests (5%) and the pastoral plantations to be undertaken by OEP projects (5%) (Figure 5.4).



Figure 5.4 Budget Distribution among Institutions & Specific Activities

(Current USD '000)



Source : DGFIOP database, Ministry of Agriculture

Casual labour is always hired to carry out forest activities. Funds allocated to casual labour are the most important component of the investment budget at 87%²⁶ of the total (Figure 5.4). The forestry sector has always been acknowledged for its important role in the casual employment of marginal populations. This is the case even if other sectors are the ones who actually benefit from this employment (more than 50% in some regions, *personal communication*), and even though the forestry sector is not very productive or has low efficiency. For these reasons, an additional budget (USD8 million) was added to forest activities in 2012 because of the tremendously high social pressure that to absorb the unemployed populations living in forest areas, especially after the revolution of January 2011. The remaining components of the forestry investment budget include works contracted with enterprises (4.8%), consumables (4%), equipment (1.5%), operational fees (1.9%) and miscellaneous expenditures (0.4%).

Table 5.4 Distribution of the Budget Allocated for Payment of Forest Activities in 2012

	USD '000	Part
Contracting enterprises	1626	4,8%
Equipment	501	1,5%
Labor	29749	87,4%
Consumables (Gasoil)	1373	4,0%
Operational fees	642	1,9%
Divers	149	0,4%
Total	34040	100%

Source: DGFIOP, Ministry of Agriculture

Budgetary funding for research and education

Budgets for research and higher education in forestry are stipulated by the Ministry of Agriculture independently from funds reserved to the development of the forest sector. Other funds are also allocated to forest research projects by the Ministry of Higher education, bilateral and multilateral cooperation with the European Union, France, Spain, Italy, Portugal,

²⁶ This budget corresponds to about 16% of the State's contribution to the financing of various programs supporting employment (FAO 2007).

etc. In addition, DGF devotes about 1% of its total budget, including international cooperation projects, to forest research (about USD100 000). The total investment budget allocated for forest research is about USD500 000 per year, and a similar amount is also allocated for higher education in forestry. A large proportion of these funds come from external sources, with more than half for research and about one third for higher education.

Private Domestic & Foreign Investments

Private domestic investment

According to the forest administration predictions, private domestic investments are low and are projected to reach an average of only USD6.1 million per year, or 10% of the total public and private investment, during the period 2010-2014. They correspond to small areas of plantations in agricultural lands for multiple purposes. Furthermore, they are mostly oriented towards the creation of wind breaks using forest tree species plantations (4 500 km per year), e.g. cypress hedges especially in fruit tree orchards, and the plantation of pastoral trees and cactus (3 000 ha/year) (Ministry of Agriculture, XIIth Plan 2010-2014). Usually, small private landowners can benefit from free seedlings, and in some cases, they can be paid for the plantation work carried out on their own farms, under provisions made in some PDAI or ODESYPANO projects. However, despite incentives attributed by the investment code to forest and pastoral tree species plantations, no pastoral or forestry development projects have been implemented by private land owners nationwide (APIA, personal communication). They are afraid that with such plantations their land will be subject to strict rules and regulations of the country's forest regime, severely limiting the way they may exploit their land.

Foreign Direct Investment (FDI)

There was an absence of FDI in the past. Recently, two proposals for forest development projects by foreign investors were presented to DGF. The first one deals with the plantation of *jatropha* trees in the central and southern regions of Tunisia (2008), and the second one concerns *Eucalyptus* tree plantations in the South (2010). The latter is an ambitious and costly project proposed by Switzerland-based Global Wood Holding which expressed its desire to invest EUR900 million for growing eucalypts trees on 160 000 ha over 15 years in the Tunisian desert and to export the wood to Italy for energy production, creating 45 000 jobs. However, a controversy arose over heavy water use and the overall environmental total impact of these projects which prevented their implementation. Currently, there is an Italian investor who would like to set up a reed plantation project over 1 500 ha in the Kairouan marshes in the central part of the country for methanol production. No decision has been made yet for approval or refusal.

Other Sources of Financing

There are no innovative financing modalities in use even though there is a potential for payment for watershed services (PWS). Recent studies dealing with the potential application of PWS in Tunisia are available. There is a public compensation payment scheme²⁷ that is implemented by OEP in order to cover half of the investment cost and the loss of income during the three years following plantation of acacia, a valued fodder tree species, on privately owned lands. Also, the forest administration usually employs local individuals as guardians in order to guarantee the survival of new plantations in collective and public lands. Their waged employment as forest guardians, considered as an incentive, will dissuade local inhabitants from grazing newly planted areas.

A recent study showed the existence of real possibilities for applying PES in watershed management projects in northwestern Tunisia (Croitoru and Daly-Hassen, 2010). Another ongoing FFEM project (*Fond Français pour l'Environnement Mondial*) aims at identifying REDD+ projects that may be relevant to Tunisian forests, and to Mediterranean forests in general.

²⁷ These schemes involve direct payments from public institutions to land owners and/or users



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The Ministry of Environment, with the support of GIZ, has developed a portfolio of 50 Climate adaptation projects in 2010, and is currently seeking ODA financing funds for some studied projects, such as:

- 1) Integrated management of cork oak forests to prevent high fire risks
- 2) Rehabilitation and development of cork oak forest areas
- 3) Rangeland management in Sidi Bouzid and Gafsa.

6. DEMAND FOR FINANCING FOR SFM

Demands for financing SFM are expressed at the national level concomitantly with the formulation of:

- 1) The National Forest Program (NFP) at short, middle and long term,
- 2) The 5-year National Development Plan (2010-2014),
- 3) The details of a new approach called “managing budget according to objectives” (2011).

Demands for funds are also expressed at the local level for specific integrated management plans where costs and benefits associated with forest development and management are usually indicated.

The National Forest Program (NFP)

The NFP (2007), with support from FAO, has developed five new directions that were followed by an action plan, and then an investment program from public and private sources. The five directions for a SFM are as follows:

- 1) Expanding afforestation and ensuring better management of forest territories
- 2) Preventing further degradation of rangelands due to excessive anthropogenic pressure
- 3) Providing forest products required by society in sufficient quantities that can fulfil people's basic needs and expectations at local, regional, and national levels
- 4) Carrying out the capacity building requirements of the forest administration in terms of both human and material means
- 5) Promoting the organization of local communities and encouraging their participation in all planned actions and decisions related to SFM.

In the action plan, the NFP has already identified an array of tasks that are suitable for promoting private investments with gratifying compensation particularly in regard to conservation and valuation of forest resources. Some encouraging measures are already indicated such as reviewing the system of incentives set to elicit afforestation and other forest activities in private lands, promoting eco-tourism by involving tourism operators and developing promising eco-tourism circuits, in addition to developing a portfolio of projects offering investment opportunities and raising greater awareness of private enterprises. Capacity building is also needed for greater mobilization of foreign investments. Finally, required resources and tools should be provided to the forest administration for the implementation of international conventions to the full extent specified in the national action plans, as well as the regional and local programs associated with the implementation of UNCCD and UNFCCC, and the strategy and action plan of the CBD.

In the NFP investment program, the projected annual investment amounts to nearly USD50 million for the period 2007-2011 (using 2010 prices) (Table 6.1).



Table 6.1 NFP Investment Program: Short-, medium-, and long-term investments projected per task

Task	Short-term 2007-2011		Medium-term 2012-2016		Long-term 2017-2030	
	Private	Public	Private	Public	Private	Public
(USD Million – 2007 prices)						
Afforestation and Forest Management	25.4	102.0	45.7	181.3	128.9	398.4
Prevention of range land degradation	0.0	42.2	3.9	71.1	11.7	165.6
Development of forest products	31.6	3.9	16.0	9.4	59.8	18.4
Capacity building	0.0	10.9	0.0	13.3	0.0	43.0
Participation of local communities	0.0	1.6	0.0	2.7	0.0	8.2
Subtotal	57.0	160.5	65.6	277.7	200.4	633.6
Total	217.6		343.4		834.0	
Amount/year	11.4	32.1	13.1	55.5	14.3	45.3
Total/year	43.5		68.7		59.6	

Source : FAO / DGF, 2007

The 5-year National Development Plan (2010-2014)

For the period 2010-2014, the public investment budget was prepared according to the projections made by the national investment program in addition to various other specific projects predicting activities in forests, rangelands, and prevention of desertification. The planned yearly average investment is around USD55.6 million, with most of these funds provided by the national budget (87%), followed by contracted loans (10%), and donations (3%). Mobilized funds are allocated for the implementation of the National Forest Program (81%), the Project of Integrated Management of Forests (9%), the Project of Rangeland Improvement in Medenine (southern Tunisia) (4%), the Creation of Protected Areas (1%), Projects of Mechanical and Biological Sand Dune Fixation (4%), and Protection against Forest Fires (1%).

An important additional program of USD26.8 million was later added for work creation, representing about 48% of the initial investment. This large budget supplementation was mainly dictated by the necessity of alleviating the upheaval of poverty and unemployment which are rampant in rural and remote areas of the country where the proportion of unemployment ranges between 20 and 40%. The added funds were allocated to afforestation and forest management (65%), combating desertification (17%), management of rangelands and creation of windbreaks (16%), creation and management of protected areas (2%) (**Error! Reference source not found.**).

**Table 6.2 Yearly Average of Investments Projected during the period 2010-2014**

Program / Project	Average	%
	(USD'000)	
National Program (financed solely by national budget)	44785	80.5%
Project of Integrated Management of Forests	5008	9.0%
Afforestation of Tataouine's mountains	558	1.0%
Revision of Management and Planning Studies	698	1.3%
Studies focusing on Economic Development	140	0.3%
Forest Inventory	140	0.3%
Land Tenure Registration	103	0.2%
Creation and Management of Natural Reserves	419	0.8%
Combating Desertification and Sand Dune Fixation in Tataouine	558	1.0%
Combating Desertification and Sand Dune Fixation in Kebili	57	0.1%
Combating Desertification and Sand Dune Fixation in Tozeur	140	0.3%
Combating Desertification in the southern region of Tunisia	140	0.3%
Rangeland Improvement in Ouaera and Dhaher areas of Medenine	2094	3.8%
Creation of a Forest Belt protecting Kebili	67	0.1%
Protection against forest fires	717	1.3%
Total for initial program	55621	100%
Afforestation	17590	65.6%
Creation and management of protected areas	558	2.1%
Management of rangelands and creation of windbreaks	4188	15.6%
Combating desertification and soil protection measures	4467	16.7%
Total for projects of the additional program	26804	100%

Source: Ministry of Agriculture, 2010. The XII development plan (2010-2014). Report of the Sectoral commission of Agriculture development , fisheries and natural resources, in Arabic

Results-based Budgeting

A new approach to budgeting was adopted by the Government in order to link the planned national budget with development indicators of the forest sector. The Unit of Results-based Budgeting (*in French GBO: Gestion du Budget par Objectif*), under the Ministry of Agriculture has developed this approach to determine the budget. Firstly, development indicators are identified by different sectors for each sectorial program. Then, the Ministry of Agriculture develops the annual budget according to the expenditures required by actions projected to be undertaken for the purpose of improving the previously identified indicators. For the forest and pastoral sector²⁸, the major indicators retained were:

- 1) The rate of the forest cover
- 2) The proportion of forests having a valid management plan
- 3) The extent of harvested forest products per comparison to the total production potential
- 4) The proportion of managed rangelands and pastures
- 5) The average burned surface area per forest fire
- 6) The number of managed protected areas
- 7) The length of palisades built for combating sand dune movements.

²⁸ The total surface area submitted to the 'forest regime', or in other terms legally occurring under the jurisdiction of the General Directorate of Forests (DGF, Direction Générale des Forêts) covers about 1.9 million ha, out of which nearly 926,000 ha are forests and woodlands while rangelands and pastures cover the remaining surface area.



Indufor ...forest intelligence

This approach is still at its inception, and needs to be improved. The Tunisian forest budget is not yet established according to this approach, even though the current budget reserves a small part for management and harvesting of forest products, but it pays little attention to indicators (2) and (3).

This new approach for budget formulation is suitable from an economic point of view, because the cost can be justified by an improvement of human well-being. Hence, this approach could be an efficient framework for an objective economic evaluation of forest investments.

7. FINANCING GAPS AND KEY CHALLENGES

In Tunisia, are only acted on after legal financing approval²⁹ is granted. Moreover, funds are theoretically granted only to actions falling under the strategic priorities set in the national development plan. But, in practice there is a large discrepancy between the distribution of approved funds and the real expenses incurred for developing the forestry sector.

Gaps in Terms of Volume

The actual budget for implementing forest activities is often lower than the initially planned budget by the Ministry of Agriculture (about 83% for the period 2010-2012). This may be either due to domestic budget constraints imposed at the Ministry of Finance or due to administrative procedures and technical constraints preventing the realization of some activities.

Also, comparisons between the national investment budget as projected and the funds that were actually used for forest and pastoral activities showed important discrepancies due to the non-implementation of some cooperation projects and the shortage of public domestic funding. Expenditures in relation to planned budgets were 66% in 2010, 104% in 2011, and 79% in 2012.

Thematic Gaps

The distribution of funds according to source (public / private) between the NFP investment program and the actual budget (2011) is quite different. Indeed, it was projected in the NFP investment program that the private sector contribution to the total investment would attain one fourth of the total investment required, and that most of the private funds would be devoted to forest management and development of forest products. In reality during this period, private investments attained only 10% and were used mainly in plantations of forest and pastoral tree species outside state owned forests. This is because private investors are deterred by the low profitability associated with slow growing tree species used in the creation of new plantations, despite the incentives set for forest and pastoral plantations (chap. 3). Furthermore, the policies make the land owners feel that they lose the control of their land and decision making power.

The public investment program (2012-2016) of the NFP has allocated 48% of funds to silvopastoral plantations, and 20% to forest management, whereas the 2012 national budget program has allocated about 61% of investments towards afforestation and pastoral plantations, and only 3% to forest management (Table 7). Several sub-tasks that are included in the NFP; such as the promotion of investment opportunities (5%), the participation of local communities (4%), and development of partnerships (1%); remain without appropriation of funds although they were initially projected under the national program (Table 7.1).

²⁹ The budget for each Ministry should be approved by the parliament



Table 7.1 Comparison of the Public Investment Distribution - National Investment Budget vs. NFP

Sub-tasks	National Investment Budget (2012)	NFP (2012-2016)	Difference
Sylvopastoral plantation	61%	48%	+13%
Forest management	3%	28%	-25%
Combating desertification	8%	6%	+2%
Protection against fires and insects	13%	4%	+9%
Biodiversity conservation	4%	3%	+1%
Creation of recreational areas	1%	1%	0%
Infrastructure	10%		+10%
Promotion of investment opportunities		5%	-5%
Development of partnerships		1%	-1%
Participation of local population, etc.		4%	-4%

Source : FAO / DGF, 2007

It can be concluded that the priorities as defined in the NFP process, and related financing as detailed in NFP investment program, were not followed by the national budgeting at least for the year 2012. A major share of the approved budget is allocated to silvopastoral plantations and forest surveillance. Indeed, about 60% of this budget is assigned to the expansion of the country's forest cover and the creation of new pastoral plantations.

The participatory and territorial approach leads to the use of forestry funds for non-forest activities such as infrastructure (10% of the national forest program budget in 2012) and socio-economic development activities. Other tasks that were deemed equally as important in the NFP (2007-2030), such as forest management and forest conservation, receive very limited budget allocations. This shortfall is due to the lack of funds for financing these activities, and may induce e.g. a loss of forest income for the State, a reduction in the contribution of the forest sector to the national economy, as well as higher risks of forest fires.

Although the NFP investment program specifies forest management as one area for investment, the public budget is directed to other thematic areas. The implementation of SFM is quite dependent on foreign funding. During the last few years, ODA funding was provided by several ongoing projects for integrated forest management and biodiversity conservation. In addition, there was a new specific project for watershed management which was not initially in the 5-year development plan, that is currently being funded (USD20.3 million).

The lack of funds is further illustrated by several important strategy studies relevant to forestry which were carried out by the forest administration. However, they remain unimplemented due to lack of money. Among these studies, one deals with the identification of a sustainable development strategy for cork oak forest areas which cover nearly 150 000 ha. Nevertheless, this study has remained in the administration desk drawers since 2007. Similarly, the few forest management plans that were actually updated also remain unimplemented because of the lack of necessary funds. Thus, there is an urgent need for a sustained financing scheme for ensuring the implementation of proper forest management. Several important tasks, such as preventing forest fires and conservation of biodiversity, should not be postponed simply because of lack of money.

Another financing gap is due to the fact that public funds allocated to REF for cork harvesting³⁰ are usually not sufficient to undertake harvesting to a full and optimal extent³¹. The consequence is a loss of state revenue as the optimal harvest cannot be realized. Even if cork harvesting is profitable, the regulations affecting REF funding cause a financial shortfall leading to a consequent loss in State revenues, in addition to market and industry shortages in both of the aforementioned major forest products.

These circumstances combine to impose a severe hindrance to the implementation of the national strategies adopted for developing the Tunisian forestry sector, particularly the strategy for afforestation (1990-2001) and the strategy for the development of the forest sector (2001-2011). Their negative impact can be clearly seen through comparisons between predicted and accomplished afforestation tasks. The first strategy projected the afforestation of 320 000 ha during the period 1990-2001, but only 56% of the predicted area was actually planted, including all tree plantations made within and outside the state owned forests. Similarly, the second strategy predicted the afforestation of 190 000 ha during the period 2002-2011, but only 53% of this total surface area was actually planted. However, a substantial improvement in planting was recorded in recent years with a yearly average of about 18 000 ha of forest and pastoral plantations established compared to the initially planned rate of 26 000 ha/year. The failure to implement forest strategies mainly affects the projected plantation in private lands.

Main Challenges

The NFP is already a process that includes the action plan and investment program, but it needs a component that includes an analytical process looking into financing strategy. Developing this strategy can effectively align the NFP process and related Investment Program with the national budgeting process and raise and mobilize the required funds for all the priority tasks of Tunisia's forestry sector. This would overcome the dependence on foreign sources and the shortage of funding for management. This strategy should be based on the increase of forest revenue generation, in addition to the establishment of economic instruments and mechanisms that encourage private investments and international funding.

There is also an urgent need to develop an effective strategy devoted to increasing the income generated by forest products. This objective may be achieved not only by creating markets where they do not exist yet, but also by positive differentiation between various forest products, such as mushrooms, honey, fruits, cork, wood, etc., through certification, territorial marketing, and/or specification of production conditions and procedures.

Another challenge is the effective use of the funds allocated to the forest sector. Funding that was intended to forestry is directed to social purposes that can be detrimental to SFM and attaining forestry goals. There is a major concern about the use of funds allocated to the forest sector going towards the creation of jobs for poor and unemployed people in marginal areas of the countryside even if no activities were scheduled to take place in some of those areas. Indeed, a large proportion (70% of the budget allocated to forest activities in the region of Kasserine) is assigned to the payment of non-active labour and to cover management expenditure incurred by the Regional Commissariat for Agricultural Development (CRDA)³². This major constraint imposed on budget expenditure has a drastic negative effect on the realisation of projected tasks. The budget allocation to the forestry sector is largely driven by the national policy dealing with poverty reduction and absorption of unemployment, rather than by the development of the forestry sector itself. In some cases, especially after the revolution of January 2011, additional funding is provided to alleviate unemployment, whether investments are productive or not. Where the investment is not productive, it effectively

³⁰ There is a loss of efficiency as commercial operator other than REF cannot participate to the harvesting operations (bringing normal competition to the business)

³¹ It is estimated that 30% of the potential production of cork is not harvested, the rate is higher (40 % for wood) (DGF, personal communication)

³² The budget of the forest sector is distributed for regions, it is controlled by the regional commissariat of agricultural development that may use these funds for other priorities than the forest sector.

becomes a social program. The targeted budget management (GBO) can avoid these inefficiencies.

Another challenge lies in the State supporting the participation of local populations in enhancing forest management. The failure of GDA development is mainly related to regulations that hinder their involvement in forest activities and the harvesting of forest products in their territories. In fact, the mission of GDA is not adapted to the forest sector because forests are state-owned with strict management regulations. Furthermore, there are difficulties of access to forest resources (GDA should compete with private entrepreneurs when an auction for the sale of forest products is organized). Another reason is the weak structure and lack of supervision in the GDA.

Moreover, private sector funding is a challenge for financing SFM, as existing incentives fail to encourage forest plantation because of the prohibitive policies. The Forest Code places strict requirements due to which the land owners perceive that they lose control over the land³³. It should be noted that the profitability of forest plantations is usually low, except for some species producing fruits such as caper, carobs, walnut, or eucalypt for honey production. Private-owned forests are classified in two categories: the first one is subject to a forest regime (due to their protection role) where harvesting plans are submitted for a special authorization from the ministry in charge of forests that prescribe the harvesting conditions. For the second category, private owners practice all their property rights, but they give notice to DGF of the harvesting activities in their land. For example, there were 420 requests for harvesting or shrub clearing in 2011 of which the DGF approved 73%. Forest clearing is not allowed when the private forest has a protective role (protection against erosion, protection of water sources and environment, protection of endangered species). In this case, the private owner can claim a compensation for restriction of enjoyment.

³³ The perception of the private owner that they lose the control of their lands comes from the continuous conflicts between forest administration and forest private owners.



8. ENABLING ENVIRONMENT AND OPPORTUNITIES FOR FINANCING SFM

Overcoming major constraints related to forest product harvesting could enhance forest revenue generation. Among constraints leading to a loss of revenue are the lack of management plans, and their non-application where they do exist because of lack of funds allocated and insufficient human and material means retained by the forest administration. This is exacerbated by the inability of the government harvesting company (REF, Régie d'Exploitation Forestière) to conduct harvesting operations to their full extent. The REF should retain a significant portion of the returns³⁴ generated by all sales of forest goods in order to increase the contribution of the forest sector to the national economy.

The results based budget management is a promising new process. The use of funds will be more efficient and be allocated to purposes that were agreed upon, and that the budget managers will follow as their future budgets will be based on performance against the previous budgets. The results indicators should take into account the importance of several goods and services provided by forests, such as the protection against water erosion and reservoir sedimentation, the forage grazed by local inhabitants' livestock, and recreation.

A sound monitoring and evaluation system is also needed to ensure full recognition of the expenditure compared with the allocated budget. In addition, an analytical accounting procedure must be set up as an efficient contribution to cost control. For example, the number of forest tree seedlings produced annually in Tunisian nurseries should depend on the plantation features in terms of surface areas, species used for plantations, density, etc. During the period 2002-2007, the number of tree seedlings produced reached an average of 29 million per year, while the quantity actually needed for both forest and pastoral plantations was only around 17 million seedlings / year during that same period. Thus, there is a costly overproduction of about 7-18 million tree seedlings every year, of which only 2 million are sold, and at a price lower than the real cost, for planting on private farms, roads, and city hedges.

Despite their numerous benefits to society and local populations, Tunisian forests are often perceived by local communities as a barrier to development. This perception is explained by widespread unemployment and limited income opportunities in most forest areas of the country. This situation creates ongoing conflicts between the forest administration and the local inhabitants over the use of forest resources and the creation of employment opportunities. The emergence of these conflicts peaked shortly after the Revolution of January 14, 2011, through greater fire frequency and larger burnt surface areas, physical violence against foresters, and trespassing against several national parks for illegal usage of protected resources. Illicit stocking and illegal cutting of trees for charcoal production have also been on the rise since January 2011.

Alleviation of these conflicts could be fairly achieved through arrangements such as participatory management and revenue sharing. The forest associations created during the last few years have not really been involved in forest activities or forest products harvesting. Also, there is no real compensation of forest users for losses they may suffer from the prohibition of access to resources needed for their livelihood, for example following the creation of natural reserves or new tree plantations. Active participation of local populations should be encouraged in all forest development projects. One concrete arrangement could be the adoption of compensation schemes by the State in order to offset income losses suffered by local forest users in order to insure their adherence to the achievement of forest management and conservation goals. Such a scheme was implemented in the South of the country where the shepherds were compensated by the State for prohibition of access to collective rangelands. Currently developed mechanisms to involve local population and the private sector are described in Box 8.1. There is a need to achieve a compromise between the

³⁴ Even if REF enjoys managerial autonomy, it can receive only revenue of forest products coming from sales by mutual agreement, using official fares and invoicing (22.7% of all sales in 2010). It does not perceive revenues due to auction sales (see chap. 5). The REF total revenue is usually not sufficient for harvesting operations (especially cork). For that reason, the State has allocated during the last few years a special budget for cork harvesting (US\$ 350,000) to the CRDA of Jendouba (the main region of cork production).



immediate needs of local populations (grazing, firewood harvesting) and the long-term production of environmental services. Thus, the role of economic instruments, including payments for environmental services, is necessary and crucial for bridging the gaps existing between private and social benefits (Daly-Hassen et al., 2010). A case study using Barbara's watershed, in northwestern Tunisia, showed there are real possibilities for establishing a payment system for ecosystem services (PES), a mechanism by which water users downstream (or the government on their behalf) can pay farmers upstream in exchange for profits generated by water and soil conservation measures (Croitoru and Daly, 2010).

Another requirement to enable financing SFM is the recruitment of adequate human resources. The lack of surveillance and management due to retirement of older foresters and lack of recruitment of young personnel (very little recruitment in the two last decades and about 50 technicians recruited since 2011) has led to an increase in degradation in many forest areas and a lack of government revenue. In fact, there are no supervisors for 125 forest centres among a total of 278 centres scattered nationwide. Moreover, the number of forest officers decreased from 800 technicians and engineers in 1985 to only 450 in 2011 and 500 currently, because of the reduction of government recruitment in recent decades to reduce the public budget.

The decrease in recruitment is why many illegal acts of depredation committed against forest resources go either undetected or are addressed after a damaging delay. Yet, they are not penalized adequately because of low fine tariffs. The overuse of resources results in a high social cost associated with the loss of current and future productions, carbon emissions, land degradation and loss of biodiversity. The recent recruitment, in 2011 and 2012, of a few dozen forest technicians and engineers is likely to redress the situation and should certainly result in reduced degradation and greater application of local forest management plans.

The management process of some ODA projects slows down expenditure compared to planned budget. The improvement of living conditions of local populations through diversification of economic activities counts among the most important objectives fixed by forest development projects using ODA in order to reduce the anthropogenic pressure exerted on forest resources. The implementation of these projects needs the establishment of local community development plans, in addition to the active involvement of local inhabitants, and strengthened coordination between different sectors during the short period of the project (usually 5 years). This process takes a long time and can be applied only at small scales. This is the main reason that only 40% of the projected activities of the Integrated Forest Management Project, second phase (PGIF II) were realized in 2011.

Developing appropriate partnerships and coordination between government, institutions involved in socio-economic development, community organizations, NGOs, private companies, banks, and all other involved stakeholders improves the implementation of forest projects, and increases the financing budget for the forest sector.

The present legal framework is inappropriate to attract investments in private land, because the investor perceives the application of the 'forest regime' to his own land as a loss of its control. The legal framework imposes strict conditions on land that is planted for trees. Guidelines providing incentives to private land owners encouraging forest tree plantations (see chap. 3) were overridden by the Forest Code's strict regulations which submit forest tree plantations to a constrained long-term management procedure, in addition to difficult administrative authorizations.

Many financing opportunities are offered by the Rio conventions (Global Environment Facility (GEF), REDD+, CDM, Adaptation Funds, Access and Benefits Sharing, etc.). Analysing the extent of their adaptation to the Tunisian context and conditions, and better coordination at national and international levels is needed in order to take full advantage of these opportunities. They could provide appropriate measures for investing in conservation of ecosystems, especially for increasing ecosystem resilience to climate change, reducing the risk of occurrence of natural disasters (flooding, fires, landslides, erosion, desertification, dieback, mortality, etc.), and reducing forest degradation. For example, during 2010-2014 GEF



has allocated initial national envelopes to Tunisia. These include USD1.5 million for biodiversity, USD4 million for climate change, and USD5.36 million for land degradation which is considered a new task.³⁵ The GEF foundation has already approved 20 national projects at a total cost of USD79.9 million³⁶. About one fourth of this grant is dedicated to projects dealing with the forestry sector, while the other projects concern climate change and other thematic tasks.

The GEF provides a focal point for Tunisia in coordinating all involved partners to identify development and innovation projects that meet GEF regulations and requirements, and comply with the country's priorities. The preparation of well-designed projects by the forest administration could be an advantage for financing forest activities using funds provided by this important grant from GEF.

In Tunisia afforestation activities have been and are supported by policy makers. Afforestation activities are in harmony with the country's development policy, especially in fighting unemployment and poverty. The activity has also received support from research with the first forest research station established in Tunis in 1957. This political attention has led to a strong increase of forest area in Tunisia (2.8% per year on average for the period 1990-2010, FAO). In addition, Tunisia has succeeded in attracting international funding because it has placed the development of forest areas that are inhabited by 20% of the rural population among its priorities. Therefore, a forestry project can have priority over other development projects related to transport or water distribution. Minor increases or decreases in forest area are observed in the neighbouring countries: Libya (data not available), Algeria (-0.5%), Morocco (+0.1%) and Mauritania (-2.1%). In order to place SFM on the national policy agenda of other African countries and LFCCs the awareness of policy makers is needed of the contribution of forest goods and services e.g. in watershed conservation, on socio-economic development of forest areas, on biodiversity conservation and on human wellbeing. SFM should also be coupled with rural development, and particularly with the development of infrastructure facilities and employment for the local population, otherwise there is a risk of degradation of planted areas.

³⁵http://www.thegef.org/gef/STAR/country_allocations

³⁶http://www.thegef.org/gef/project_list?keyword=&countryCode=TN&focalAreaCode=all&agencyCode=all&projectType=all&fundingSource=all&approvalFYFrom=all&approvalFYTo=all<gt=lt<gtAmt=&op=Search&form_build_id=form-686b3449a94d00aa1b72651d8baf4aeb



Box 8.1. Creating Mechanisms to Involve Private Enterprise & Local Communities in the Forest Sector

The forest administration is developing two mechanisms for eliciting the involvement of the private sector and local communities in the co-management of forest products and services:

1. *Granting concessions* is a system introduced in 2005 which allows the development of some activities (production of seedlings, afforestation, hunting, ecotourism) by the private sector and local communities, within a precisely delimited forest area. Under this system, a contract is established between the FA on behalf of the State and the private enterprise which would have gained acceptance for a previously submitted project proposal. The signed contract describes the conceded area, the cost of investment, the annual fees required and the duration of the concession. Perceived fees from concession recipients are estimated in relation to projected benefits, and are funnelled to the State budget. This mechanism has the advantage of inducing the development of the forest sector without reliance on public funds.
2. *Building partnerships* between public, private and local populations through the involvement of local enterprises in the exploitation of non-timber forest products. These partnerships aim at improving the living conditions of local inhabitants (which count among the most disenfranchised in the country) by giving an added value to forest products through their transformation using local labour. This type of partnership can also be enhanced by future certification schemes and local label attributions. This mechanism has also the advantage of overcoming the numerous conflicts arising between the forest administration and the local users over the proper use of forest products.

These two innovative financing mechanisms offer new investment opportunities, and can make a significant contribution towards a better distribution of costs and benefits among the engaged stakeholders. However, the government remains a major catalyst in developing these mechanisms, eliciting investments by private enterprises and encouraging local communities to accomplish activities under these two mechanisms. FAO Technical Cooperation Program (TCP) is currently providing assistance to the forest administration for the purpose of designing and developing these mechanisms.



9. RECOMMENDATIONS

Four groups of recommendations are listed below to overcome financial gaps and challenges, and to create an environment encouraging financing and investments for SFM. Some are derived from the economic valuation of forest goods and services provided by forest ecosystems in Tunisia (FAO/DGF, 2012b).

1. A well-defined public budget allocation for ensuring SFM

The priorities as defined in the NFP process, and related financing and detailed in the NFP investment program, were not followed in the national budget at least for 2012. It is recommended to apply the new approach of results-based budgeting. This budgeting method will enhance the linkages between the public budget, the priority tasks and the expenses required for developing the forest sector. Proper application of this approach for funding, after the identification of appropriate indicators of management objectives and results, is likely to:

- Ensure planning of actions that are concordant with drafted national plans and priorities. It could allocate enough funds for the proper implementation of forest management plans and activities, biodiversity conservation in public forests, as well as for watershed protection and reduction of fire risks. So far, the increase of the forest cover was the only indicator for monitoring and evaluation of the development of the forest sector by policy makers. The adoption of different indicators according to priorities can assure better allocation of funds between thematic areas.
- Reconsider the assignment of forest investment funds for unnecessary labour payments which make little or no contribution towards the implementation of forest development tasks, and prevent the payment of labourers for activities other than those specified in the forestry program.

2. Developing financing mechanisms and institutional instruments for encouraging sustainable forest management

Encourage local forest users by conditional performance based incentives. Only those willing to apply sustainable usage practices should benefit from such incentives. Similarly, it is necessary to compensate losses of income incurred by households as a result of measures implementing sustainable forest management, such as prohibition of grazing access, because raising livestock represents the most important source of income in forest areas.

There is an existing incentive scheme but it has not facilitated investment in private lands. Therefore, it is necessary to:

- (i) Resolve conflicts between private forest owners and the forest administration by transfer of all exploitation rights to land owners or perhaps by possible purchase of private lands by the State.
- (ii) Eliminate regulation constraints and deploy an adequate incentive scheme for encouraging forest plantations of severely eroded private lands. Ideas focusing on new regulations and incentives encouraging afforestation of private lands should be debated and weighed for adoption.

Establishing pilot sites for successful achievement of the above financing mechanisms could be of utmost importance for convincing investors and local forest users to implement SFM practices.

3. Improving revenues derived from forest goods and services

Allocate a sufficient budget for REF to ensure cork stripping and other harvesting operations can reach their full extent, and to increase the net revenue generated by forest products.

Update administrative prices of forest products and review the level of fines for forest offenses so that they equal the full value of inflicted damage. Improve forest revenue through the creation of added value derived from transformation and processing chains of NWFPs by providing support to small and medium enterprises and community associations³⁷. Certification and support of marketing initiatives for goods and services (fuelwood, hunting, ecotourism, etc.) should also result in improved revenues. In addition, it is necessary to adopt a coordinated approach between private and public sectors for certain products, such as cork, rosemary plants, etc. which are the basis of industrial activities subject to strong competition from substitute products.

Evaluate and promote successful experiences on private concessions, especially those devoted to the production of forest tree seedlings, hunting, and ecotourism. Green tourism and eco-tourism are real opportunities in Tunisian forests. Already, forest concessions (2005 Act) encourage private investment to promote ecotourism.

4. Adapting forest regulations to support financing and revenue generation

Regulation constraints stemming from slow and rigid administrative procedures should be removed to promote private investment. For example, concession requests by private investors may take up to six months to be reviewed, and yet the request may be turned down because not all requirements were fulfilled. Administrative obstacles also limit local community associations from obtaining legal agreements for undertaking specific tasks and work on behalf of the forest administration. Another significant hindrance lies in the fact that the regional forest services are totally dependent, administratively and financially speaking, on the Regional Commissariats for Agricultural Development (CRDAs). A direct link to the forest administration would enable better coordination between national and regional levels. This was the case for decades from the 1950s.

Overcome different constraints (cumbersome administrative and technical procedures, lack of personnel and material means) that hinder the implementation of financed forest activities. There is an urgent need for adapting the General Directorate of Forests (DGF) to new requirements by strengthening its means of intervention, and establishing new mechanisms that are able to promote coordination and cooperation between all stakeholders involved.

Finally, forest law enforcement should be improved. Regulations should be more adapted for the improvement of local living conditions. Consequently, fines must be adjusted to reflect the true value of inflicted damage caused to the society (loss of future production, erosion, reservoir sedimentation, loss of biodiversity, loss of forage resources).

9.1 Lesson based recommendations for African countries

In Tunisia, political attention has driven a strong increase of forest area (2.8% per year on average for 1990-2010, FAO). Afforestation is focusing mainly on watershed management and protection of water infrastructure which are important investment areas in the agricultural sector. Afforestation activities also accord with the country's development policy, especially in fighting unemployment and poverty. Forest activities have received support from research which was initiated in Tunis in 1957. The regime change has not affected SFM financing because the forest sector is considered as one of the main employment sectors in forest areas. However, the lack of monitoring and evaluation has caused a reduction of the efficiency of forest activities. Tunisia has succeeded in attracting international funding because it has placed the development of forest areas that are inhabited by 20% of the rural population among its priorities. Therefore, a forestry project can have priority over other development projects related to transport or water distribution.

³⁷The forest administration has recently suggested the transfer of 20% of all supply of various forest products to community associations (GDA's) and local qualified individuals for industrial transformation and processing (DGF, 2012).



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To put SFM on the national policy agenda of other African countries and the LFCCs the awareness of policy makers is needed of the contribution that can be made from forest goods and services in e.g. watershed conservation, socio-economic development of forest areas, biodiversity conservation and human wellbeing. SFM should also be coupled with rural development, and particularly with the development of infrastructure facilities and employment for local populations, otherwise there is a risk of degradation of planted areas.



REFERENCES

- APII (Agence de Promotion de l'Industrie et de l'Innovation). 2010. Les industries diverses en Tunisie, Monographie, Tunis.
- Body, P. 1948. Economie forestière Nord Africaine. Tome premier : Milieu physique et milieu humain. Editions Larose, Paris.
- Croitoru L. and Daly-Hassen H. 2010. Using Payments for Environmental Services to Improve Conservation in a Tunisian Watershed. Mountain Forum Bulletin, 10 (1): 89-91. ISSN: 1815-2139. URL: <http://archive.mtnforum.org/rs/bul.cfm>.
- Daly-Hassen H., Pettenella D., and Jemal A. T. 2010. Economics instruments for the sustainable management of Mediterranean watersheds. Forest Systems, 19 (2): 141-155.
- Daly-Hassen H. and Ben Mansoura A. 2005. Chapter 7 - Tunisia, pp. 105-122. In: M. Merlo and L. Croitoru (Eds), Valuing Mediterranean Forests: Towards Total Economic Value. CABI Publication, Cambridge, Mass, USA, 406 p. ISBN: 0-85199-997-2.
- Daly-Hassen H., Ben Mansoura A., and Hammami A. 2005. Forest law enforcement and governance : Case of Tunisia. Oral presentation to: MEDFOREX Seminar on Forest Law Enforcement and Governanace. Orestiada, Greece, 15 April 2005. URL : <http://www.medforex.net/annual/2005/presentations>.
- Daly-Hassen H., Chebil A., et Ben Moussa B. 2008. Perspectives de la demande de bois industriel en Tunisie. Communication orale, 1er Colloque Euro-Maghrébin sur les Bois Méditerranéens, Université de Boumerdès, Algérie, 30 Mars-02 Avril 2008.
- Daly-Hassen H., Khouaja A., Chebil A., 2004. Impact de la baisse des tarifs douaniers sur l'industrie de bois local en Tunisie, 3/2004, NEW MEDIT, 3 (3) : 28-31. ISSN: 1594-5685.
- DGF (Direction Générale des Forêts), Ministry of Agriculture. 2012. Rapport annuel des activités de la DGF en 2011.
- DGF (Direction Générale des Forêts). 2010. The second forest inventory.
- FAO (Food and Agriculture Organization). / DGF (Direction Générale des Forêts). 2012a. Etude sur la caractérisation de la population forestière, élaboré par K. Tounsi et A. Ben Mimoun, Tunis.
- FAO (Food and Agriculture Organization) / DGF (Direction Générale des Forêts), 2012b. Evaluation économique des biens et services des forêts tunisiennes, élaboré par H. Daly, L. Croitoru, K. Tounsi, A. Aloui et S. Jebari.
- FAO (Food and Agriculture Organization). / DGF (Direction Générale des Forêts). 2001. Rapport national de prospective du secteur forestier en Tunisie. élaboré par H. Daly et G. Gader, Projet FOSA/FAO, Rome, 50 p.
- FAO (Food and Agriculture Organization). / DGF (Direction Générale des Forêts). 2007. Analyse du Processus et formulation du programme forestier national Tunisien. Elaboré par H. Daly-Hassen, A. Chennoufi, M. Naija, A. Bouzid, and A. Hammami, Tunis, 11 p.
- FAO (Food and Agriculture Organization). 2010. Forest resources assessment 2010. National report, in french, Rome.



- FAO (Food and Agriculture Organization). Grasslands and pasture crops, Tunisia, elaborated by ChedlyKayouli <http://www.fao.org/ag/AGP/AGPC/doc/Counprof/TUNIS.htm>
- FAO, 2003. Role of planted forests and trees outside forests in sustainable forest management Republic of Tunisia country case study. Prepared by Rouchiche and H. Abid.
- FAO, 2007. Relier les programmes forestiers nationaux aux stratégies de réduction de la pauvreté. Cas de la Tunisie. Par Saïd HELAL, Rosalie McConnell, Thirong Patrick So.
- FAO. Creating an enabling environment for forestry and forest industries : Establishing mechanisms for joint management of forests in Tunisia. <http://www.fao.org/docrep/013/i1775e/i1775e03.pdf>
- GIZ 2011. Baseline report. Projet Régional Silva Mediterranea – CPMF. Adaptation au Changement Climatique des conditions cadres de la politique forestière dans la région MENA.
- GIZ, 2012. Analyse de la politique du secteur forestier et des secteurs connexes – TUNISIE. Projet SYLVA MEDITERRANEA, par M. Meliane.
- INS (National Institute of Statistics) website <http://www.ins.nat.tn/indexen.php>, Tunis
- Ministère de l'Agriculture, des Ressources Hydrauliques et de la Pêche 2009. Projet de Gestion des Ressources Naturelles Deuxième phase (PGRN2).
- Ministry of Agriculture, 2009. Medium-term evaluation of the XIth Plan for the Development of Tunisian Forests, Pastoral lands, and Protection of Soil and Water.
- Ministry of Agriculture, 2010. The XII development plan (2010-2014). Report of the Sectoral commission of Agriculture development, fisheries and natural resources, in Arabic.
- Ministry of Agriculture, 2006. XIth plan of Development. Committee of Forests, pastoral lands and soil protection, in Arabic, Tunis.
- Ministry of Environment. Website <http://www.environnement.nat.tn/sid/index.php>
- ONAGRI (Observatoire National de l'Agriculture). Budget économique de l'Agriculture et de la Pêche, Tunis.
- REF (Régie d'Exploitation Forestière), Ministry of Agriculture. Annual. Activities reports for the period 200-2011.
- République Tunisienne, 2011. Le Code forestier et ses textes d'application, Tunis.
- République Tunisienne 2010. Développement économique et social en Tunisie 2010 – 2014. Vers une croissance basée sur l'innovation et la créativité.
- http://www.mdrp.gov.tn/fileadmin/publications/Developpement_Economique_Social_2010_2014_Fr.pdf
- UNDP (United Nations Development Programme). 2012 Human Development Report 2011 - Sustainability and Equity: A Better Future for All. <http://hdr.undp.org/en/statistics/hdi/>
- World Bank. website <http://data.worldbank.org/country/tunisia>



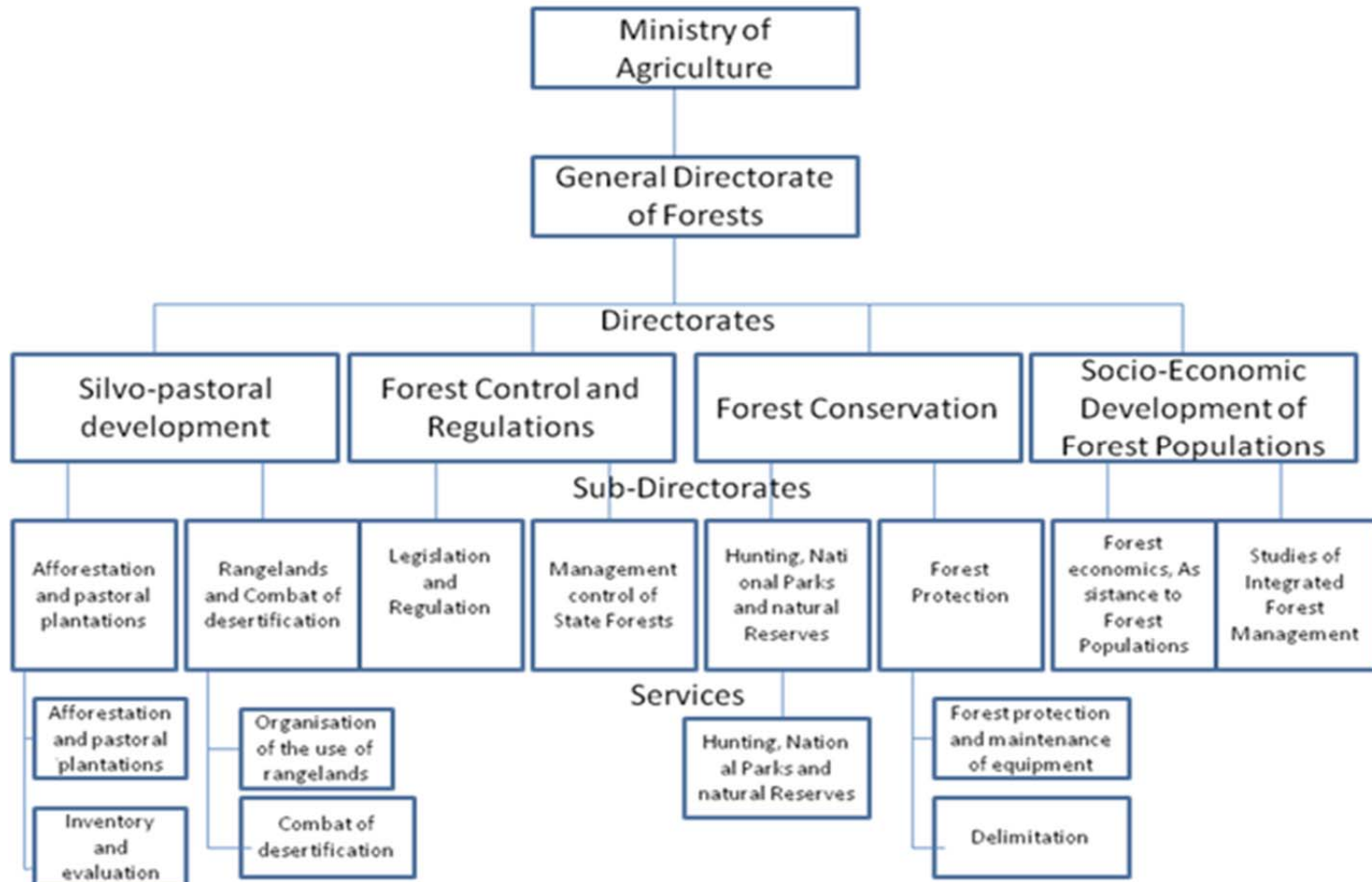
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Annex 1

Organization chart of the General Directorate of Forests (DGF)



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