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An Investigation into Sustainable Forest Policies and Practices in Syria

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**An Investigation into Sustainable Forest Policies
and Practises in Syria**

Rim Rateb. Al Berni

PhD 2010

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**An Investigation into Sustainable Forest Policies and
Practices in Syria**

by

RIM RATEB. AL BERNI

A thesis submitted to the University of Plymouth in partial fulfilment for
the degree of

DOCTOR OF PHILOSOPHY

Faculty of Science and Technology
School of Geography, Earth and Environmental Sciences
University of Plymouth

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Abstract

An Investigation into Sustainable Forest Policies and Practices in Syria

by

Rim Rateb. Al Berni

Appreciation of how forest land can be managed in a sustainable way in arid and semi-arid zones (ASAZs) of centralized countries is limited. Accordingly, this thesis seeks to analyse the role of government and communities, including women, in the formulation and implementation of sustainable forest management (SFM) policy and practices in the semi-arid environment of Syria where such land is limited in extent (e.g. 3% forest and 57% rangeland) and yet where its high biodiversity value is of international significance. The thesis employs a variety of methods: a case study approach (Syria); a questionnaire (i.e. 142 respondents); face-to-face interviews (i.e. 26 interviewees); participant observation and secondary data. The SFM model was used to organise and analyse the influences of environmental, economic, social, cultural and political issues on the state of forest land in Syria. Three contrasting forest areas were selected for detailed analysis at local level: Al Foronloq had the Arab Institute of Forestry close by and the area had a high biodiversity value for landscape; Abo Kbeis contained key genetic resources and a number of women there had been trained in forest management and Abd Aziz Mountain was characterised by rangeland with traditional grazing plus a very arid environment.

The main results obtained from census data confirmed that Syrian forest lands have diminished considerably since 1900 with regard to their geographical extent due to agricultural development, expansion of rural-urban settlements as well as of agricultural land onto Syrian forest land. On a more general level, the political issues in Syria (i.e. centralization and independency of the country) demand development of the internal resources of the country, such as agricultural production, in order to cover the needs of human maintenance.

Scrutinising forest documentation and using results of face-to-face interviews, it was found that there were considerable changes in forest policies in terms of forest protection and plantation. In addition, there was a recent indication of adopting SFM principles in the case study area, largely as a result of action by agencies external to Syria at the national level, and the new role of NGOs in forest management at the local level. The increasing level of awareness of environmental problems; the capacity of institutions; community participation in natural resources management and achieving international agreements were also found to be paramount in any contracts between the Syrian government and other organisations.

This thesis, at the local level, showed that respondents in the mountains (in the Abd Aziz Mountain (AAM) study area) seemed to be older, poorer, mostly with non-educated background, with more than three children, than in the Al Foronloq (AF) and Abo Kbeis (AK) study areas. Respondent groups in AAM were found to

be more dependent upon forest resources than respondents in AF and AK; and they occupied land illegally because of their mission to develop agricultural activities, including grazing. The study confirmed that educated households in AF and AK use forest resources more than non-educated households. Conversely, non-educated households in AAM suffer from gaining a local income which may in turn affect their attitudes and behaviours in using forest resources; and as consequence, householders suffering from financial problems may be less aware of the importance of forest protection and try to solve their individual needs by increasing the pressures on the forest resources.

The major constraints affecting the formulation and implementation of SFM policy are insufficient financial resources, inadequate management from national to regional and local levels; the limitations are also related to local communities' attitudes and ignorance of the role of women in forest management.

This thesis found that the contribution of women in the labour force at the local level was high in Lattakia (Al Foronloq study area) compared with other study areas (e.g. 32.9% in Lattakia against 13.4% in Hamah and 18.8% in Alhasake) (UNDP: Syrian Human development, 2005); although, there was a significant relationship between income level, family size and women's contribution in forest management at the local level and no significant relationship with the educational level. On a more specific level, the role of religious faith in AK affects the contribution of women in the society and the workplace generally and in forest management in particular.

Finally, the application of the SFM model in this study provided a flexible approach for analysis of complicated interactions between the government and communities. It also provided a comprehensive framework for different types of analytical purposes. Each of the three main components (issues, state and political decision-makers) was divided into several sub-components which facilitate the explanation and identification of the complexities affecting the formulation of SFM policy and the implementation of such policy. It helped to provide a set of policy recommendations which may help to increase future community participation in forest management and reduce the influences of community pressures on forest resources in Syria.

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Author's Declaration

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Graduate Committee.

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Relevant academic seminars, modules and conferences were attended at which work was often presented and external institutions were visited and/or contacted.

Courses and Modules attended

Module code	Title
EFU0115FB	Internet Search and Word-Processed Report
EFU0217F	Listening & Speaking
IMSO 111	British Cultural & Society
IMSO 112	Communication
IMSO 113	Academic Reading & Writing
IMSO 114	Educational & Research Skills

Graduated school skills development courses attended:

- SPSS (part one and part two)
- GTA course: Learning Teaching and Assessment: (Theory and Practice)
- EndNote program, introduction and advanced
- An Introduction to Qualitative Research Methods
- Getting started with Quantitative Research

- Preparing Effective Poster Presentations
- Writing up and Completing the PhD
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Chapter 1: General Introduction

1.1 Introduction

The research question addressed in this thesis focuses on the role of government and communities in the formulation and implementation of sustainable forest management (SFM) policy and practice in the context of past, present and future opportunities in Syria. Understanding how forest land¹ can be managed in a sustainable way is particularly important in the semi-arid environment of Syria where such land is limited in extent (e.g. 3% forest and 57% rangeland) and yet where its high biodiversity value is of international significance. The importance of a critical analysis of the role of governments and communities in the formulation and implementation of SFM policy and practice in arid and semi-arid zones (ASAZ) has been highlighted by Patosaari (2007) and stems particularly from increasing pressures put on fragile areas by intensive human activities.

This study examines the complexities of the concept of SFM and different factors affecting policy formulation and implementation in Syria. The country has been chosen as an ideal subject for detailed study to investigate the role of government in forest management as it has a strong centralized government which, furthermore, owns all the forest land. In some ways the government with its considerable powers to formulate and implement policy provides an interesting example of the constraints of a 'top-down' authority.

¹ Forest land is defined by the Syrian administration (Section 4.3.1) to include forest, agro-forestry and rangeland. However, the main emphasis in this thesis will be on forests, which comprise mainly trees and shrubs. Rangeland and agro-forestry will also be important.

Set against this political background, a key justification for this research is the need to understand the role of communities in Syrian forestry in terms of existing pressures arising from the political system. Forest land in Syria represents an important source of livelihood. It provides a wide range of non-wood forest products (NWFPs) such as food, medicinal and aromatic plants, fodder materials, which constitute a substantial source of food security for rural poor households. However, in recent years, for many rural people relying on forestry there have been considerable changes to their way of life brought about by cultural and economic pressures which in turn have affected the forests.

Syria is of extremely high biodiversity value and comprises one of the most ancient biodiversity areas of the world (Kasis, 2005; Abido, 2007). The proximity of the land masses of Africa, Asia and Europe, together with its large range of climates has meant that Syria has developed a unique places for fauna and flora species: for example the total number of endemic woodland species is 243 (Kasis, 2005).

There are many drivers that affect the investigation of the formulation and implementation of SFM policy and practice, not least the lack of knowledge about forest management in arid and semi-arid areas of the Middle East. The author's knowledge and background of the area, including expertise in the Arabic language, as well as cultural and personal links, were key reasons for selecting Syria. Such expertise facilitated obtaining the primary and secondary data required for this investigation. In addition, the forestry literature written in the Arabic language is largely unknown outside the Middle East and deserves a wider audience.

This study, then, determines the different methods and practices that have been employed to promote SFM in Syria, and identifies the main factors influencing the development of SFM policy and practice in such a vulnerable area. This study will determine the relative importance of top-down (government action) and bottom-up (community action) approaches in the formulation and implementation of SFM policy and action in Syria. This study will also analyse the environmental, economic, social and cultural factors that affect householders' attitudes and behaviours in Syria which in turn affect the formulation and implementation of SFM policy and practice. Finally, this study will explore the contribution of women in forest management.

To this end, the project takes a multi-stage approach (triangulation), combining questionnaire survey, face-to-face interviews of key stakeholders in forest management, participant observation and census data to investigate the role of governments and communities in the formulation and implementation of SFM policy and practice in Syria. Secondary data and forest policy documentation will be also used in order to investigate the main issues and constraints that affect the formulation and implementation of SFM in Syria. Meanwhile, the SFM framework will be used in this study in order to analyse complicated impacts and feedbacks from government and community on the state of forest land in Syria (See Section 1.4 for a detailed explanation).

1.2 Background and problem definition

At the outset, it is important to state that there is no international convention on SFM. The seminal concept of sustainable development was propounded at the Rio

Summit in 1992 with the stated goal of achieving social, economic and environmental benefits for both present and future generations. However, as explained in Chapter 2, the countries taking part could not agree on even the most basic elements of SFM and instead declarations have only been published at international and national levels. Unfortunately, these declarations are not legally binding and do not have the force of a convention on SFM.

At the national level, there is considerable interest in investigating the influence of contemporary pressures and changes upon forest areas in ASAZs (FAO, 2007c). Although many studies have noted that biodiversity loss, water depletion and climate change factors are the main factors affecting the state of forest land in ASAZs, human activities are responsible for much of these influences (Rametsteiner and Wijewardana, 2003). At the outset, there is a need for assessment of the role of governments and communities in forestry to set the context for the analysis of the formulation and implementation of SFM policy and practices (e.g. Holdgate, 1996; Wijewardana, 1998; Rametsteiner and Wijewardana, 2003; Fauzi *et al.*, 2002; Auld *et al.*, 2003; Hickey and Innes, 2005). Research is especially needed into the social and cultural aspects of SFM, as previous studies on SFM in ASAZs have identified that the top-down action of the decision making in forest management processes can affect the formulation and implementation of SFM in ASAZs (Cavalcaselle, 1996 cited in FAO, 1996; Schanz, 1998; Papaik *et al.*, 2008; Davis and Holcombe, 2009). This means that results from a specific case study focusing on the top-down action of the decision making in forest management in ASAZs will be of considerable relevance to the wider SFM debates.

The main problem in implementing SFM in such vulnerable environments such as those found in most of the dry forest areas is related to the environmental-human interactions (Rametsteiner and Wijewardana, 2003). Understanding the links between populations and their environment requires a detailed examination of the ways in which different factors interrelate. These include not just physical factors such as consumption, technology and population growth, but also social and cultural concerns such as gender roles, political structure, legislation, institutions, and governance at all levels (Schanz, 1998).

Social status, low literacy levels, political issues and a lack of participation by local communities in forest management processes are important factors that could affect the formulation and implementation of SFM policy and practice in Syria. Recently, FAO (2007b) has recognised that forest plantation and protection cannot occur without the cooperation and participation of local communities in decision making of forest management processes in ASAZs. Many authors have highlighted the importance of participating local communities in decision making of forest management processes in ASAZs (Stocking & Murnaghan, 2000; Hilhorst & Muchena, 2000; Schmithüsen *et al.*, 2001; Reij & Waters-Bayer, 2001; Pound *et al.*, 2003). Yet, the contribution of women in forest management in ASAZs of centralized countries is often overlooked and women's work in forestry has often been invisible.

1.3 The SFM model as a conceptual framework

Researchers have presented different methods for understanding SFM policy and practice and the complexities arising from environmental, economic, cultural and

political factors (Schanz, 1998; Egestad, 2002; Iffat, 2003; Rebugio and Camacho, 2003). One of these conceptual frameworks is the SFM model (Figure 1.1). This model will be used as the framework for understanding the role of government and community in forest management in Syria. Justification for the choice of this model is given in Section 2.6.

The SFM model (Figure 1.1) has been used to investigate social justice and gender inequality in forest management, protection of indigenous people's rights, conservation of soil, water, biodiversity and other natural resources, as well as economic factors and technologies in most of the developing countries (Rebugio and Camacho, 2003). The Food and Agriculture Organisation (FAO) helped to make this model more widely known in developing countries for both sustainable development and SFM studies (Rebugio and Camacho, 2003)

The SFM model has proven to be a useful framework for different types of analytical purposes and, in particular, to describe the contribution of governments and communities to forest management (Howlett and Rayner, 2006); and also to describe information and documentation in an analytical way when there is a difference between the role of governments and communities in forest management resulting from different political systems (top-down action and bottom up action) (Schanz, 1998), as well as being a key tool to explain the relationship between governments, communities, NGOs and external bodies (see Figure 1.1) (Egestad, 2002) (See Chapter 2 for more details). There seems to be some consensus in the literature, therefore, that the SFM model is a suitable analytical framework to address the role of government and community in many different social and political contexts.

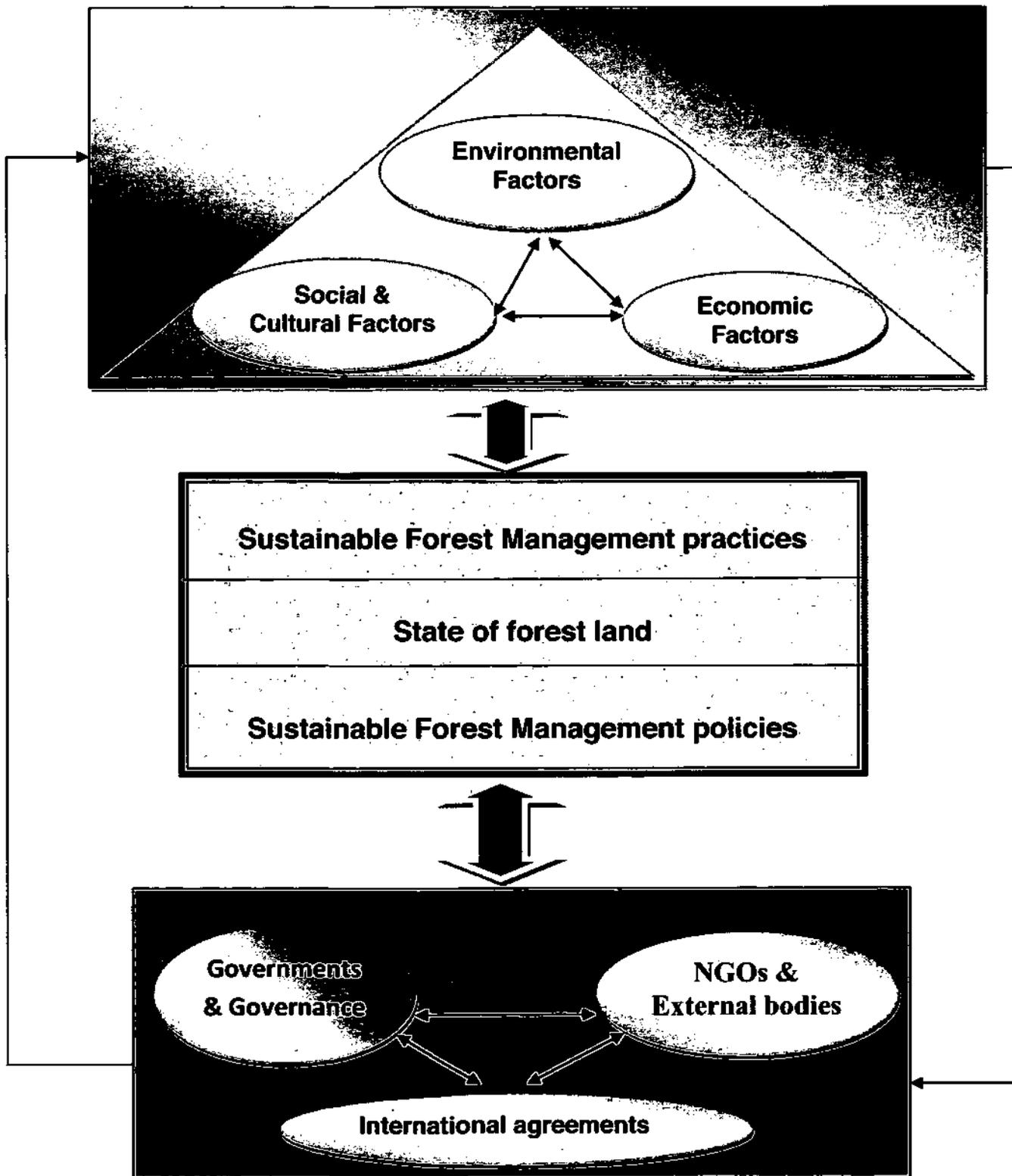


Figure 1.1: Conceptual Political Framework for sustainable forest management (Source: Author adapted from Rebugio and Camacho, 2003: 2)

As Figure 1.1 highlights, the main concept behind this model is that environmental, economic, social and cultural factors in one part of the system can lead to change in the state of forest land and can influence the main decision-makers in the forestry sector. On the other hand, the main decision-makers in the forestry sector can also lead to change in the state of forest land and can also impact on all the other factors.

The SFM model, as well as providing a flexible approach for analysis of complicated feedbacks and influences by the government and communities, has other strengths. Each of the three main components (factors, state and political decision-makers) is divided into several sub-components which can facilitate the explanation and identification of the complexities which can affect the formulation of SFM policy and the implementation of such policy (Revilla *et al.*, 1999; Koleva, 2006) (Figure 1.1 and Chapter 3 for more detailed explanation).

1.4 Research aim and objectives

Section 1.2 has highlighted the relative scarcity of studies on decision making to understand how forest land can be managed in a sustainable way in vulnerable environments such as in the ASAZs of centralized countries. This study aims to investigate the role of government and communities in forest management for a better understanding of SFM policy and practice in Syria. The study will provide a key theoretical understanding of the essential factors affecting the formulation of SFM policy and the essential factors affecting the implementation of such policy in Syria. To address these aims the study has the following objectives:

- 1. To outline the principal characteristics of forests in Syria, explaining the issues of forest degradation and the changes of forestry policies and applying the SFM model (Chapters 4 & 5);**

The environmental, economic, social and cultural background to the study will be described and the key characteristics of forestry will be outlined. The political issues will be discussed. The main issues that affect the formulation and implementation of SFM in terms of policy and practice will be determined including: biodiversity loss, demand for water resources, soil erosion, climate change, overuse of non-wood products, population growth and the role of women, community and governance in forest management. Forest policies will be outlined and the issue of policy implementation and management will be described. The applications of SFM model in this study will be discussed to understand the main issues affecting SFM policy and practices in general, and the role of government and communities in forest management in particular.

- 2. To assess the role of government in SFM at the national level in Syria (Chapter 6)**

To address this objective, the government's awareness of SFM principles, policies and practices will be determined based on semi-structured interviews with government ministers and officials. The main constraints affecting the formulation and implementation of SFM policy and practices will be investigated and the role of internal and external bodies will be evaluated.

- 3. First to analyse the environmental, economic, social and cultural factors that affect householders' attitudes and behaviour with regards**

to forests (local level) in Syria, and second to investigate community engagement in forest management (Chapter 7)

To achieve this objective, a questionnaire survey will be conducted at three contrasting rural communities' sites to investigate the links between householders' attitudes and behaviours, the potential use of forest resources and future action of forestry and goals. In particular, the main constraints affecting the implementation of SFM at the local level will be discussed.

4. To explore the contribution of women in forest management in Syria (Chapter 8)

To achieve this objective, the face to face interviews of key stakeholders and the survey of communities will be used to explore the contribution of women in Syrian forest management.

1.5 Outline of chapters

The thesis is structured following the main objectives set out in Section 1.4. Chapter 2 provides a review of literature that is relevant to this project, including reference to sustainable development and sustainable forest management investigations. The various definitions of SFM are presented. Chapter 3 presents the research methodology used in this thesis. The *case study approach* is identified as a key methodological element of the research addressed in this thesis. The rationale for selecting *Syria* as a research study area and justification for choosing the *three case study areas* in the eastern and northern parts of Syria are also presented. Four research methods are outlined: *questionnaire data, face-to-face interviews, census data and participant observation (triangulation)* in order

to collect and analyse data and to determine the formulation and implementation of SFM in the three study areas. Chapter 4 describes the main factors affecting the policy formulation and implementation of SFM in Syria and identifies the role of governments and communities in forest management (objective 1). This chapter also discusses changes in forest policy as a response by decision-makers at the national level. Chapter 5 presents a description of applying the SFM model, to understand the main factors affecting SFM policy and practices generally and to understand the role of government and communities in forest management in particular. Chapters 6-8 discuss the key findings from the communities' survey and face-to-face interviews of key stakeholders in the case study areas in Syria (objectives 2, 3 and 4). The final chapter presents a conclusion and recommendation for such studies on the role of governments and communities in the formulation and implementation of SFM in the vulnerable environment in Syria, and discusses the recommended direction and the need for future research.

Chapter 2: Theories and Concepts

2.1 Introduction

Chapter 1 presented the key points in relation to theories of the contribution of governments and communities in the formulation and implementation of sustainable forest management (SFM) policy and practice in ASAZs and showed how they could be integrated into the SFM model (Figure 1.1). This chapter develops this concept in greater detail and starts with a comprehensive review of the various definitions for sustainability, sustainable development (SD) and SFM in general context. The complexity arising is related to the context of political systems, which will be discussed with special regard to the role of governments, forest governance and communities in forest policies and practices. This chapter then discusses some issues (EESCP) affecting the formulation and implementation of SFM policies and practices in ASAZs. It also highlights the importance of governments and communities in SFM studies in arid and semi-arid areas. The last section of this chapter presents a discussion about the SFM framework that deals with the concept of SFM in terms of forest policy and practice.

2.2 The establishment of SFM as a concept and then practice

The aim of this section is to explain the terms sustainability, SD and SFM in order to establish a better understanding of their meaning with special regard to the role of governments and communities in forest policy and practice.

2.2.1 Definition of sustainability, SD and SFM

The concept of sustainability became the focus of international attention as a result of the Brundtland Report (WCED, 1987: 43), which defined SD as: 'development which meets the needs of the present without compromising the ability of the future generations to meet their own needs'. Here, the concept of SD focused on the process of economic growth without explaining the environmental degradation (Dresner, 2002). However, there is considerable disagreement among researchers in different disciplines over how this broad definition of SD should be practiced, and how sustainability should be measured. Bunnell and Johnson (1998) argued that SD is not just about the environment and economy but it is also about the society. In the same vein, Kirkby *et al.* (1995: 153) asserted that 'the Brundtland definition does not elaborate on the notion of human needs and wants, and the concern for future generations is problematic in its operationalization as well'. They also considered that the problems in its application can be related to local communities and future generations, who are unable to attain their needs. The Brundtland definition of SD also focuses on social justice and human development with especial regard to the social equity and the equitable distribution and utilization of natural resources. In this sense, Redclift (1987) defined SD as different things to different people. It should be noted that the variation in the definition of SD could be related to the purpose of its investigation including resource scarcity, biodiversity, population, and ecological limits, which are ultimately a debate about social justice rather than the preservation of nature (Harvey, 1996). In this context, Gladwin *et al.* (1995) identified several issues which can be fundamental to understand the variation in the definitions of SD

including: human development, the inter-connections between socio-political, economic, and environmental goals, justice (distribution of resources and property rights) and security (achieving a safe, healthy, and high quality of life). Despite the purpose of SD, Hart (1997: 67) argued that 'the challenge is to develop a sustainable global economy: an economy that the planet is capable of supporting indefinitely'. In this vein, Beder (1994) asserted that the new technologies and the role of markets should be expanded taking into account the need for protecting the natural environment. By contrast, Macnaghten and Urry (1998: 2) argued that 'current discourses of nature and the environment all assume the existence of a singular 'nature' rather than emphasize that it is 'specific social practices, especially of people's dwellings, which produce, reproduce and transform different natures and different values'. Their argument was against the three 'doctrines' of the environment (e.g. environmental realism¹, environmental idealism², and environmental instrumentalism³). Firstly, they emphasized the interaction between the cultural processes and the naturalization of environment. Secondly, they considered the need for increasing the role of individuals in protecting the environmental values. Thirdly, they asserted the need for building the

¹ Environmentalism realism: 'refers to the transformation of nature into a 'scientifically researchable environment' in which modern Western science can identify environmental problems and articulate appropriate solutions. Social and cultural environmental practices are subsumed by the realities of scientific inquiry'.

² Environmental idealism: 'analyzes nature by examining the range of 'values' held by people about nature; these environmental values are assumed to be stable and consistent'.

³ Environmental instrumentalism: refers to 'the responses of individuals and groups to environmental problems that are determined by evaluating individual or collective interests against environmental trade-offs through cost-benefit analysis or other market-based mechanisms'.

interconnection between public institutions and governments and individuals to protect the environment.

It is clear that the previous definitions of SD are not identical based on the identification of each pillar of sustainability as basic to any process of development: the environmental resource, the economic development and social justice, which can be observed whether at the level of international and national policy (as highlighted in the policies of the United Nations, the World Bank, national governments, the Convention on Biological Diversity, and Agenda 21) or at the level of regional and local governments.

As a result of the Earth Summit, the United Nations Commission on SD (CSD) was established to monitor the formulation of SD at different levels. Seven separate agreements were made at the Rio Earth Summit including:

- 1. The Convention on Biological Diversity (CBD),**
- 2. The Convention on climate change,**
- 3. The Statement of Forest Principles,**
- 4. An Earth charter,**
- 5. Agenda 21 focusing on the priority of sustainable development,**
- 6. The implementation of Agenda 21 with new financial resources and the transfer of environmentally sound technologies from the North to the South,**
- 7. The strengthening of the United Nation Institution.**

The Rio conference has raised expectations of solving environmental and development problems through a global political partnership towards SD. One of

these expectations was that 'new and additional financial resources' would be available to developing countries to support the implementation of Agenda 21 towards SD, but this did not materialise. Another expectation was that scientists in developing countries should be participating fully and equally in the international scientific research programs which deal with the global problems of environment and development, but 'participate on an equal footing' was difficult because the structural inequalities of policies between the North and the South.

At the Earth Summit (1992), the value of forests was recognised and this was expanded dramatically with more focus on forest management and biodiversity (Bunnell, 2000). In addition, the Statement of Forest Principles was agreed in recognition of the crucial role of forests in the social sector, albeit with limited success (IISD, 2005). The idea of SFM, therefore, was developed consequently from the Statement of Forest Principles to manage and use it in a way that maintains its potential to assist environmental, social and economic issues.

On a global scale, the Helsinki Conference of 2002 defined SFM in order to develop policy implementation towards SFM (Ministerial Conference on the Protection of Forests in Europe (MCPFE, 2002: 5):

'stewardship and use of forests and lands in a way, and at a rate that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions at local level, national and global levels, and that does not cause damage to other ecosystems'

This statement has provided the foundation for numerous national and international development policy initiatives toward SFM and its development to assist with environmental, economic and social issues. Subsequently, at the United Nations Forum on Forests (2006), it was agreed to reverse the loss of forest cover worldwide, to enhance forest-based benefits, increase the area of protected and sustainably managed forests and reverse the decline in the development assistance for SFM (UNFF, 2006).

The Food and Agricultural Organisation (FAO) stressed the need to understand the effects of human activities on forest land at the regional and local levels, the role of politics and economic issues: 'Forest Management deals with the overall administrative, economic, legal, social, technical and scientific aspects related to natural and planted forests. It implies various degrees of deliberate human intervention, ranging from actions aimed at safeguarding and maintaining the forest ecosystem and its functions, to favouring specific socially or economically valuable species or groups of species for the improved production of goods and services. Sustainable forest management will ensure that the values derived from the forest meet present-day needs at the local level while at the same time ensuring their continued availability and contribution to long-term development needs' (FAO, 1993: 3).

Furthermore, Egestad (2002) and Schanz (1998) emphasised the key role played by individuals in terms of SFM practice, while decision-makers and institutions play a crucial role in terms of SFM policy. Similarly, Koleva (2005: iii) defined SFM as 'a

key component of sustainable development. It requires adherence to such principles as balance between ecological, economic and social dimensions of sustainability, strong consensus among stakeholders, a cross-sectoral approach and partnerships between governments and communities'. Other definitions suggest that 'SFM is more and more frequently viewed as an ideal in managing forest areas for local communities' needs' (Schanz, 1998:1). In this sense, understanding the role of decision-makers or governments and communities in the forest management processes is important, especially in vulnerable environments. Many authors have considered the complexity of SFM in terms of policy formulation and implementation. For example, in arid zones, Prasad and Kotwal (2001) suggested that the levels of success in the implementation of SFM policies depend on different features affecting SFM policy formulation and implementation. They concluded that:

1. There have been no actions visible at the government level towards SFM,
2. Political commitment of governments has not been demonstrated by action,
3. Most of the actions have been initiated by academic and research institutions,
4. Lack of financial resources for promoting action toward SFM,
5. Lack of trained personnel to encourage the research and development projects,
6. Economic growth often conflicts with such monitoring of SFM,
7. International agencies have not paid adequate attention in terms of practical SFM.

Malaysia, which has been heavily involved in international environmental policy, provides a useful case study. It has developed an effective policy and legal framework for the management of its tropical forest resources, albeit with limited success in its implementation (Tour, 1999). The key factor affecting its success is the political commitment which ensures that the role of forest products and the need for biodiversity conservation are paramount in the formulation of forest policy. However, less attention has been given to the implementation of forest policy and practice.

From the discussion above, it is clear that the definitions of SFM are not identical especially where each country in ASAZs has its own political, social, cultural, economic and environmental issues (e.g. the purpose of its concerns), which can affect the formulation and implementation of SFM policy and practices. In other words, while some studies have paid attention to the formulation of SFM with special regard to particular aspects (e.g. political and economic aspects in Toure, 1999), others were interested in investigating the factors that affect the implementation of SFM policy and practice with special regard to the three pillars of SFM (e.g. environment, economic and social factors in Koleva, 2005). In the context of the SFM model (Figure 1.1), it is important to discuss the definition of SFM in connection with the main determinants that affect the formulation and implementation of SFM policy and practices, and in the context of political systems. Before discussing these points, further investigation on the development of SFM is needed.

2.2.2 Development of SFM since Rio

Internationally, there has been widespread agreement on the importance of ensuring that forests are sustainably managed (FAO, 1999b). The need to ensure productive functions with the protective, environmental and social roles of forests was forcefully stressed by the Earth Summit, which was held by the United Nations Assembly in 1992, focussing on 'Combating Deforestation' in Chapter 11 of Agenda 21, and in the 'Forest Principles' (i.e., the 'Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests'). Governments in cooperation with interested groups and international organizations have agreed to pursue 'the formulation of scientifically-sound criteria and guidelines for the management, conservation and sustainable development of all types of forests' (FAO, 1999b: 1). Since the Earth Summit in 1992, the role of international organisations has been increased toward the international agreement on SFM, albeit with limited success. Three successive organizations (e.g. the Intergovernmental Panel on Forests (IPF); the Intergovernmental Forum on Forests (IFF) and the United Nations Forum on Forests (UNFF)) under the UN have established a guideline for implementing SFM. Such initiatives are widely considered to be important steps in achieving international agreement and action on SFM (Ivers *et al.*, 2000; Mankin, 2004; Charron, 2005). Unfortunately, the Statement of Forest Principles, as noted by IPF in 1998, did not deal comprehensively with all aspects of forests. The omissions are at the heart of the debate about creating a forest convention that has been ongoing since Rio. Those favouring a convention argue that strengthening the various instruments could

help fill some of the existing gaps (Tarasofsky, 1999). They also argue that a new legally-binding instrument could increase political commitment for the forest sector at national level. Those who argue against a convention assert that negotiation of such conventions is expensive and time consuming and that a forest convention may not offer significantly greater advantages than strengthening existing instruments (Braatz, 2002).

Implementation of the international commitments and non-government organisations (NGOs) on forests will depend on political commitment, the availability of adequate institutional, technological and human capacity and financial resources in countries, with effective planning, including monitoring and assessment of progress. In this sense, Toure (1999) suggested that the key factors affecting the success of implementation of SFM policies and practices can relate to: a national forest policy, strengths of the forest department, involving NGOs in forest management, technology, development of downstream industries, grants, formulating and implementing SFM based on criteria and indicator (C & I) tools. In the same vein, Moon and Park (2004: 1) emphasised the role of international cooperation to promote SFM: 'The goal of international cooperation is to promote sustainable forestry through diverse partnerships involving individuals, communities, industries, governments, institutions and organizations'. They also emphasised the role of NGOs: 'NGOs also can play an intermediary role between government and the private sector. They are becoming increasingly important in facilitating the transfer of technology, for promoting public awareness and negotiating on international environment issues'.

Ten years after the Earth Summit, SFM was noted at the World Summit on Sustainable Development (WSSD), which was held in Johannesburg, South Africa, in 2002, as being an essential target to achieve sustainable development with especial regard to the Millennium Development Goal (MDG) No. 7, 3 and 1 (i.e. "Ensure Environmental Sustainability", "Promote gender equality and empower women" and "Eradicate Extreme Poverty and Hunger"), albeit with limited success in the biophysical aspects of forests including: the changes in forest cover and the increasing of protected forests (Charron, 2005). The reason behind that could be related to the growing political attention around the world to the social aspects of sustainability such as poverty; sustainable livelihood; rural development; human health and food security. Nonetheless, the opportunity to launch negotiations on a Forest Convention was missed, because most countries (i.e. developed and developing countries) have been engaged in the assessment of forest development within the implementation of the MDGs.

In arid and semi-arid regions, eight international organisations have been involved in the formulation and implementation of SFM since the Earth Summit, with especial regard to the assessment of criteria and indicators towards SFM, namely: the International Tropical Timber Organization (ITTO); the Pan-European Forest Process; the Montreal Process; the Tarapoto Proposal; the Dry Zone Africa Process; the Near East Process; the Central American Process and the African Timber Organization Process (Cheng and Durst, 2000). The main role of these organisations is to ensure the implementation of SFM in the regions and it helps to establish the C & Is which are relevant to each country in the regions in terms of formulation and implementation of SFM. In the context of this study, thirty

indicators have been chosen, based on the criteria and indicators of the Near East Process which were established by the FAO and UNEP in 1996, to investigate the major factors affecting the formulation and implementation of SFM policy and practices generally and particularly in the role of government and communities in forest policy and practices in Syria.

The previous section has highlighted the strengths and weaknesses of the international agreements on SFM after the Earth Summit. In the context of this study, further explanation of the formulation and implementation of SFM policies and practices in ASAZs is needed.

2.2.3 The formulation and implementation of SFM in arid and semi-arid zones

Dry zone forests⁴ are the most unstable ecosystems among the forest types of the world (FAO, 2003). Such forests are vitally important because they provide environmental services to maintain millions of people living in ASAZs. Forest protection is considered one of the main activities of forest management in many countries in ASAZs (see Chapter 4 for more details). This includes combating forest fires, illegal encroachment, illegal cuttings and controlling grazing. For example, countries such as Turkey and Egypt have made significant efforts to implement integrated watershed management programmes involving different institutions, including those responsible for forestry, pasture, agriculture and rural development. In some cases, efforts have been made to introduce participatory

⁴ Dry zone forests exist in dry countries, where there is a variation in climates, but almost warm during the year, with short period of rainfall.

approaches to encourage the involvement of local communities in planning and managing watershed activities and improving land use systems (FAO, 1993). In Syria, for example, some efforts related to forest protection and forest plantation have been supported by external bodies such as UNDP organisation, FAO and Other NGOs (i.e. the Environment Friendly Agency). The role of external bodies has been increased since 1994, when UNDP organisation started its first five year programme of the development of human resources project in Talila. Another programme was initiated by cooperation between FAO, UNDP and the Syrian government to develop institution capacity in agricultural and forestry sectors. Recently, there are two projects ongoing (i.e. the Protected Area project and the achievement of SFM in Syria and Turkey) under the responsibility of the UNDP organisation and FAO, focusing on the implementation of SFM policy and practices in Syria at the national and local levels (see Chapter 6 for more details explanation).

However, the assessment of SFM and its potential to contribute to the formulation of related policies and implementation of such policy, are still at the initial stage in many countries in ASAZs, especially in the developing world (Patosaari, 2004). The main issues affecting the formulation and implementation of SFM policies and practices in most of the dry forest areas come from the depletion of water resources, loss of biodiversity, rapid population, extension of agricultural lands and lack of effectual policies to tackle deforestation. There is, therefore, an urgent need for more studies to resolve these problems (Temu and Ogweno, 2007; Patosaari, 2007; El-Lakany and Garrity, 2008). The severity of such problems is

more serious in arid and semi-arid areas, where the inadequate forest land is a limiting factor (Abido, 2007; El-Lakany and Garrity, 2008). In the context of the SFM model used in this study for understanding the complexities that affect the formulation and implementation of SFM in arid and semi-arid areas, it is, thus, of crucial importance to discuss the most important environmental, economic, social, cultural factors (EESC) and political factors that affect forest policy and practice in these vulnerable areas (Section 2.4).

2.3 Sustainable forest management: issues and debates

As mentioned above, many disciplines have investigated the SFM policies and practices in connection with study purposes, the EESC factors and the political factors (O’Laughlin, 2006). Traditional forestry researchers have emphasized the interaction between management of forest land and the purpose of wood production (Lowood, 1990; Kimmins, 2000; Mather, 2001) and in particular have focused on the development of quantification methods in connection with making profits from the practice of forestry (Lowood 1990). Other researchers have emphasized the interaction between forest and social factors (Lane & McDonald, 2002; Andersson *et al.*, 2005; Patosarri, 2007) and in particular have considered the role of individuals (e.g. gender equality, individual needs and forest resources availability). Sociologists have been more concerned about the role of the individual in forest policies and practices (e.g. participatory approach). A number of researchers have tried to investigate the political factors and in particular focused on the interaction between the formulation and implementation of forest policies (Schanz, 1998; Egestad, 2002). As explained in Section 1.1, in this thesis it will be argued that the SFM model as presented in Figure 1.1 can be usefully

applied to fulfil the objectives of this thesis, namely to understand the role of government and local communities in forest management in Syria. The model was selected because it integrates the EESC dimensions of forestry practice with governments and their role in formulating and delivering forest policies.

At the outset of this section, it is important to set the SFM model in a wider conceptual context. Briassoulis (2000), in a seminal paper on land use change, developed a critical framework to consider theories and ranked them on the basis of their level of abstraction, which has been applied in Table 2.1 to theories of SFM.

Table 2.1 Theories of SFM (Source: Briassoulis (2000) as quoted in Eghtaie (2008))

	Theories	Approaches
1	The purpose of the theoretical project	Descriptive, explanatory, predictive
2	The approach to theorisation	Individual/ behaviourist theories and institutional / structuralist theories
3	The spatial scale	Theories of changes in forest management
4	The types of forest considered as principal objects of interest	Theories applicable to natural forests and ancient woodlands, commercial plantations and range land with trees
5	The types of forest management determinants taken into account	Theories prioritising social / economic/ environmental determinants and / or the role of governments
6	The crucial temporal dimension	Static or dynamic theories

Table 2.1 highlights the classification of SFM theories and associated approach which can be applied to understand the role of governments and communities in forest policies and practices. Each component of the SFM theories, therefore, will

be explained and described in the context of the SFM model used in this study to achieve the main aims of this research study.

Many researchers have emphasised the role of socio-political factors in forest policies and practices such as administrations, organisations, institutions, regulations, legislation and ownership; and the community level actors such as alternative sources and public infrastructure, as well as individual householders (Panyotou and Sungsuwan, 1994; Schanz, 1998; Merry and Carter, 2001; Lazidinis *et al.*, 2009). The government actors may have an important influence on the formulation and implementation of SFM. For example, new legislative rules may reduce the encroachment on forest resources by increasing restrictions on certain practices such as hunting. Multi-ownership of forest land may increase the role of grass-roots or community by opening up the opportunities available to them (bottom-up action). Administrations, organisations and institutions may affect the formulation of SFM by regulating usage of specific resource points (e.g. water resources) or by imposing restrictions on certain practices, such as overgrazing. Producer associations or cooperatives may also reduce the risk by importing external resources or by protecting natural resources. The community actors may also have a critical influence on the implementation of SFM: for example, alternative sources may affect forest land by facilitating the opportunities available to local householders. Public infrastructure may also affect the forestry practices. For example, a new road system may reduce the cost of transportation of forest products. When new systems are involved, householders also critically rely on advice from outside sources.

The purpose of any study, as shown in Table 2.1, is paramount and in this case the goals of the SFM research must be explicit: the object is to understand the patterns and diversity of forest management which occurs in Syria in terms of the implementation of government policies and the behaviour of individuals and communities.

The second component (Table 2.1) is the approach to theorisation. Eghtaie (2008) in his dissertation on land use change in Egypt, asserted that there is a link between the approach to theorisation (component 2) and the crucial temporal dimension (component 6). He explained that while component 2 refers to individual, behaviour, institutional or structural theories, component 6 refers to the methods used to investigate land use change. In this study, the socio-political approach has been chosen in order to understand the government interventions and communities' involvement in forest management in a centralized political system such as in Syria, and to explain the main issues affecting the formulation of forest policy and the implementation of such policy. An appropriate method has been chosen to attain the main objectives of this study. Before discussing the method used in this study (component 6), further explanation of the socio-political approach used in this study is needed in order to understand the role of government and communities in forest policies and practices.

Some researchers have applied different approaches to investigate the formulation and implementation of SFM with especial regard to the priorities of constraints that affect forest policies and practices (Pauw *et al.*, 2000; Singhal *et al.*, 2003; Shahbaz *et al.*, 2004; O'Laughlin, 2006; Salehi, 2009). In a study aimed at discovering factors affecting SFM at regional scale in developing countries,

O’Laughlin (2006) adopted a political model as a conceptual framework for investigation SFM (Figure 2.1). He suggested that SFM results from interaction between society, economic, ethical and political processes and ecosystem conditions. Further, the central role of policy is of crucial importance that can affect the formulation and implementation of SFM. His study concluded that factors affecting the formulation of SFM are divided into six main categories: economic, ecosystem, ethic, society, governance and policy factors. Each one is subdivided into categories as are shown in Figure 2.1.

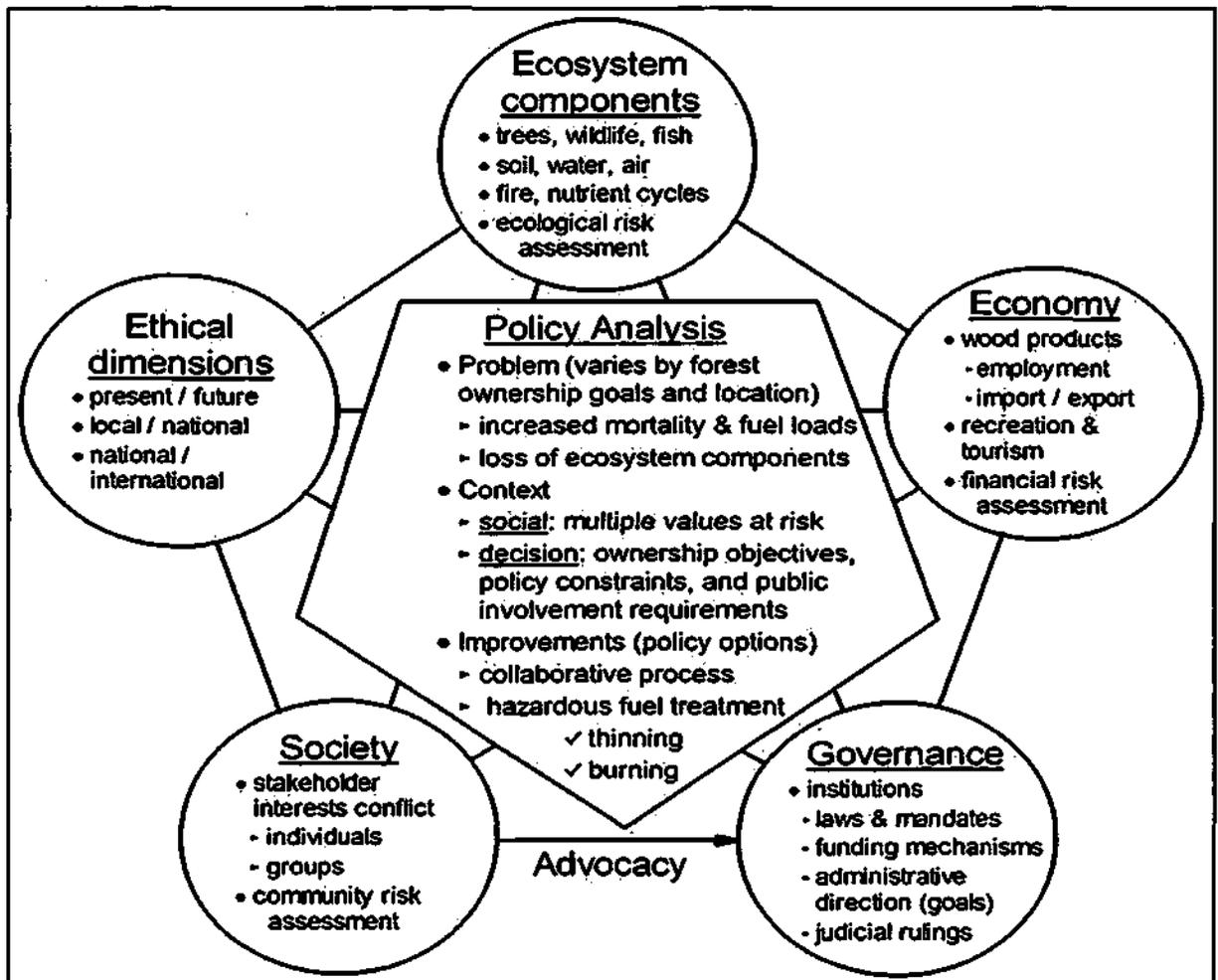


Figure 2.1: A political model as a conceptual framework for investigating SFM (Source: O’Laughlin, 2006: 48)

In this framework, the author suggested that SFM is the result of six interacting processes. Each of these processes operates with relation to the others. The processes are driven by one or all of these variables that influence the central actions of the policies of SFM formulation. These variables are often referred to as underlying factors which support the proximate effects on SFM. The author also highlighted that these factors include environmental factors (e.g. fire, water, soil and others (Iorup *et al.*, 1998; Larsson *et al.*, 2001; Raison and Rab, 2001; Patel-Weynand, 2002; Norton, 2003; Patosaari, 2007), economic factors (e.g. wood products, employment, recreation, tourism and financial availability (Ffolliott *et al.*, 1995; Nathan, 2009), social factors (e.g. stakeholders interests, group conflicts, community issues (Pauw *et al.*, 2000; Singhal *et al.*, 2003; Salehi, 2009), ethical factors (e.g. issues cover present and future, as well as local, regional, national and international scale of interest (Shahbaz *et al.*, 2004), governance (e.g. institution, legislation, administration and funding availability) and policy (e.g. ownership issues, community participation and forest policy goals (Schanz, 1998). Some of these factors directly influence the characteristics of forest land (e.g. institutions, funding and ownership due to the political systems). Other factors determine the goal of SFM (e.g. the suitability of the policy for social needs) especially the policy factors which cause constraints to the implementation of SFM policy in any particular political system, resulting from specific action by decision-makers in forest management processes.

The advantage of this model is in giving specific attention to the functioning of policy as a central role, the endorsement of the role of governance and the possibility of stimulating different scenarios. The selection of factors for this framework is based on theoretical relationships between factors (e.g.

environmental, economic, social, ethical and governance) and policy formulation and implementation of an SFM. However, this model gives equal weight to the role of governance and the environmental factors, also other factors such as societal factors. In fact, the environment problems are the paramount issues in many national forest policy agendas in ASAZs (UNDP, 2009); although this model centralises the importance of policy analysis in investigation of the SFM, with no specific regard to the implementation of such policy.

In the context of the present study, the SFM model (see Figure 1.1) acts as a simplistic framework for understanding the role of government interventions and communities' involvement (e.g. socio-political approach) in forest policy and actions in connection with the political constraints and the major EESC issues that affect the formulation and implementation of SFM policies and practices.

The third component (Table 2.1) of Briassoulis (2000) concept to understand land use change and in this case SFM is that of spatial scale. This study will investigate the role of government and communities in the formulation and implementation SFM policy and practices (see Chapter 3 for more details). Communities' characteristics such as poverty, size of family, occupation and education level can affect government intervention in the formulation and implementation of SFM policy and practices (e.g. forest policy change and forestry practices changes. By contrast, imposing regulation and rules of forest policy by governments can affect the behaviours and attitudes of communities, which in turn may affect the availability of forest resources (UNDP, 2009).

The fourth component (Table 2.1) of SFM theories is the type of forest land. In the context of SFM, the types of forest land should be considered as the important key element in investigation of the role of government and communities in forest management in Syria, because the concept of Syrian forest land is different from the other forest land in ASAZs. Syrian forest includes both dense deciduous forest and rangeland with sparse trees, whereas the type of forest land in ASAZs include evergreen or deciduous, broadleaf trees, coniferous (needle-leaved) trees, or mixed species (FAO, 2005). In the context of the SFM model, the importance of investigating the type of forest land in ASAZs comes from understanding the government's mission in increasing forest plantation and protecting forest land, and from the human pressures on forest land, which are the main key objectives of the present study.

The fifth component of SFM theories (Table 2.1) is the types of forest management which are determined either by EESC issues or political issues or both. In the context of the SFM model, the determinants that affect the formulation and implementation of SFM policy and practices should be considered as the main key elements in understanding the priorities of each issue within the government's intervention and communities' involvement in forestry policy and practices – the state of forestry. A discussion of these determinants and their influences on the types of forest management will be presented in Section 2.4 in this chapter.

The final component (Table 2.1) of Briassoulis (2000) is the spatial and temporal scale and in the case of SFM theories is the crucial temporal dimension. There

has been a global change in formulation and implementation of forest management during recent decades from focus on timber management to ecosystem management that endorses all aspects of forest management: ecological, economic and social and cultural (Iftekhhar, 2005). This has resulted in a change in sustaining forest land from sustained forest products to sustained diversity of the forest values, goods and benefits (Rauscher and Reynolds, 2005). These new objectives introduce new temporal and spatial scales into management. And as stated earlier, Echteie (2008) emphasized the interconnections within this component, which focuses on the methods used to understand the main factor affecting land use change in Egypt and the approach to theorisation (component 2). In the case of this study, a temporal scale of analysing data, scrutinising forestry documentation and applying the SFM model will be used to investigate the intervention of government and communities' involvement in the formulation and implementation of SFM in Syria with especial regard to forestry policies and practices (García-Gigorro and Saura, 2005), environment problems (Barbour *et al.*, 2005), socioeconomic issues (Horne *et al.*, 2005; Köchli and Brang, 2005) and the political issues (Schanz, 1998).

The conceptualisation of SFM theories has been discussed in this section, with special regard to the six components of Briassoulis (2000) that should be included in any investigations of SFM. Further explanation will be given in the next section to the major EESCP issues that affect the formulation and implementation of SFM policies and practices in ASAZs.

2.4 Theories of SFM (EESCP issues) in ASAZs

The purpose of this section is to discuss the SFM in a conceptual sense in order to classify the terms of formulation and implementation of SFM policies and practices in connection with debates about the main determinants (or issues) (e.g. EESCP issues) that affect the types of forest land and forestry practices in ASAZs. To achieve this aim, an overview of the type of forest land represented by the contribution of researchers and studies is important to begin with, followed by theories of forestry practices with especial regard to the main determinants that affect the implementation of forest policies and practices.

In an assessment of the Global Forest Resources, the FAO organisation defined forests as ecosystems that are dominated by trees which cover 10% of the land area in developing countries and 20 % in developed countries (e.g. 30% Globally) (FAO, 2000a). The term of 'forest' includes natural woodland, forest plantation and protection, multiple-use or forest conservation and agroforestry land (i.e. windbreaks and shelterbelts of trees with a width of more than 20 meters), as well as "temporarily unstocked areas"⁵; it excludes fruit tree plantations and trees planted in agroforestry land (Gonzalves & Becker, 2005). Lund (2007) considered that there is a varying definition of forests based upon physical characteristics (i.e. the canopy cover and upon 'botanical characteristics' (i.e. variety of tree species: broadleaves, deciduous, shrubs, sparse and in some cases rangeland is included in the forest classification such as in Syria). It should be noted that there is no universal definition of the term "forest", especially where each country in ASAZs has its own political, social, cultural, economic and environmental issues.

⁵ "temporarily unstocked areas" refers to clear-cut, burnt areas.

Many researchers have recognised the importance of the types of forestry (e.g. forest protection, forest plantation, forest rehabilitation and forest recreation) in connection with the 'EESCP' perspectives (McNeely and Miller, 1984; MacKinnon *et al.*, 1986; Leader-Williams *et al.*, 1990; Peterken, 1996; Parviainen and Päivinen, 1998; Schanz, 1998; Ljungman *et al.*, 1999; Kant, 2003; Jeakins *et al.*, 2004; O'Laughlin, 2006). According to Briassoulis (2000), there is no accurate meaning of drivers in land use studies. In the case of SFM studies, determinants (drivers or issues) can affect the type of forestry in different ways. Therefore, it is crucial to understand how each determinant may influence the formulation and implementation of SFM policy and practice, and to understand whether government makes a greater contribution to forestry policy and practice than its communities in a centralized country, or the role of community at the heart of the formulation and implementation of SFM.

In a political SFM study, Jeakins *et al.* (2004) applied a framework (Figure 2.2) for understanding the operational strategies for implementing forestry in the developing world. They argued that the information about forest management including suitable data and procedures, local management units, the scientific results of monitoring field measurements can be used to monitor the implementation of SFM. Their approach emphasised the need for information about forest resources on a spatial scale to monitor the formulation and implementation of SFM over time. Monitoring SFM, according to this model, can be achieved by applying different criteria and indicators relating to environmental factors (climate change, water resources and natural erosion) (Ehmer, 2008) and socio-political factors (Schanz, 1998) through direct influence on the type of forest

management in use, such as plantation, protection, rehabilitation and recreation (Nelson and Geoghegan, 2002; Mertz *et al.*, 2007; Merlo and Croitoru, 2005).

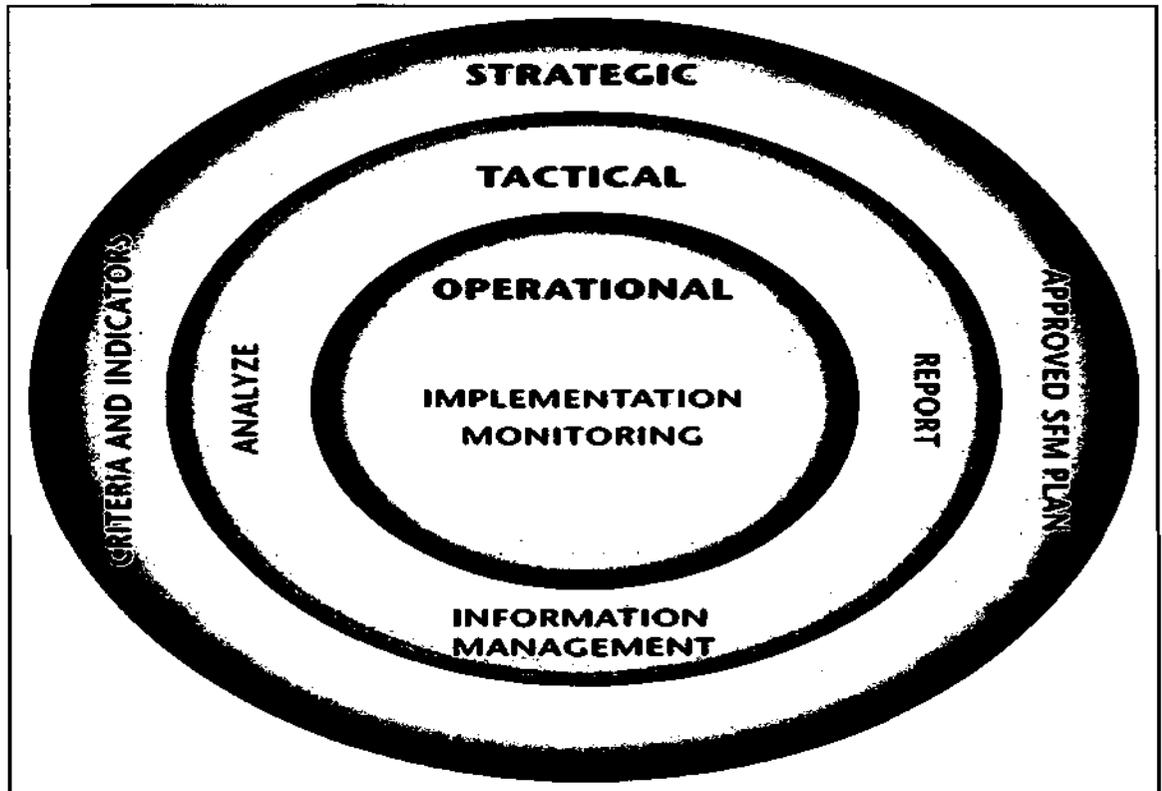


Figure 2.2: A framework for understanding the type of forest management (Source: Jeakins *et al.*, 2004: 42).

This conceptual framework is clearly theoretical and capable of providing guidance to empirical researchers about the role of education, scientific information, foresters, governments and communities in forestry practices. It shows the central role of forestry in the SFM investigation. However, Figure 2.2 does not show how governments and communities influence the operation of forestry or how the type of forestry is influenced by their action (top-down or bottom-up actions). In this sense, this framework is not applicable to achieve the main objectives of the present study.

In an ecological SFM study, Vierikko (2010) applied a framework for understanding the interaction between the forestry ecosystem and the socio-cultural dimensions of SFM in ASAZs (Figure 2.3). This framework includes five components: 1) knowledge and information about forests; 2) discourses and debates over forest use; 3) goals and purposes of forest politics; 4) policy tools to control management; and finally 5) sustainable management practices that are directly connected to forest ecosystems.

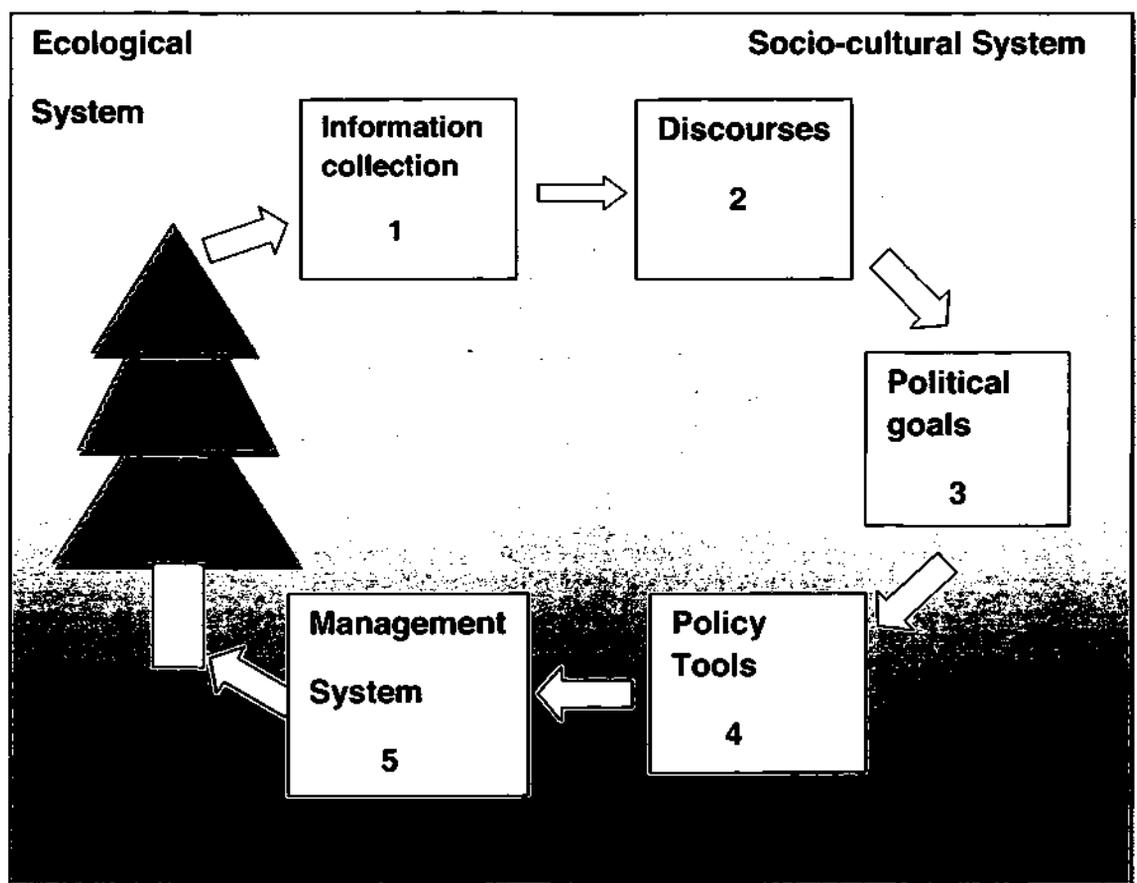


Figure 2.3: Ecological model for understanding the concept of SFM (Source: Vierikko, 2010: 14)

Figure 2.3 highlights the priorities of socio-cultural and ecological aspects for understanding the concept of SFM. Vierikko (2010) argued that social

characteristics determine management behaviour towards ecologically sustainable forest management and allow appropriate policy tools to be involved in the implementation of SFM. The ecological system represents the nature of forest ecosystems that is determined by biological, physical and chemical factors (Larsson *et al.*, 2001). The first component of this framework refers to the direct way of collecting information about forest land with especial regard to individual experiences (i.e. an individual observes the environment and creates images based on these observations) (Tyrväinen *et al.*, 2005). The second component is 'the discourses' which refer to a socio-cultural agenda (i.e. a place where scientific knowledge meets other knowledge, such as local, traditional and cultural knowledge and experiences) (Shannon *et al.*, 2007). The third component of this framework is the political goals which refer to, for example, the national forest policy. Policy tools (the fourth component) represent some key points for discussion between decision-makers such as criteria, legislation and recommendations in order to put political goals into practice and regulate the management behaviour of social actors. The final component of this framework is the forest management practices which refer to the implementation of SFM with especial regard to the social actor (or communities) (Hellström, 2001).

It is clear that Figure 2.3 represents a conceptual framework for understanding the concept of SFM taking into account the possible causalities between the socio-cultural and political issues and the ecological systems (Wang, 2004). This framework, however, does not show the importance of the third aspect of SFM (e.g. economic dimension) and gives an equal weight to the role of government and communities in the formulation and implementation of SFM. It should be noted

that this framework is not an appropriate model to investigate government intervention and communities' involvement in forest policy and practice in such a centralized political system in Syria, where the role of government in formulation and implementation SFM is dominant.

Elsewhere, a number of researchers have focused on the economic perspective of SFM (Othman, 1996; Sverdrup and Stjernquist, 2002; Burton *et al.*, 2003; Wang, 2004; Merlo and Croitoru, 2005; Kant, 2007; Reynolds *et al.*, 2007). While Merlo and Croitoru (2005) in their book "Valuating Mediterranean Forests: Towards Total Economic Value" adopted the total economic value (TEV) approach in order to understand the direct and indirect value of forest resources (e.g. timber and non-timber products, eco-tourism, water conservation, carbon sequestration and biodiversity), Wang (2004: 205) argued that decision-makers in the forestry sector should integrate the multi-uses of forest resources into forest management practices in order to understand the concept of 'the pluralistic' of SFM. In the case of the present study, the contribution of forestry production to the national economy in Syria is little (e.g. 0.01% of the total GDP) compared with other sectors such as environmental and social (Nahal and Zahoueh, 2005) (see Chapter 4 for more details). Therefore, investigation of the formulation and implementation of SFM on such a limited amount of land (3%) should take into account the complexities arising from the environmental, economic, social, cultural and political (EESCP) issues; that is why the SFM model used in this study is applicable to attain this goal.

In the context of the SFM model, the key point is to stress that the role of government is greater than communities' participation in forest management (top-down actions), especially in a centralized country such as Syria. In other words, the formulation and implementation of forest policies and practices stresses the dominant role of governments or decision-makers in forest policy and actions at different levels, who work together within either the major constraints of particular environmental resources such as climate change, biodiversity loss and soil erosion; or economic constraints such as the increasing demands of wood and non-wood products; or social constraints such as education level, gender equality, poverty; or cultural constraints such as religious; or political issues such as a centralized political system; or within all of these things together in order to attain the formulation and implementation of SFM policies and practices. Therefore, elaboration of the debate of the major issues that affect the formulation and implementation of SFM policies and practices is important in terms of understanding the priorities of these constraints in forest policies and practices. Before discussing this point, a summary of the SFM theories used in this study will be presented in Table 2.2.

**Table 2.2: A general structure of SFM theories' application in this study
(Source: Author after Briassoulis, 2000)**

	Theoretical structure	Forestry elements	Relevant references
1	Purpose of study	Descriptive and explanatory	(Schanz, 1998; Koleva, 2005)
2	Approach used	Socio-political	Wolfslehner <i>et al.</i> , 2003; Richards, 2007)
3	Scale of interested parties	Governments and communities	(Stoker, 1996; Higman <i>et al.</i> , 2005)
4	The types of forest considered as principal objects of interest	Theories applicable to natural forests and ancient woodlands, commercial plantations and range land with trees	(FAO, 1999a, Merlo and Croitoru, 2005)
5	The types of forest management determinants taken into account	Theories prioritising social / economic/ environmental determinants and / or the role of governments	(O'Laughlin, 2006; Jeakins <i>et al.</i> , 20004)
6	The crucial temporal dimension	Static or dynamic theories	(Rebugio and Camacho, 2003; FAO, 2005b; UNDP, 2009)

Chapter 1 discussed the main aims and objectives of this research study. The scale of interest that this study is going to investigate is also mentioned in Chapter 1 (e.g. the role of governments and communities in the formulation and implementation of SFM at the national and local levels). The applicable theories related to the type of forest land and forest management practice has been discussed in this section. A further discussion on the issues that affect the formulation and implementation of SFM in ASAZs with especial regard to the political issues and the other factors (e.g. EESC determinants) will be considered next.

2.5 The environmental, economic, social, cultural and political issues (EESCP)

Many studies (Table 2.2) have paid attention to attempting to understand the influences of a particular issue such as environmental (Thompson *et al.*, 1994; Ehmer, 2008) or economic (Merry and Carter, 2001); or social and cultural (Gardner-Outlaw and Engelman, 2000; El Lakany, 2008); or political (Schanz, 1998; Roos, 2002) determinants on the ways that decision-makers or individuals should be aware when they formulate and implement SFM policies and practices in any given areas – the state of forest policy and practice. In the context of the SFM model used in this study (Figure 1.1), it is important to classify the major determinants (EESC and P issues) that affect the formulation and implementation of SFM policies and practices in order to understand the priorities of each factor in determining the role of government and communities in forest policies and practices. A summary of the research studies which discuss the main determinants affecting the investigation of SFM and the state of forest land are represented in Table 2.3, followed by classification of these determinates.

Table 2.3: A summary of previous studies discussed, issues affecting the formulation and implementation of SFM policy and practice (Source: Author)

Author, date	Issues affecting the formulation and implementation of SFM policy and practice
(Panyotou and Sungsuwan, 1994)	Political economy (e.g. wood consumption, wood exports and imports) and political system. (Political issues)
(Thompson <i>et al.</i> , 1994)	<ol style="list-style-type: none"> 1. Biodiversity loss 2. Population 3. Skills

	<p>4. Non-wood products (EES issues)</p>
(Othman, 1996)	<p>1. The immediate causes include forest conversion to alternative uses, particularly large scale land development programs</p> <p>2. The underlying cause of forest conversion is poverty</p> <p>(Economic issues)</p>
(Schanz, 1998)	<p>1. Cultural (e.g. the contribution of women in forest management, gender inequality, religion)</p> <p>2. Political structure (e.g. government, institutions, organisations, NGOs and interested group)</p> <p>(Political and cultural issues)</p>
(Gardner-Outlaw and Engelman, 2000)	<p>1. Human activities</p> <p>2. Education level</p> <p>3. Forestry practice</p> <p>(Social and Political issues)</p>
(Hellström, 2001)	<p>1. Social factors (population, education, poverty)</p> <p>2. Cultural factors (religion, conflict)</p> <p>3. Policy factors (ownership)</p> <p>(Social, cultural and political issues)</p>
(Merry and Carter, 2001)	<p>1. Forest policy (structure and attitude)</p> <p>2. Economic (imports and exports)</p>
(Egestad, 2002)	<p>Social factors (e.g. Ethic, communities participation, attitude and values of individuals and groups)</p> <p>(Social issues)</p>
(Roos, 2002)	<p>Forest policy and institutions (conservation policies)</p> <p>(Political issues)</p>
(Andersson <i>et al.</i> , 2005)	<p>1. The environmental factors: weather and climate</p>

	<p>variations, topography, soil erosion and biodiversity</p> <ol style="list-style-type: none"> 2. The socio-economic factors: demographic, social, economic, political and institutional factors and processes such as technology, markets, forest policy and rules and community organisation <p>(EES issues)</p>
(Merlo & Croitoru, 2005)	<ol style="list-style-type: none"> 1. Environmental factors (e.g. climate change, biodiversity loss, soil erosion, and desertification) 2. Economic factors (e.g. wood and non-wood production, overgrazing, recreation, tourism, employment) 3. Social factors (e.g. poverty, education, technology) 4. Policy factors (e.g. Institutions, governments, NGOs, private sectors) <p>(EESP issues)</p>
(Sheppard <i>et al.</i> , 2005)	<ol style="list-style-type: none"> 1. Education system 2. Poverty 3. Climate change 4. Biodiversity loss 5. Wood consumption <p>(EES issues)</p>
(Patosarri, 2007)	<ol style="list-style-type: none"> 1. Environmental conditions: soil characteristics, climate, water availability and environmental pollution 2. Forest characteristics: such as biodiversity 3. Government development project: that appeared to affect afforestation and protection forest project <p>(Environmental and political issues)</p>

(Ehmer, 2008)	<ol style="list-style-type: none"> 1. Environmental factors: climate change appeared to affect the forest structure 2. Tourism and recreation <p>(Environmental and social issues)</p>
(El Lakany, 2008)	<ol style="list-style-type: none"> 1. Population growth 2. Education system 3. Poverty 4. The role of women <p>(Social issues)</p>
(Lazdinis <i>et al.</i> , 2009)	<ol style="list-style-type: none"> 1. Forest characteristics: reduction in forest area under direct management and the need of private sector 2. Political economy: the need for democracy 3. Society issues (e.g. education, poverty) <p>(Political and social issues)</p>
(O'Laughlin, 2006)	<ol style="list-style-type: none"> 1. Policies, governance and practice 2. Ecosystem (e.g. soil, water, and others) 3. Social factors (e.g. conflict, group interests, and communities) 4. Ethical (international, national, local and regional) 5. Economic factors (e.g. wood production, imports and exports, recreation and tourism) <p>(EESP issues)</p>

2.5.1 The EESC issues

The purpose of this section is to elaborate the debates of the main EESC issues that affect the state of forest land (covers and practices) with especial regard to

the SFM model (see Figure 1.1) used in this study to investigate the role of government and communities in forest policies and practices. To achieve this aim, a discussion and explanation of different contributions of researchers who investigated each issue and its effect on the state of forest land is of great importance.

Environmental issues:

There has been a broad consensus in literatures that biodiversity (Patel-Weynand, 2002), climate change (Patosaari, 2007), water depletion (Ilorun *et al.*, 1998; Larsson *et al.*, 2001; Norton, 2003) and soil erosion (Raison and Rab, 2001) are the major environmental issues that affect the state of forest land in ASAZs. It is, therefore, important to discuss how each issue can affect the state of forest land and forestry practices in ASAZs.

Noss (1990) and Paumalainen (2001) considered that a forest ecosystem comprises three important dimensions: structural diversity (i.e. forest areas, natural and protected forests, mixture species and age structure), compositional diversity (i.e. numbers of total floral/ faunal species and endangered species) and functional diversity (i.e. forestry practices, human activities). The ancient tropical forests of Malaysia, for example, are home to 2650 tree species, 700 species of birds, 350 species of reptiles, 165 species of amphibians, 300 species of freshwater fish and millions of invertebrate species (Isik *et al.*, 1997). Other types of forests, boreal forests, have a high diversity at the ecosystem level which adapt to extreme climatic conditions (Shater, 2009). On the other hand, many studies (i.e. Cooke, 2008; Thompson *et al.*, 1994; Andersson *et al.*, 2005; Sheppard *et al.*, 2005) considered that developing countries which have extensive arid and semi-

arid areas (huge rangeland, desert land) are already suffering from biodiversity⁶ loss with special regard to the political issues (e.g. financial, policy goals) and climate conditions. It should be noted that rangelands in some countries in ASAZs, for example in Syria, are included in the definition of forest land as a place which comprises grassland and wood trees (UNDP, 2009). Therefore, Biodiversity loss in such a vulnerable area will exacerbate environmental problems (climate change) with serious implications for forest management (wood and non-wood production). Being socially more exposed to the impacts of biodiversity loss, many developing countries are vulnerable because they lack the required technologies, financial resources and institutions or trained people. In addition, reduction in forest land may magnify the impacts of climate change by increasing the temperature, which in turn can affect the endemic species (Allard, 2008).

IUCN (1997) estimated that 12.5% of the world's species of plants, 44% of birds, 57% of amphibians, 87% of reptiles, and 75% of mammals are threatened by forest decline. In this sense, Brooks *et al.* (2006) confirmed that biodiversity loss, for example in the world's biodiversity hotspots, has led to an increased threat to large numbers of species. He also concluded that there is a need for immediate conservation action to protect biodiversity, especially in dry forest land. Many developing countries have come to realize the environmental, economic and social values of their forest biodiversity (Groombridge, 1992) and include biodiversity conservation strategies in their forest management actions (See Chapter 4 for

⁶ Leveque (1994) defined biodiversity as 'the diversity of the living world, and is seen on several levels: intra-specific genes (genetic diversity), species (inter-specific diversity) and ecosystems (ecological diversity)' (Leveque, 1994 cited in Rondeux, 1999: 1)

more details). There is also a growing awareness among ecologists that rangelands play an important role in conserving biodiversity (Brown and Lugo 1990; Dunn 2004), which in some cases were classified into forest categories such as in Syria.

Other studies have given attention to the role of forest in the carbon cycle (sequestration of carbon) and in regulating climate change (Patosari, 2007; Brundtland, 2009). Fredeen *et al.* (2005) considered that the rate of carbon sequestration depends upon forest age, site quality, species composition and the style of forest management. A number of countries have established several programs for implementing forest plantations as an important management strategy to regulate climate change and for carbon sequestration (in 2000, about 4 million hectares of plantations worldwide were established in charge of carbon sequestration) (FAO, 2008a). However, Hibbert (1967) and Komatsu *et al.* (2007) argued that plantation with fast-growing conifers on non-forest land can decrease the flow of water from catchments and can cause water shortages during droughts. In the same vein, some studies (Milly *et al.*, 2005; Schmidhuber and Tubiello, 2007) confirmed that reducing the rate of deforestation is the only effective way to reduce carbon losses from forest ecosystems and regulate climate change.

Some researchers have focused on the interconnection between forest and water and soil (Lorup *et al.*, 1998; Larsson *et al.*, 2001; Raison and Rab, 2001; Norton, 2003). Lorup *et al.* (1998), for example, emphasised that the regulation of

hydrological cycles and processes is one of the important services provided by forests. They also concluded that forests' hydrological functions play an important role in increasing precipitation and decreasing evaporation; regulating the total runoff; protecting landscapes against soil erosion and preventing and mitigating the consequences of floods. Many countries in ASAZs have paid attention to increasing the protected forest areas in order to protect watershed catchment and to prevent soil erosion such as in Turkey and Syria (FAO, 1993) (See Chapter 4 for more details).

Having discussed the main environmental issues that affect the state of forest policy and practice, the next section will focus on the economic issues that affect forestry action in ASAZs.

Economic issues:

Forest lands have been affected by the global economic crisis resulting in the growth of demand on wood production and increasing the price of fuel (UN, 2004). Forests in ASAZs have limited amounts of wood of commercial value, due to their poor quality, inadequate forest management and slow growth rates (FAO, 1993). Croitoru (2007) classified forest industries in the developing world, which include production and processing of paper pulp and the transformation of wood and lumber and panels. She also explained that the depletion of forest resources in the region has led to reducing forest enterprise (Croitoru, 2007).

Many studies have argued that deforestation and forest degradation are the main problems causing wood and non-wood production to suffer in the arid and semi-

arid regions (Gadgil, 1989; Scherr and Yadav, 1996; Meyer *et al.*, 2003; Croitoru, 2007; Drucker, 2008; FAO, 2009). Scherr and Yadav (1996) considered the links between forest production and the changes in the state of forest land in arid and semi-arid countries. They emphasised that illegal wood cutting, the shortage of wood fuel, exportation and high consumption of wood and non-wood production can negatively affect the annual production of wood in ASAZs. For example, due to the lack of natural forests and the high prices of wood products, wood fuel represents only 0.02% of total energy consumption in Egypt (FAO, 2007b). On the other hand, many researchers have emphasised that the environmental and social issues have a greater affect on the state of forestry practices than the economic issues (e.g. the consumption of wood and non-wood products) in developing countries (Merlo and Croitoru, 2005; Croitoru, 2007). It is, therefore, important to synthesize the social issues in terms of their influences on the state of forest land and forestry practices.

Social and cultural issues:

This section discusses the main social and cultural issues that affect the state of forest land and forestry practices in ASAZs. In the context of the SFM model used in this study, investigation of the role of communities in forest management is one of the main objectives in this research study. Therefore, this section focuses on the main constraints that affect the involvement of communities in forest management with especial regard to their characteristics. Three main issues will

be presented, including the size of local communities, their educational level and the role of women in forest management.

Some researchers have emphasised that increasing the size of family at the local level will lead to deforestation, evidenced by loss of indigenous species, food shortage, environmental deterioration and general poverty (Rudel, 1994; Wakeel *et al.*, 2005). Other studies (FAO, 2000b; Owubah *et al.*, 2001; Junnifa *et al.*, 2006; Kang *et al.*, 2007) have concluded that inadequate institutional support, political instability, education levels and poor governance are the greatest social factors affecting the formulation and implementation of SFM in developing countries. FAO (2000b: 5) considered that 'countries need to commit more of their own resources to strengthen their forestry institutions, including training, education level and research in order to develop the forestry sector.'

Alternative thoughts by researchers have focused on the role of communities, including women, in forest policy and practices (Rodda, 1993; Rahman, 2000; Hafvenstein, 2003; Bulte *et al.*, 2004; Zaru *et al.*, 2006). On the one hand, efforts have been made in developing countries to enhance communities' participation, but local communities are often still excluded from decision-making processes, where top-down action is widely accepted in most centralized countries (Hafvenstein, 2003). On the other hand, women have been empowered in different political positions and commitments but there is still a considerable gap between their involvement in forest policy formulation and that of men (Fortmann and Rocheleau, 1984; Molnar, 1987; Anonymous, 1999; Boo and Wiersum, 2002; Pearl, 2003; CFAN, 2005). This gap includes women's participation fully in the

environmental, economic, social, political and cultural sectors (Zaru *et al.*, 2006). Pearl (2003: 3) emphasised the importance of women's contribution in forestry and agroforestry systems in developing countries: 'women are traditionally the prime participants in both the agricultural and the forestry components of agroforestry production systems'. In other words, women have learned to manage these resources in order to preserve them for future generations. He also argued that 'women's access to and control of these resources is far from guaranteed' (Pearl, 2003, p. 3). In addition, women have suffered from the environmental disasters and the low availability of forest products (Boo and Wiersum, 2002) because they have the responsibility for collecting fuel wood, animal fodder, collecting charcoal and non-wood products. Their role is often different from that of men, and they may have different interests and roles in a participatory process in forest management (Rodda, 1993; Jama *et al.*, 2006). A major issue affecting the position of women in the north Africa and west Asia (NAWA) countries is related to education, poverty, gender inequality, religious issues and family size (Kabeer, 1994; Robinson, 2004).

Islam is the predominant religion in developing countries (Mogahed and Abdo, 2006). Islam is, therefore, the sole religion of the contemporary local forest communities in the study areas. The protection and conservation of the environment and natural resources are a mandatory religious duty. However, the contribution of women in forestry or other sectors is affected by the rules of Islam. Gender roles have assigned different responsibilities to women and to men. This has resulted in political, religious, cultural and economic barriers, which restrict women's access to natural resources (Mogahed and Abdo, 2006). For example, women in Turkey are excluded from decision-making as community leaders may

not invite women to meetings related to resources use and they expect only the men to present their concerns (Pearl, 2003).

Some countries in the study areas have recognised the role of women in changing the state of forest land. For example, the Moroccan Social Development Agency (MSDA) and the European Commission have implemented a support programme to improve the working conditions of rural women and ensure long-term management of the argan forest⁷ in south west Morocco. This programme aims at involving women in the management of the argan forest in order to increase the production of argan oil and to solve the problem of gender inequality. This programme allows women to participate actively in the preservation and long-term management of the argan forest (Zaru *et al.*, 2006). Allan (2006, 21) mentioned that 'there can be no progress without significant progress towards the abolition of all forms of discrimination against women in the various countries of the region. In order to achieve this we must act – all together and each at his own level of responsibility – so as to update legislation as well as changing people's mentality and their actions. These action plans must be considered, conceived and implemented with the actors of civil society who are best placed to relay them to our populations and are most aware of the realities in each country of the region'.

Lower levels of education among women may further restrict their participation in forest management. For example, government and institutional policies in Turkey often fail to recognise the importance of women's access to natural resources.

⁷ Argan or Argaina *Spinosa* which adapts to desert climate.

Turkish women are absent when forest villagers conflict with the forest managers and they do not commit as many forest offences as men (Atmis *et al.*, 2005). In the sense of forestry sector, there is still a cultural barrier preventing women from contributing to the forestry sector. A study by Zaru *et al.* (2006) about the role of women in the Turkish rural economic development confirmed that almost 75% of women felt that husbands preferred their wives to work as a housewife.

Socio-economic factors also affect the individual's access to basic services (benefits) such as a family's size and poverty level (Toksöz and Şen, 2001; Widyanti *et al.*, 2009). Widyanti *et al.* (2009: 1) argued that 'the larger the number of household members, the higher the probability that a household is chronically poor'. They also considered that 'change in household composition will simultaneously produce both positive and negative effects on a household's economic capacity and condition' (Widyanti *et al.*, 2009: 1). They explained that increasing the size of a household affects the household's economic capacity, which influences the individual's needs. On the other hand, the addition of working by householders has a positive effect on the household's economic capacity and condition. For example, when a young person joins their family, regarding the development of their economic capacity, he or she brings additional earning capacity to the household (Widyanti *et al.*, 2009). Assaad & Arntz (2005) argued that 'the need for women to work is expected to be strongly dependent on the composition of the household they live in' (Assaad & Arntz, 2005 cited in Spierings and Smits, 2007: 5). In other words, low income and increasing the size of family in the household can affect the natural resources in general and women's contribution in the workplace in particular, as poor householders with a large family

need more sources (e.g. food, water, medical plants, etc...) to satisfy their needs than rich householders with a small family; and they also need help from their family members, including wife and daughters, to increase their income. The contribution of women in labour forces generally, and in forestry in particular is a crucial issue which is recognized by most countries in ASAZs. A study by Teeter *et al.* (1990) explained that, for example, the role of women in forestry and tree resource utilization and management has not been fully recognized in Kenya. The government, in recognition of the important role played by women in forest management, made provision for women's involvement in the current forest policy including:

- Policy statement 4.5.1: More opportunities for women will be enhanced in forest training and education.
- Policy statement 4.5.2: The Government will endeavour to involve women in participatory forest management.

The contribution of women in forest management practices is often overlooked and women's work in forestry has often been invisible, especially in developing countries (Kabeer, 1994). This is partly due to poor methodology as the statistics do not reflect the true contribution of women in forestry and within the household, because some women are not wage-earners and they therefore fall out of government economic statistics (Kabeer, 1994; Robinson, 2004). Thus, the need to investigate the role of women in arid and semi-arid countries is of great importance with especial regard to the main issues (e.g. religion, education level, poverty level and family size) that affect their contribution in forestry practices (See Chapter 8).

Having discussed the main environmental, economic, social and cultural issues that affect the forestry practices; and in the context of the SFM model, it is important to explain the political issues with especial regard to the role of government in forestry policies and practices.

2.5.2 The political issues (P)

Table 2.3 shows that a large number of SFM studies have considered policy as being one of the most important factors affecting the formulation and implementation of SFM in different parts of the world (Panyotou and Sungsuwan, 1994; Schanz, 1998; Hellström, 2001; Egestad, 2002; Roos, 2002; Merlo & Croitoru, 2005; Sheppard *et al.*, 2005; Andersson *et al.*, 2005; Patosarri, 2007; El Lakany, 2008; Lazdinis *et al.*, 2009). This section aims to understand the political issues that affect the formulation and implementation of SFM policies and practices in the context of the SFM model (see Figure 1.1).

The term policy in SFM refers to the power systems that have the responsibilities for formulation and implementation of forest policies and practices (Lynch, 1998; Kooten *et al.*, 2005). Some researchers have argued that forest resources have been influenced by a wide range of groups such as governments, NGOs, interested groups, internal and external organisations, local communities (Lazdinis *et al.*, 2009). Forests in developed countries seem to be managed by the state, private actors and interested groups (Taylor, 2004; FAO, 2005b). In the same vein, Olsson *et al.* (2004) suggested that in the democratic countries, forest management is based on the co-operation between the state and multiple interest groups in society who aim to contribute to economic growth and to the development of society. By contrast, Johnson and Forsyth (2002) argued that the

power of governments in a centralized political system plays a greater role in formulation and implementation of forestry than other groups and communities such as the poor groups, women and indigenous peoples, who are the most dependent on forest resources and who are also less involved in such activities (Johnson and Forsyth, 2002) such as in Syria (Chapter 4).

Hoskins (1996) argued that the power of government does not always stand as a negative process in the forestry sector in developing countries. She also concluded that 'effective policies, regulations and laws, with appropriate alliances to balance power and with participatory processes, allow forest resources to play their rightful economic, social and environmental role' (Hoskins, 1996 cited in FAO, 1996: 11).

Many studies have attempted to understand the term policy in the forestry sector. One of the most recently utilised models for classification of forest policy in the Mediterranean countries was Merlo and Croitoru (2005). They considered that understanding forest policy in most countries in the Mediterranean region requires focus on four points (Figure 2.4):

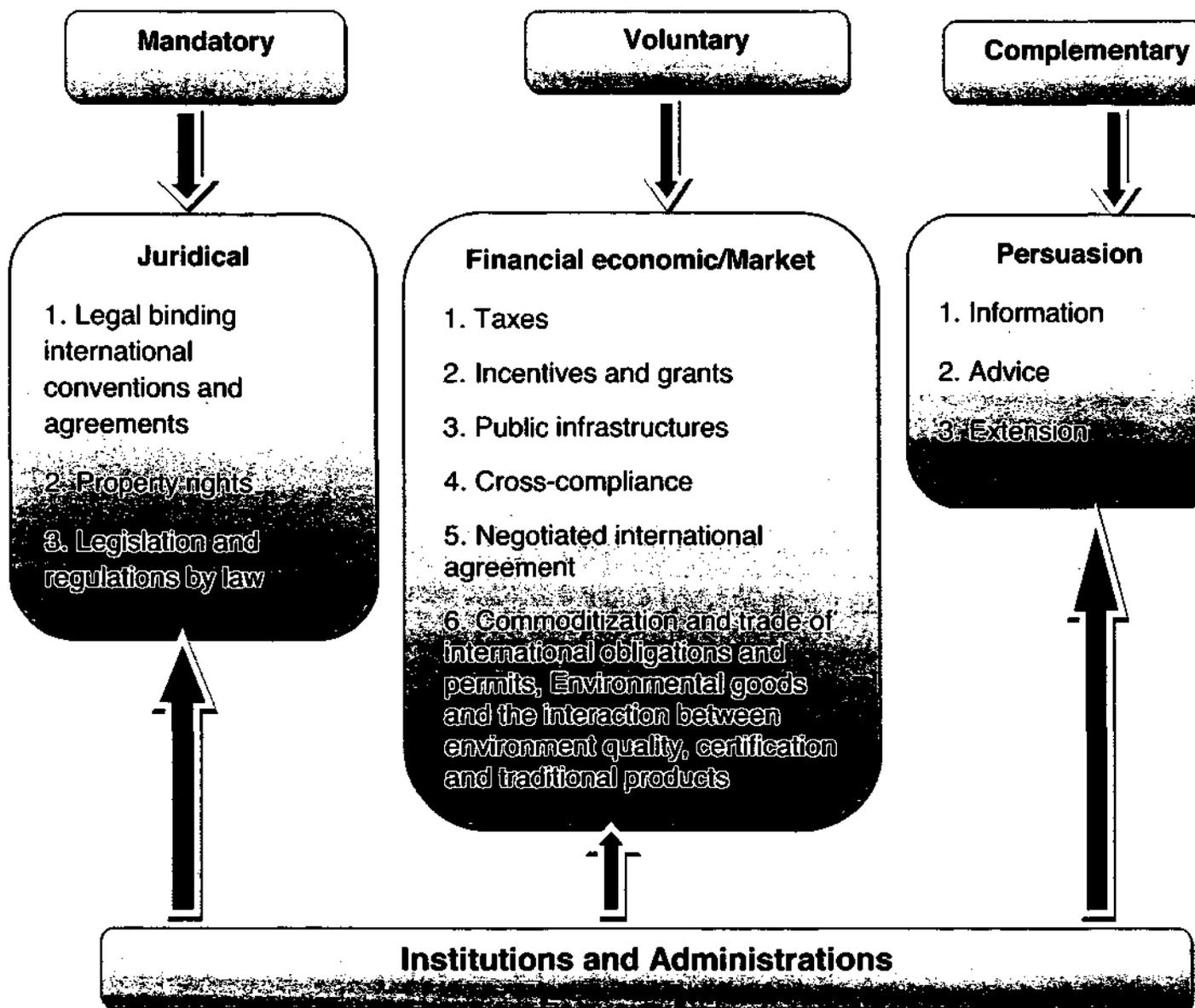


Figure 2.4: Forest policy classification in the Mediterranean region (Source: adapted from Merlo and Croitoru, 2005)

1. Mandatory tools refer to juridical power including international legal binding, forest ownership and forest legislation and regulation;
2. Voluntary tools refer to the economic role in forestry including taxes, incentives and grants, public infrastructures, international involvements and trade of forest products;

3. Complementary tools refer to the acknowledgement and researches including information, advices, and institution extension;

4. Institution and administration tools refer to the main institution and administrations which engage in establishing forest policy regulation, legislation, market and awareness.

Merlo and Croitoru (2005) argued that understanding the interventions of government, administrative, institutional, private sector, NGOs functions are the most complicated issues in most countries in the Mediterranean region because of the dominant role of top-down action (the power of government in formulation and implementation forest policy).

Rojas-Brials (2005) explained the main problems affecting the formulation of forest policy in most Mediterranean countries as follows:

- Centralizing organisations with limited presence of forestry graduates in the countryside
- Unmotivated and underpaid staff in the forestry sector
- Lack of updating knowledge and specialization
- Structures of decision-making in the forestry sector are too hierarchical (e.g. forest management and control are in the hands of one group only)
- Inflexible administrative rules such as time commitment, incentives, marketing responsibility
- Contradictory forest law and institutional interference

He also argued that this model is not applicable for understanding the concept of SFM because it does not take into account community forestry and their

involvement in forestry practices (Rojas-Brials, 2005). In the same vein, El Lakany, (2008) confirmed that this model is an attempt to highlight the role of policy and the importance of economical factors without explanation of the role of society.

The rights of indigenous peoples have increasingly been recognized by the governments in the developing world; however, state ownership of forest land is still predominant, especially in Syria (see Chapter 4 for more details), where national policies did not recognize the role of local communities until recently (FAO, 2007a). Nonetheless, efforts have been made in developing countries to enhance communities' participation, but local communities are often still excluded from decision-making processes, where top-down action is widely accepted in most centralized countries (Hafvenstein, 2003). In exceptional cases, such as in Syria, communities are supported by international donors, who encourage the development of a long-term process of action and integrate environmental and gender assessment into programme design, implementation, monitoring and evaluation towards the implementation of a successful SFM (FAO, 1996). The importance of the national state, NGOs and international organisations will be discussed in Chapter 4. In the context of the SFM model, the political factors will be investigated in Chapter 6 as important factors affecting the formulation and implementation of SFM in Syria.

Based on the discussion above, the role of government in formulation and implementation of forest policies and practices in centralized countries is paramount. The present study will examine in depth the role of government and

communities as the major actors affecting the formulation and implementation of SFM policies and practices in centralized countries in arid and semi-arid zones. It is, therefore, of crucial importance to discuss and explain the role of governments, communities and forest governance in forest management with special regard to the political systems.

The nature of government and governance

The aim of this section is to distinguish between the terms 'government' and 'governance' in terms of political systems and their objectives, and to establish a better understanding of their interventions in forestry practices. Definitions and descriptions of the terms 'government' and 'governance' vary with political systems and the objectives of their use. Investigations and studies of policy do not always employ similar definitions. It is, therefore, important to look at different definitions and descriptions of these terms as they apply to the various political systems (e.g. democratic, centralized political systems).

While the term 'government' describes the power of the decision-makers within various groups (civil, religious, academic) who have the authority to enforce the rules (e.g. regulations, legislations, law), the term 'governance' refers to the interaction process between partnerships who develop practical techniques to change the 'government' construction (Stoker, 1996). In political theory, government is more powerful than governance in an autocratic⁸ political system

⁸ 'An **autocracy** is 'a system of government by one person with absolute power' (Web of Oxford Dictionary, 2009).

because it is based on policy formulation and powers. In contrast, in a democratic⁹ political system, governance is the interaction between the authorities' decision-making in order to decrease the power of government. It includes governments, institutions, funding agencies, donors, networks and administrative departments, all of which encourage decision-makers to make the rules and govern the actions of the society. Rhodes (1996) considered that the term governance comes from the development of the term government: 'governance is a change in the meaning of government, referring to a new process of governing; or a changed condition of ordered rule; or the new method by which society is governed' (Rhodes, 1996 cited in Stoker, 1996: 17). The United Nations Development Programme (2001), for example, stresses the interactions between governance and the governments in a democratic political system: 'governance is the exercise of political, economic and administrative authority to manage a society's affairs in a democratic political system' (UNDP, 2001 cited in UNDP, 2005a). Similarly, Evans *et al.* (2006) emphasised the key role played by the governments, while decision-makers, social capacity and institutions' capacity play a crucial role in the term of governance in a democratic political system. In a centralized political system, Lazdini *et al.*, (2009: 312) described the term, "forest governance": 'forest governance refers to the capacity of government to make and implement forest policy, to steer society in the attainment of forest-related goals'.

⁹ **Democracy** is 'a form of government in which either the people have a voice in the exercise of power, typically through elected representatives or a state governed in such a way or control of a group by the majority of its members' (Web of Oxford Dictionary, 2009).

Over the last two decades, the Rio summit in 1992 and other international conferences sponsored by the UN have considered the need for understanding the role of government and forest governance at the local level. For example, Chapter 28 of the Rio declaration in 1992 emphasised the need for understanding the concept of 'good governance' toward sustainability: 'good governance is a precondition for achieving sustainability at the local level' (cited in Evans, 2006: 850). Goss (2001: 11) defined forest governance at the local level: 'governance is crucially about politics, both formal and informal' and he described governance as 'the emerging forms of collective decision-making at the local level, which lead to governing local sustainability development of different relationships, not simply between public agencies but between citizens and public agencies'. In the political context, (Christie and Warburton, 2001 cited in Evans *et al.*, 2006: 852) argued that: 'the fundamental driver of sustainable development must be democratic debate, decisions reached through open discussion, consensus based on shared goals and trust. Sustainable development needs representative democracy that is trusted and vibrant and new forms of participatory democracy to complement it that can inspire greater engagement by citizens in creating a better world'. They also explained 'good governance' in the democratic political system: 'good governance refers to both the nature and capacity of governments and refers to the relationship between governments and communities'.

The concept of forest governance is only just emerging in some centralized countries, as governments and their citizens experiment with their rights and responsibilities (Odendaal, 2003, Riley, 2003). A central concern is that forest governance involves new styles of decision-making and new ways of accessing services, accessing education, listening to citizens and communities, as well as

new ways of organising and delivering information (Burg, 2006). In addition, some of the literature on the relationship between forest management and governance suggests that the interactive aspects of forest governance allows both grassroots and stakeholders to share and receive information; and, as most conclude, by facilitating this two-way interaction, forest governance has the potential to act as a means of improving justice and responsiveness to citizens (Rose-Ackerman, 2004; Purushotham and Rao, 2005). It should be stressed that forest governance is an important actor which can affect the formulation and implementation of SFM (further details on their role at the national level will be explained in Chapter 4).

Theoretical and conceptual debates surrounding the role of local community and forest governance have attracted growing interest in the last decades, as community analysts turn their attention to understanding the institutional transformations that are taking place in and around community forests (Goodwin 1998; Jones and Little 2000; MacKinnon 2002; Murdoch and Abram 1998; Woods 1998). In the UK, an example of a democratic political system, this growing interest in the concept of forest governance as a key research theme reflects the introduction of new institutions and initiatives in local communities during the 1980s and 1990s (Goodwin, 1998). The contemporary forms of forest governance are characterised by the involvement of a diverse range of actors drawn from the public, private and voluntary sectors (Rhodes, 1996; Stoker 1996). The development of these new forms of forest governance opens up a series of research questions regarding the relationships between governance and communities, the changing relationships between key interest groups and the scope for community involvement and local empowerment (for more details see Goodwin, 1998; Herbert-Cheshire, 2000; Woods 1998). In this context, Goodwin

(1998) argues that there has been a growing noticeable interest at the centre of contemporary community studies concerning the ways in which communities are governed. Communities, along with all those citizens, agencies and organisations who live and work in them, have also been deeply affected by these new ways of governing (Goodwin 1998).

In recent years, the development of new structures and processes of forest governance has been apparent in centralized countries, for example in Iran and Egypt. This change, for example in Syria, reflects the establishment of NGOs such as an Environment Friendly Agency (UN, 2004). In the social and community fields the new structures include Forest Protection Associations in Turkey and Morocco, Voluntary Agencies of various kinds in Egypt and Women's Association Agencies in Tunisia (Sattot, 2005). Moreover, the new agencies and initiatives' involvement in the forest management practices in centralized countries have come to emphasise the importance of a 'community-based approach' which relies on notions of self-help and empowerment (Sattot, 2005). MacKinnon (2002, 2000) and Bryden *et al.* (1997) argue that such an approach is strongly evident in a democratic political system, where a focus on community is associated with 'bottom-up' or endogenous models of political development. In a centralized political system, the endogenous or 'bottom-up approach' begins to be effective when it seeks to mobilise existing local capacities in support of priorities identified by local people themselves, who are enabled to take control of their lives with the assistance of external or experienced organisations, to meet challenges and secure the opportunities which enable community forests to move forward (Napi *et al.*, 2006). For example, in Tunisia, Women's Association Agencies have been

significantly involved in some projects, aiming to increase women's involvement in environmental services of this kind (Iffat, 2003). However, the role of women in forest management in a centralized political system is still stifled due to the political systems and other issues such as religion (Ojha *et al.*, 2008). This latter point warrants closer investigation – an issue which will be investigated in greater detail in Chapter 8.

2.6 The SFM analytical framework

As discussed in Section 2.3, the present study will use a temporal scale of analysing data, scrutinising forestry documentation and applying the SFM for investigation of the intervention of government and communities' involvement in the formulation and implementation of SFM in Syria. Many researchers have used different models and methods for understanding the concept of formulation and implementation of SFM and the complexities arising from environmental, economic, cultural and political factors (Jeakins *et al.*, 2004; Merlo and Croitoru, 2005; O'Laughlin, 2006; Vierikko, 2010). Some of these models have focused on understanding the forest policy as an important tool to formulate and implement forestry practices with especial regard to the economic factors (Merlo and Croitoru, 2005). Other models have tried to understand the concept of SFM and focused on the ecological, social, cultural and political factors without interpretation of the economic factors and the practical way of implementing forestry practices (Vierikko, 2010). Jeakins *et al.* (2004) have applied a political model, which gives equal weight to all factors and actors and centralizes the role of forestry operation, to investigate the SFM at the national level. This framework is not applicable to the present study because it is difficult to investigate the role of government and

communities in the formulation and implementation of SFM in a spatial political system (i.e. top-down action), such as this study is based on. O'Laughlin (2006) has also presented a political framework which gives equal weight to governance and other actors such as environmental and social issues. This framework is also not applicable to this study because the environmental issues are paramount in most countries in ASAZs. Recent publications and studies have showed that understanding the role of governments and communities in forest management are very important towards SFM at different scales of interest and research issues. It should be mentioned that there are many models used in SFM investigation by researchers (Egestad, 2002; Schanz, 1998; Iffat, 2003; Rebugio and Camacho, 2003). One of these conceptual frameworks is the SFM model (Figure 1.1).

As mentioned in Chapter 1, the main aim of this study is to investigate the government interventions and communities' engagements in formulation and implementation of SFM policy and practices in Syria. The SFM model will be used as the conceptual framework to investigate the state of forest land, policy and practices, in terms of the complexities arising from the EESC factors and the political factors. This framework is adapted from two researchers working on the Philippine's strategies towards sustainable development (Rebugio and Camacho, 2003). They applied the SFM model in developing countries for understanding the concept of sustainable development based on the role of social justice and gender equity in forest management, protection of indigenous people's rights, conservation of soil, water, biodiversity and other natural resources, as well as economic factors and technologies. The FAO helped to make this SFM framework

more widely known in developing countries and this model has become famous for sustainable development and sustainable forest management (Rebugio and Camacho, 2003). As this framework is important for this study regarding its role in organising information and its ability in highlighting the dynamic ways of the interaction between its components and involving other models, therefore it is of crucial importance to highlight this framework again in this chapter (Figure 2.5).

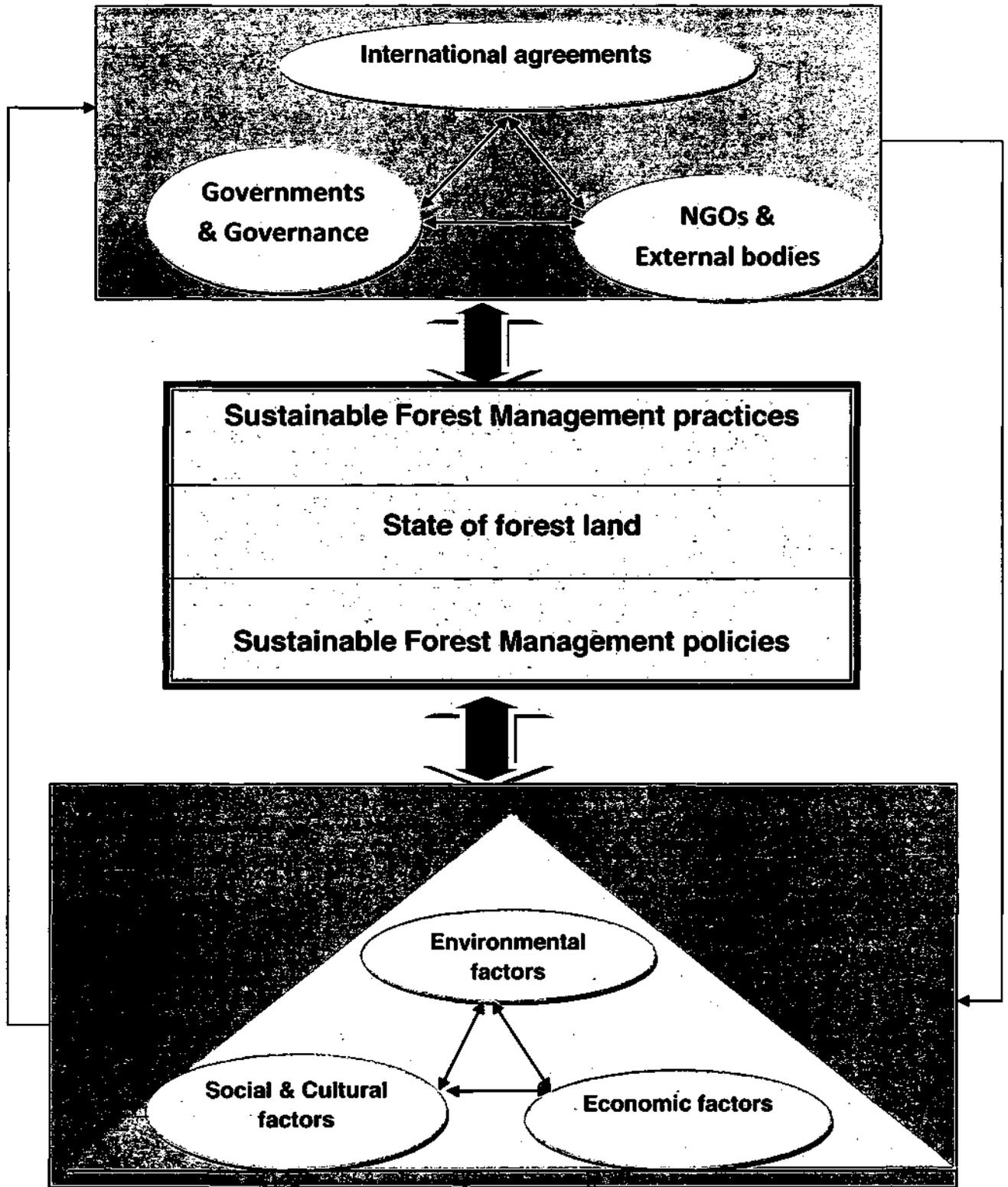


Figure 2.5: Revised conceptual political framework for SFM to illustrate top-down and bottom-up approaches (Source: Author adapted from Rebugio and Camacho, 2003: 2)

The ability to create different models within the SFM model has been highlighted by some researchers in order to understand influences of each factor on the state of forest land (Pravat, 2006; Howlett and Rayner, 2006; Coll *et al.*, 2009). Pravat (2006), for example, emphasised that the SFM framework is a broad model which is applicable in investigation of special issues such as environmental problems and the interaction between different issues at different scale levels and in different political approaches (e.g. top-down and bottom-up approaches).

Howlett and Rayner (2006), in their study of the coastal zone management in Europe, considered that the SFM model is a comprehensive framework designed to understand the interaction between the environmental and social factors as well as inside each factor. Coll *et al.* (2009) also suggested that the SFM framework is an analytical model utilising different qualitative information and quantitative data for the purpose of understanding the complexities arising from the political systems. By contrast, Ferlie *et al.* (2003) considered that the SFM framework is focused on particular issues and ignores other factors such as historical issues which may have a greater influence on the development of sustainability. Olson *et al.* (2007) also stated that 'the political framework represents the diversity of decision-making associated with strong negative relationship with commitment and decision quality'. Similarly, Giddings (2006: 16) mentioned that the SFM framework has some disadvantages including the time consuming process of involving stakeholders throughout the process of decision-making.

The SFM framework has been used in different practical ways, especially in investigation of the relationship between different actors (e.g. international groups

and organisation, NGOs, decision makers, stakeholders, managers, communities) in different political systems (Coll *et al.*, 2009). Within a short time, this framework has become popular among researchers and policy makers as a conceptual framework for structuring and communicating policy-relevant research through a forest management process (Sayer *et al.*, 2003); although the majority of researchers who have applied the SFM framework have focused on the role of governments, institutions, organisations, NGOs, programmes and communities in the investigation of SFM policy and practice (Byron, 2003; Koleva, 2005).

The SFM model has been considered to be a key tool to explain the relationship between governments, communities, NGOs and external bodies (see Figure 2.5). For example, Clark (2003: 2) argued that 'a presumed strength of the political framework is that it utilises in all studies of parties and party organisation'. Also an assertion supported by German and Taye (2008), who argued that 'the political framework is to evaluate effectiveness of collective action processes in watershed management is proposed' (German and Taye, 2008: 99). Mahalingam *et al.* (2007: 517) further supported the assertion that 'the political model is useful to sort out cause and effect. The advantage is that it categorizes different aspects and allows us to focus on process links between decision-makers and communities'. Other studies have used this framework to address sustainable development: its potential access within environmental, economic, social, cultural and political factors at different scales of interest (Donovan *et al.*, 2006). Moreover, some researchers have used the political framework to compare developing countries

and developed countries in terms of determining the most important components of the SFM framework for their case studies (Kale and Little, 2005).

From the above argument and quotes, therefore, it is clear that a better understanding of the political components (e.g. government, governance, communities, external groups and interested groups) and relationships could be investigated by applying the SFM framework in any political system. Thus, it is considered to be the most appropriate framework in this study in order firstly to determine the main factors affecting policy formulation and implementation towards SFM in Syria (e.g. environmental, economic, social, cultural and political factors) and secondly to identify the differences between the role of government and communities in forest management.

2.7 Conclusion

This Chapter has provided a theoretical understanding for the concept and practices of sustainable development and sustainable forest management and has been reviewed. A review of studies related to the research of SFM policies and practices in ASAZs was provided. The theories of the types of forest land and forestry practices were also presented with especial regard to different conceptual frameworks used for understanding the concept of SFM and the complexities affecting the formulation and implementation of SFM policies and practices. A discussion of the environmental, economic, social, cultural and political determinants was also presented. The importance of such study in investigating the role of government and communities in the formulation and implementation of SFM policy and practices in vulnerable areas in ASAZs of a centralized country was also explained in Section 2.5.2, which confirms the rationale of this research

study, with especial regard to the importance of 'community forests' and 'government'. The justification of the SFM models to this study was also explained. The next chapter will explain the research methodology adopted for this thesis.

Chapter 3: Research Methodology

3.1 Introduction

Chapter 1 presented the key question and the aims and objectives for this research study. Chapter 2 provided a conceptual understanding for the theories of “SFM” policy and practice. The purpose of this chapter is to review the methods adopted to attain the main aims and objectives of this study in investigation the government intervention and communities’ involvement in forest policy and practices in Syria. To facilitate this aim, firstly Section 3.2 will review the methods adopted by different researchers and discuss the SFM model as a method used in this study to organise and analysis the indicators which represent the three components of this model (e.g. environmental, economic and social and cultural component, the state of forest characteristics component and the political component). Secondly, Section 3.3 will identify the experimental design for this research study with especial regard to the case study approach and the justification for selecting the three study areas (local scale) in the northern and western parts of Syria. The scale of interest will also be mentioned in Section 3.3. Thirdly, a discussion for the methods adopted in this thesis will be identified and presented in Section 3.4, including: questionnaire survey, face-to-face interviews, participant observation and secondary data.

3.2 The SFM model

As discussed in Chapter 2, many researchers have explained the conceptual and theoretical debate underpinning the role of governments and communities in forest policy and practice, and have followed a number of different methodological approaches depending on the type of political issues under investigation and the

other determinants (e.g. environmental, economic, social and cultural issues) that affect forest policies and practices. In particular, political researchers have adopted political models to explain forestry policy and practices and identify the impacts of human activities on forest areas, as well as to determine the role of individuals and government. Important issues might be characterised either by the individual or by government, NGOs, interested groups and external groups or by forest governance (e.g. Kammerbauer *et al.*, 2001; Pandey, 2004; Jeakins *et al.*, 2004; O’Laughlin, 2006; Gunarso *et al.*, 2007; Dudwick *et al.*, 2006). On the other hand, ecologists have applied socio-ecological framework to investigate SFM focusing on the influences of human activities on the forest ecosystem (Andersson *et al.*, 2005; Vierikko, 2010). These methods take into account the interaction between the types of forest land and the factors that affect choices concerning SFM policy. However, these methods have problem in explaining the priorities of each issues for SFM investigation.

Chapter 2 and Section 1.3 also emphasized that the SFM model, adapted from Rebugio and Camacho (2003), provides a flexible approach in this study for analysis of complicated feedbacks and influences by the government (component 3) and communities (component 1) and facilitates the explanation and identification of the complexities which can affect the formulation of SFM policy and the implementation of such policy (Table 3.1). The SPSS (Statistical Package for the Social Sciences) software will be used for testing these influences and feedbacks.

Table 3.1: A Checklist of the SFM model indicators and method used for data collection (Source: Author adapted from Echaie, 2008)

Components	Sub-components	Indicator	Source of data
1	Environmental factors	1. The need for water supply 2. Biodiversity 3. Soil erosion 4. Fires	Interviews & Questionnaire & Census data
	Economic factors	5. Wood and non-wood products 6. Overgrazing 7. Ecotourism including hunting and recreation	Questionnaire & Interviews & Web site & Arabic article
	Social and cultural factors	9. Population living in rural area 10. Rural women' contribution in PA 11. Education levels 12. Poverty level 13. Size of family 14. Occupation 15. Number of employed	Interviews & Questionnaire & Census data & Participate observation
2	State of forest land	16. Area of forest 17. Area of degraded forest 18. Area of plantation 19. Area of protection 20. wood and non-wood products	Census data (Official National Statistics)
3	Political factors	21. Forest policy 22. Existence of local expertise 23. knowledge and technologies 24. Existence of administrative, policy, NGOs and private sector 25. Existence of research and development in term of SFM 26. Water Supply system 27. Social policies. 28. Forest advisers 29. Settlement of new protected forest area 30. Awareness levels	Face-to-face interviews & National Report of forest regulations

A list of indicators was required in order to represent the three sub-component of the SFM model. In this thesis, 30 indicators were selected (Table 3.1). The types of method used in this study will be discussed in Section 3.4. However, there was

a problem in obtaining data needs related to some of these indicators (i.e. hunting). The reason was related to refuse some decision-makers in forestry sector to handle some data to the author (centralized political issues), and to the unavailability of data. In order to success, triangulation (e.g. different sources of data) and cross-checking with other availability resources (e.g. web site and Arabic article) were used (see Section 3.4).

Two types of data will be used in this study: Primary and secondary data (triangulations¹). Primary data includes the questionnaire survey and participant observation which will provide the evidence of the role of communities in forestry practices at the local level, and also includes face-to-face interviews which will provide valuable information on the role of government in forest policy and practices at the national level. Secondary data, on the other hand, includes documentation of forest policy, the national report of forest policy and actions which will be used to identify further information of the role of governments, forest governance and communities in the formulation and implementation of SFM policy and practices in Syria.

The case study approach has been considered as the main methodological tool to achieve the main aims and objectives in this thesis. Therefore, the rationale for choosing the case study approach and the justification for selecting the three contrasting study areas in Syria are of crucial importance and will be discussed in the following section.

¹ Triangulation is a technique using different type of data and methods.

3.3 The experimental design

Overmars *et al.* (2007) asserted that there are two types of research approaches to achieve the purposes of study: deductive and inductive. While the first one refers to the development of research questions starting with a particular theoretical perspective and then reviewing the previous research studies that examine particular theory and next, testing the research questions in order to put the research findings in the context of the previous studies, the second one starts with collection of data and then compares these data with other data collection in order to generate the main theory of the research study.

This study will follow the deductive approach starting with identification of the main aims and objectives and the research questions of the present research study (e.g. Chapter 1). Then, a review of the previous theories that addressed the research questions has been discussed in Chapter 2. The present chapter seeks to outline the methods used for achieving the main aims and objectives of this research study. Before discussing the research methodology used in this study, it is important to explain the importance of the case study approach.

Case study methodology seems a valuable method of research in many types of investigations especially in social studies. In this respect, Yin, (2003: 2) states that: 'the distinctive need for case studies arises out of the desire to understand complex social phenomena'. This can be attributed to the idea that a case study approach can be designed to draw conclusions from the viewpoint of the participants by using multiple sources of data (Tellis, 1997). Case studies allow in-depth research and produce first-hand information, in that they work in a natural

setting, allow the employment of a variety of interrelated methods and sources, imply long-term contacts and personal experiences and finally produce information that covers the whole unit, not only small aspects of it (Mackinnon, 2002; Malecki, 2003). In addition, concentration of research efforts on one community as a case study can reduce costs, limit travel, and enable in-depth immersion and prolonged engagement (Patton, 2002). Despite its advantages, however, it is widely acknowledged that this method brings with it some problems. O'Leary (2004) emphasised that the case study approach can be expensive for the researcher on a number of levels; the required level of access can be difficult to negotiate; the researcher can come to have an effect on the researched and vice versa; and immersion can precipitate emotional costs for all parties involved. The case study approach is not without its problems. According to Yin (2003), results relate to the unit of analysis only and allow no inductive generalisations; there is also limited access to the field and to the personal subjective information that constitutes the basis of case studies. However, employed with attention to these constraints, it is a useful and legitimate approach to social research (see for more details, Yin, 2003; Patton, 2002).

The case study approach has been recognised in recent years by many researchers on SFM investigation (Andersson *et al.*, 2005, Hickey and Innes, 2005; Elbakidze and Angelstam, 2007). Andersson *et al.*, (2005), for example, emphasised the importance of case studies in the comparison between different regions as well as within the same region. They concluded that the Mediterranean forests have altered the landscape by different combinations of factors in varying ecological constraints, economic and socio-cultural pressures. In lowland temperate and mountain forests, the use of case studies as a methodological

approach towards investigating SFM is noted as having the potential to improve the understanding of non-timber values, biodiversity and cultural matters in different geographical and historical contexts.

In the context of this study, the main purpose of this research is to investigate the role of government and community in forest management (see Chapter 1). It is, therefore, important to adopt an appropriate case study, basing selection on the types of forest land and the role of top-down action in the formulation and implementation of SFM policy and practice. This study also will use both national and local scales for a comprehensive explanation of the role of government and communities in the formulation and implementation of SFM policy and practice. At the national scale, important issues on government intervention in forest management will be investigated (Chapter 6), including forest policy, forest legislation, the principles of forestry practices and the level of awareness. At the local scales, important characteristics of local communities will be investigated (Chapter 7), including the social and cultural and economic of individual householders, and the forestry characteristics.

The rationale for selecting Syria as a case study was explained in Chapter 1 (see Section 1.1). The justification for selecting the three contrasting study areas in the northern and western parts of Syria will be discussed next.

3.3.1 The justification for selecting the three contrasting study areas

Syria lies in West Asia to the east coast of the Mediterranean Sea between latitudes 32-37° north and longitude lines 35 - 42° east. Turkey is bounded to the

north, east of Iraq, south of Palestine, Jordan and the Golan Heights to the west of Lebanon and the Mediterranean Sea along 183 kilometres of the coast (see Figure 3.1). Because of its geographical position, Syria has a strategic business contribution in and with the three regions (e.g. Asia- Europe- Africa) (UNDP, 2005b).

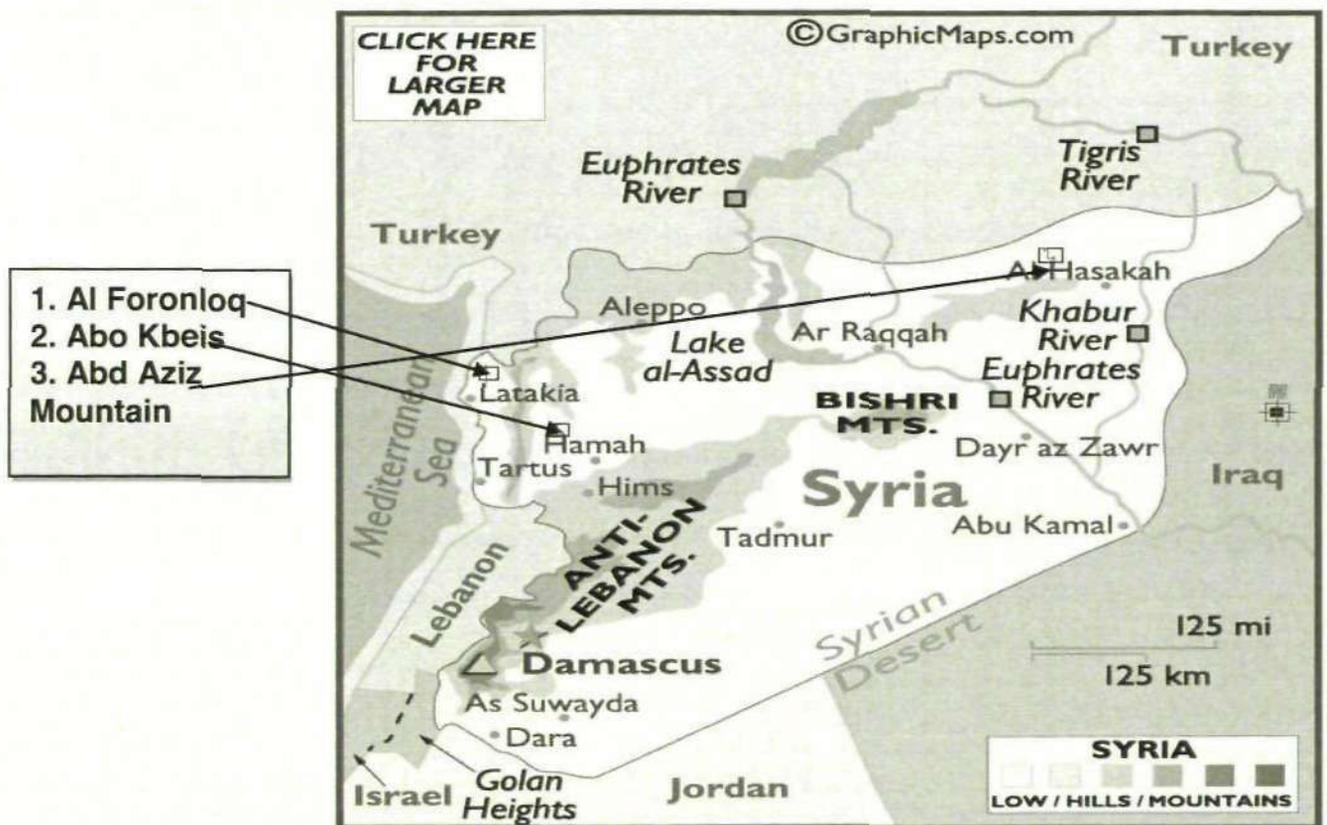


Figure 3.1: Location of the case study in Syria (Source: Records of forest land in Syria by Forestry Department in Damascus, Syria, 2005; UNEP, 2008)

In seeking a suitable area, the author of this study undertook a field visit to different areas within Syria in order to get an understanding of social and cultural perspectives of the areas. The author also relied on maps (for clues about the geographical location of different areas) and the Office of National Statistics (2005) Rural and Urban Area Classification for its forest characteristics. The first decision

was made to choose between three contrasting case study areas (see Figure 3.1): the Latakia study area (Al Foronloq Protected area (PA)) and Hamah study area (Abo Kbeis (PA)) in the west and the Al Hasakah study area (Abd Alaziz Mountain PA) in the north. The three study areas were also protected areas. The first two are protected forest lands, and the third one is protected rangeland.

The differences between the three study areas highlight more clearly the contrasting issues which affect the formulation and implementation of SFM than can be achieved by studying only one area. At this point, it is crucial to compare between the three study areas in terms of the types of forest land, forestry practices and forest utilization, size of family, educational matters, low income, water depletion, agricultural expansion and overgrazing. These factors are expected to have different influences on the formulation and implementation of SFM policy and practice in each study area. It is, therefore, important to discuss the differences between the three contrasting study areas with especial regard to the main determinants that influence on the state of forest land in each one.

Al-Fronloq study area (see Plate 3.1; Appendices 4.1.1) has been considered as it has been a protected forest area (PA) since 1999, covering an area of 4500 hectares. It is one of the most important protected areas in Syria with an altitude of between 450 and 800 meters and a precipitation of about 1000 mm/year (Martini, 2007). One of the most important features of the Al-Fronloq study area is its adjacent location to the Mediterranean Sea (semi environmental climate). Its importance also comes from being the canal between Asia and Europe for many wild birds. It includes a variety of forest species (see Appendices 4.2) (e.g. Pine *Brutia* (*Pinus Brut*) which is considered to be a keystone species for landscape

and ecosystem stability in the Al-Fronloq area (Kasis, 2005). In addition, fruit production is the major agricultural practice in the Al-Fronloq area because of its role in protecting Al-Foronloq's soil from possible degradation. The Arab Institute of Forest has been established in this area since 1959 leading to increase the education level in terms of forest resources and forest protection, which in turn influence on local communities' attitudes and behaviour who acknowledge the importance of forest land. There are some key factors affecting the Al-Foronloq area, including soil erosion, over-grazing by goats, over-collecting of non-wood products, over-use of spring water, tourism activities, population density and fires (Munlahasan, 2005). The rationale for selecting this area, therefore, comes from the mixes between forest species and agricultural vegetation (agroforestry), its contribution for conservation biodiversity, the existence of the Arab Institute of forest.



Plate 3.1: The Al-Fronloq Protected Area (Source: Author, 2008)

The Abo Kbeis study area (see Plate 3.2; Appendices 4.1.2) is located on the eastern slopes of the coastal mountain region which covers an area of 11000 hectares. It was declared a forest protected area by an Agriculture and Agrarian Reform Ministerial decision in 1999. The elevation of the site ranges from 540 to 1200 meters above sea level with precipitation of about 1200 mm/year. It includes natural forest species of Oak (*Quercus Calliprinos*) and Pine (*Pinus Bruti*) (see Appendices 4.2). The total population living in Abo Kbies is 4100 persons, who have directly influenced the natural resources in this area (Martini, 2007). During the fieldwork, the role of women in the workplace and in the society in this area was hidden. Women have been affected by the role of religion (i.e. Islamic religion), which has restricted the involvement of women in forest management and other activities. However, other issues have influenced the forest area including: water depletion, soil erosion, poverty, over-use of wood fuel, violations, lack of well-trained people, lack of funds and business pressure (market) (Munlahasan, 2005). The rationale for selection this area comes from the role of women in forest management, and from the natural type of forest land which is important in terms of conservation biodiversity (e.g. the total number of endemic species is 145 from the total endemic species in Syria (243)).



Plate 3.2: The Abo Kbeis Protected Area (Source: Author, 2008)

The Abd Aziz study area (see Plate 3.3; Appendices 3.1.3) was declared a rangeland protected area by an Agriculture and Agrarian Reform Ministerial in 1993 which covers an area of 49000 hectares. It is located in the north-eastern part of Syria. The topography in Abd Aziz Mountain is composed of a series of hills and valleys with an elevation of 400 to nearly 920 meters above sea level with annual rainfall ranging from 180-200 mm/year. The total population living in this area is estimated between 12000 to 14000 persons (Martini, 2007). One of the most important features of the Abd-Aziz Mountain study area is the existence of afforestation programme which has been established since 1986. This area has been affected by many factors such as overgrazing, which impacts on the forest area (see Appendices 4.2). The main factors affecting this area are size of family, soil erosion, overgrazing, cultural practices of grazing, water scarcity, poverty and

education level (Munlahasan, 2005). The rationale for selecting this area comes from the type of forest land (e.g. rangeland), the types of forestry practices (forest plantation and protection), the traditional practices of grazing and the topography characteristics, as well as the arid environmental condition.



Plate 3.3: The Abd Aziz Mountain Protected Area (Source: Author, 2008)

Having justified the reasons for selecting the three contrasting study areas in Syria, the next section will identify the research methods adopted to collect data and information for investigation the role of government and communities in the formulation and implementation of SFM policies and practices in Syria.

3.4 The Research Methods

This section aims to review the methods used in the present study in order to meet the objectives of the research. Four different sources of data (e.g. triangulation) will be identified including: questionnaire survey with local communities, face-to-face interviews with local and national stakeholders, participant observation and secondary data (e.g. census data, Arabic web sites, national reports of forestry and forestry documentation).

3.4.1 Participant observation and research positionality

Participant observation has been used as a method in different disciplines, especially in social and political (Diaz, 2005; Pollock, 2005). Pollock (2005: 86), for example, argued in a study of his own experience, regarding prisoners that 'this method involves the researcher's living or working with a population of prisoners for a length of time, participating to some degree in the daily activities of prisoners while they record and observe what they see and experience'. Diaz (2005) also emphasised that participant observation is the most important method for understanding the complexity of the field areas. However, the disadvantages of using participant observation as a method are time consuming way of obtaining and memorizing information (Robson, 2007).

The main justification for adopting the participant observation method was the nature of the study itself. This study is looking at the role of community and government in forest management. Thus, rather than looking for a new event or trying to find a new theory, it is attempting to develop a deep understanding of that community and how it reacts to a specific practices of SFM (Hoggart *et al.*, 2002).

Participant observation allows the research to develop a rich picture of the community, in particular the role of women in forest management. In doing so, it allows me (the researcher) to familiarise myself with the condition and context of that community, so helping to make the use of other, more impersonal research methods more effective. Devine and Heah (1999: 24) argued that 'participant observation means playing a role, devoting energies to maintaining the pretence that the researcher is not really researching but in fact working, visiting, and living there.'

Accordingly, in this study, I lived in the study areas for approximately a month and half (two weeks in each study area), immersing myself in the community. Participant observation was doubly important for me as I am from a different governorate (i.e. Homs) (see also snowballing technique section 3.4.2), where the community's attitude and behaviour is different, and so this process helped me to familiarise myself with life in a rural community in Syria. Data collection started from the day of arrival, using a diary (see Figure 3.2) to record observations. The format of the record was adjusted to ensure that: 'inferences and personal observations, reflections, hunches, and emotional reaction of the field researcher {were} recorded separately from the stream of field notes that {described} the event or situation' (Schensul *et al.*, 1999: 115-116).

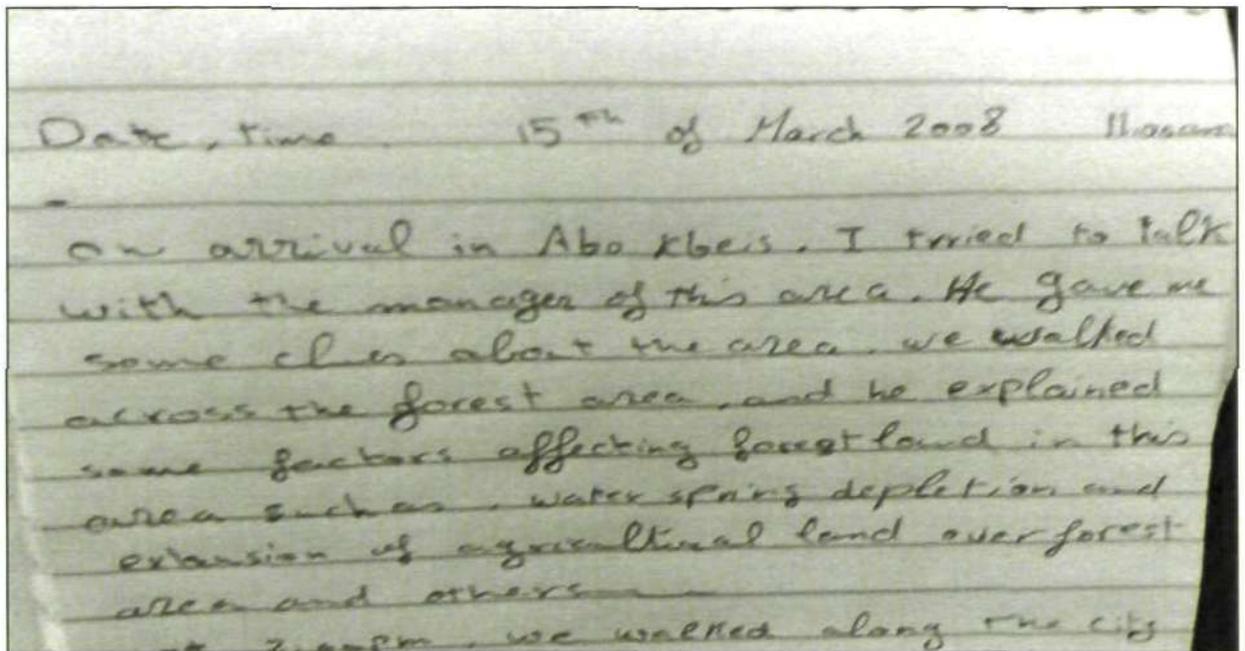


Figure 3.2: Sample of the research diary (source: Author)

As explained in Chapter 1, my background about the case study area in Syria was important and facilitated carrying out participant observation, face-to-face-interview, questionnaire survey and obtaining the secondary data required such as Arabic information and census data. It is, therefore, important to explain how the researcher' experiences and techniques help in getting access to the three study areas – an issue is presented next.

3.4.2 Snowballing methods

The snowballing method is an important method which complements and facilitates the use of other methods in the research. Valentine (2005: 117), for example, argued that 'the snowballing method describes using one contact to help you recruit another contact, who in turn can put you in touch with someone else. The initial contact may be a friend, relative, neighbour, or someone from a social group or formal organisation'. As the term implies, through this method, recruiting gains momentum or 'snowballs' as the researcher builds up layers of contact (see

Figure 3.3). For example, Donovan (1988), a white researcher, described how she used black friends to help her get an introduction to Afro-Caribbean groups in the UK. She was then able to snowball further, using one informant to introduce her to another.

In studies where the researcher comes from another area and has a different religious background (as is the case with this study) difficulties can be faced, particularly that of approaching potential informants. Snowballing may be considered one of the best approaches in these cases (Flowerdew and Martin, 2005; Valentine, 2005). Valentine (2005) outlined the advantages of this technique. Firstly, it helps the researcher to overcome one of the main barriers to recruiting interviewees, gaining their trust. Secondly, it allows the researcher to seek out, more easily, interviewees with particular experiences or backgrounds. However, snowballing – where respondents tell the researcher about others they know with the same specified characteristics – has disadvantages. As potential respondents often know each other, the disadvantage with snowballing is that a contact network created using this method alone may be prone to bias (Valentine, 2005). This is because those who know each other may have similar behaviours and attitudes or may influence each other in relation to the research. Those that are missed may have quite different characteristics. As a result, the sample or the contact network may not be particularly diverse and important phenomena may be missed. In this context, the main recommendation when starting the snowballing method is to use more than one initial contact to recruit interviewees in order to obtain people with different views and backgrounds. This will also help to maintain the confidentiality of each interviewee (Bryman, 2001; Valentine, 2005).

fieldwork (see Section 3.4.3, 3.4.4, and 3.4.5). Before starting the study, the author knew one person who has lived and worked in Al Foronloq for seven years as a manager of the Al Foronloq study area; this person made introductions to current residents of the area and gave some names of useful stakeholders for interviewing them. However, those householders were the individuals that the author met in the three study areas, and they were very helpful in finding accommodation, introducing the author to a large number of people and taking the author sightseeing in the three study areas. Subsequently, the author used the snowballing method through interviewing these initial contacts, then using information from that interview to make further contacts and build a network of participants.

3.4.3 Getting access to the three study areas: a Syrian researcher's experience

Table 3.2 provides specific details on how the above approaches were used and implemented during the author's initial stay in the three study areas. The author lived in the three study areas for approximately six weeks between 7th February and 20th March 2008.

The author needed to become part of the three study areas to understand the context of the forest areas 'from the inside', to understand various local powers and exclusions in the community, and more importantly, to get the author recognised by community members for a further research method step: questionnaires. It was also crucial to embed the author in the three study areas so that the author could connect with people who might find it hard to trust a stranger

female at first, particularly Islamic people. This was essential for obtaining a high response rate for the subsequent procedures.

Table 3.2: Some dates and events from the research diary (source: Author)

Date	Events
<p>7th to 20th February 2008</p>	<p>Visited Al Foronloq for the first time. Explored the area by walking around. Got myself more familiar with the area. Attempted to find accommodation by help from the manager of Al Foronloq study area. Found accommodation with small family (Simon, his wife Lela and their two girls). Tour of Al Foronloq forest area and sightseeing with the manager of the Al Foronloq forest area. I started to get more familiar with people and place. Introduced myself to some families and discussed with them my research study. My main task was to get myself more recognised by people: going to church, reading in the park, attending Friday markets. I got more confidence at this stage. I started my questionnaire survey by telling people about my questionnaire survey. I announced that I was going to distribute and collect the questionnaire by myself.</p>
<p>21th February to 4th March 2008</p>	<p>Visited Abd Aziz Mountain for the first time. Explore the area by walking around. Got myself more familiar with the area. Attempted to find accommodation by help from the manager of Abd Aziz Mountain study area. Found accommodation with small family (Tahseen, his wife Gamileh and their three boys). Tour of Abd Aziz Mountain forest area and sightseeing with the manager of the Abd Aziz Mountain forest area. I started to get more familiar with people and place. My main task was to get myself more recognised by people: going to some farms, creating relationship with some girls in the town. I got more confidence at this stage. Introduced myself to some families and discussed with them my research study. I started my questionnaire survey by telling people about my questionnaire survey.</p>

	I announced that I was going to distribute and collect the questionnaire by myself.
5th to 20th March 2008	Visited Abo Kbeis for the first time. Explored the area by walking around. Got myself more familiar with the area. Attempted to find accommodation by help from the manager of Abo Kbeis study area. Found accommodation with small family (Ahmad, his wife Mouna and their two boys and girls). Tour of Abo Kbeis forest area and sightseeing with the manager of the Abo Kbeis forest area. I started to get more familiar with people and place but I had some problems with some Muslim families. Some women refused to participate in my questionnaire survey. My main task was to get myself more recognised by people: visiting the Mosque, going to the restaurant, attending some invitations from some families. I started my questionnaire survey by telling people about my questionnaire survey. I announced that I was going to distribute and collect the questionnaire by myself.

As a participate observer, the author's initial research status was somewhere between overt and covert participant; the extent to which people were aware of the author's research objectives varied between people and over the course of the research process. The author's main research tool was a research diary, in which detailed entries were made each day (see above). At first this included very broad and general information, for example, attending events (e.g. Friday markets). As the author's relationships in the field became more defined, field notes began to take on a more specific character, as details of interesting conversations were recorded as soon afterwards as possible. Keeping a research diary proved to be extremely useful in helping the author to follow a first network and to inform the author's position with respect to later relationships in the field. As a whole, the participant observation approach and consequent embedding in the community

had a positive role in the questionnaire response rate and facilitated the contributions to questionnaires (see Section 3.4.4).

Table 3.2 (above) shows some key dates and events from the author's diary that illustrates the field work schedule. When the author first moved to the first study area (e.g. Al Foronloq), the author was aware that gaining access to people relies on interpersonal resources and strategies (Flowerdew and Martin, 2005). Although the author had used a snowballing technique to build up a first network in the three study areas (see Section 3.3.2), the author did not want this 'good network' to dictate too strongly the 'who' and 'where' of the new contacts in the fields. Choosing somewhere to live was fundamental to the author's research status in the field. For example, when the author moved to the Al Foronloq study area, the manager of the forest area, the first contact said to author:

'You can always stay here with my family, there should be a room free for a long time up there' to which I spontaneously replied something like, 'Sounds ideal, but I have got lots of papers, laptop and things to bring down here and I need my own place really, but many thanks for the offer' (Diary, 7th of February 2008)

Luckily, Firas (the manager of the Al Foronloq forest area) knew a small family, Simon and Lela and they kindly offered the author a room for the period of field work. The room was big and well furnished; in particular it was close to the study area. The same situation happened in the other study areas in Abo Kbeis and Abd Aziz Mountain. It was important to live with some families, because the more people the author knew, the more contacts the author had and the more visible the author became. For example, Simon and Lela with their family (two girls are aged

21 and 29) helped the author to build connections in a network: each one introduced the author to his/her friends, took the author around the study area to see how people participate in forest management practice and introduced the author as a PhD student doing research in Al Foronloq about the formulation and implementation of SFM policy and practice. In addition, the author's 'snowballing network' became larger by having a good relationship with Simon and Lela, who were happy to introduce the author to their friends. The author did form quite strong friendships with some residents in the three study areas and in many respects the author started enjoying staying there and doing the field work. However, the author felt that maintaining a 'normal' position as an ordinary person in the community was essential to relationships in the field and consequently the validity of the study. As far as author was aware, the author managed on the whole to be on good terms with everyone. To maintain such a stance, the author did nonetheless need to take several positions and act in certain ways with different people. There were many people, however, who refused to participate in the author's questionnaire survey (e.g. Muslim women in the Abo Kbeis study area). The following shows how the author developed relationships in the three study areas.

Initially, the author's first contacts in the three study areas were with those who are friends of the managers in each study area; these included people who had an interest in forest management in general and in the author's research in particular. In the first two days of living in each of the study areas, the author was introduced to a very large number of people. The spring time helped in different ways. Firstly, the author had an opportunity to go every day for a walk inside the forest areas, and to meet others afterwards for tea. Secondly, in Al Foronloq, the author's first

contact's daughter was on holiday (half term holiday), so author spent lots of time with her friends as well as with her. It was a good opportunity for the author to meet different generations to talk about different subjects and gain initial insights into attitudes they held with regard to the community's contribution to forest management. It was at the end of field work that the author began particularly to recognise the benefits of living temporarily in different areas with differences in culture, religion and social characteristics. People in the three study areas started saying 'Hello, how is your research going?'. Such social commerce built more confidence in the author and greatly benefited the author. Furthermore, the technique used in questionnaire distribution helped the author to continue observations during data collection (see Section 3.4.4). Knocking on doors and having little conversations about the research study gave the author rich opportunities to observe initial reactions of survey respondents.

3.4.4 Questionnaire data

Many sociologists have used questionnaire survey as a fundamental method to obtain data needs, especially about individual behaviour and attitude, and to achieve the research aims and objectives (Parfitt, 2005; Robson, 2007). Advantages and disadvantages of using questionnaires in the social studies can be summarised in Table 3.3 (Frascara *et al.*, 1992).

Table 3.3: Advantages and disadvantages of using questionnaires (Source: Frascara *et al.*, 1992)

Advantages	Disadvantages
<ol style="list-style-type: none"> 1. Questionnaires are less expensive than other methods. 2. They produce quick results. 3. They can be completed at the respondent's convenience. 4. They offer greater assurance of anonymity. 5. They offer less opportunity for bias for errors caused by the presence or attitudes of the interviewer. 6. They are a stable consistent and uniform measure, free of variation. 7. They offer a considered and objective view of the issue, since respondents can consult their document and since many objects prefer to write rather than talk about certain issues. 8. The use of questionnaires allows a wider coverage, since researchers can approach respondents more easily than other methods. 9. They are not affected by problems of 'non-contacts'. 	<ol style="list-style-type: none"> 1. Questionnaires do not allow probing, prompting and clarification of questions. 2. They do not provide opportunities for motivating the respondent to participate in the survey or to answer the questions. 3. The identity of the respondent and the conditions in which the questionnaire is answered are not known (researcher are not sure whether the right person has answered the questions). 4. It is not possible to check whether the question order – where required – was followed. 5. Questionnaires do not provide an opportunity to collect additional information while they are being completed. 6. Due to lack of supervision, partial response is quite possible.

There are different techniques of questionnaires used by researchers in the social sciences (Bryman and Burgess, 1994; Hoggart *et al.*, 2002): the personal questionnaire, the intercept questionnaire, the postal questionnaire, the telephone questionnaire and the on-line questionnaire (Gray and Guppy, 1994). Hoggart *et al.* (2002: 175), for example, argued that 'different procedures for surveys create

differential distances between researcher and respondent'. The personal questionnaire, for instance, involves less distance than the postal questionnaire. Further, questionnaire surveys can be written or oral (Hoggart *et al.*, 2002), similar questions but more impersonal ones may be asked and there is no conversation between the researcher and the respondent. In oral (personal and telephone) questionnaires, on the other hand, the researcher interviews the respondent verbally according to a pre-designed and structured set of questions (Flowerdew and Martin, 2005; Hoggart *et al.*, 2002). However, researchers have to decide which type to conduct, regarding the nature of their study and other considerations such as cost, time, and social interaction implications.

As Lovelock *et al.* (1976: 363) pointed out, 'personal delivery and collection of self-administered questionnaires appears to be a particularly appropriate method in social science questionnaires.' Detailed surveys of participants' attitudes and behaviour patterns are especially likely to be in this category. They also highlighted the main disadvantages and advantages of personal delivery questionnaire.

Disadvantages:

- High cost (e.g. travel, accommodation, and catering cost).
- Time consuming.
- Personal visit may be regarded as threatening and may serve to discourage participation.
- It may be possible to ascertain the nature of the bias resulting from refusal.

Advantages:

- Very high response rate.
- Such surveys have greater control over the sample design
- It encompasses complete and up-to-date identification of participants' geographical locations.
- It provides useful insights into aspects such as respondents' characteristics, attitudes toward the survey, and reasons for non-participation.

In the light of the above, personal delivery and collection of a self-administered questionnaire was employed in this study to provide quantitative data with regard to social and cultural characteristics and background, attitude, and behaviour of participants with regard to the role of community in forest management practices (see also sections on sampling strategy below).

Questionnaire structure

Flowerdew and Martin (2005) emphasized that there are two types of questionnaire: open and close questions. While open questions refer to the way that the respondents have to express their idea to answer the questions, close questions refer to the way that the respondents can choose the answers which provided by the researchers. They also considered that the questionnaire design in social studies should include questions about individual characteristics (e.g. age, gender, occupations and income) and individual attitude and behaviour (e.g. participation, opinion)

In this study, different types of questions related to the objective of the study, as well as to local respondents' characteristics, their attitudes and behaviours in

terms of SFM practices were included (see Appendix 1) for obtaining the primary sources from the local communities in the three case study areas. The questionnaire was designed to include four sections:

Section one:

This section asked questions about the respondents' characteristics. It included information about age, gender, income, family size, educational level and occupation. The aim of asking these questions in this section was to collect the required data needed to investigate the differences between the respondents' attitudes and behaviours.

Section two:

Section two of the questionnaire was concerned with the relationships between respondent groups' characteristics and their influences on forest resources. In this section, respondents were asked questions about their potential use of forest resources; this included collecting medical and aromatic plants, collecting seed and fruits, cutting branches, leaves and roots, collecting water from springs, hunting, grazing, agriculture use, cutting firewood and facilitating tourism needs.

Section three:

The third section of the questionnaire focused on investigating the relationships between the attitude and behaviours of the respondent groups and the main constraints affecting the state of forest land. Questions included in this section covered the major constraints: cutting branches, wood and roots, overgrazing, soil erosion, water depletion, the change of conservation forest land to agriculture land and for construction purposes and fires.

Section four:

This section focused on the present and future action and goals of respondent groups in the three case study areas. The aim of this section is to investigate the perception of respondent groups of the present action and future goals of forestry practices. Questions included in this section focused on the responsibility to undertake training courses in forestry. This section also focused on the perception of respondent groups of the establishment of protected areas and violation upon forest resources, their participation in forestry practices and their perceptions on the future goals for the forest, with especial regard to looking after natural resources, the need for secure source of living instead of the forest resources and for stable income.

Before the actual survey was undertaken, a pilot study of questions to be posed to residents was undertaken. As Fink and Kosecoff (1998) found, pilot studies are useful in preventing inappropriate questions from arising or confusion amongst the participants accruing. A similar strategy was pursued in this study and 20 participants from various age groups, locations and occupations were contacted and tested. Five respondents refused to participate (i.e. women) from the three study areas as they were unable to be involved in this study (because of religious faith. Two of the respondents refused to participate (i.e. men) because they were running a business and they did not have time to be involved in the research questionnaire. Therefore, seven respondents excluded themselves from the main sample. Thirteen respondents worked in the three study areas (e.g. in forest management processes); they did not precipitate any changes in the questions or demand any conditions in dealing with me as a female researcher and could, therefore, be included in the main sample.

Sampling strategy

Sarantakos (2005) argued that sampling methods can be classified as either probability or non-probability. Probability sampling is a procedure in which the selection of respondents is guided by the probability principle, according to which every unit of the target population has an equal calculable and non-zero probability of being included in the sample. Probability sampling includes:

- **Simple random sample:** each member of the target population has the same chance of being selected for participation in the study, which is ideal for statistical purposes. Disadvantages are that such samples are hard to achieve in practice, require an accurate list of the whole population, and are expensive to conduct as those sampled may be scattered over a wide area.
- **Systematic sampling:** this is a random sample with a system. From the sampling frame, a starting point is chosen at random, and thereafter further respondents at regular intervals. Its advantages are that it spreads the sample more evenly over the population, and it is easier to conduct than a simple random sample. On the other hand, the system may interact with some hidden pattern in the population, e.g. every third house along the street might be the middle one of a terrace of three.
- **Stratified sampling:** an approach in which the population has been classified into 'strata' or subgroups and then a random sample is pulled from each subgroup as related to the objectives of the research study.

In non-probability sampling, respondents are chosen from the population in a non-random manner. Generally, non-probability sampling is used in three situations:

1. **Hard to find groups,**

2. Surveys of specific groups, and
3. Surveys in pilot work

Examples include:

- *Convenience sampling*: used in exploratory research where the researcher is interested in getting an inexpensive approximation of the truth. As the name implies, the sample is selected because sampling is convenient. This non-probability sampling is often used during preliminary research efforts to get a gross estimate of the results without incurring the cost required to select a random sample.
- *Snowball sampling*: In snowball sampling the researcher begins by identifying someone who meets the criteria for inclusion in his/her study (Section 3.4.2). The researcher then asks respondents to recommend others who may also meet the criteria (see also discussion above). Although this method would hardly lead to representative samples, there are times when it may be the best available. This sampling is especially useful when trying to reach populations that are inaccessible or hard to find.
- *Quota sampling* is the non-probability equivalent of stratified sampling; the researcher first identifies the sampling and their proportions as they are represented in the population. Although it is quick and cheap, it is not as representative of the population.

In this study, to ensure comprehensive coverage of all parts of the community, systematic sampling was used. Questionnaires were delivered to every second or third household in the three study areas, mainly during afternoon or evening hours, to ensure availability of at least one family member who could receive the questionnaire in person. The author briefly described the survey, obtained the

family member's cooperation and arranged a return visit on the second day or in two days' time for the collection of the completed questionnaires. If the questionnaires were not completed by this time, the author had to make a third visit (sometimes four or five visits) two days later. Each household contact had to fill a simple form² (Table 3.4) – this form was the cover page of the questionnaire – which in turn stayed with the author as an important record of the questionnaire collection.

² This form had to be filled in by the researcher by building on information provided by the household member who opened the door.

Table 3.4: The cover page of the questionnaire (source: Author)

Sustainable Forest Management
Introduction
1- The overall objective of the questionnaire survey is to add your response and attitude to any developments that there may have been in sustainable forest management in your area.
2- In doing that, I hope to be able to understand the various factors affecting public policy and action. This will help to inform present and future response from the public policies to the development of SFM in the local scale.
3- Data and information collector are requested to comply with the following:
3.1. Explain the purpose of this questionnaire to the person included in the research and that the information given by him/her would remain confidential, i.e. not to be disclosed to any other person.
3.2. Put (√) accept (correct) or (X) not accept (wrong) in the relevant box of the answer.
3.3. There might be more than one answer to one question? Put the proper sign in the box opposite to each answer.
3.4. Some questions are requested to be arranged as per priority or importance for you? Put numbers (1, 2, and 3) in the opposite box, as:
1- First priority.
2- Second priority.
3- Third priority....so on.
3.5. There are questions which have many answers? Please read all questions and put the sign in the box opposite to your answer.
3.6. Note that some questions require abstract numbers of percentages, put it in the required box.
3.7- Emphasize confidentiality, and that it will not be possible to identify any person's individual response in any published document.
3.8. No obligation to answer any question.
Responder:
Researcher:
Date:

The author adopted some small technical procedures that facilitated the field work.

The author asked the person designated to participate in the research to leave the questionnaire outside the door if they were not at home and in order to protect the copies, each household was provided with a good plastic file, which saved the questionnaire from wind, etc. Meanwhile, if the respondent forgot to leave the

questionnaire outside or they were not at home, or even if they forgot to do it all, a new collection date was provided by leaving paper notes on the door. For the actual survey, questionnaires were delivered to every second or third house in each study area (142 in all), including each household member over 18 years old as a respondent receiving a questionnaire. As a result, twenty-eight rural villages in all of the case study areas were selected. With assistance of personnel from the manager of each area, 40 householders from the Abo Kbeis PA, 50 householders from the Al Foronloq PA and 52 householders from the Abd Aziz Mountain PA were selected. As a whole, 142 questionnaires were distributed and 100% usable responses were collected. This response rate reflected the interest of household members in the three study areas in the research subject from the beginning.

The adoption of participant observation in this research, living closely within the three study areas and embedding the author in the community along with the importance of personal contacts (see above) built a trust between the author and the residents in the three study areas. Personal delivery and collection of questionnaires, as well as author's approach of providing plastic files and arranging many visits, were also key factors. During the questionnaire distribution, some residents in Al Foronloq started calling the author 'the forest' girl.' Distribution and collection of the questionnaire took a month and a half, starting in February 2008 and finishing in March 2008. Meanwhile, during the data collection, the author arranged sometimes to go to Damascus to complete the interview approach.

3.4.5 Interviews

An interview is another important source of information used to complement questionnaire data. A personal interview involves a face-to-face, interpersonal role situation in which an interviewer asks interviewees questions designed to elicit answers pertinent to research questions (Nachmias and Frankfort-Nachmias, 2007). The personal interview method has advantages and disadvantages (see Hoggart *et al.*, 2002; Patton, 2002; Nachmias and Frankfort-Nachmias, 2007):

Advantages:

1. **Flexibility in the questioning process:** Interviews can range from highly structured to non-structured depending on the research problem under examination. The interviewer can clarify questions and probe for additional information.
2. **Easy administration:** interviews do not require respondents to have the ability to read or to handle complex documents or long questionnaires.
3. **Less patience and motivation is required than in other methods.** Interviews require 'participation', not just 'response.' Participation involves the researcher interacting with respondents to complete the interview. Hence, interviewing is often perceived as an obliging endeavour rather than a one-sided exercise.
4. **Opportunity to observe non-verbal behaviour:** such opportunities are obviously not available when questionnaires or indirect methods are used.
5. **Opportunity to record spontaneous answers:** the respondent does not have as much time available to answer questions when questionnaires are employed; when spontaneity is important, interviews offer a real advantage over other methods.

6. Capacity for correcting misunderstandings by respondents: such an option is very important and not available in other forms of data collection, such as remotely organised questionnaires.
7. Control of the interview situation: interviewers determine who answers questions, where the interview is conducted and the order in which questions are answered.
8. Completeness: the fact that the interviewer presents the questions guarantees that all questions will be attempted and the interview will be complete.
9. Fuller information: interviewers are able to collect supplementary information from respondents. Personal characteristics and their environment can aid the researcher in interpreting the results.
10. High response rate: interviewing attracts a relatively high response rate.

Disadvantages:

1. Higher cost: interviews are more costly and time consuming than some other methods such as questionnaires, especially when respondents are widely dispersed geographically.
2. Interviewer bias: innate characteristics of interviewers and differences in interviewer techniques may affect respondents' answers.
3. Lack of anonymity: the presence of the interviewer may make the respondent feel threatened or intimidated.
4. Sensitivity: it is less suitable than other methods when sensitive issues are discussed. For example, many people prefer to write about sensitive issues rather than to talk about them.

In an exploratory study, face-to-face interviews can be very helpful to 'find out what is happening {and} to seek new insights' (Robson, 1993: 42). It can be prepared ahead of time with lists of questions and topics that need to be covered during the conversation. It also helps to develop a keen understanding of the topic of interest necessary for developing relevant and meaningful conclusions. Questions tend to be open-ended and express little control over interviewees' responses. In addition, it is a useful method for developing an understanding of an 'as-of-yet not fully understood or appreciated behaviour,' experience.

In this study, face-to-face interviews were conducted with key stakeholders (formant and informant members) involved with forest management policy and practice. Face-to-face interviews with stakeholders varied from one interviewee to another (see Table 3.5), designed to give insight into the relationship between forest policy, forestry practices, potential improvements in forestry institution and departments, decision-makers' attitudes and probable future changes in their decisions and interaction between local communities and stakeholders. They also helped to identify some problems that might affect this interaction.

Snowballing was also used to identify key decision-makers (international, national, regional and local levels) for interview (see below). Twenty-seven stakeholders were contacted by email or by telephone; all of them accepted the invitation and were interviewed. Twenty-one of them were national policy stakeholders, and two of them were regional policy stakeholders; the rest were local policy stakeholders (Table 3.5). Stakeholder interviews were carried out in February and March 2008. It should be mentioned that the need for more information related to the role of external bodies in the formulation and implementation SFM in Syria was lead the

researcher to interview the director of the UNDP office in Damascus by phone and emails. This interview was carried out in November 2009.

Table 3.5: Key stakeholder interviewees and some key topics of discussion (source: Author)

Description of stakeholder group	Interviewees	Interview focus
International officers	The director of the UNDP office in Damascus	The role of external bodies in the formulation and implementation of SFM policy and practices
National policy stakeholders	<ol style="list-style-type: none"> 1. Minister of Agriculture. 2. Minister of Environment. 3. Director of forestry department. 4. Head of national forestry for the arid and semi-arid countries. 5. Chief Executive of the Community Council of Syria. 6. Interviews: <i>eight</i> members in woodland and environmental department at the University of Agriculture in Damascus. 7. Chief assistant of the National Resources Management. 8. Chief of the Wood Industrial of Syria. 9. <i>Six</i> members of Non-government Organisations (NGOs) of Resource Management. 	<ul style="list-style-type: none"> - Discussing the main objectives of formulation and implementation of forest policy. - Discussing the main objectives of SFM policy and practice in Syria. - Discussing administrative structure and constraints. - Discussing the role of local communities in forest management activities. <p>Discussing the role of Syrian forest policy at international, national, regional and local levels.</p>
Regional policy stakeholders	<p>Head of the Faculty of Forestry in Lattakia.</p> <p>Head of Regional Forestry and Agriculture for the North West Regional Development Strategy.</p>	<ul style="list-style-type: none"> - Discussing the help of government for efficient forest management. - Discussing politicians' work and other power structures, and how it influences the formulation, implementation of SFM policy and practice. - Discussing the improvement in planning forest management.
Local policy stakeholders	<p>Manager of Al Foronlok forest area.</p> <p>Manager of Abo Kbeis forest Area.</p> <p>Manager of Abd Aziz Mountain.</p>	<ul style="list-style-type: none"> - Discussing the encroachment or conflicts posed by the local forest communities. <p>Discussing the reasons for such encroachment.</p>

All interviews were digitally recorded and transcribed afterwards, giving the author a chance to get rich qualitative quotes and data.

3.4.6 Some lessons learned

Being a Syrian researcher coming to a Western country was a big learning challenge in my life. Coming to the UK with limited English skills, limited understanding of what research means, limited experience of social research, from a different cultural background, and as non-geographer doing a PhD in a geography department, only my ambition was a substantial factor. I learned a great deal about doing research and qualitative and quantitative inquiry while engaged in my PhD study; writing this narrative consolidated and extended that learning.

Being a countryside girl and having studied agricultural engineering and forestry for five years, in my undergraduate study, I built up my interest in the relationship between forestry policy and practice, government and community. So when I was offered a PhD scholarship, doing a PhD in the UK was a key choice. Working in Syria with urban and rural people was an unforgettable experience for me. At the time, I felt nervous about taking the decision to conduct my questionnaire survey in rural areas in Syria, miles from my supervisors' directions, but I loved doing this work in the country where I was born, which is why I became so involved in it. According to Watt (2007: 82) it 'is reasonable to expect new researcher to feel some trepidation at the onset of a first study'. However, I concur with Wolcott (1995) who asserted that the rewards make it worth the effort. Reflecting on my first research effort strengthened my conviction, for I gained confidence in my

ability to overcome the demands my research required. Moreover, Valentine (2005: 113) explained that when a researcher is thinking about qualitative research 'it is important to reflect on who you are and how your own identity will shape the interactions that you have with others.' That in turn was described as recognising the researcher's 'positionality' and being 'reflexive' (Valentine, 2005). Furthermore, Schoenberger (1992) suggested that issues such as gender, nationality, history and experiences might affect the relationships between the researcher and the researched. In this way, I was aware that my positioning as a stranger, a Syrian Christian female, would affect my research in some way.

What surprises me most about this experience is how positively some people in Syria in general, and in the three study areas in particular, reacted to my research and to me as a stranger doing research alone without man helps. When I approached people there with my research idea about the role of government and communities in the formulation and implementation of SFM policy and practice, they readily agreed to participate through questionnaire and interview. On one hand, they thought that I would provide a good learning experience for them. When I spoke to the manager of Al Foronloq, my first contacts, he was enthusiastic about my research subject. He introduced me to some people who have a background in forest management processes. Nonetheless, people in the three study areas in Syria thought me brave to carry on my research without my supervisors being there to guide me. Although they believed that this research can help them by solving some of their constraints (e.g. increase wages or provide alternative source of forest resources). People in the three study areas were immensely supportive to my research and felt a kind of obligation to fill in my questionnaire. There are lots of other stories I could tell which reflect the support

of Syrian people for me as a researcher. As I finished the fieldwork in Syria, I realised how much this experience affected my understanding of doing research, and secondly and most importantly for me, how rural people in my country perceived my research interest in the role of government and communities in the formulation and implementation of SFM policy and practice, which will help me in future research on the same subject in another country in ASAZs.

3.4.7 Secondary data

Secondary data (e.g. scrutinising forest documentation (e.g. policy and practice), governments' reports of human development and forestry regulations and census data) is important sources in the context of this study (e.g. cross-checking). It will play a crucial role as further evidence of the influence of householders' characteristics upon forest resources, and of women's role in forest management, as well as of the types of forest land and forestry in Syria. In terms of investigation, the role of government in forest management in Syria, particularly the National Official Statistical Report, provided useful information about afforestation areas in Syria and the establishment of a forest protection system (forestry practices and policies), which are the main objectives of Syrian forest policy. Further information can be obtained from the government files about the role of external bodies. Moreover, census data will provide further evidence of some issues that affect the formulation and implementation of SFM policy and practices in Syria in general, and in the three study areas in particular (e.g. size of family, income, gender...).

3.5 Conclusions

The research methodology adopted in this study has been discussed in this chapter. An introductory section reviewed the methodological approach used by

different researchers. A Checklist of the SFM model indicators and method used for data collection has been discussed. The limitations and difficulties encountered during the measurement of the model's indicators was also explained (further discussion on the application of SFM model will be presented in Chapter 5). A brief discussion of the scale of interest was also mentioned with especial regard to the national and local levels. The justification for considering the case study approach as a main methodological element in this thesis was explained. The rationale for selecting the three contrasting study areas in Syria was presented. Finally, the last part of this chapter discussed and identified the four research methods used in this thesis for collecting data and information needs to attain the aims and objectives of this research study including: participant observation, questionnaire, face-to-face interviews and secondary sources.

Having identified the methods used in this study for data collection and analysis, the next chapter will discuss the principal characteristics of forests in Syria, and explain the issues of forest degradation and the changes of forestry policies with especial regard to the SFM model.

**Chapter 4: Forestry characteristics in Syria
- Issues and Policy -**

4.1 Introduction

Chapter 3 presented and discussed the research methods used in this thesis. The rationale for focusing on SFM in Syria and selecting the three contrasting study areas in the northern and western parts of Syria was also explained. This chapter aims to discuss the principal characteristics of forests in Syria, explain the issues of forest degradation which occurs there as well as outline the changes in forestry policies (objective 1). To facilitate the fulfilment of these aims, the environmental, economic, social and cultural issues (EESC) associated with forestry in Syria are discussed and the political issues are outlined in the following sections.

4.2 The EESC issues

4.2.1 Environmental issues

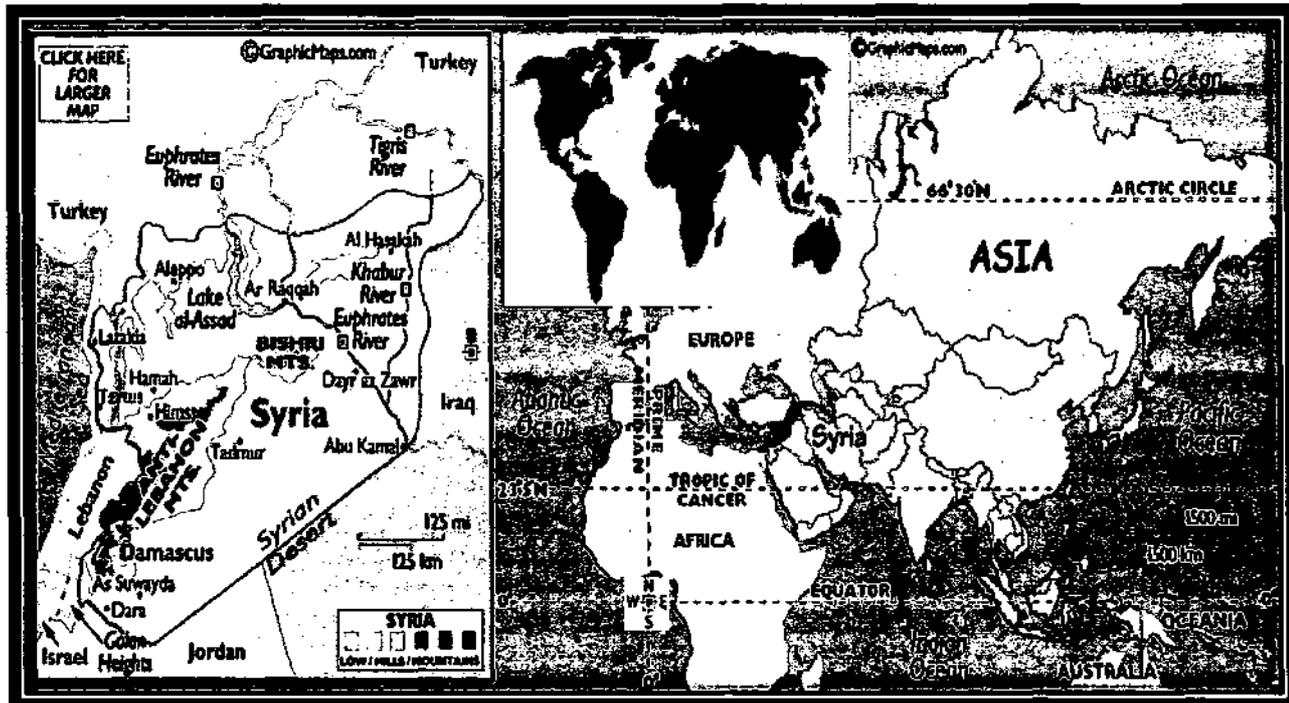
This section presents an overview of the major environmental issues affecting the distribution of forest land in Syria. The country is located on the eastern part of the Mediterranean Sea (MS) and covers an area of 18378000 hectares (See Table 4.1 and Figure 4.1). Its land area consists of a massive rangeland in the north to a green land in the west (FAO, 2003). The climate of Syria is categorised as semi-arid in the west (e.g. on the borders of the MS), arid and extremely arid in the north and the south east of its land area with an average annual air temperature is 20 C° and the total precipitation for the year is 35.6 mm (Munlahasan, 2005; Ali, 2007). Nahal (1981) divided Syria land into four regions regarding the differences of geographical, geological and climatic conditions as follows:

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1. The interior region or the plains region: It is located in the east of the mountainous region and consists of Aleppo and the Al Jazerah valleys, where the river of Euphrates flows, in addition to the Homs and Hama valleys. This region contains most of Syria's rangelands. It is in this geographical region that two of the case study areas (the Abo Kbeis and the Abd Aziz Mountain study areas) for this investigation are located (see Chapter 3).
2. The desert region: It comprises the desert plains, which run from the southern part of Syria (the Druze Mountain) to the south-eastern part of the country (mostly desert area).
3. The mountainous regions: They lie from the north down to the south of the country and include all mountains and hills which are parallel to the MS. They are divided into two main mountains: Latakia Mountain in the west and Al-Zawia Mountain in the east with the Al-Ghab valley in between (Hamah governorate). The Ante-Lebanon Mountains are located in the south of this region, which forms a border between Syria and Lebanon. The range of mountains in this region shrinks off into a hilly area in the southwest, which is known as the Golan Heights.
4. The coastal region (green land): It lies between the mountains and the MS. It extends from the south of Turkish border to the north of Lebanon. The Jabal al Nusayriyah Mountain, which parallels the coastal plain, has an average elevation of just over 1,212 meters. The Sinn, a minor river in Latakia governorate, is located in the west of the Al Nusayriyah Mountain, about 32 kilometers southwest of the port of Latakia, and is used to irrigate the area. Most of Syrian forests exist in this region. It is in this geographical

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region that one of the case study areas (Al Foronloq study area) for this investigation is located (see Chapter 3).



**Figure 4.1: general map of Syria showing the location of Syria in the eastern part of the MS
(Source: <http://www.worldatlas.com/webimage/countrys/asia/sy.htm>, 2009)**

Against these geographical characteristics, Merlo and Croitoru (2005: 186) emphasized the environmental role of forest in Syria: 'forests provide a constant supply of fodder for a large number of grazing animals and play a significant role in watershed catchment protection, desertification control and prevention of soil erosion and flooding', they also emphasized the social role: 'forest represents a rich source of medicinal and edible herbs and perfume.' In addition, they estimated the forest value (e.g. direct and indirect uses) in the Syrian environmental services, which provides direct services as 7.6 million Euros and indirect services as 45.1 million Euros (Figure 4.2) (Merlo and Croitoru, 2005). These values were

based on the cost avoided methods (e.g. 'the magnitude of water protection function is proportionate to the costs of floods, erosion and other impacts avoided by the existence of forest cover' (Merlo and Croitoru, 2005: 188)).

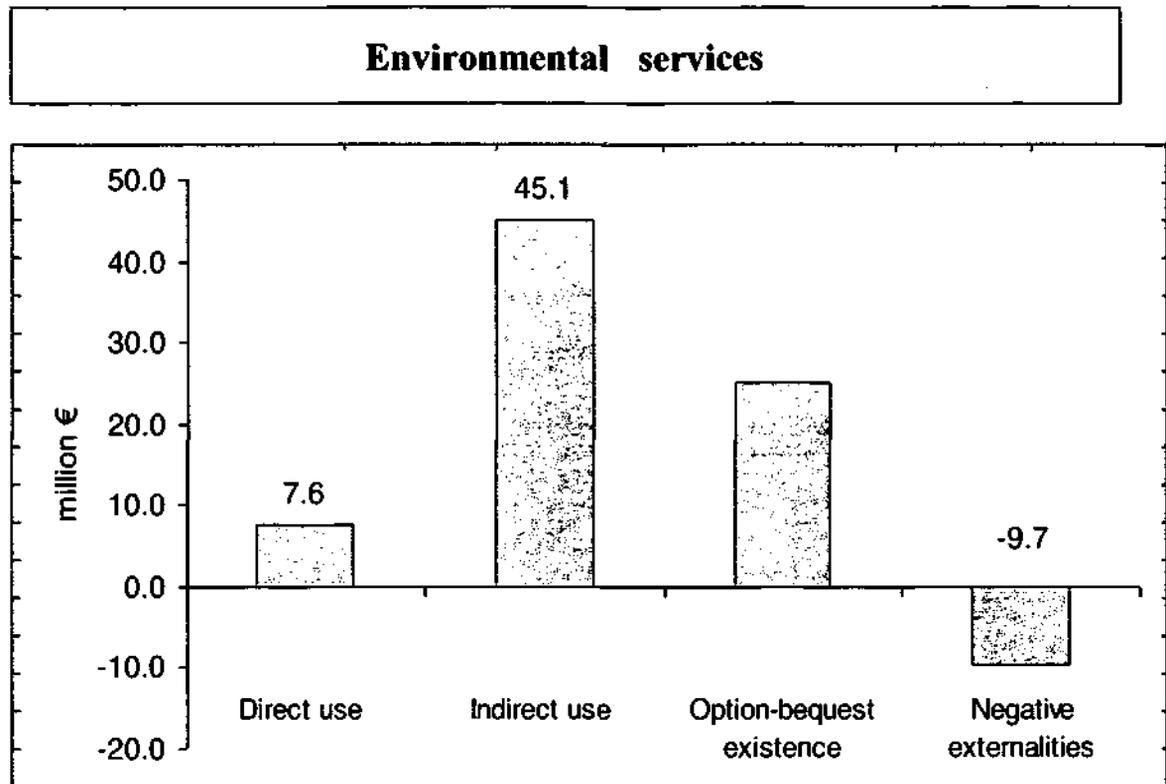


Figure 4.2: Forest contribution to environmental services (Source: Nahal and Zahoueh, 2005)

Figure 4.2 shows that the importance of the forest sector in protecting catchments (e.g. indirect use) is over six times more than the value of its wood and non-wood products (e.g. direct use). It is clear that the forest area plays a vital role in environmental functions with especial regard to protecting catchments in the coastal area in Syria (Darwish; 2004). Figure 4.2 also shows that there are no reliable data on the 'option-bequest existence'. Merlo and Croitoru (2005: 17-18) defined both the bequest value and the existence value of forest land. Bequest value refers to 'the value on conservation of particular forest feature for future

generation' (i.e. conservation forest land for recreation purposes. Existence value refers to 'the knowledge of the existence of a particular forest characteristics', such as conservation-biodiversity. However, a recent study on conservation-biodiversity in Syria suggested that 5% of forest land in Syria is part of this strategy (Kasis, 2005). Nonetheless, forest areas, their structure and their production, are affected by negative externalities including fires (Merlo and Croitoru, 2005). Between 1996 and 2003, almost 2210 forest fires happened (i.e. an average of 276 fires per year) (see Figure 4.3). Recently, fire has affected 2004 hectares of the Brutia pine forests along the borders with Turkey and 20000 hectares of coastal forest, leading to soil erosion, which is estimated at 20 tonnes ha⁻¹ year⁻¹ in the coastal areas in Syria (Abido, 2005).

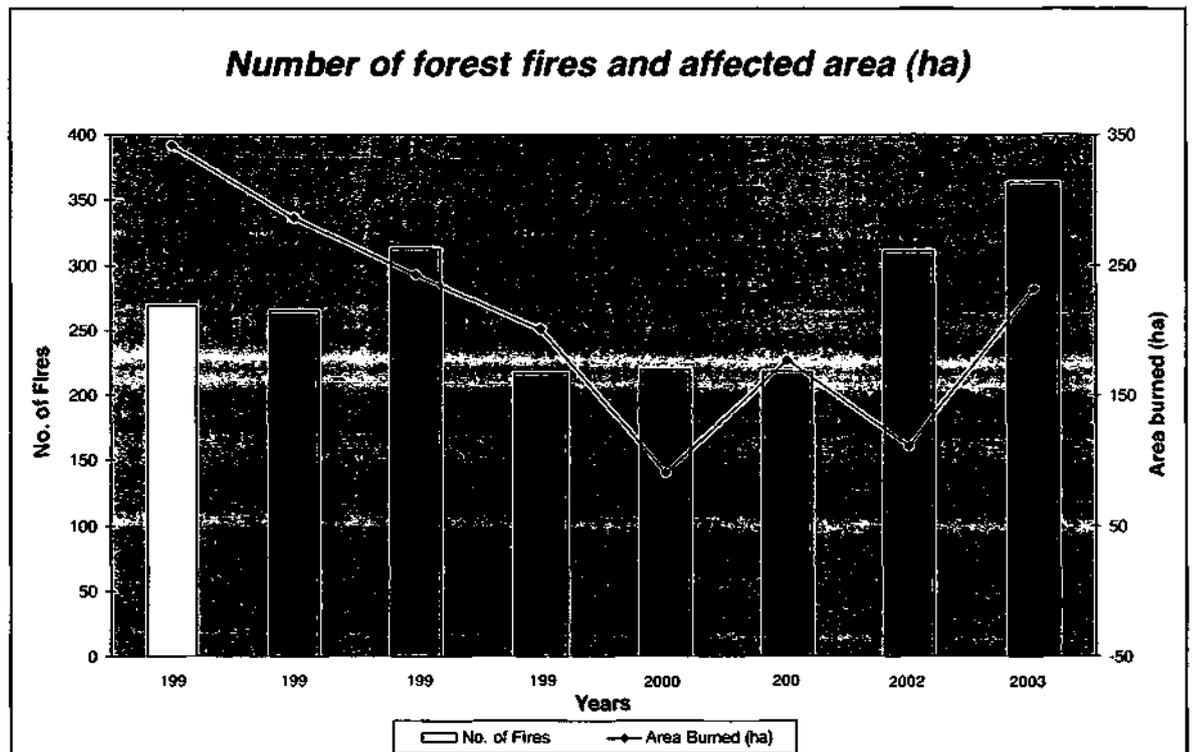


Figure 4.3: Number of forest fires and affected area (ha) (Source: Abido, 2005)

Darwish (2004) argued that human activities, biodiversity loss and aridity condition including water depletion are the main reason for increasing the number of fires upon forest areas in Syria. In this respect, fires, biodiversity loss and aridity condition could be the major environmental issues leading to forest degradation, which in turn can affect the formulation and implementation of SFM policy and practices in Syria.

4.2.2 Economic issues

This section focused on the major economic issues affecting the formulation and implementation of SFM policy and practices in Syria. The contribution of the forest sector to the national Gross Domestic Products (GDP) was estimated by the Global Forest Resources Assessment (FRA, 2005) at 0.01%, whereas the contribution of the agricultural sector was estimated at 25% of the total national GDP in Syria. A recent study has suggested that forestry provides work for 0.25% of the national labour force and contributes 0.01% to the total GDP (e.g. industrial wood, firewood and charcoal) (Central Bureau of Statistics, 2005). In other words, measured directly, forest production is not critical to the national policy strategy in Syria (Abido, 2005). On the other hand, agricultural production is fundamental for economic development in Syria, as it is the main source of income with especial regard to the labour-force. According to the National statistics of FAO (2005b), the agricultural sector occupied 30 % of the labour-force in Syria, whereas forestry occupied just 0.1% (Table 4.1). While the total area of agricultural land is 28% of the total land in Syria, the total area of forest land is only 3%, with especial regard to the high percentage of range-land (57%) of the total land in Syria. The low percentage of forest land in Syria could be explained by the increasing effects of

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some issues such as soil erosion, overgrazing, water depletion, deforestation, desertification, agriculture development and the encroachment of local communities upon forest resources (Abido, 2005; Munlahasan, 2005) (see Chapter 6 for more details).

Table 4.1: Key descriptive for the study area in Syria (Source: FRA 2005; Merlo & Croitoru, 2005; UNDP, 2007; UNDP, 2009)

The characteristics of the study area		Syria
Land area (1000 ha)		18378
Forest area (1000 ha)		484
Forest area (%)		2.5
Agriculture area (%)		28
Ownership of forests	State %	100
	Private %	-
	Other %	-
GDP %	Per capital	1.150
	Proportion from forestry and agriculture %	25
	Proportion from forestry⁴ %	0.01
Population	Rural %	49.8
	Urban %	50.2
	Total density (pop./km²)	96.8
	Total (1000)	21983
Poverty %		20
Education (illiteracy rate) %		19.2
Number of employees	Forestry (1000 person) & %	16 0.1%
	Agriculture %	30

Syria's government has focused on the expansion of afforestation programmes and a forest protection strategy in order to increase forest land cover and protect

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the remains of the forest area (Croitoru, 2007; Boulay, 2006). However, the Syrian government has focused more on increasing agricultural production than on forest products as a reflection of the national policy of the country, which focuses on the development of the agricultural sector in order to maintain food security. In the same vein, Syria is an independent county which demands development of the resources of the country in order to cover the basics of human needs (IFAD, 1994). This strategy could affect the formulation and implementation of SFM policy and practices in Syria because one of the main priorities is agriculture development.

In the absence of a real forest inventory and reliable data regarding forest resources, it is difficult to assess the role of the Syrian forests, in terms of market and non market goods and services to the economy. However, the last estimation of UNDP for forest production in Syria (2009) (Table 4.2) shows that the forest sector produces very modest volumes of wood, which are mainly used to satisfy small industrial and domestic needs: firewood and charcoal and other medicinal and aromatic plants, chestnuts and small fruits. The direct use value of forest products is estimated as €¹ 7,622,080 in 2005 (Central Bureau of Statistics, 2005).

¹ 68 SP = 1 Euro

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Table 4.2: Direct use value of forest resources in Syria (Forestry Report: The UNDP' estimation record of forest products, 2005)

Direct use values (2003)	Value (€)
Timber for industrial use	267960
Firewood	140950
Charcoal	3320
Medicinal and aromatic plants	1453800
Chestnuts, small fruits	14850
Net growth of standing timber stock	3147900
Other NWFPs	1973000
Honey	177000
Grazing	173300
Total	7622080

The national demand for forest products is mainly satisfied by timber imports, which consists of 30,000 tonnes/year of softwood lumber, 3,000 tonnes/year of hardwood (beech), and 3,000 tonnes/year of exotic wood. In addition, a certain amount of fuel-wood (2500 tonnes) and charcoal (100 tonnes) is imported, as well as paper pulp (Abido, 2005).

Referring to a recent preliminary study (Nahal and Zahoueh, 2005), the total indirect use values have been estimated at € 45,110,000 of which € 42,500,000 is due to watershed protection and € 2,610,000 is due to carbon storage. Given that the total negative externalities linked to forests (forest fires, overgrazing, overcutting of wood and medical plants, conversion to agriculture land and for construction purposes as well as encroachment by local communities) have been evaluated by the same study to € -9,960,000; the estimated total economic value (direct and indirect uses) of the Syrian forests as a whole is € 43,042,080, which represents 0.01 % of the GDP. In addition to these negative factors, it was noted

that the characteristics of local communities who live close to forest land areas such as in their education level, income, size of family and their occupations, have also affected forest land in general and forest resources in particular (General commission for remote sensing / engineering studies unit, 1991; Abido and Kabili, 1999; Abido, 2000). Therefore, it is important to discuss the characteristics of local communities and their influences on the use of forest resources in Syria.

4.2.3 Social and cultural issues

As mentioned in Chapter 2, the characteristics of communities (e.g. size of family, income levels and educational background, occupation, religion and the contribution of women in forestry practices) influence the formulation and implementation of SFM policies and practices in ASAZs (Rudel, 1994; Owubah *et al.*, 2001; Junnila *et al.*, 2006; Mogahed and Abdo, 2006; Zaru *et al.*, 2006). According to FAO (2005b), forest cover reduced from 32% to 3% (484000 ha) of Syria's total area between the period of 1900 and 2000. The degradation of the forest area, during this period, was related to population growth, poverty, agricultural purposes, overgrazing, over-cutting for wood fuel, medical plants, roots and charcoal, fires and lack of management (Nahal and Zahoueh, 2005 cited in Merlo and Croitoru, 2005).

As highlighted in Table 4.1, the high population density (e.g. 96.8 people km⁻² in Syria has put a pressure on the natural resources and there has been a large migration to the largest rural areas in Syria such as Lattakia, resulting in forest degradation (UNDP, 2007). Table 4.1 also shows that the rural area in Syria was occupied by 49.8 % of the total population in 2005. Subsequently, rural settlements have been increased in Syria and forest land areas have suffered from

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the growth of rural settlements. This explains why Syrian forest land has converted to agriculture land and houses. In addition to the depletion of natural resources for housing and agriculture development and as a result of growing demand for new roads (infrastructure), the forest areas have been seriously degraded in Syria (Munlahasan, 2005). On the other hand, the pressure of an increasing population combined with the depletion of forest resources, leads people to demand more and more of the forest resources (for medical plants, roots, seeds, fruits, wood, branches and firewood) (Pala *et al.*, 2004; Munlahasan, 2005; Bou Habib, 2006). In other words, there has been a negative relationship between the population growth rate in rural areas and the state of forest land in Syria. Nonetheless, there are other issues related to local communities that affect the state of Syrian forest land.

Education is identified as the top priority in the national development of Syria (UNDP, 2007). The Ministry of Education has the largest budget of any ministry with an allocation of over 22% of the national budget. According to the estimation of UNDP (2007), the illiteracy rate accounted for 19.2% of the total population in Syria (see Table 4.1). It is important to mention that as the education level rises in Syria, the ability to acknowledge the importance of forest resources increases. However, educated communities suffering from financial problems may put pressure on the forest resources in order to obtain their needs, especially if they do not have a job (Munlahasan, 2005) (see chapter 7). Increasing the numbers of employees can be used to develop the current status of householders' education levels and income levels, and any improvements in householders' education and income levels could be reflected in their attitude and behaviour towards forest resources (Durusoy *et al.*, 2005). Therefore, education and income levels in Syria

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have put pressure on forest resources (the UNDP' report of communities' survey in Syria, 2007) and as consequence, this pressure could be one of the main constraints affecting the availability of forest resources in Syria (see chapter 7 for more details).

Against the role of education and income level, Chapter 2 also explained that Islam is the predominant religion in Syria. Mogahed and Abdo (2006) argued that the Islamic rules in Arab countries have restricted the women's access to natural resources. A majority of Syrians (74 percent) are Sunni Muslim. The country is also home to other Muslim groups and Christians (about 10 percent), as well as the Alawites (12 percent of the population) who dominate the Ba'ath Party and the security branches of the government (Assaad & Arntz, 2005). While the Syrian constitution has always required that the president of Syria has to be a Muslim, Syria has no official religion. The majority of women in Arab countries have worked as housewives and they have been restricted to involvement in the society in accordance with the Islamic faith, which does not allow any Muslim women to work with any men without the permission of their husband. There is a general tendency in some rural areas in Syria for girls or women to leave school at a younger age to support their families financially and as reflection of the dominance of the Islamic religion in Syria. The Islamic religion in some rural areas in Syria (e.g. in Hamah) has still restricted the role of women in society (El-Safty, 2004). On the other hand, women in other rural areas have started to be involved in the society and workplace in general and in forest management practice in particular, (e.g. women's role in the Forest Protection Project in Al Foronloq) but lower levels of education and poverty levels and increasing the size of the family may further

affect women's participation in forest management (Pearl, 2003; Assaad & Arntz, 2005) (see Chapter 8 for more details).

Section 4.2 has explained the major EESC issues (first component of the SFM model) that affect the formulation and implementation of SFM policy and practices in Syria. The next section will discuss the forestry characteristics in Syria as the second component of the SFM model.

4.3 Forestry characteristics

4.3.1 Forestry in Syria

According to the latest forest legislation in Syria (2007; pp3-4), 'forest land is a community of resources occupied in an area of land formally registered as forest land or rangeland or agroforestry land, where tree species are the essential element in addition to fruit trees, shrubs, grass, creeping and climbing plants, herbs and medicine plants, roots, fungi, bacteria, animals and birds.' Note that in the past (e.g. Forest Legislation, 1994), forest land also included olive trees. However, olive trees were excluded from the recent forest legislation as they are included in agricultural legislation. Forestry is defined as 'the processes of plantation, protection, rehabilitation, production, forest investment, forest regulation including trees height, size and ages, cutting wood, clearing, grazing, fire management, watershed management and recreation, taking into consideration the role of environmental and economic, social factors in forestry practices in general and in achieving sustainable forest management in particular' (Forest Legislation, 2007: p 4).

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As mentioned in Chapter 2, dry zone forests are the most unstable ecosystems among the forest types of the world. The rate of forest degradation in ASAZs has emerged in global action to protect forest areas and conserve biodiversity, as well as to mitigate climate change. As this study focuses on the investigation of the role of government and community in the formulation and implementation of SFM policy and practices in Syria, it is, therefore, important to investigate how government or community respond to the changes in the state of forest land in Syria with especial regard to forest plantation and protection, and the types of forest land in the context of the SFM model applied in this study. As mentioned earlier in this chapter, forestry is an unimportant sector in the Syrian economy compared with the agriculture sector (as forest land covers only 3% of Syrian total land). For this reason, this study has to focus on the complexities affecting the formulation and implementation of SFM policy and practices and in particular, it must investigate the role of government and communities in forest management in Syria, instead of focusing on forest land itself.

The Syrian government has increased the area of forest plantation and protection especially upon rangelands and agricultural lands since 1994, resulting in an increase in forest land to 2.5% in 2005 (Boulay, 2006). This means that the progress in forest plantation and protection (see Table 4.3) could be fundamental to the formulation and implementation of SFM policy and practices.

Table 4.3: Forest and forestry characteristics in Syria (Source: FRA, 2005; Syrian National Forestry Statistics, 2005)

Country	Forest area (1990-2000)			Plantation	Protection
	1000ha	% of land area	Annual rate of change %	% of total forest area	% of total forest area
Syria	461	2.5	1.9	49.7	50.3

Table 4.3 shows that the annual increase of forest areas in Syria was 1.9% between 1990 and 2000. Over 49% of the total forest area in Syria has the potential of being developed for forest plantation (e.g. mainly upon rangelands and agricultural lands) and 50.3% for forest protection (FRA, 2005). Afforestation on rangelands and agricultural lands (agroforestry) is one of the main strategies of the forestry department in Syria, and is a key measure in rehabilitating and restoring rangeland ecosystems and protecting agricultural land from wind erosion. The establishment of forests upon rangelands accounts for 26% of the total plantation areas whereas forests upon agricultural land account for just 10% of the total (Darwish, 2005).

Forest plantation and protection have been considered as the main objectives of forest policy in Syria, in order to reduce pressure on fodder and fuel, increase rural income, prevent soil erosion, protect infrastructure from wind erosion and combat desertification and forest degradation (Darwish *et al.*, 2007). The main reason for increasing the area of protected and plantations is related to improving the ecological condition at the national, regional and local levels, as well as to develop local income (Croitoru, 2006). In this context, it is, therefore important to determine

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the main roles of forest plantation and protection as the main types of forestry practices in Syria.

Many researchers have recognised the importance of protected areas for conservation biodiversity (McNeely and Miller, 1984; MacKinnon *et al.*, 1986; Leader-Williams *et al.*, 1990; Peterken, 1996; Parviainen and Päivinen, 1998). Parviainen and Päivinen (1998), for example, emphasised the role of natural or semi-natural forests in conservation of biodiversity, as they provide a habitat for forest species. Peterken (1996) argued that ancient forest species are considered to be a 'keystone' in terms of nature conservation with especial regard to the combination of both forest quality and forest diversity. A protected area is defined by the IUCN World Commission (IUCN, 1994) as:

'An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means' (IUCN, 1994 cited in Green and Paine, 1997).

The IUCN definition of protected areas is rather more precise with respect to what is protected than that why is protected. In the context of the case study area, protected land is managed by the Syrian government for a wide variety of purposes (Darwish, 2005) which include:

- Improving scientific research,
- Maintenance of environmental services,
- Protection of endemic flora and fauna features,
- Tourism,
- Education.

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Syrian forest policy has been adopted with the development of plantation and protected areas, with the participation of local communities in forest management. This policy has passed three important stages since 1953 (Nahal and Zahoueh, 2005) as follows:

First Stage: Started in 1953, up to 1970, the total plantation area reached 2800 ha⁻¹ year⁻¹ only.

Second Stage: Started in 1970, up to 1984, the annual plan was for the afforested area to reach 12,000 ha⁻¹ year⁻¹ and produced 25 millions of saplings.

Third Stage: After 1984, when the annual area afforested reached 24,000 ha year⁻¹ and 30 million of saplings were produced annually. The total afforested area reached 229031 ha during the period from 1993 to 2005 (Table 4.4).

Table 4.4: Total afforested area in Syria since 1993 (Source: Syrian National Forestry Statistics, 2005)

Country	Forests area (ha) 1992/1993			Afforestation - ha per year		Total forest area (ha)
	Natural	Plantation	Total	1993/94	1999/2005	
Syria	232840	144688	377528	17076	67883	461871.3

Table 4.6 shows that the plantation area increased dramatically between 1993 and 2005, resulting from the hard efforts of the Syrian government to improve the state of their forests in order to achieve the forest policy objectives, which in turn played a key role in formulation and implementation of SFM policy and action (See Section 4.4 for more details). Before investigating this point as the third component

of SFM model (see Figure 1.1), a brief discussion on forest vegetation in Syria will be presented in the next section.

4.3.2 Forest vegetation in Syria

The purpose of this section is to describe the type of forest land in Syria, as a key element of the SFM model used in this study for analysing the main issues affecting the state of forest land and forestry practices.

Related to many geographical, physical, economic, social and historical factors, arid and semi-arid forest areas are characterized by different zone levels (Goodrich *et al.*, 2000). The Mediterranean region has a variety of geographical areas and many types of soil, rainfall averages and temperatures, resulting in a greater number of biodiversity places (Merlo and Croituru, 2005), which makes this region a unique geographical place to study. This was one of the main reasons for choosing Syria as a case study area.

According to Quezel (1976), the Mediterranean forest area (MF) is categorized by four vegetation classes:

1. Conifer forests of pines (Aleppo, Brutia, juniper, etc),
2. Ever-green oaks (holm, cork, etc.),
3. Deciduous oak forests (species including: oak, ash, cedar, etc.),
4. Mountain forests of cedar, black pine and beech.

In the context of the study area, Nahal (1981) classified Syrian forest vegetation regarding the differences of geographic and climatic conditions as follows:

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1. The coastal mountains (Alaouites Mountains): It consists of two parts which are remarkably varied with especial regard to the variety of rainfall:

➤ **The western part** is divided into five categories related to altitude:

- 0-200 m: It includes: *Ceratonia siliqua*, *Pistacia lentiscus* zone,
- 200-750 m: it includes *Quercus Calliprinos* and *Pistacia palaestina* zone.
- 750-850 m: it includes *Quercus infectoria* zone.
- 850-1200 m: it includes *Quercus cerris* zone
- 1200-1570 m: it includes *Abies cilicia* zone

➤ **The eastern part** is divided into four categories:

- 300-900 m: It includes *Quercus calliprinos* and *Pinus palaestina* zone.
- 900-1000 m: it includes *Quercus infectoria* zone.
- 1000-1300 m: it includes *Quercus cerris* zone.
- 1300-1570 m: it includes *Ceratonia libani* zone.

2. The Baer and Basit Mountains: are divided into three categories:

- 0-100 m: it includes *Ceratonia siliqua* and *Pinus lentiscus* zone.
- 100-400 m: it includes *Pinus brutia* and *Quercus calliprinos* zone.
- 400-900 m: it includes *Quercus cerris* zone.

3. Aleppo Mountain (Kurds Mountain): it is divided into three categories as well:

- 400-900 m: it includes *Quercus calliprinos* zone.
- 900-1050 m: it includes *Quercus infectoria* zone.
- 1050-1200 m: it includes *Quercus cerris* zone.

4. Hermon Mountain: it should be noted that the vegetation in this mountain is mostly degraded due to the effects of overgrazing and desertification. It is divided into five categories:

- Less than 800 m: it includes fruit trees.

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- 800-1200 m: it includes *Crataegus azorolus* and *Poterium spinosum* zone.
- 1200-1600 m: it includes broadleaf forest zone with *Quercus calliprinos*, *Q. Infectoria*, *Pyrus syrica* and *Amygdalus orientalis*.
- 1600-2000 m: it includes *Juniperus exelsa* zone.
- 2000-2500 m: it includes *Ferula hermonis* and *Astragalus hermoneum* zone which is almost degraded.

5. Al-Arab Mountain (Druzes Mountain): it is divided into three categories:

- 850-1050 m: *Pinus atlantica* zone.
- 1050-1400 m: *Q. Calliprinos* zone.
- 1400-1700 m: it includes *Q. Infectoria*, *Q. Look* and *Q. Cerris* zone.

With especial regard to the diversity of forest vegetation in Syria, the most important species is oak, which accounts for 59% of the total forest species (Figure 4.4).

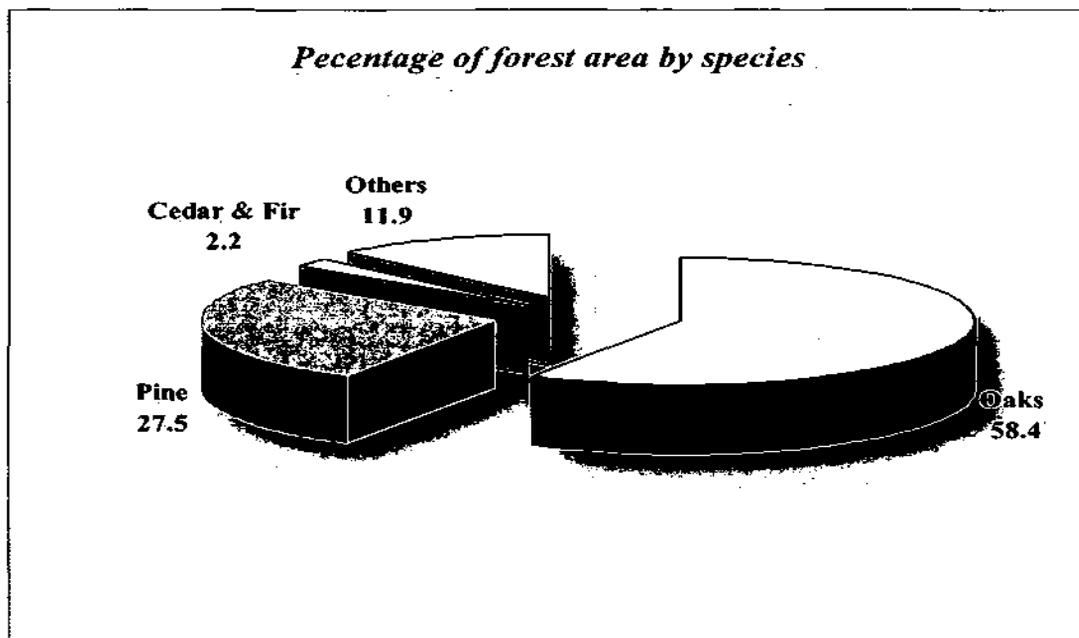


Figure 4.4: The percentage of wood species in Syria (Source: the Ministry of Agriculture, 2005).

Figure 4.4 shows that Syrian forest lands are composed of broadleaf (58.4%) and conifers (27.5%) and the rest as associated with Cedar and Fir species and others. While broadleaf species include *Quercus calliprinos*, *Q. cerris*, *Q. pseudocerris*, *Q. infectoria*, *Castanea sativa*, and *Platanus orientalis*, coniferous tree species include *Pinus brutia*, *Pinus halepensis*, *Abies cilicia*, *Cedrus libani*, *Cupressus sempervirens*, *Juniperus excelsa* and others (Abido, 2005).

Syrian forests represent an important source for rural people's livelihoods and they are recognized as having good potential for grazing, tourism and recreation. They play a significant role in the protection of watershed, prevention of soil erosion and flooding, carbon sequestration, biodiversity conservation, landscape quality and desertification control (Abido, 2005). It was noted that the characteristics of local communities who live close to forest land areas such as in their education level, income, size of family and their occupations, have also influenced forest land in general and forest resources in particular (General commission for remote sensing / engineering studies unit 1991; Abido and Kabili, 1999; Abido, 2000). Therefore, it is important to investigate the relationships between local communities and their influences on the use of forest resources in Syria – bottom-up action (see chapter 7), and to determine how Syria's government responds and feeds back to such influence – top-down action (see Chapter 6). It is equally important to investigate how government, NGOs, administration, institutions, external bodies and communities in such a centralized country as Syria formulate and implement SFM policy and practices; also, who has the responsibility to manage forest areas, and what they deliver from implementation and formulation of SFM policy and action in the study areas. The following sections will discuss and explain the role political

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issues including forest policy, administration and ownerships as issues affecting the formulation and implementation of SFM policy and practices, and also explain the main change of forest policy as a respond to formulate and implement SFM policy and practices

4.4 The political issues

As mentioned in Chapter 2, forest policy, as the third component of the SFM model, is one of political issues affecting the formulation and implementation of SFM policy and practice in ASAZs (Panyotou and Sungsuwan, 1994; Schanz, 1998; Hellström, 2001; Egestad, 2002; Roos, 2002; Andersson *et al.*, 2005; Merlo & Croitoru, 2005; Sheppard *et al.*, 2005; Patosarri; 2007; El Lakany, 2008; Lazdinis *et al.*, 2009).

Forest policy in Syria means a declaration of a general statement of overall planning and programming goals. The statement of policy in that country has considered the need to conserve and develop forest resources, with especial regard to the accumulation of experience and the gradual strengthening of the institutions necessary for the implementation of policy (FAO 1990). However, two issues have dominated the formulation of forest policies in Syria. The first one is the general aridity of the region and the recognition of the beneficial effects of forest on climate change, water depletion and soil and wind erosion. The second one is the scarcity of forest resources (biodiversity loss) related to the overexploitation and the current pressure of population in the mountainous areas. This explains why Syria carries out the sort of forestry programmes which

emphasize forest protection and afforestation. The investigation of these key issues will be presented in Chapters 6 and 7.

Compared with other countries in ASAZs where a democratic political system is dominant, the practical application of forest policy in Syria has been affected by the centralized political system. By bringing government decision-making closer to local community, democratic countries attempt to achieve the central aspirations of forest governance. In other words, the grassroots have the right to participate in the forest management process. In this case, the role of external groups in facilitating the interrelationship between the power of government and the grassroots is extremely important to formulate and implement SFM policies and practices (Agrawal and Ostrom, 1999 cited in Merlo and Croitoru, 2005). In the context of the case study area, Syria has kept the state of forest land under the control of the government. Merlo and Croitoru (2005) argued that the interaction between the structure of forest ownership, institutional problems and the weaknesses of forest administration makes forest management in centralized countries such as in Syria more complex than in the democratic countries. In the context of the SFM model, it is important to understand the interaction between administrations and institution of forest policy in order to investigate the role of government and communities in forest management in Syria.

4.4.1 Forest ownership, administration and management

Generally, most forest lands in ASAZs are entirely owned by the state (Merlo and Croitoru, 2005). In the context of the case study area, the entire forest land is owned by the state of Syria. Unsurprisingly, the state in such a centralized country continues to be the main actor that fulfils both formulation and implementation

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rules of forestry (Figure 4.5). However, state ownership has been considered to be one of the most secure tools to ensure that forest management makes a real contribution to maintain forest lands (Darwish, 2004). Recently, the role of private forestry has been officially acknowledged in Syria (Nahal and Zahoueh, 2005). For example, interested groups have been involved in forest plantation and seedlings, which are distributed to them by the forestry department free of charge in an attempt to improve forest plantation (GEF, 2009). However, such groups have been obstructed by a number of legal constraints including financial, political and from the centralization of decision-makers (Abido, 2005).

In order to look more closely at the operation of forestry at the national, regional and local levels in the study area, it is essential to analyse the institutional setting within which it operates at the national and regional levels as well as the cultural context within which householders live and work at the local level (i.e. the formal and informal power structures which govern forestry).

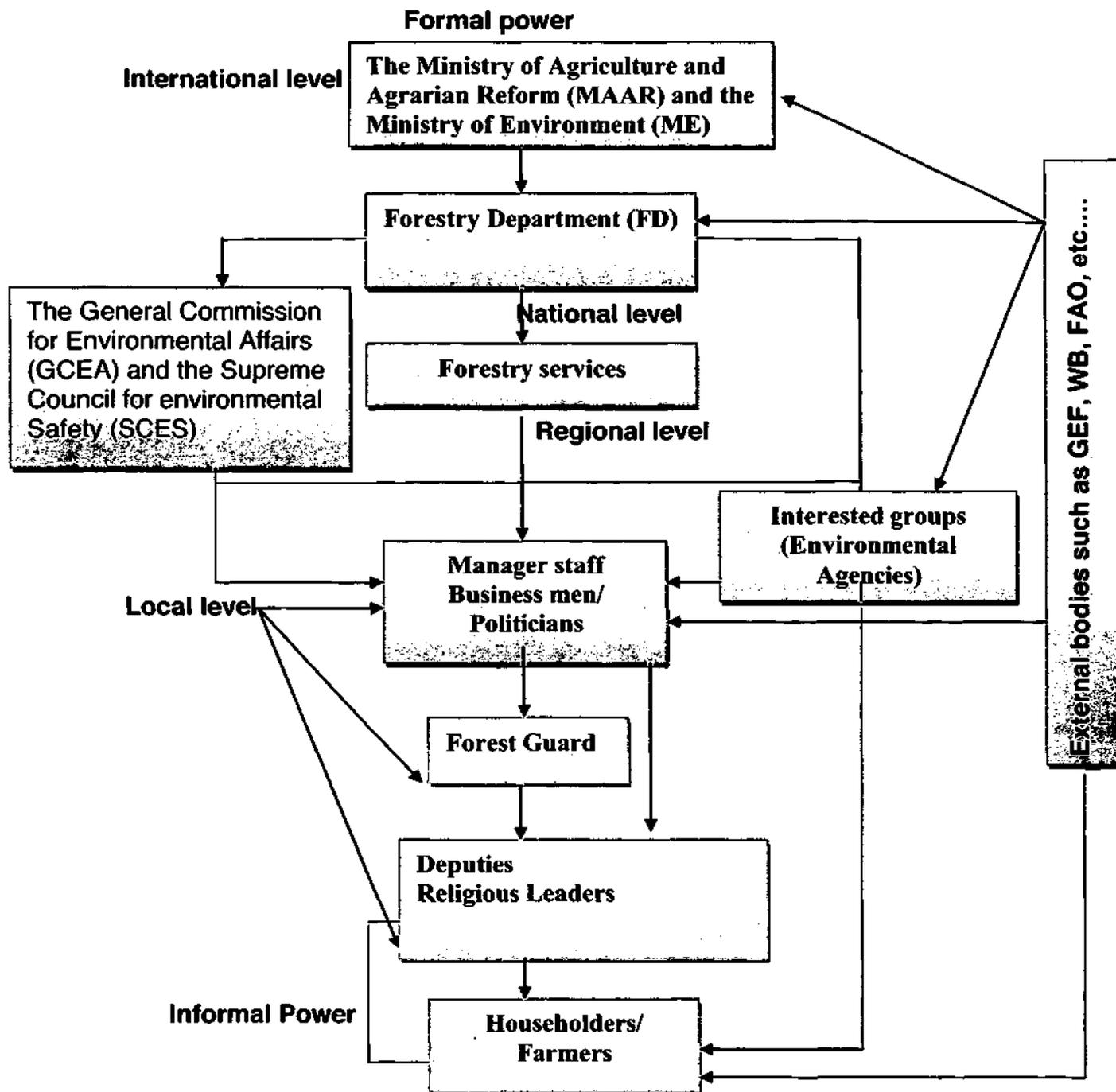


Figure 4.5: The hierarchical structure of institutions controlling forestry in Syria (Source: Author adapted from Darwish, 2005; GEF, 2009)

As Figure 4.5 highlights at the top of the formal institution operating forestry at the national level is the Forestry Department, which plays a significant role in forest

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policy. The department's role is to manage forest areas, protect forest land, conserve biodiversity, establish plantation areas and distribute forestry activities at the national, regional and local levels. Responsibility for the formulation of forest policy lies with the MAAR and ME, which assess the engagement of the forestry sector and the environmental sector at the international level. Unsurprisingly, the MAAR and the ME are the 'top decision-makers' for the forestry sector because of their dominant role. Forestry services, the General Commission for Environmental Affairs (GCEA) and the Supreme Council for environmental Safety (SCES) have the responsibility for any action related to forestry and environmental problems at the regional level. In addition, interested groups such as the environmental agency (NGO) help in such action, such as finding the donors who are interested in the development of forestry and the improvement of the Environmental issues. At the local level, control over forestry activities falls to the manager, who is responsible for maintaining the forestry practices with especial regard to such help as is obtained from the religious leaders, forest guards and local communities. There is also official cooperation with the manager of forest land in the areas at the local level by making proposals related to the environmental issues in the areas. However, Religious Leaders, householders and farmers' responsibility is limited to maintenance of such activities as donation and clearing forest areas (Darwish, 2005). Householders' cooperation in clearing and maintaining forest protection is one of the fundamental characteristics of householders' behaviour in the study areas; decision-making about how to be involved in forestry activities is usually agreed between forest managers and forest guards to ensure that everyone can help in such activities.

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Syria is administratively divided into 14 governorates or “mohafazas.” Each “mohafaza” is generally divided into “mantika”, each “mantika” is divided into “nahia” and each “nahia” is divided into villages. In each ‘mohafaza’, there is a vein of forest department, ‘forestry services’ which has the responsibility of managing forest land at the regional level. In each village, there is an administration office which has the responsibility of managing forest land at the local level (Darwish, 2005). Syrian’s government has engaged different organisations to manage forest areas including,(Records from Forestry Department, 2007):

1. The Directorate of Forests and Afforestation has responsibility for reforestation, establishment of state forests and state forest protection zones. It has established a significant area of protected forest and by 1980 had undertaken extensive reforestation work in an area covering some 60000 hectares.
2. The Ministry of Agriculture and Agrarian Reform has responsibility for Plant Genetic Resources, which was started in 1980s. There are 15 field gene banks containing nearly 700 different cultivars of fruit trees.
3. The Centre for Forestry Genetic Resources was established in Lattakia in the north western part of the country in 1995. Its objectives are: Collection, Documentation, Conservation, Propagation and the use of forest genetic resources in afforestation, green belts and agricultural development.
4. The Department of Minor Forest Products has responsibility for the management and use of some plants collected in the forest and sold by the villagers. The initiatives of the Department were made especially with regard to trees and shrubs that were propagated in the forestry nurseries, without any considerations regarding genetic resources.

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5. The National Biodiversity Unit (NBU) was established in 1994. The NBU has a databank of different components of biodiversity in Syria which covers geographic information compiled from available national bibliographies.
6. The Arab Centre for the Studies of Arid Zones and Dry Lands (ACSAD) is an intergovernmental organisation, established in 1971 in Damascus, Syria. The main objectives for this organisation include regional research programmes and studies related to natural resources in arid lands such as water, soil, plants and animal production, as well as the training of Arab scientists, exchange of knowledge and experience among Arab States, cooperation with other Arab and International Organisations.

The Syrian government's current Development Plan (2005 - 2010) and their future vision for 2010 - 2025, aims to develop the country's economy and society to meet the needs of the 21st century in terms of the requirements of changing economic and environmental characteristics and the pressures of international political regimes (UNDP, 2009). This plan consolidates the major elements of a number of objectives, including strategies for economic and administrative issues, productive sectors, infrastructure, promoting exports, investment, industry and a new social policy for poverty alleviation and community participation. It should be mentioned that the centrality of power in forestry sector has focused on the principle of Syrian government' mission regarding the priority of environmental issues (e.g. conservation policy) and the needs for people participation and partnerships between the public sector, NGOs, and all actors in the civil society (UNDP, 2007).

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The FD of MAAR has already taken some steps towards the preparation of a national forest policy through the amendment of forest law, the development of administrative structure and the development of participatory approach. However, FD has very limited technical capacities for establishing the national forest resources (Nahal and Zahoueh, 2005). In other words, there is a great need for technical assistance and external support to achieve the expected objectives from the forestry sector for institutional changes and particularly for implementation of forest policy on the ground (see chapter 6 for more details).

There have been many changes in forest policy towards the objectives of Syria's government generally, and forest protection and plantation in particular. The next section will consider these changes as key elements in the political issues (the third component of the SFM model) and their effects on implementation forestry practices.

4.4.2 Forest Policy

A number of forest policies have been formulated plus associated laws and rules adopted by the Syrian government since the 1950s (Nahal and Zahoueh, 2005). In early 1953, the Syrian government formulated forestry rules and, as a result of this law, afforestation activities were begun where the total of 74000 tree seeds were planted in land areas of 16 ha (4625 tree seeds in 1 ha with 0.5 m tree distant). A second law was amended in 1962, 1969 and 1970 by decree number 86/1953. This law focused mainly on prohibitions, limitations and violation and which especially ignored the social dimensions. For example, this law excluded state forest policy, administration, inventory, management plans, private forestry,

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training extension and community participation. As a result of this law and the aridity in climate conditions, forest areas were decreased and lost their socio-economic and environmental characteristics (Abido, 2005; Nahal and Zahoueh, 2005). In particular, this law adversely affected local community as large numbers of people working in forestry were transferred to the agricultural sector (Abido, 2005; Darwish, 2005). In spite of this weakness, this law had some strengths regarding research in forest management. For example, forest research was catalysed and maps were established by the Hunting Commission at the end of 1961. These endeavours focused on the classification of *Pinus Brutia* in the coastal area in Syria (Abido, 2007). The Higher Commission for Afforestation (HCA) was established in 1977 as a reflection of the key role of the forest area in combating desertification and land degradation. The HCA aimed to increase afforested areas to cover 15% of the country (Abido, 2005).

New forest regulations were enacted in 1994 by the Ministry of Agriculture with especial consideration towards improving the community's rights in using forest resources. These rights include the use of dead wood, charcoal and grazing activities, except for goats and sheep. However, this law did not improve the previous constraints concerning forest policy, social forestry, community participation, private forestry, training, extension of forest land and environmental functions (Nahal and Zahoued, 2005). At the same time, new environment legislation was adopted in 1994 to protect the natural resources including flora, fauna, soil and water. Nahal and Zahoueh (2005: 185) emphasised the importance of this law in ensuring the environmental balance and conservation biodiversity: 'it empowers competent authorities to issue standards, specifications and regulations for the sites of protected areas in order to ensure environmental balance and the

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conservation of living organisms.' As a result of this law, two bodies of the General Commission for Environmental Affairs (GCEA) and the Supreme Council for environmental Safety (SCES) were established in 2001, taking into account the importance of environmental factors and forestry practices. The main outcomes were:

- Preparation of environmental plans and law
- Assessment of environmental problems
- Prevention and control of ecologically harmful activities
- Promotion of environmental public awareness
- Adopting environmental policies
- Prohibiting any environmentally damaging activities
- Protecting forest areas

These two bodies improved the amount of protected forest areas, resulting in increasing the protected areas to reach 166121 hectares in 2005 (e.g. 35% of the total natural and artificial forests area in Syria), and establishing a new forest policy (Abido, 2005). The Ministry of Agriculture and the HCA, with especial help from the GCEA and the SCEC groups, formulated new forest policy and the main implications were (Darwish, 2004):

- Forest law in 1953 was revised to include the environmental function.
- The management plan for major forest ecosystems was established.
- Forest ecosystems were protected from fires.
- The afforested area was increased.
- Forest tree seedlings were distributed to farmers at a nominal price.

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- Extensive university education and forestry training programmes were launched.

These rules, especially those involving the revision of forest law, management plan, plantation strategy, education and training, had a positive impact on the forestry sector and as chapter 6 will discuss in detail, they were key drivers in increasing the area of plantations and improving the levels of forest protection, resulting in an increase of afforested areas of about 24000 ha in 1996 (Abido, 2005). However, the role of communities was ignored.

In 2007, a new law of forest policy was issued by the President of Syria. These rules considered the association of environmental, economic and social factors, SFM policy and practice, and encouraged local communities to contribute to forest management action (UNDP, 2009). The main implications were:

- Forestry practices were carried at different level (with main concerned on the forest protection and plantation) with priority of the environmental perspectives. .
- Forest law was enforced (regulation, rules, legislation).
- Conservation biodiversity was initiated in three local areas.
- Forestry institutions were established (at the national, regional and local level).
- Institutional capacity was built with helps from international bodies.
- Legislation was revised and updated to cover the needs for sustaining forest land.
- Strategic planning was employed focusing on the cooperation between different institutions of different sectors.
- Participatory approach was employed.

These regulations, especially those increasing the protected forest areas and afforestation areas, conservation biodiversity and participatory approach, have a

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positive impact on the formulation and implementation of SFM policy and practices in Syria, as chapter 6 will discuss in detail. They have improved the value of social factors resulting in the employment of more people in forest management action managing (Forest Legislation, 2007). As a result of this law, the Ministry of Agricultural and Agrarian Regions (MAAR) and the Ministry of the Environment (ME) have initiated a protectorate programme concerning rehabilitation, reforestation and protection purposes of forest areas and rangelands, as well as the role of local community in forest management action (Darwish *et al.*, 2007). It should be noted that the new legislation has not mentioned about the alternative sources of income which should be provided to meet daily needs. This is the weaknesses of the new rules and should be recommended to achieve the SFM in Syria (see Chapter 9).

One of the key reasons for changing forest policy rules and regulations in Syria was that the country does not have a large area of forest and consequently maintaining this national treasure was seen to be a duty required by the public interest in achieving environmental, economic and social perspectives of the forestry sector. The second key reason in changing forestry regulations was related to the co-operation between national and international organisations for conservation biodiversity and forest protection purposes in Syria (GEF, 2007). One of the good examples of this co-operation was started in 2005 by the United Nation Development Programme (UNDP) and the national government in Syria to conserve biodiversity. In general, the implementation of the project of conservation biodiversity has been designed and implemented under a short term strategy in order to put theory and policy into action (UNDP, 2007; see Chapter 6 for more details). The third reason could be related to the involvement of the Syrian Arab

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Republic in a number of national and international agreements and legal obligations. These agreements are defined as below (UNDP, 2009):

1. Preparation of the National Country Study on Biodiversity in 1998,
2. Preparation of the National Biodiversity Strategy and Action Plan, which was approved by the Syrian Supreme Council for Environment Protection in 13th of May 2002,
3. Preparation of the Strategy and Action Plan for Marine Biodiversity,
4. Preparation of Protected Area Conditions in Syria based on the IUCN and International criteria for protected areas, taking into consideration the national needs and legislation,
5. Developing the first, second and third National Reports related to the Biological Diversity Convention. Those reports were copied and sent to the Convention Secretariat in 2001, 2003 and 2006 respectively,
6. Syria signed and ratified most of the Conventions and Agreements related to conservation biodiversity such as: the Convention on the Conservation of Migratory Species of Wild Animals (CMS); the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the Convention on Wetlands (RAMSAR); the African-Eurasian Migratory Water-Birds Agreement (AEWA); the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS); and the Cartagena Protocol of Bio-safety,
7. Establishing three natural protected areas with especial financial support from the Global Environment Facility Organisation (GEF),
8. Updating legislation and laws related to forestry law,
9. Enacting Environmental Law No.50 that includes articles concerning protected areas and conservation biodiversity,

10. Enacting a project for Self Assessment of National Capacity Building Needs in order to implement the Global Environmental Conventions such as United Nations Convention on Biological Diversity (UNCBD); United Nations Convention to Combat Desertification (UNCCD) and the United Nations Convention on Climate Change (UNCCC).

Involving in such agreement has put pressures on Syrian government in terms of improving forestry sector. In this sense, changes in forest policy have led to some improvements in forestry action in Syria. Therefore, further details on forest policy changes regarding SFM policy and action will be discussed in the next section.

4.4.3 Change in forest policy

Section 4.4.2 presented a key description of the development of forest policies in Syria from early 1953 until 2007. The discussion highlighted the main changes of forest policies with regard to forestry practices, institutions, administration issues. A summary of changes in forest policy as a result of the combination of action of the MAAR, ME, HCA, GCEA, and SCES during the period 1953-2007 is presented in Table 4.5.

This section is written in order to evaluate the level of changes in forest policies that happened during the period 1953-2007, and to explain how these changes have affected the development of forestry in general and the formulation and implementation of SFM policy and practices in Syria. Shater (2009: 2) has argued

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Table 4.5: A summary of changes in forest policy as an action of the MAAR, ME, HCA, GCEA and SCES (Source: Darwish *et al.*, 2007)

<i>Date</i>	<i>Action deliver</i>
1953	<ol style="list-style-type: none"> 1. Definition of forest land. 2. Afforestation activities were initiated, where a total of 16 thousand hectares were planted with tree seedlings.
1962,1969 and 1970	<ol style="list-style-type: none"> 1. Prohibiting the traditional customary rights of forest users. 2. Limitation of forest management including research, training and equipment. 3. Preventing forest violation by introducing penalty rules on people who made an encroachment on forest resources. 4. Forest researches were significantly activated and forest drawings were established by the Hunting Commission in 1961.
1977	The Higher Commission for Afforestation (HCA) was established in 1977 regarding increasing afforestation areas to achieve 15 percent of the country. As a result, 45 thousand hectares were planted with tree seedlings.
1994	<ol style="list-style-type: none"> 1. Improving community's right in using forest resources such as guaranteeing free user rights to communities living in forest villages. These rights include the use of dead wood, charcoal and grazing activities, except for goats and sheep. 2. Environmental Protection was adopted in 1994 in order to protect natural resources including flora, fauna, soil and water.
2001	<ol style="list-style-type: none"> 1. Two bodies of the General Commission for Environmental Affairs (GCEA) and the Supreme Council for Environmental Safety (SCES) were established in 2001 concerning environmental factors and forest management. 2. Improving the amount of protected forest areas, resulting in increasing the protected areas to reach 166121 hectares in 2005. 3. Forest law of 1953 was revised to include the environmental function. 4. The management plan for forest ecosystems was established, including protection from fires. 5. Afforestation areas were increased to reach 229000 hectares. 6. Forest tree seedlings were distributed to farmers at a nominal price. 7. Extensive university education and forestry training programmes were launched.
2007	<ol style="list-style-type: none"> 1. Design and implementation of forest management plans oriented to an integrated and sustainable development of the forest resource, within the broader context of rural development. 2. Conservation of renewable natural resources (soil, water, natural vegetation), through integrated watershed management, sustainable forest management and combating desertification. 3. Conservation of plant and animal diversity and genetic resources, through rational forest management, establishment of protective areas, arboretums and tree seed orchards. 4. Protection of the forests against wild and criminal fires, pests

	<p>and other damages, through integrated and community based fire management.</p> <p>5. Support of the forest plantation policy, including the urban and rural plantations, particularly the protection plantations, for soil and water conservation, rehabilitation of degraded lands and protection of soils and orchards against winds.</p> <p>6. Support of the private and community forests, in accordance with the participatory approach concept in forest management, exploitation and protection.</p> <p>7. Setting-up of a geographical and ecological data system oriented to forestry development which will help in: forest classification, management system options, forest trees selection for plantations, weather prediction for forest fire management and control.</p> <p>8. Setting-up of monitoring and assessment systems, using modern technology, such as remote sensing in particular for forestry; renewable natural resources, biodiversity, combating desertification, climate change, etc and with neighbouring countries, because forest resource belongs to the whole world, which must be protected from degradation and developed in common.</p> <p>9. Support of institutions capacity, particularly the Forestry Department, with relation to its structure, capacity planning, staff competence and efficiency, extension potentiality, for better implementation of the forest policy, regarding sustainable management and development of the forest resources.</p> <p>10. Development of forestry research at the research centres and universities, in accordance with the forest policy, regarding sustainable management of the forest resource, for a continuous flow of multiple benefits that contribute directly to the well-being of people and to the achievement of overall rural development objectives.</p> <p>11. Improving the awareness of the public regarding the importance of forests and trees as a national natural resource and heritage, closely linked to the society and to each individual.</p> <p>12. Support and activation of relations with Arabs, Regional and International Organizations having interest in forestry, renewable natural resources, biodiversity, combating desertification, climate change etc., and with neighbouring countries.</p> <p>13. Revision of forest legislation in accordance with principles and objectives of forest policy, present position of the forest resources and the International Conventions dealing with sustainable forest development, which will support legally the implementation of the forest policy.</p>
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that Syrian government has the dominant role in formulation and implementation of SFM, and its strategy depends on progress in 'innovation and research'. Both of

Chapter 4: Forestry characteristics in Syria – Issues and Policy -

these factors depend on the development of forest policy and practices which are the responsibility of the government.

'Innovation progress' refers to develop projects designed for protection and plantation of forest areas. These projects contribute to increase both the protected forest areas and afforested areas, as well as to provide job for local communities. More than 229,000 ha were planted since 1953. At present, the large project at Abd Aziz Mountain aims to afforest more than 18,000 ha in the short-term and about 30,000 ha in the long-term. Similarly, an afforestation project in Abo Kbeis aims to increase such an area by about 23,000 ha. In addition, about 24,000 ha were planted in Al Foronloq. Moreover, 28 protected areas have been established in 13 governorates since 1994.

'Research progress' refers to improving the capacity of forest research in Syria:

- Improving knowledge about the importance of conservation biodiversity in forest ecosystem processes.
- Improving understanding of the role of forests in the environmental and social perspectives.
- Improving and supporting the forestry extension system.

These actions are important to develop the state of forest land in Syria, which in turn will have influences on the formulation and implementation of SFM policy and practices in Syria (see Chapter 5). It should be concluded that formulation and implementation forest policy and practices in Syria are under the responsibility of the government (top-down action), an issue will be investigated in Chapter 6.

4.5 Conclusion

This Chapter aims to attain the first objective of this thesis in outlining the principal characteristics of forests in Syria, and explaining the issues of forest degradation and the changes of forestry policies. It presented the EESC issues, the state of forestry and the political issues concerning the change of forest policy as a basis for the analysis in Chapter 6-8. The EESC issues were described in Section 4.2 in terms of the influence of aridity condition including water depletion, biodiversity loss and the occurrence of fires, the needs for wood and non-wood products, the encroachment by local communities, the role of women, education and income levels, on the state of forest land. A brief description of the types of forest land was outlined in Section 4.3: forest lands include forests, rangelands, agro-forestry, plantations and protection areas. The political issues were explained in Section 4.4 focusing on its role as issues affecting the forestry sector (Section 4.4.2) and as a feedback to develop the current strategy of forestry practices (Section 4.4.3) (further explanation will be given to the major EESCP issues and the state of forest land in Syria in Chapter 5).

The main discussion in this chapter has emphasized that Syrian forest lands have experienced major constraints with regard to the EESCP issues particularly in forest governance issues. The results obtained from the national reports and formal documentation for protected and planted forest lands, forest vegetation, forest changes areas, forest legislation and the engagement in international agreement, have shown ingress of agriculture land onto forest land, increasing the encroachment of local communities upon forest resources, and constraints in terms of forest administration, ownership and institution. The development and

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changes of forest policies especially in terms of forest protection and plantation have emphasize the dominant role of government in forest policy and practices.

This study has used the SFM model to organise and analyse the major constraints that affect the formulation and implementation of SFM policy and practices in Syria. Therefore, next chapter will discuss the application of the SFM model in this study with especial regards to the EESCP issues and their influences on the state of forest land in Syria.

Chapter 5: The application of the SFM framework

5.1 Introduction

The main aim of this study is to investigate the role of government and communities in forest management to gain a better understanding of SFM policy and practice in Syria (Section 1.4). Chapters 1 and 2 presented the SFM framework and justified the rationale for choosing the conceptual model to understand the interaction between, on the one hand, the government's formulation and implementation of SFM policy and, on the other, the communities' engagement and response to it. Chapter 3 identified the main methods which were adopted to facilitate an understanding of SFM policy and practices. This chapter will elucidate the framework which used in this study to organise and analysis the data and information obtained from primary sources (face-to-face interview, questionnaire survey, participant observation and secondary sources (e.g. census data, national report, Arabic forestry documentation), and synthesise the influences of the socio-economic and environmental issues (first component) and the political dimension (third component) on the state of forest land (second component).

5.2 The sub-components of the SFM framework in this study

This section aims to discuss the three components of the SFM framework in light of the complexities that affect the state of forest land in Syria (Table 5.1). The first component is related to the environmental, economic, social and cultural factors that influence the state of forest land (the second component). The political issues,

the third component, are represented by government, external bodies, interested groups and NGOs. Their impact may improve the state of forest land or lead to the degradation of forest resources. The interconnection between the three components of the SFM framework emphasizes the interaction and response of the factors and thereby facilitates the understanding of crucial issues and their influences on the state of forest and forestry (Ferlie *et al.*, 2003; Clark, 2007; Mahalingam *et al.*, 2007).

Table 5.1: Issues and indicators used in this study

	Sub-components issues	Indicators
<i>The first Component</i>	<i>Environmental Issues</i>	1. The need for water supply 2. Biodiversity 3. Soil erosion 4. fires
	<i>Economic Issues</i>	5. Wood and non-wood products 6. Overgrazing 7. Tourism including hunting and recreation
	<i>Social & cultural Issues</i>	8. Rural householders 9. Size of family 10. Education levels 11. Poverty level 12. Occupation 13. Women's contribution in forest management
<i>The second Component</i>	<i>State of forest land</i>	14. Area of forest land 15. Area of degraded forest land; 16. Area of forest plantation 17. Area of protected forest 18. Wood and non-wood products 19. Number of employed people in the forestry sector.
		20. Forest fire management adopted 21. Forestry advice: raising awareness

The third Component	Political issues	
		22. Co-operation between Syrian government and external bodies 23. Government financial policy change 24. local communities' attitudes and behaviour changes (individual) 25. Cooperation between administration, external bodies, NGOs, interested groups and institutions facilitating alternative source of wood-fuel 26. Skills and training courses 27. Forest policies (legislation; administrative; ownership; participatory approach) 28. Facilitating alternative source of wood-fuel 29. Research development and education development 30. Engagement of rural women in the decision-making process and in forestry practices

The 30 indicators in Table 5.1 were chosen from 65 indicators developed in 1998 by the FAO organisation for implementation SFM in the Near East region¹. The reason for choosing these indicators was partly academic related to the key drivers and partly pragmatic based on the availability of data and information. The SFM framework facilitates the way in which these indicators are organised. However, focusing on special indicators may lead to the researcher missing important information or data related to other indicators (Mendoza and Prabhu, 2003). This is one of the limitations of applying the SFM framework in this study which will be taken into account in the future study (Chapter 9).

¹ Near East Process Criteria and Number of Indicators (source: <http://www.fao.org/docrep/003/x6895e/x6895e05.htm>)

Component 1 of the SFM framework categorises in a way which includes the sub-components of the main social, cultural, environmental and economic issues and related indicators such as water depletion; biodiversity; soil erosion; fires; overgrazing; wood and non-wood products; recreation and tourism; rural householders; size of family; income level; educational level; gender roles and occupations.

Components 1 and 3 of the SFM framework will influence the 'state of forest land' (Component 2. State indicators used in the present study (Table 5.1) refer to the changes in the extent of forest land related to forestry practices (forest protection and plantation) as well as degradation. In this study, six state indicators have been identified: area of forest land including area of 'natural' forest and extent of plantations. Section 5.3 will discuss the state of forest land and the possible influences of EESCP issues.

Political indicators classified in Component 3 (Table 5.1) include: forest policy; existence of local expertise; knowledge and technologies; existence of administrative policy; NGOs and private sector; existence of research and development in terms of SFM; water supply system; social policies; forest advisers; settlement of newly protected forest area and the awareness levels. Political determinants will act in two ways. Firstly, they may be characterized as issues affecting the current and future state of forest land (Jeakins *et al.*, 2004). For example, they may impose afforestation programme in such areas where there are other issues related to local communities such as low income level which needs to be consider first as government' priority to protect forest resources from

any encroachments. Secondly, they may be acted in terms of providing solutions for the degradation forest land by, for example, increasing forest plantation and protection (Abido, 2005).

Overall, the SFM framework can be a useful model in analysing particular issues such as the influences of individual attitudes and behaviours on the forest resources and the role of government in solving the main constraints that received by the environmental; economic; social and cultural problems. Having described the application of the SFM framework in this study, the next section will discuss the interaction between the three sub-components (e.g. the EESC issues, the political issues and the state of forest land) of the SFM framework.

5.3 The relationships between the sub-components of the SFM framework

As stated before, the purpose of this study is to investigate the government intervention and communities involvement in forest management in Syria. In the context of the SFM framework, it is important to understand how the government acts and reacts to issues related to the EESCP constraints and what they deliver in terms of formulation and implementation SFM policy and practices (e.g. top-down actions). Firstly, the interaction between the political issues, environmental issues and the state of forest land will be presented in Section 5.3.1, describing the action received by Syrian government to solve the environmental constraints affecting the state of forest land (see Chapter 6 for more details investigation), as well as their intervention in terms of formulations and implementation SFM policy and practices. Sections 5.3.2 and 5.3.3 will continue with the same structure of

Section 5.3.1, and will focus on the interaction between the political factors, other issues (e.g. economic and social and cultural) and the state of forest land.

5.3.1 Environmental-political issues and the state of forest land

Figure 5.1 presents the three sub-components and key indicators used to study the environmental-political issues in this study. The need for water supply; biodiversity; soil erosion and fires represent the environmental issues which influence the state of forest land. The impact of high demand for water for household uses (e.g. water depletion and pollution); loss of biodiversity; increasing fires and soil erosion will affect the current and future state of forest land (e.g. endemic species will be depleted and replaced by other non-value species). The government represents the political actions who needs to provide an appropriate solution in order to identify the major constraints of environmental issues and their influences on the state of forest land, and subsequently to protect forest land and increase afforestation areas, as well as to provide alternative sources in order to reduce the depletion of forest resources and the consequent influences on the degradation of forest land (Figure 5.1). For example, government may provide new forest management guidelines in order to reduce the occurrence of forest fires. Raising the awareness of local communities, who live in or close to forest land, may be another action from government in order to reduce the encroachment upon forest resources; the use of water resources and overgrazing. The government interventions for reducing the depletion of water resources and the degradation of soil in some areas may obtain from increasing plantation and protection areas (Abido, 2005; Darwish *et al.*, 2007). It should be noted that co-operation between the Syrian government and external and internal bodies could be one of the other actions in terms of increasing training courses to raise the

awareness of local communities about the importance of protecting forest land (Section 6.2).

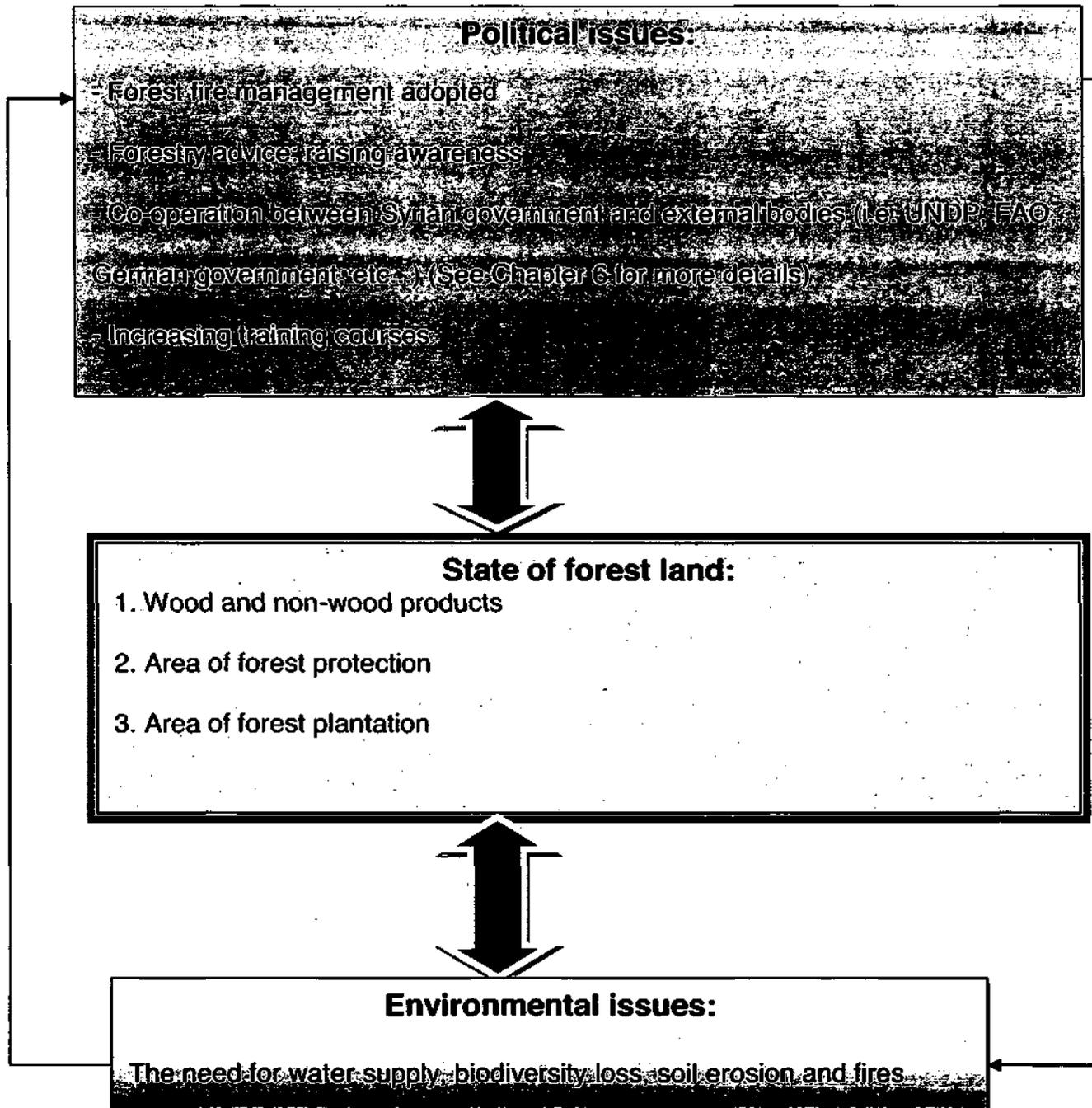


Figure 5.1: A conceptual SFM framework for environmental-political issues and state issues in the study areas (Source: author; after Rebugio and Camacho, 2003; Abido, 2005; Darwish, 2004, 2005).

5.3.2 Economic-political issues and the state of forest land

As shown in Figure 5.2, three indicators are identified to elucidate the economic-political issues that affect the state of forest land. The indicators are wood and non-wood products; overgrazing and ecotourism, including recreation.

The overuse of wood and non-wood products; the effects of overgrazing; the need for more facilities to develop tourism; the need for more places such as parks to enjoy forest environment, as the main constraints of the economic issues, will affect the current and future state of forest land in Syria (e.g. endangering of endemic species; the standing of forestry in the tourist sector as part of the national GDP; forest land degradation). For example, the overuse of non-wood products such as aromatic plants may lead to the depletion of these plants (biodiversity loss) in addition to the degradation of soil. Government may provide alternative source to protect these plants. Moreover, the government may tackle the problems received by the economic constraints such as overgrazing by providing new areas for grazing or providing alternative sources of wood fuel. Other actions can be achieved by improving the cooperation between administrations; external bodies; NGOs and institutions, as well as involving local communities in forest management practices (Figure 5.2).

In the context of the SFM framework, the interaction between these issues and the possible actions received by the Syrian government, and also inside each issue will explain the priorities of each issue in the formulation and implementation SFM policy and practices in Syria.

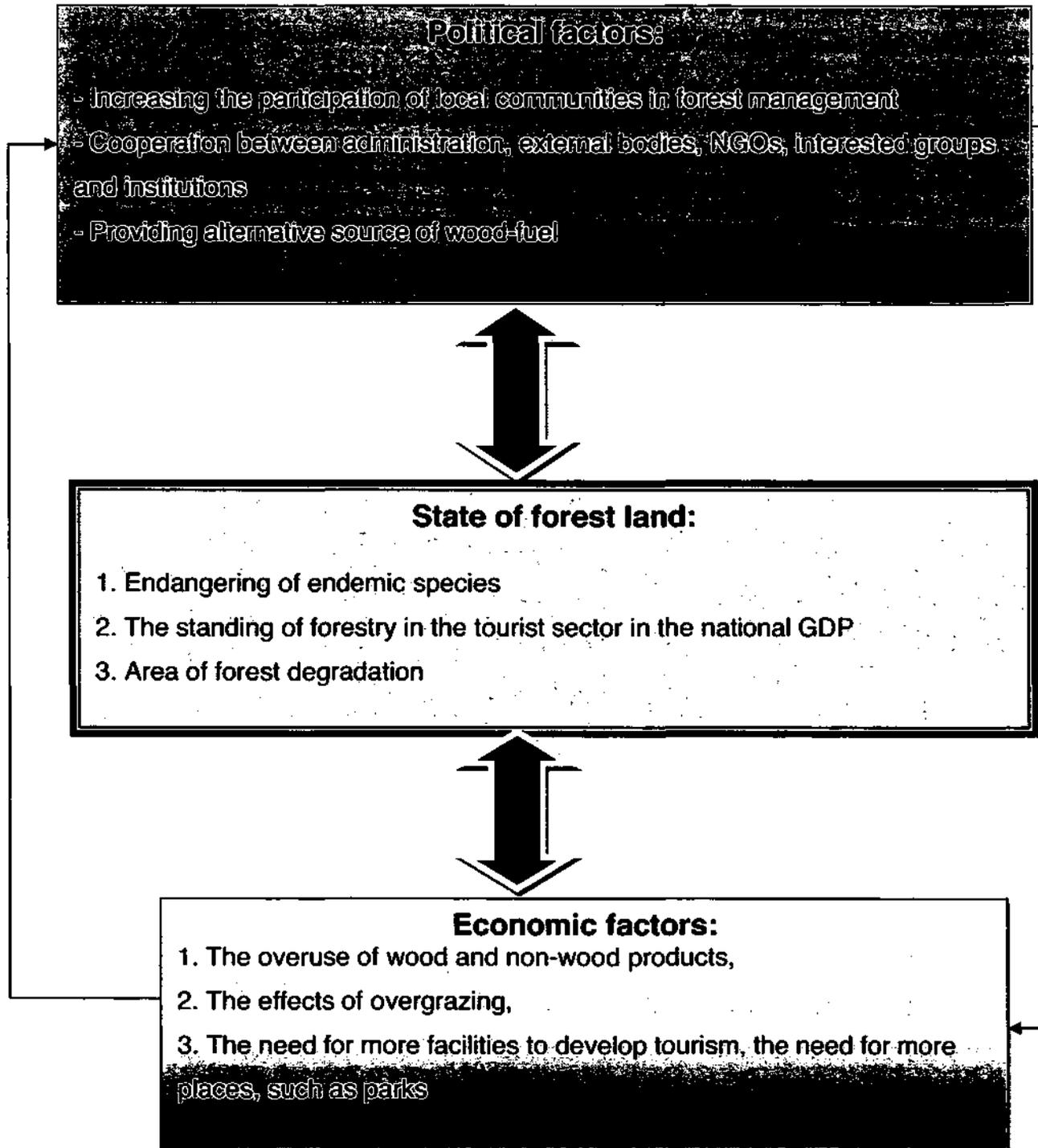


Figure 5.2: A conceptual SFM framework for economic-political factors in the study areas (Source: author; after Rebugio and Camacho, 2003; Abido, 2005; Darwish, 2004, 2005)

5.3.3 Social and cultural-political issues and the state of forest land

Six indicators were selected to explain the interaction between the social-cultural issues in the study areas (Figure 5.3: Chapters 7 and 8). They included factors such as size of family; education levels; occupation and rural women's contribution in forest management.

In the context of the SFM framework (Figure 5.3), the characteristics of individual (householder) as an issue which influences on the potential use of forest resources. Their influences will result in the overall reduction of forest land (forest degradation) and will change the current state of forest land (forest resource depletion and biodiversity loss and decrease in forest land). For example, income level may influence on the local communities' attitudes and behaviours which in turn may lead to put pressures on the forest resources (e.g. encroachment upon forest land). The government may follow different ways to solve the problems received by local communities. For example, the government may increase local income throughout raising employees' wages, reducing the prices for local products, providing local communities with all the facilities they need (alternative sources of wood-fuel) to reduce the influence of using forest resources.

The influences of the social and cultural issues on the state of forest land and consequences on forest policy and government' decisions could be reflected on the formulation and implementation of SFM policy and practices either directly by the major influences of local communities' use of forest resources, or indirectly from the contracts between the government and external bodies, in particular, where external bodies or international organisations may come with their

conditions which could lead to changes in the regulations of forestry policy and practices.

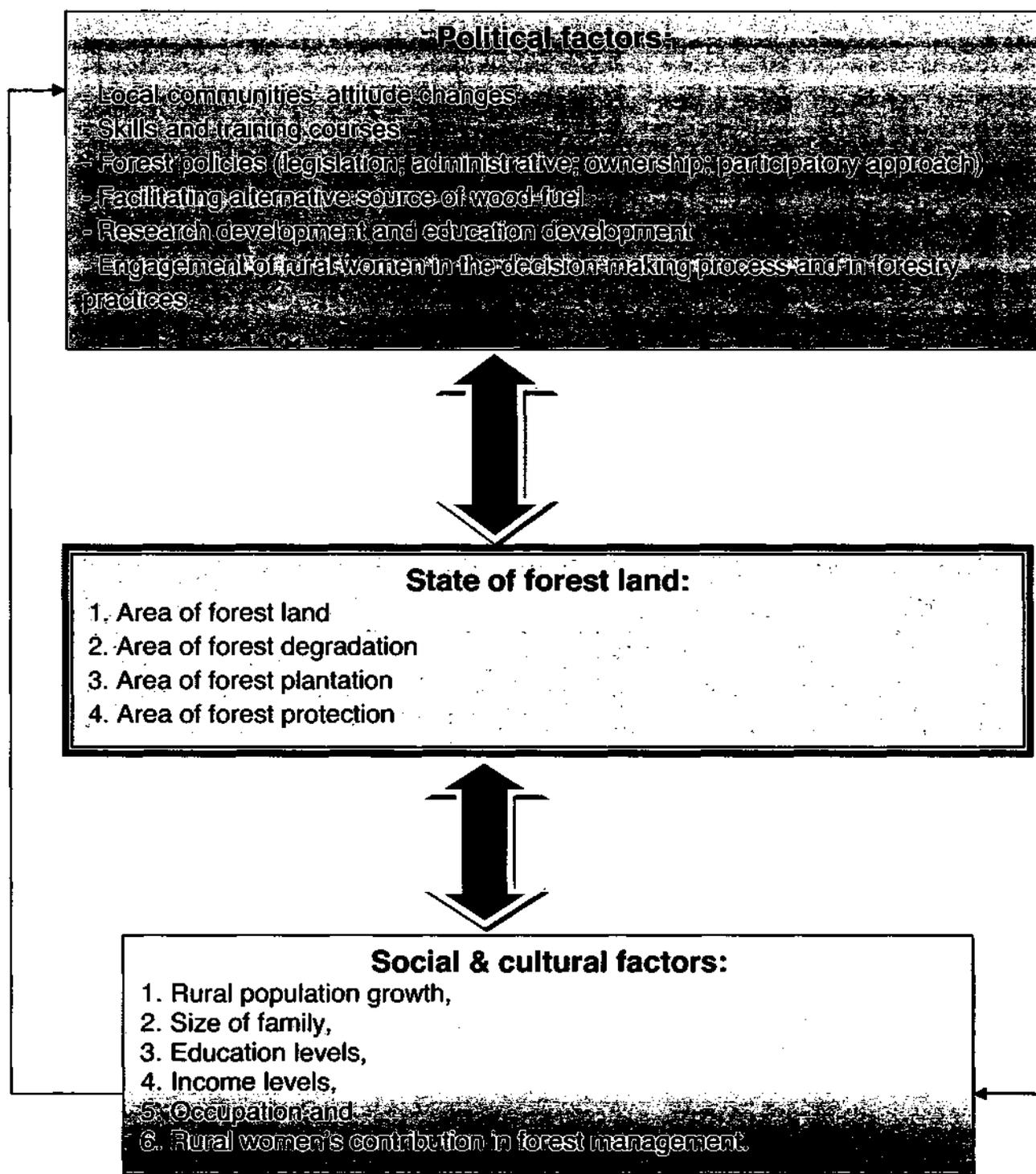


Figure 5.3: A conceptual SFM framework for socio-political factors in the study areas (Source: author; after Rebugio and Camacho, 2003; Abido, 2005; Darwish, 2004, 2005)

This section has presented the three sub-components of the SFM framework as sub-models which facilitate the understanding of the relationships between the main constraints that affect the state of forest land in Syria, and also highlighted the role of government and communities in forest management as a basis for further investigation in Chapters 6 - 7. Furthermore, the three detailed frameworks (Figures 5.1, 5.2 and 5.3) have emphasized that the state of forest land is influenced by many constraints including EESCP issues (e.g. environmental, economic, social, cultural and political issues). In short, they are all inter-related in complex and changing ways.

5.4 Conclusion

This chapter has presented a discussion and explanation for the application of the SFM framework used in this thesis. An explanation of each component and sub-component (e.g. environmental, economic, social, cultural and political and the state of forest land sub-components) and related indicators were discussed in Section 5.2. The relationships between the three components of the detailed SFM framework were explained in Section 5.3. This chapter has emphasized that the SFM framework acts as an analytical model which facilitates the investigation of the role of government and communities in forest management in Syria. Chapters 6 to 8 will be focused on the government engagement and communities' involvements, including women, in the formulation and implementation forest policy and practices using the SFM framework in order to understand how government can responds to the influences of such issues (EESCP issues) and what they delivers in terms of policy and practices; how local communities influence on the current state of forest land and how they involve in forestry

practice, as well as how women contribute in society, workplace and forest management practices.

Chapter 6: Analysis of awareness of government officials, experts and forest managers regarding sustainable forest management

6.1 Introduction

One of the main objectives of this study was to analyse the past and present Syrian government forestry policies and determining to what extent they are in accord with sustainable forest management (SFM). Another objective was to investigate communities' engagements and action in forestry. Chapter 4 set the geographical context and outlined key physical, social and environmental characteristics of the country and described the various forest policies. The discussion in Chapter 5 focused on the application of SFM model to the study of forestry policy and implementation in Syria and the explanation of the inter-relationships between the key components. The SFM model has been used as a conceptual framework for understanding the complex linkage and feedback between political factors, environmental, economic, social and cultural factors and changes in the state of forest land in Syria (Chapter 5). It can also identify the indicators that will explain and qualify these linkages and feedbacks (Chapters 3 and 5).

This chapter aims to analyse the awareness of government officials that affect the formulation and implementation of SFM policies and the environmental pressures which they work within and to investigate whether officials engage with local communities regarding the impact of their policies. It tries to answer the following questions based on the results obtained from face-to-face interviews with Ministers, officers, forest managers and employees in the forest department as

well as non-government staff, staff from the Agriculture University and external bodies (see Appendices 2):

- To what extent are government ministers and officials aware of SFM principles, policies and practices?
- What are the main pressures preventing full implementation of SFM policies?
- How does the government engage with international, national, regional and local bodies in the formulation and implementation of forest policy?

In order to achieve the objectives to determine the main issues that affect SFM policy and actions; and to assess the past and present actions of governments and communities in terms of formulation and implementation of SFM policy and practices, this chapter is structured as follows: Section 6.2 will discuss the awareness of representatives of the Syrian government with special regard to the understanding of SFM principles, policies and practices. Section 6.3 will identify the main pressures that affect the state of forest land including environment, economic, social and cultural factors. Section 6.4 will present an analysis and discussion of government interventions in terms of formulation and implementation of forest policy and practices in Syria at international, national, regional and local levels.

6.2 Awareness of SFM principles, policies and practices

The political factors in the context of this study's objectives are the responses and feedbacks to forestry decision-making on the main pressures affecting the state of

forest land (Schanz, 1998; Patossari, 2004; Jeakins *et al.*, 2004). As discussed in Chapter 5, indicators for political factors relate to actions taken by government external and internal bodies, experts and NGOs. In the wider sense, the political factors may include regulatory actions, environmental policy development, state and public awareness including understanding of the principles, policies and practices of SFM and changes in management strategies including further training (Jeakins *et al.*, 2004; Patossari, 2004). Actions taken by decision-makers were discussed in Section 4.4.4 as change in forest policies. This section focuses on the awareness of forestry decision-makers in terms of understanding SFM principles, policies and practices based on interviews and discussions with the officials associated with forestry decision-making in Syria (see Chapter 3).

Patossari (2004) argued that the interaction between forestry decision-making and society should be promoted through partnerships and be strengthened through raising general awareness of the concept of SFM and the role of forests and forestry in sustainable development. In this context, it is important to understand the perception of decision-makers of SFM principles, policies and practices.

In order to answer the first part of the question mentioned above, it is important to begin with the main challenge objectives in terms of forest policy and practices in Syria (see Chapter 4 for more details). Forest policy in Syria determines the main objectives and priorities of the government in terms of the multifunction of forest land. In other words, 'it is the mission of government concerning the importance of the forest resources and their economic, ecological, social, cultural and aesthetic values' (Author's interview: the Director of FD, 2008). In the past, the first forest policy issued in 1953 in Syria was formulated in the belief that the natural forest

land and forest plantation are the most important elements and tasks, respectively, in the formulation of forest policy. Nowadays, forest policy has changed from the traditional concept of only being concerned with timber production to the concept of multifunctional management of forest land: forests impinge directly on human and the environment and indirectly on economic development (Author's interview, 2008). This response was also agreed by the Director of FD who confirmed that 'forest policy is dependent on the political, environmental and social philosophy of the country and on a wide range of changing social, economic, ecological and cultural conditions' (Author's interview, 2008). It should be noted that the principle of forest policy has been focused onto the multiple functions and benefits of the forest resource and on managing forest land on a sustainable basis with especial regard to participatory and ecological approaches (Author's interview, 2008).

Most of the interviewees were clear about the theoretical aspects of sustainability and the need for community participation in forest management. They believed that SFM derived from the protection and plantation of forest areas in order to meet the present and future needs of maintaining forest land, with especial regard to the importance of forest land in protecting the environment and developing local income. In this respect, the Minister of MAAR in Damascus indicated that:

'Forests are natural ecosystems which should be managed and treated as such, in order to preserve and enhance their environmental role in soil and water conservation, biodiversity conservation, carbon sequestration, climate change, etc. This necessitates the introduction of the "environmental dimension" in forest management plans and forest development strategies. The new forest policy recognizes a shift towards the environmental protection functions of the Syrian forests; however, this must not diminish the value of their productive function or the ability of forestry activities to compete for scarce investment resources' (Author's interview, 2008).

It should be noted that there is an interaction between forestry and related sectors, such as agriculture, animal husbandry, industry and energy at the national, regional and local levels, particularly in areas bordering forest lands (FAO, 2009). Therefore, understanding the main pressures that affect the formulation and implementation of SFM should take into account this interaction in order to respond to the negative impacts that may act against SFM and use (Section 6.3).

The interviewees were very aware of the short and long term benefits of SFM regarding both the environmental and social benefits; however, they are still facing some pressures related to putting forest policy into practice. This could be related mainly to the centralized political system which restricts the involvement of local communities in forestry decision-making; to forest legislation; financial reasons and agricultural development (Author's interview, 2008). This finding is in line with the expectation of the International Union of Conservation Nature (IUCN): 'poverty in Syria is popularly cited as a principal driver of forest loss and degradation. Local forest communities need to be persuaded that by developing forests and using them properly, it would be possible to fight rural poverty and reverse the process of environmental degradation at the same time as ensuring sustainability of the forest area' (IUCN, 1996: 33). Nonetheless, forest legislation issued in 2007 has not provided the essential elements of planning and management tools designed to ensure SFM policy and practices. In other words 'the new forest law has not included a link to the preparation of a forest management plan; a qualitative and quantitative inventory of the country's forest resources; a national information system and participation; criteria and indicators for SFM; environmental impact assessment and the categories of land that can be created as forest reserves or other types of forest tenure (Author's interview, 2009). It should be noted that as

there is no specific category as to forest tenure, it is very difficult to understand the definition of forest land in Syria (Chapter 4) as it could be a mix of forest land and cultivated land and rangeland (such as in Abd Aziz Mountain study area where rangeland is classified as forest land). This explains why this study has to investigate the role of government and communities in forest management instead of focusing on forest management in itself.

The Syrian government recognised the importance of conservation of forest areas in 2007, with especial regard to the need for the engagement of local communities in forest management action in order to achieve the Conventions of United Nations on Climate Change and Conservation Biodiversity, the Forest Principle of Agenda 21, as well as the Millennium Development Goals (MDG) for achieving sustainable development with especial regard to the role of women, poverty and education levels (Alba, 2008) (Section 6.4; Table 6.1). It should be noted that most of the environmental programmes in Syria such as planting and protecting trees are donor funded (Author's interview: the Director of Conservation Biodiversity Department, 2008). However, increasing the dependency on donor funding has an impact of limiting the implementation of any programmes especially when donors withdraw their support under some conditions. In addition, heavy dependence on external funding could affect indirectly the local authorities in making decisions on the implementation and formulation of such projects, since donors may come with their own programmes.

Table 6.1: A case study of how government officials are working with donors and local communities to achieve SFM (Author's interview, 2009)

Training course for communities (January 2008): villagers from Al Fonoonlog (25), Abo Kbeis (40) and Abd Aziz Mountain (30) were trained to understand the major effects of overgrazing and biodiversity loss upon forest resources. This programme was the responsibility of international experts (i.e. the Global Environment Facility (GEF) which is located in Washington, USA) and the national government (i.e. the Ministry of Agriculture) who signed a contract for the project of Conservation Biodiversity and Protected Forest Management in 2005 (UNDP records, 2008). The contractor aimed to increase the awareness of local community, including women, relating to forest protection and to the issues affecting forest areas. The key task of the donor was to ensure that the local community played an increased role in forest management.

In summary, there is an awareness of the principles of SFM policy and practice at the highest levels in the Syrian Government. The next section investigates the major pressures that affect the formulation and implementation of SFM in Syria.

6.3 The main pressures affecting the formulation and implementation of SFM policy and practices in Syria

This section aims to identify the main pressures that affect the state of forest land in Syria which in turn affect decision-makers as a way of responding to the social and cultural, economic and environmental pressures. As discussed in Chapter 2, indicators for the main pressures describe the environmental, economic, social and cultural factors (Donovan *et al.*, 2006). One component in the context of an SFM model has been identified as the possible issues that affect the state of forest

land (e.g. environmental, economic, social and cultural issues component) (see Chapter 5 for more details).

6.3.1 Environmental pressures

The aim of this section is to investigate the main environmental pressures which affect the formulation and implementation of SFM policy and practices in Syria. Some researchers have argued that an environmental issue plays an important role in determining forest management policies and practices (Thompson *et al.*, 1994; Merlo & Croitoru, 2005; Sheppard *et al.*, 2005; Andersson *et al.*, 2005; Patosarri, 2007; Ehmer, 2008). This section, therefore, investigates the main environmental pressures which affect the formulation and implementation of SFM policy and practices in Syria. Environmental issues included in this study consist of the following indicators: the need for water supply, biodiversity, soil degradation and fires.

The need for water supply: Water resources in Syria are very important for providing drinking water as well as meeting the needs of agriculture, forestry, tourism and industry (Shalabi, 2000). However, there is an absence of effective rainfall or groundwater, except on the narrow band along the west coastal part of Syria (Abido, 2005; UNDP, 2005c).

The Syrian government has given more attention to developing the agricultural sector than to developing the forestry sector and as a consequence water resources have been depleted because the agricultural sector consumes 85% of the total water supply. Population growth and urbanisation plus the conversion of

forest land to agricultural land also affect water requirements (Table 6.2) (Author's interview: the Director of the Ministry of Environment, 2008).

Table 6.2: The main causes and factors affecting water resources and the main pressures (Source: Author's interview, 2008)

The main problems affecting water resources	Causes	Pressures	Responses
1. Water depletion	<ol style="list-style-type: none"> 1. The use of traditional irrigation methods; 2. Population growth and urbanisation; 3. Over-pumping of ground water; 4. Increasing the demands of drinking water; 5. Increasing the areas of desertification; 	<ol style="list-style-type: none"> 1. Decreasing agricultural production; 2. Drought in water springs; 3. Depletion of natural water resources; 4. Land use changes. 	<ol style="list-style-type: none"> 1. Improving irrigation methods; 2. Adaptation of a national policy for rationalization and irrigation modernization of water uses; 3. Increasing forest plantation, especially in the watershed areas.
2. Water pollution	<ol style="list-style-type: none"> 1. Local communities' attitude and behaviours; 2. industrial waste; 3. Forest fires; 4. Overgrazing; 5. Wind and water erosion. 	<ol style="list-style-type: none"> 1. Human health; 2. The high cost of water supply and water treatment; 3. Forest degradation; 	<ol style="list-style-type: none"> 1. Increasing training courses.

Table 6.2 shows that there are two main problems affecting water resources in Syria including: water depletion and water pollution. While water depletion could be caused by the increasing use of traditional irrigation methods; population growth and urbanisation; increasing the demands on drinking water; increasing the areas of desertification; water depletion could lead to decreasing of agricultural production; depletion of spring water and land use changes (e.g. conversion of forest areas to agriculture land). This response is in line with other researchers, for example, Abdrabbouh (2007: 2) and Abido (2005) argued that increasing

afforestation areas is one of the priorities of MAAR with especial regard to preventing water depletion.

As shown in Table 6.2, water pollution is the second constraint affecting the water resources in Syria. Local communities' attitudes and behaviours; forest fires; overgrazing; wind and soil erosion are the main causes leading to water pollution which in turn affect human health and lead to forest degradation, as well as demanding high costs of water treatment for provision to local communities. The Syrian government has focused on increasing training courses in order to increase the awareness of local communities about the water crisis in Syria and on the need for cooperation between local, regional and national stakeholders in order to decrease the occurrences of overgrazing; forest fires; wind and water erosion (Author's interview: the manager of Al Foronloq PA, 2008; Chapter 7).

It should be noted that there is an inter-relationship between minimising water depletion and the increasing of afforestation areas, which make this indicator one of the most important issues that affect the state of forest land in Syria in terms of the need for increasing forest plantation. At the same time, and because of aridity conditions in saving water resources in Syria, it is of great importance to examine other indicators included in the environmental issues of the SFM model in order to provide an explanation of the changes occurring in the state of forest land in Syria and the consequences of the political factors which respond to such changes.

Biodiversity: As mentioned in Chapter 4, the geographical characteristics of Syria have produced a unique fauna and flora (Darwish, 2005). The situation is very unstable and according to the UNDP (2006) about 641 plant species are

threatened by the increasingly arid conditions. Besides the issue of climatic conditions, conversion of forest land for construction purposes and into agricultural land has affected the remaining forest areas which are home to cedars, firs, pines and oak species (UNDP, 2006). Therefore, it is important to identify the main factors leading to biodiversity loss in Syria, and as a consequence affecting the state of Syrian forest land.

The National Report of the state of Syrian forest land (2005) shows that about 70,000 ha of forest land was degraded because of the increasing effects of water and wind erosion; climate change; fires and human activities (Table 6.3).

Table 6.3: The main factors affecting the state of forest land in Syria (Source: the National Report of the state of Syrian forest land, 2005)

Factors	Forest degradation (ha)
Wind erosion	1620
Water erosion	1058
Climate change	48000
Fires	1995
Human activities	20000
Total	72673

Table 6.3 highlights the main factors affecting the state of forest land in Syria. Climate change and human activities are the main pressures leading to biodiversity loss in Syria as a huge quantity of wood and non-wood species have being over-cut for householders' uses and climate change has led to increased desertification and deforestation in Syria (Author's interview: the director of FD in

Syria, 2008). This finding is accepted by some researchers who argue that climate change and human activities are the main factors leading to biodiversity loss, desertification and deforestation in ASAZs (Western, 1999; FAO, 2003; McNeely, 2003a; Czudek, 2005; Darwish *et al.*, 2007; Nadin, 2009). However, the Syrian government has paid great attention to conserving biodiversity since 1995, when Syria signed the Convention of Biodiversity and the convention of Climate Change, with especial regard to forest protection strategies. As a result, the National Commission for Biodiversity Conservation and Development (NCBCD) was established in 2005 which led to an increase in the number of protected areas in Syria (Author's interview: the Director of Biodiversity Department in Syria, 2008) (see Chapter 4 for more details). Starting in 1999, the National Biodiversity Unit (NBU), which is a part of the Ministry of the Environment, has cooperated with external bodies such as the UNDP organisation and the GEF agency in order to develop the formulation and implementation of NCBCD. This cooperation has encouraged the Syrian government to develop the capacity of different institutions, and as a consequence twenty five stakeholders, who have the responsibility for policy and action in terms of conservation biodiversity, have been established including (12) ministries, (4) universities, (2) research centres, (5) community-based organizations and (2) NGOs; but personnel training is still difficult (Author's interview, 2008). This response is in line with Darwish *et al.* (2007: 5) who argue that 'Syria does have the institutional and human resources necessary for biodiversity conservation and sustainable use of biological resources, but Syria needs much training to upgrade its capacities for biodiversity conservation and forest protection.' It is important to mention that forest protection has been identified in Syrian forest policy as one of the main forest management actions,

which could protect forest land including flora and fauna species, and as a consequence to conserve biodiversity (Chapter 4).

Having identified the main factors leading to biodiversity loss and affecting the change of the state of Syrian forest land, however, there is a strong need for having a closer look at other factors which affect the conservation of biodiversity; the state of forest land and especially the formulation and implementation of SFM policy and practice in the Syria.

Forest fires: The aim of this section is to investigate the effect of forest fires as one of the environmental factors which could affect the state of Syrian forest land. To facilitate achieving this aim, the history of forest fires which have occurred in the last twenty years in Syrian forest land is important to begin with.

The records of forest fires in the Forestry Department shows that about 1186 forest fires occurred between 1987 and 2004, burning 19957 hectares of Syrian forest land. The largest forest fires occurred on 27 October 2004 in Lattakia (Plate 6.1), where wild fire swept through a 10 km of pine forests leading to damage around 2000 hectares (2.4%) of pine forest land in Lattakia (e.g. 4.6 % of pine forest lands in the coastal region). It should be noted that the impacts of fires could be related to human health, biodiversity loss and forest degradation (Abido, 2005; Kasis, 2005). In this respect, the Syrian Arabic News Agency (SANA) reported on Wednesday 27 October 2004 that 'the fires which broke out late Tuesday north of the Mediterranean port city of Latakia raged on throughout the night but had later been brought under control in certain areas. An elderly man was killed when his home was burnt down in Ras al-Basit, a coastal resort some 400 kilometres (250

miles) northwest of the Syrian capital. Twenty-two other people, among them four fire-fighters, were hospitalised in nearby towns' (SANA news, 2004: Cited in Erfan, 2005: 3).



Plate 6.1: Major forest fires occurred in Lattakia in 2004 (Source: Erfan, 2005)

In 2007, another major fire swept through brutia pine forest land in the AL Foronloq forest land, which damaged nearly 600 hectares of Brutia pine forest. The second major fire, which occurred in September 2007, damaged about 1000 ha of Brutia pine forest land and killed four people who were living close to the forest land (Author interview: the Director of FD, 2008). It should be noted that increasing forest fires could be affected by climate conditions and human activities. The distribution of forest fires in Syria is significantly determined by the predominance of climatic conditions. Long summers (extending from June to October and sometimes even longer), with a short period of rains and high temperatures (over 30°C), have affected the soil moisture (i.e. reduction to below 5%). As a consequence a spark, a match or a cigarette butt can be enough to start

a fire (Author's interview: the Director of FD, 2008). Therefore, the most damaging fires are influenced by people for many different reasons including: burning of waste and starting fires for pasture renewal which get out of control, (illegal) clearing of land to change land use, etc. Other underlying causes like poverty, land pressure and enforcement create favourable conditions for forest fires. However, the cause of forest fire is often reported either as unknown or merely as a natural phenomenon (Author's interview: the manager of Al Foronloq study area, 2008). These facts could explain partly why Syria has lost 30 percent of its forest cover during the last century (see Chapter 1). In addition, these facts emphasise that forest fires can strongly change the state of forest land through forest degradation and could be one of the most important natural or artificial pressures which affect forest lands in such an arid country as Syria (Lopez-Francos, 2008). However, soil erosion is one of the environmental factors which could change the state of forest land, and could be affected by an increasing number of fires. This factor will be discussed and analysed in the next section.

Soil degradation: some researcher argued that one of the main causes of soil degradation is related to fires; overgrazing; water and wind erosion; agricultural activities; desertification; deforestation and human activities, the effects of which could reflect on the structure of soil and lead to soil degradation (Marcus, 1989; Munlahasan, 2005). Most agricultural activities in Syria comprise fruits or olive trees production (Munlahasan, 2005). Traditionally, farmers include trees as hedging on their farms in order to protect their agricultural land from soil erosion and water erosion (Author's interview: the manager of Abo Kbeis, 2008). The reason could be related to the importance of the roots of trees, which go deeply down in the ground, improving the soil structure (Darwish, 2005). As stated above,

however, soil degradation could occur as an effect of fires or for other reasons such as overgrazing and human activities. The Report of the World Bank and UNDP (1998) for Combating Desertification confirmed that the effect of forest fires has led to soil erosion, especially in the coastal region of Syria, where soil erosion exceeds 20 tonnes/hectares/year and through illegal grazing, which has led to forest degradation. Grazing does not only destroy wood species by massive destruction of young trees or saplings, but it also affects soil structure (Author's interview: the Director of FD, 2008). For example, grazing by goats in 2000 in Abd Aziz Mountain led to the loss of nearly 2 ha of forest area because of the direct effect on the wood species and soil structure (the National Record of Forestry Department, 2005). Local communities prefer to keep goats in rural areas in Syria because of the goat's long milking season and because of their adaptation to grazing in difficult mountainous and hilly terrain as well as to slopes and flat land. (Author's interview, 2008) (see Section 6.3.2).

However, the Syrian government has considered the negative effects of overgrazing, with especial regard to overgrazing by goats, on forest land and soil structure; and as consequence, grazing by goats has been prevented in forest land since 1994: 'goats' grazing is prohibited in forestlands' (Forestry Law, 1994: 13). The Director of FD confirmed that 'grazing by goats is illegal on forest land because it leads to soil erosion and as consequence to forest degradation; however, it is very difficult to prohibit it because of illegal forestry practices by local communities' (Author's interview, 2008). Therefore, there is relationship between illegal grazing by goats, soil degradation and forest depletion, which all in turn could affect the state of forest land in Syria.

Having analysed and discussed the effect of soil degradation, forest fires, biodiversity loss and the need for water supply in the context of the SFM model as the main environmental factors affecting the state of forest land in Syria, it is important to investigate the economic factors affecting the state of Syrian forest land and consequently to elicit a response from political factors.

6.3.2 Economic pressures

Based on the principles of economic theory, many forestry researches have suggested that economic factors do not play a significant role in forestry decision-making at the national and regional levels in the developing world (Gadgil, 1989; Scherr and Yadav, 1996; Meyer *et al.*, 2003; Croitoru, 2007; Drucker, 2008; FAO, 2008d). On the other hand, economic factors could be fundamental to improving the state of forest land at the local level in ASAZs (Weber and Hoskins, 1983; Ffolliott *et al.*, 1995). In the present study, key economic factors included in the analysis are wood and non-wood demands; overgrazing; tourism and recreation.

Wood and no-wood demands: Due to the lack of data available regarding wood and non-wood demands and forest resources, data from interviews and other sources (i.e. census data and forest documentation) will be used in this context to explain the effect of increasing demands for wood and non-wood products (NWP) on the state of forest land in Syria.

The national census data of forest production in Syria (2005) showed that the contribution of forest production including industrial wood, firewood, charcoal and

NWPs to the GDP is of minor significance, of about 0.01%. On the other hand, Syria is a net importer of wood and non-wood products. In fact, while Syria produces only 5-6% of its wood consumption including saw timber, veneer and particleboard, domestic wood and paper products are derived only from imports. Total domestic resources are not sufficient to meet the government's mission of forest production because of the high cost of afforestation in Syria (estimated at over 41.250 LS ha⁻¹ or about £580 ha⁻¹) (the National census data of forest production, 2005). This fact was confirmed by the Director of FD: 'the high cost of afforestation is affected by a number of factors: high inputs required for forest land clearing and preparing; labour-force wages; watering needs; climate conditions; and human and animal pressures on the forest land' (Author's interview, 2008).

As mentioned earlier here and in Chapter 4, Syrian forest policy, issued in 2007, has taken into consideration the importance of achieving SFM with regard to the three pillars of sustainability (i.e. environmental, economic and social and cultural factors). However, more consideration has been focused on the environmental, social and cultural roles of forest than its productive function (Author's interview: the Director of FD, 2008). This response is in line with Croituru (2007) who confirms the predominance of environmental, social and cultural factors of forest land in Syria. However, the economic role of forest can be only assured through stronger community involvement (Author's interview: the head of Environment Department, 2008).

Wood cutting has been identified as the main human pressure on forest resources (Kasis, 2005; Darwish *et al.*, 2007). In the context of the three case study areas,

the managers of these areas confirmed that 'wood is used for heating houses and for cooking or for fireplaces inside the houses. Using wood allows householders to save fuel and gas but wood collecting is illegal under the forestry regulations, with some conditions. For example, it is only permitted to collect the pruned and dead branches (e.g. less than 2 m in the border of forest land) under the supervision of the forestry department personnel to meet household needs' (Author's interview, 2008). The manager of the Al Foronloq study area emphasised the relationship between the characteristics of local communities including local income and the overcutting of wood and non-wood species from forest areas: 'The few members of the local community who have switched to fuel stoves are those who have a higher income generally derived from employment in the public or private sector (Author's interview, 2008). This was also revealed by an interviewee who said:

'Most of the residents in the three selected areas have poor economic conditions, they rely on wood for fuel, and on non-wood products for food security' (Author's interview: Woman councillor in the Forestry Department, 2008).

In general, non-wood products are more important than timber production in ASAZs generally and in Syria in particular in terms of socio-economic aspects of forestry including health care, food security and nutrition (fruits, leaves, seeds and nuts, mushrooms, honey), livestock production, and cultural values (Al-Hakim, 1994; Wahbe, 1997; Mbubi and Boon, 2009). Syria has a variety of flora and genetic resources. About 3459 species belong to 865 genus and 131 families grow in Syria (Wahbe, 1997). The most important non-wood forest products (NWFPs) in Syria include edible fruits (i.e. *Ceratonia siliqua*, *Prunus amygdalus*), medicinal plants (i.e. *Crataegus monogyna*, *Matricaria aurea*) and aromatic plants (i.e. *Laurus nobilis*, *Myrtus communis*). Other NWFPs could be found in Syria including tannins and dyestuffs (i.e. *Rhus sp.*, *Quercus infectoria*, *Rubia sp.*),

ornamental plants (e.g. *Daphne oleifolia*), edible mushrooms and truffles, exudates, honey and bushmeat (Al Hakim, 1994; Wahbe, 1997). However, medicinal and aromatic plants have been threatened by forest degradation and affected by fires; overgrazing; clearing of trees for wood-fuel; urban expansion in forest areas and local communities' attitudes and behaviours (Author's interview: staff at the Faculty of Agriculture, 2008). The head of the Environmental Department also emphasized that the main pressures which affect the sustainable use of NWFPs in general and the medicinal and aromatic plants in particular in Syria could be related to: 'low prices paid to gatherers; insufficient legislation regarding plant harvesting and trade; lack of awareness of the effects arising from the increasing demands; the direct effect of overgrazing on diminishing the availability of NWFPs; and the reluctance among traders to provide information related to their practices' (Author's interview, 2008). This finding is anticipated by other researchers in ASAZs who argue that overgrazing; financial concerns; legislation, lack of awareness among people at the local level and unavailability of data related to the NWFPs, are the main pressures affecting the development of NWFPs and the state of forest land in ASAZs (Boulos, 1995; Iqbal, 1995; Miller and Cope, 1996; Heywood, 1997).

As a response, forest protection has emerged in Syrian forest policy as one of the main objectives of forestry practices in order to prevent overgrazing; to protect endemic species (fauna and flora); to prevent encroachment by local communities and to involve local communities in forestry action in order to minimize their impacts on forest resources (Section 6.4).

Having discussed and analysed the main pressures affecting the development of wood and non-wood products, which in turn affect the state of forest land in Syria; and having identified that overgrazing is one of the main pressures affecting the availability of wood and non-wood products in Syria, it is important to determine the effect of overgrazing on the change of forest land in Syria. This point will be discussed next.

Overgrazing: ASAZs have been adversely affected by overgrazing (Chapter 2: Teketay, 2005; Croitoru, 2007). This section aims to investigate the role of overgrazing as one of the economic factors in the context of the SFM model in terms of its contribution to changing the state of forest land in the study area.

The value of grazing takes into account the number of forage units (FU) consumed in the land areas (Zahoueh, 1994). Syria has 50,000 ha classified as grazed forest, with an average of 30 FU ha⁻¹ of forage consumption (Abo Zakhm, 1997). In addition, the market price of 1 FU is derived from the market price of barley (e.g. £0.12 kg⁻¹). Consequently, the value of total forage consumption is around £173300 (Nahal and Zahoueh, 2005). From this fact, it is clear that Syria has low forage consumption. This could be related to the increasing effects of overgrazing which lead to the depletion of tree species and soil compaction, which in turn affect the total forage consumption generally and the economic value of forest land in the national GDP in Syria in particular (Author's interview: staff at the Faculty of Agriculture, 2008).

Traditionally, sheep and goats have been used for grazing in *Juniperus excelsa* and *Pistacia atlantica* forest lands (Darwish, 2005; Abido 2005). The animals normally graze during spring, when the seedlings of various tree species, grasses and herbs are growing, which adversely affects the regeneration of trees. As a result, seedlings of various tree species are crushed and the roots of tree species are trampled by the grazing animals, as well as the soil being reduced of its porosity, which in turn affects the ability of soil to absorb sufficient amounts of water and as consequence, rain-water runs off, leading to erosion of all of the soil in its path (Author's interview: staff from the Woodland and Environment Department at the Faculty of Agriculture, 2008). Therefore, overgrazing could be one of the major pressures affecting not just soil characteristics but also the state of forest land in Syria (Chapter 7).

Increasing the awareness of the importance of preventing grazing in forest land has been emerging since 1994. A penalty for illegal grazing has been introduced in forestry policy (i.e. 50000 LS = £700 and 3 months in jail) (Forest Regulation, 2007: P9). This regulation has reduced the illegal grazing in forest land but it is still difficult to prevent it completely (Author's interview, 2008).

Having discussed the effect of overgrazing on the state of Syrian forest land, it is important to investigate other economic pressures assumed to affect the state of Syrian forest land.

Tourism, including recreation: as mentioned in Chapter 2, increasing attention has been given to the development of forest-based ecotourism in order to improve the living environment and provide various amenities in the extremely dry areas

(De Haas, 2006; Croitoru, 2007; Ehmer, 2008; Porter, 2008). This section aims to investigate the main pressures of the tourism sector and forest recreation which has occurred in Syria in terms of their contribution in explaining the change of the state of forest land. To address this point, a general overview of the role of tourism and forest recreation at the international level is of great importance to begin with.

Theories and principles concerning the protection and management of nature resources have not just considered the environmental aspects, but have also considered the social and cultural aspects, with especial regard to the effects of local communities on the use of natural resources (Al Azeih, 2008). The International Union for Conservation of Nature (IUCN) classified natural reserves in 1994 and recognized the main objectives of managing protected areas with especial regard to the role of recreation, which attract the attention of visitors. (Darwish *et al.*, 2007; Al Azeih, 2008).

Tourism is one of the growing sectors in Syria and most of the tourist areas are located in forest zones. The most important positive influences of the tourist sector in Syria could be summarized as: (Author's interview: the Chief of Environment Protection Department, 2008):

- Creates jobs for members of communities,
- Opens new markets for local products,
- Contributes to the development of infrastructure, which in turn contributes to the development of community services.

The tourism sector in Syrian forest areas has been affected by many factors:

- The unplanned construction of facilities such as restaurants and hotels; the unavailability of infrastructure in forest areas and rangelands such as roads,
- Social and cultural impacts including attitudes and behaviours of visitors; poverty; illiteracy level and poor engagement of women in decision-making policy.
- The extensive uses of land resources which affect wildlife habitat and forest resources.
- Lack of financial allocation for improvement to the tourism sector and recreation purposes of forest land.
- Policy factors: Lack of sufficient staff for monitoring the illegal activities in forest land; lack of technology (insufficient technical and professional background); less attention given to the role of forest recreation in landscape perspective (lack of clear concept of landscape and recreation); lack of information related to the forest management system; lack of communication engagements in forest management processes; institutional issues including the availability of data and information.

(Author's interview: the manager of Al Foronloq study area, 2008)

As mentioned in Chapter 4, the Syrian government's priority has been given to the role of forest protection and plantation in combating desertification and conserving natural resources including water resources and biodiversity (Abido, 2005; Kasis, 2005). However, there is still a limitation in obtaining data and information about the recreation and tourism sector in Syria (Author's interview: the director of Forestry Department, 2008). The reason could be related (as mentioned above) to financial supports; local communities' attitudes and behaviours; and political

issues. Therefore, it is important to investigate the main pressures of social and cultural factors which could affect the state of forest land in Syria.

6.3.3. Social and cultural pressures

This section discusses the influences of rural communities, including women, on the use of forest resources. The main issues that affect local communities' attitudes and behaviours in terms of utilisation forest resources also explains in the context of this study's model (SFM) in Syria. The main social and cultural factors (Chapter 5) assumed to affect the state of forest land in Syria will be investigated further in Chapters 7 and 8. This section will be treated as a platform to gain understanding of the influence of local communities in their use of forest resources in Syria as well as the role of women in forest management.

Local communities' influences on the use of forest resources: This section aims to discuss the influence of local communities on the use of forest resources in Syria in order to understand the main pressures created by local communities which affect the state of forest land in Syria.

According to Maser (1997, p99) 'the community as a whole, in the context of sustainability, should interact with the local environment'. As mentioned in Chapter 4, the New Forest Policy issued in 2007 has encouraged the implementation of management approaches that enable local communities (and within them, both men and women) to be involved in forest management as preferential partners and beneficiaries with especial consideration to the influences of their attitudes and behaviours on the use of forest resources. In this respect, the Head of

Woodland and Environment Department at the Faculty of Agriculture confirmed that:

'I firmly believe that forest clearing is synonymous to killing a hen that lays golden eggs or slaughtering a healthy and productive cow instead of milking it' (Author's interview, 2008).

However, he was optimistic about the new rules of forestry which were enacted in 2007:

'We are facing a new challenge of making our people realise that they should milk the cow instead of killing it' (Author's interview, 2008).

Therefore, the influence of local communities' attitudes and behaviours could affect the state of forest land in Syria generally and forest resources in particular. In order to confirm this assumption, this study has to take into account the use of my questionnaire survey in order to understand the major influences of local communities upon the use of forest resources in the selected areas in Syria (see Chapter 7 for more details). One example from the findings obtained from the questionnaire survey has confirmed the assumption mentioned above:

'We live on what we grow on our small farms and gather from surrounding forests. We extract timber and fuel-wood, graze our livestock, collect wood, branches, medical plants, seeds and roots and collect water from water springs in the forest land. We adapt ourselves to the local place as sons of the soil and have the right to keep on exploiting the available resources from the PA' (Respondent, 99).

In order to decrease the impact of local communities upon the use of forest resources, the Syrian government has recognised the importance of involving the members of local communities who live in or around the forest areas in the process of forestry practices since 2007 (Alba, 2008: Tables 6.1 and 6.4).

Table 6.4: An example of how experts are working with local communities to achieve SFM (Author's interview, 2009)

Training courses were provided for two communities (1999 - 2005): This project was implemented in Al Sweda and Al Hafah. As a result of this project, more than 4430 people including 1271 women registered in 107 training courses between 2000 and 2004 (Author's interview, 2009). This project was funded by an external donor (i.e. GEF).

The roles of local communities in forest management generally and women's contribution in forest management in particular, have depended upon the role of external bodies or donors in the development of natural resources, including forest areas (Table 6.4). However, the role of communities and women in forest management is still restricted by the Syrian political system (i.e. a centralized political system) as the main decision-making in forest management is under the responsibility of the MAAR (i.e. centralized action). It should be noted that restricting local communities from being involved in forestry practices could affect their attitudes and behaviours which in turn could increase the illegal practices in forest areas such as overgrazing; cutting wood and branches; conversion of forest land to agricultural land; and for construction purposes (Abido, 2005: Chapter 7).

Women's contribution to forest management: As discussed in Chapter 2, one of the social and cultural issues affecting the state of forest land is women's contribution in forest management. This section, therefore, examines the main pressures that derive from the centralized political system in Syria which is assumed to affect women's contribution in forest management and which in turn

could affect the state of forest land in Syria. In order to achieve this aim, a brief explanation of the role of women in forest management in ASAZs generally and in Syria in particular is important to begin with.

Many researchers have considered the role of women in forest management in ASAZs (Fortmann and Rocheleau, 1984; Molnar, 1987; Anonymous, 1999; Boo and Wiersum, 2002; Pearl, 2003; CFAN, 2005). Pearl (2003: 3) emphasised the importance of women's contribution in forestry and agroforestry systems: 'women are traditionally the prime participants in both the agricultural and the forestry components of agroforestry production systems'. In other words, women have learned to manage these resources in order to conserve them for future generations. He also argued that 'women's access to and control of these resources is far from guaranteed' (Pearl, 2003, p. 3). However, women have suffered from the environmental disasters and the low availability of forest products (Boo and Wiersum, 2002) because they have the responsibility for collecting fuel wood; animal fodder; collecting charcoal and non-wood products (Author's interview: the Chief Women Union in Damascus, 2008). Their role is often different from that of men, and they may have different interests and roles in a participatory process in forest management (Anonymous, 1999). They have the responsibility for tending sheep, goats and other domestic animals owned by their families or by the government (Author's interview, 2008). It should be explained here that sheep are either owned by local communities or they may be tended by staff from a special department in areas called 'Madagen', which are dedicated places to look after animals and birds. Staff here have to be educated and working with the Syrian government.

Over the last decade, women have been empowered in different political positions and commitments but there is still a considerable gap in policy formulation to engage women in the forestry sector and practice (Anonymous, 1999). This gap includes women's full participation in the economic, social, political and cultural sectors. The major issues affecting the position of women in the ASAZs generally and in Syria in particular is related to education, poverty, gender inequality, religion and family size (GEF, 2009) (See Chapter 8 for more details). It is, therefore, important to discuss these major issues which are assumed to affect women's contribution in forest management in Syria.

Islam is the predominant religion in the case study area, which includes 89% of the total population of Syria (Mogahed and Abdo, 2006). Islam is also the sole religion of the contemporary local forest communities in Syria. The protection and conservation of the environment and natural resources are a mandatory religious duty (Author's interview: the Director of FD, 2008). The contribution of women in forestry or other sectors is affected by the rules of Islam which in some areas in Syria restrict women's involvement fully in the workplace (Author's interview: the manager of the Abo Kbeis study area, 2008). For example, women in the Abo Kbeis study area are excluded from decision-making as community leaders may not invite women to meetings related to use of resources; and they expect only the men to present their concerns (Author's interview, 2008).

Lower levels of education among women may further restrict their participation in forest management in Syria (Zaru *et al.*, 2006). There have always been barriers to girls' education, including cost (education is free in theory but not always in

practice); long walking distances to school (often perceived as unsafe for girls) and a variety of cultural factors including the prevention of women to study with men or be taught by men as well as an expectation of them to enter marriage at a young age. (Author's interview: the manager of the Abo Kbeis study area, 2008)). In 1990, the Early Childhood Care and Education programme (ECCE) was established by non-government institutions in seven governorates across Syria, where only 5 percent of the girls between the ages of 6 and 13 were enrolled in 793 schools. In 2000, 7.8 percent of that age group was enrolled (Zaru *et al.*, 2006). The data from the Syrian Ministry of Education shows an increase in the number of 'girl friendly schools' from 793 to 1475 in 2004, which provide girls, aged 6-13, with a formal primary education in order for there to be a greater inclusion of females in education (Zaru *et al.*, 2006). In the matter of workplace, there is still a cultural barrier preventing women from contributing in workplaces in Syria (Author's interview, the Chairwoman of the Women's Union, 2008). The last survey concerning the role of women in economic development shows that almost 75% of women in rural areas of Syria (i.e. in Hamah) felt that the husbands preferred their wives to work as a housewife (Zaru *et al.*, 2006).

Socio-economic factors also affect women's involvement in workplaces in the ASAZs generally and in Syria in particular, such as the family's size and the poverty level (Assaad & Arntz, 2005; Widyanti *et al.*, 2009). While Widyanti *et al.* (2009: 1) argued that where there is 'a large number of household members, the high probability is that a household is chronically poor', Assaad & Arntz (2005) argued that 'the need for women to work is expected to be strongly dependant on the composition of the households and their occupations' (Assaad & Arntz, 2005 cited in Spierings and Smits, 2007: 5). In other words, there is a strong relationship

between income level, the size of family and land tenure which can affect the natural resources in general and women's contribution in the workplace in particular, as poor households with a large families need more resources (e.g. food, water, medical plants, etc...) to satisfy their needs than rich households with small families, which in turn could lead them to change their occupation in order to satisfy their needs with especial help from their family members including the wife and daughters (Author's interview, the manager of the Abd Aziz Mountain, 2008). Therefore, the need for investigation of the role of women in a centralized country such as Syria is of great importance with especial regard to the main issues (i.e. religious, education level, poverty level, occupation and family size) which are assumed to affect the contribution of women in the labour force generally and in forestry practices in particular in Syria (See Chapter 8 for more details).

Having investigated and discussed the main pressures (e.g. social and cultural, economic and environmental issues) that could affect the state of forest land in Syria, it is important to investigate how forestry stakeholders and decision-makers deal with these pressures and how they intervene in the formulation and implementation of SFM policy and practices.

6.4. Engagement with formulation and implementation of forest policy

This section discusses the interventions of governance to the main factors that affect the state of forest land in terms of formulation and implementation of SFM policy and practices in Syria. Chapter 4 highlighted the formal and informal decision-makers who have the responsibility of managing forest areas in Syria. Interventions taken by decision-makers in terms of formulation of forest policies

were discussed in Section 4.4.3. Section 6.3, meanwhile, discussed the main pressures affecting the state of forest land in Syria. As a result of these pressures, and in an attempt to minimise their influence, the different contributions which may be made by formal government, or external bodies, or NGOs are important. This section will focus on the interventions made by government, external bodies and NGOs in terms of formulation and implementation of SFM policy and practices.

The political component of the SFM framework relates to the action taken by an government or by the wider governance. In the widest sense, interventions may include regulatory action in the forestry sector or other sector such as the environmental sector. Decision-making opinions may alter, and there may be changes in management strategies including a participatory approach and further training (Bauer and Corredor, 2006; UNDP, 2009). The interventions in the context of the SFM model should be designed to act on the pressures, but may at the same time also have an influence in modifying the indicators of the state of forest land. In this study, three key political indicators are discussed comprehensively: changes in the governmental forest policies (1953-2007; Section 4.4.3), the awareness level of decision-making in terms of the principles of SFM policies and practices (Section 6.2) and the interventions of decision-making in formulation and implementation of SFM policy and practices (Sections 6.4.1 to 6.4.3).

6.4.1 Government interventions

This aim of this section is to determine government interventions in terms of formulation and implementation of SFM policy and practices in Syria based on information obtained from face-to-face interview.

It has been noted during the data collection period that there were two authorities in Syria in charge of forestry decision-making (Figure 4.5), although the Syrian national report for combating desertification mentioned that all forest areas in Syria are headed by the Ministry of Agriculture (MAAR) and the Forestry Department (FD) (UNDP, 2005a). The MAAR gives forestry guidelines to the FD regarding the formulation and implementation of forest policy according to the Director of FD in Damascus (Author' interview, 2008; Table 6.5).

Table 6.5: Suggestions to improve the state of forest land (Source: Author's interview: the Director of FD in Damascus, 2008)

- 'Locals should inform the authority when they find a dead or dry tree and obtain official permission before cutting and collecting.
- Build a trust between the officials and locals. This can be achieved when the government side eliminates local people's fears, and at the same time, locals follow rules regarding the sustainable management of forest land.
- Plan an appropriate policy to control unorganized tourism. Government should restrict the access to some areas and specify others. For example, tourists can barbecue without risking forest fire.
- Fine tourists in case of violations such as littering, damaging the soil or the vegetation.
- Control the excessive collecting of medicinal plants (i.e. plants that are collected in large quantities or uprooted from the ground).
- Involve local people in monitoring the forest management process and provide them with alternative sources of wood-fuel.
- Build towers in strategic locations in forest lands in order to facilitate monitoring.

The quotes in Table 6.5 demonstrates that the ultimate decision-makers in forestry (i.e. FD) have the responsibility for employing their own staff and providing experts in forest management in order to support forestry action with especial regard to giving considerable attention to the role of local communities in forestry action. It should be noted that the government has more power in formulation and

implementation towards the state of forest land than local communities (top-down action) (Author's interview, 2008). This finding is recognised by Johnson and Forsyth (2002) who argue that governments in a centralized political system play a crucial role in forest management. However as acknowledged by UNDP (2009), the new legislation of forest policy has followed a participatory approach in which the local and regional governance co-operate with the national governments which in turn co-operate with the international organisation and governments in order to manage forest land with especial regard to forest plantation and protection. This fact was confirmed by the Director of FD, who mentioned that: 'participatory approach has been agreed since the new forest policy regulation was issued in 2007, with especial regard to the importance of the cooperation between the FD (national), internal and external bodies (i.e. UNDP, FAO, German government) and NGOs (local and regional) which encourage the Syrian government to change forest policy in order to manage forest land on a sustainable basis and increase the awareness of environmental problems and social development' (Author's interview, 2008). The Director of the Environment Friendly Agency (NGOs) in Damascus also confirmed that 'there is an increase in the level of awareness of environmental problems and community participation in natural resources management' (Author's interview, 2008). This finding is supported by the findings from the UNDP survey in three forest areas in Syria, where the seminar of awareness of illegal grazing was conducted, from 21st to 25th of January, 2008; 25 local communities from Al Foronloq, 40 from Abo Kbeis, and 30 from Abd Aziz Mountain were involved in this seminar in order to increase their awareness of the effects of overgrazing on the forest resources in the forest areas (UNDP records, 2008).

As discussed in Chapter 2, forest policy has been seen as an important key response relating to the environmental problems (Edward-Jones, 2003). The current forest policy in Syria has considered the importance of environmental and social aspects of the state of forest land and introduced some regulations in order to minimise the environmental problems which can interact with human activities and lead to changes in the state of forest land (Author's interview: the Chief of forest management in the FD in Damascus, 2008). For example, forest policy has taken into consideration the importance of windbreaks in water catchment areas to minimize the effects of water erosion; around the agricultural land and on the main roads to minimize the effects of wind erosion; as well as on the motorways to reduce the occurrence of noise (Author's interview: the Director of FD, 2008).

Croitoru (2007) emphasized that Syrian forest policy has focused more on the environmental and social aspects of forest land than its productive function because of the high degree of aridity conditions. There are three main reasons as to why the Syrian government should be concerned about the environment and social aspects of forest land: firstly, tree species could protect other sectors such as agricultural land (from wind erosion), and the social sector (by providing local communities with their resource needs such as wood-fuel, non-wood products); secondly, it provides a range of 'services' to humans, (e.g. aesthetic beauty); and finally, it provides security to local communities in terms of protecting them from the occurrence of noise and flood, as well as from vulnerable climate conditions) (Author's interview: the head of Forestry office in Lattakia, 2008).

It should be noted that the research of SFM in Syria is very important because there are lots of complex factors that could affect the formulation and

implementation of SFM policy and practices (i.e. environmental, economic, social and cultural factors), and there is also a political issue (a centralized political system) that could affect the responses and actions of decision-making related to putting forest policy into practice.

Having identified the government's intervention in terms of formulation and implementation of SFM policy and practices in Syria, although as mentioned earlier in Section 4.4.3 in Chapter 4, external and internal bodies or organisations have been involved in the formulation and implementation of forest policy and practices, therefore, it is important to determine the engagement of each of them in the formulation and implementation of SFM policy and practices in Syria.

6.4.2 Engagement of external and internal bodies in Syrian forestry:

The previous section (Section 6.4.1) discussed the interventions of the main decision-makers who have the responsibility of formulation and implementation of SFM policy and practices. This section, therefore, will identify the main role of external and internal bodies in forest policy and actions as well as in other environmental agreements based on the face-to-face interviews.

It should be noted that there is a limited number of documents available to researchers and the public which ensure and confirm the involvement of NGOs in decision-making for forestry and other environmental agreements. The reason could be related to the centralized political system - centralized authorities - which make the main authorities keep all formal and informal documents related to the

engagement of NGOs and other groups in forestry policy and practices or other environment agreements such as conservation biodiversity and human development (Author's interview: the Director of Biodiversity Department, 2008).

The number of NGOs has been increased since 2000 to reach 1400 NGOs registered officially in the Social Department in Syria (Darwish, 2005). The first lady (Mrs Assad) confirmed that:

'Such organisations are playing a crucial role in areas that were previously perceived as the role of the government alone' (Sinjab, 2010; Syrian comment in BBC News).

'This represents a political will. They wouldn't have increased, otherwise they wouldn't have been involved or encouraged to be involved in sectors previously not encouraged' (Sinjab, 2010; Syrian comment in BBC News).

Each one has its objectives relating to conservation biodiversity, environmental issues, sustainable development including human development, and forestry activities, as well as finding the donors who are interested in the development of forestry and the environmental issues. One good example of engaging NGOs in such an issue related to environmental problems is the project of Birds Protection at Jolan Lake, in the southern part of Syria. The director of this project expressed his opinion as to how such a project could be very important in terms of development of the implementation of conservation biodiversity in Syria and how experts could be valuable in developing such a project, as well as to how government regulations can make it difficult to achieve the targets of such a project:

'I graduated at the Harper Adams University in the Agriculture department in 1973 and specialised in the Environment. I came back to my homeland, Syria, 20 years ago because I want to use my knowledge to improve my country. During this period, I have been engaged in some projects such as the project for Bird Protection at Jolan Lake, southern Syria. Five years ago, I opened the Environment Friendly Agency (EFA) with the co-operation of some groups who are

interested in Environmental issues. We are working hard to achieve our targets but we are facing a problem dealing with the government's regulations in having to obtain permission for every step we want to make in order to complete our job. We are dealing with international companies in order to cover the cost of our project' (Author's interview: the Director of the Environment friendly Agency, 2008).

This director was pessimistic about how government regulations could actually contribute to delays in achieving such a project in Syria. Although in respect of the main pressures affecting the contribution of NGOs in society issues, Rahabi, co-founder of a committee to defend women's issues in Syria, confirmed that there is no real democratic voice in Syria:

'We applied for the registration three years ago and we have not had an answer' (BBC News, 2010).

In the past, Syrian NGOs have tended to work in isolation from each other; however, the Syrian Trust for Development Organization (STFD) (STFD is NGOs established in 2007) in cooperation with the UNDP have been working together since 2007, in order to enhance the development of democratic listening and participation in Syria by providing capacity development services and an opportunity for organizations to cooperate with an international organization which in turn could strengthen the relationships between voluntary actors and the state (Sinjab, 2010; P: Syrian comment in BBC News). It should be noted that STFD has worked in partnership with the Syrian government, the private sector and international organisations in order to develop projects, focusing mainly on the areas of rural development, education and cultural issues (Author's interview: the Director of Biodiversity Department, 2008).

It is clear that the position of NGOs in Syria has been improved in the area of rural development and environmental issues with especial regard to the role of the

external bodies (UNDP) in such improvement. It is, therefore, crucial to discuss the role of external bodies in the development of environmental issues generally and in SFM policy and practices in particular. To do so, an overview of the cooperation between the internal and external bodies such as UNDP and the Syrian government is important to begin with.

Syria has received support from the Global Environment Facility Organisation (GEF) since 1994. GEF has provided financial resources estimated at about \$12.7 million for ten national projects in Syria (five biodiversity, two climate change, two Persistent Organic Pollutants (POPs), one multifocal). While the projects regarding climate change and biodiversity constitute the largest main subject areas in terms of funding, which account for 42 % and 36 % respectively, POPs and multifocal areas account for about 22 % (Table 6.6).

Table 6.6: The main issues which have been supported by the GEF (Source: GEF, 2009)

Main issues	Million \$	Percentage of total
Climate change	5.4	42
Biodiversity	4.7	36
POPs	1.95	15
Multifocal	0.84	7
Total	12.72	100

Table 6.6 highlights that the largest amount of funds has been given to two subject areas in Syria: climate change and biodiversity. The main objectives of such projects were summarized by the director of the UNDP office in Damascus (Author's interview, 2009):

1. Evaluate independently the **relevance and efficiency** of GEF support in Syria including: national environmental frameworks and decision-making processes; the authorization of GEF in Syria and the achievement of global environmental benefits (Conversion of Climate Change and the Convention of Biodiversity and the Millennium Development Goals (MDGs)), and the achievement of GEF policies and procedures.

2. Assess the **effectiveness and results** of completed and ongoing projects in each relevant subject area in Syria.

3. Provide **feedback and knowledge sharing** to (i) the GEF Council in its decision-making process in order to allocate resources and to develop its strategies at international level, (ii) sharing information with the Syrian government in order to solve the main issues affecting the development of environmental, social, economic and political perspectives in Syria, and (iii) sharing information with different agencies and organizations involved in the preparation and implementation of GEF projects in order to develop other projects in other areas in Syria or in neighbouring countries.

This response emphasises the potential role of external bodies to such a vulnerable area as Syria where climatic conditions and the centralized political system are paramount in the main issues that affect the development of formulation and implementation of any projects in Syria. This response also emphasises the potential role of the cooperation between international agencies (external) and internal agencies in Syria with especial regard to streamlining and rationalising organisational activities and reducing autocracy. This is in line with

other studies on conservation biodiversity (Kasis, 2005; Darwish, 2005; Darwish *et al.*, 2007) which note that the support of GEF improves the institutional capacity in the Syrian government, particularly by providing stronger coordination between the former Ministry of Environment and the Ministry of Agriculture that led to improvements in management practices of protected areas.

Building up the institution capacity in Syria has been seen as an important task of encouraging the role of external bodies in formulation and implementation of the project of 'Capacity Building in Sustainable Forest Management and Planning and Forest Fire Management' which has been running since 2009, with the cooperation of the Turkish government and with support from the FAO (i.e. The total fund given by the FAO to this project is around \$30 Million. This amount is spent for the implementation of the four subject areas, namely: forest fires protection (35%), forest management and maintenance (7%), forest development and afforestation (55%); and the green belt (3%). This fund covers staff wages; investment costs; recurrent costs and other production fees). The main aim of this project is to strengthen collaboration in terms of sustainable management of natural resources and a fire management system. As a response from the main decision-makers in the Syrian forestry sector to this project, the FD employed about 1590 technical managers, of which most are forestry engineers (18%), technicians (78%) and lawyers (4%) who are in charge of legal affairs. It also employed 2870 permanent workers, 4580 temporary workers and other officers who are in charge of the administrative tasks (Author's interview, the Chief forestry in FD in Damascus, 2008).

With the main advantages of implementing this project in achieving SFM in Syria, it should be noted that this project has given priority to the major pressures affecting the implementation of such a project including (Author's interview, 2008):

- Lack of trained personnel;
- Increasing poverty level amongst local communities;
- Absence of national forest fires management strategy;
- Absence of integrated management plans for most of the Syrian forests, including forest fires prevention activities;
- Top-down centralized approach to development planning and implementation and negligence of local community's involvement in natural resources management; limited level of understanding, information and knowledge among local people;
- Low forest law enforcement and lack of technique, management and limited institutional capacities;
- Lack of cooperation mechanisms between the main decision-makers and local communities;
- Increasing the exploitation of non-wood forest products and services, including ecotourism potential.

This comment highlights the immediate beneficiary of this project to the MAAR and the FD in Syria as they have the responsibility for protecting the forest land; however, the ultimate target of this project is the rural communities who are directly dependant on forest resources. It is crucial to mention that implementation of such a project is very important in the research of SFM in ASAZs generally and in Syria in particular because it could contribute to improving the status of the

communities (as regards income and educational levels) and conserve biodiversity of flora and fauna, which are at the heart of achieving SFM.

Another example of involving external bodies in Syria at regional and local levels is the project of 'Range rehabilitation and establishment of a wildlife reserve in the Syrian Steppe'. This project started in 1996 with cooperation between the Syrian government, the Italian government, the FAO and the UNDP. It aims to assist the Syrian authorities with promoting conservation and sustainable use of forest land and biodiversity in the Al Talila Reserve area, as well as rehabilitating the rangelands that surround the forest land. (Author's interview: the Director of Financial Department in UNDP, 2008). The outcomes of this project confirm the potential role of local communities and women in the development of the sustainable use of forest land; however, it also confirms that it is difficult to involve local communities and women in such projects without permission from the Syrian government (Darwish, 2004). It became clear in the interviews that the external bodies were able to help in providing financial resources; supporting the development of the policy framework; increasing the availability of information related to land use including forest land; however, they were unable to help individuals (local communities and women) to improve their standard of living needs and education levels.

Having discussed the main role of external bodies such as GEF, FAO, and the Italian government in funding action for implementation of biodiversity and forest management in Syria, and the role of internal bodies (EFA, NGOs) in finding the donors for such projects related to environment and social issues, it is important to

mention that their role could be very important in the implementation of SFM action in Syria, especially because the concept of SFM has only recently been acknowledged, since 2007, and because conservation biodiversity, which has been implemented mainly through the efforts of external bodies, is part of the objectives of Syrian forest policy.

6.5 Conclusion

This chapter presented an analysis and discussion of the key factors (i.e. environmental, economic, social and cultural) and the political factors that affect the state of forest land in Syria. Section 6.1 introduced the importance of understanding the relationship between the three components of the SFM framework in the assessment of past and present actions of governments and communities in terms of formulation and implementation of SFM policy and practices. In Section 6.2, the discussion focused on the awareness of forest governance in Syria with especial regard to the efficient understanding of SFM principles, policies and practices. The findings from the face-to-face interviews confirmed that the Syrian government has given SFM priority to achieve what was decided in the international agreement including Forest Principles of Agenda 21, the Conventions of Climate Change and Biodiversity (with especial regard to the interaction between water resources and forest land and conservation biodiversity) and the Millennium Development Goals for Sustainable development (with especial regard to the relationships between population growth, poverty and education levels, forestry degradation and the importance of women in forest management). Section 6.3 discussed the relationships between the first component (i.e. environmental, economic, social and cultural factors) and the

second component (i.e. the state of forest land) of the SFM model used in this thesis. Section 6.3.1 discussed the relationships between the environmental factors and the state of forest land in Syria. Four environmental factors were discussed including, the need for water supply; biodiversity; forest fires and soil degradation. Section 6.3.2 focused on the relationships between economic factors and the state of forest land in Syria; and discussed three economic indicators including: demands for wood and non-wood products; overgrazing and tourism, including recreation. Section 6.3.3, meanwhile, discussed the social and cultural factors with especial focus on the influences of local communities in the use of forest resources and the role of women in forest management, in order to create a platform for further investigation of these two points (see Chapters 7 and 8).

The face-to-face interviews, census data and forest documentation showed water scarcity and overgrazing were particularly crucial issues. In addition there was concern about the tourist sector and recreation in forest land which could be related to an insufficiency of financial resources and expertise; unplanned construction management; local communities' attitude and behaviour; the extensive use of land resources.

In Section 6.4, the discussion focused on government engagement, the third component of the SFM model, in terms of formulation and implementation of SFM policy and practices in Syria. It was found that the government gives the priority in forest policy to conservation of biodiversity by protecting and managing forest land. The crucial role played by NGOs at the local level was also noted.

In the next chapters, the analysis and discussion will be focussing on the influence of local communities (their characteristics) upon the use of forest resources in the three study areas in Syria (Chapter 3).

Chapter 7: Local communities: their attitudes and awareness of SFM

7.1 Introduction

Chapter 6 focused on the extent to which the Syrian government firstly is aware of SFM and secondly formulates and implements SFM policy and practice at national, regional and local levels. The results confirmed that government has given SFM a high priority and is sensitive to meeting the international agreements related to forestry and biodiversity (environmental agreements) through the Principle of Forest Management. The chapter also discussed the main pressures affecting decision-making priorities in forest management and the state of forest land in particular. Priority is given to particular issues including: the protection of forest areas to conserve water catchments; and reduction of biodiversity loss; forest fires and soil erosion; overgrazing, overcutting of wood and non-wood products; the need to improve the tourist sector and recreation purposes of forest areas; the influence of local communities' characteristics on forest resources and the ignorance surrounding the role of women in forest management.

Just as the previous chapter examined the government's awareness of SFM (top-down), this chapter investigates the perception of local communities, including women, in the three study areas in Syria, of the need to be good stewards of forest land in general and the use of forest resources in particular (bottom-up action). While the present chapter focuses on the role of local communities in forest management in the three selected areas in Syria, the next chapter (Chapter 8) will focus on women's contribution in forest management.

The present chapter addresses the following questions:

- Do the characteristics of local communities affect the implementation of SFM at the local level?
- Is there any association between the local communities' background and their awareness of their impact of pressures on forest resources?
- Is there an awareness of the need to implement SFM at the local level?
- What is the perception of local communities about the current and future goals of forestry practices at the local level?

To answer these questions, this chapter will be based on the results obtained from questionnaire data; participant observation and census data (Chapter 3). Questionnaire data were analysed using the Statistical Package for the Social Sciences (SPSS). Statistical significance of differences between respondent groups are tested at the 95% confidence limit, where there is less than a 5% chance that differences observed between respondents occurred by chance ($P < 0.05$). It should be noted that as this study aims to investigate the role of government and communities in forest management, the author has to take into account the need to investigate comprehensively the influence of local communities on the use of forest resources; and as consequence, the author conducted quite a small sample in order to achieve the aims mentioned above (i.e. 142 households). It should be noted that nomadic¹ people were not included in the total sample for two reasons. Firstly, they are not accountable in formal statistics, and secondly they do not live close to forest areas. As it was a small sample and could be open to bias, the author had to re-categorize some variables in order to

¹ Nomadic people live in the southern and the eastern parts of Syria (Williams, 2001)

investigate the significant differences between the respondent groups and the relationships between their characteristics; and the potential use of forest resources as well as their action in forest management.

The argument and the discussion in this chapter will be in the context of this study's SFM conceptual framework, which has been adopted to help improve the understanding of the role of governance, government and community in minimizing the effects of major factors that affect the state of forest land (e.g. environmental, economic, social and cultural factors) (Chapters 2 and 3); and the potential impacts of utilization of forest resources in the three study areas. Therefore, this chapter contributes to the achievement of one of this study's objectives: *'first to analyse the environmental, economic, social and cultural factors that affect householders' attitudes and behaviour with regards to forests (local level) in Syria, and second to investigate community engagement in forest management'*. In order to achieve these objectives, this chapter is structured as follows: Section 7.2 will discuss the differences between respondent groups in terms of their characteristics; this includes householders' ages; educational level; size of family; occupation and income. In Section 7.3, the perception of householders on the use of forest resources will be analysed and discussed. Section 7.4, meanwhile, discusses the perception of householders on the main pressures that affect forestry practices in the three study areas including: cutting wood; overgrazing; water depletion; reduction of forest area; soil erosion, fires; conversion for agricultural purposes and construction purposes. Finally, Section 7.5 discusses the involvement by local households in the current action and future goals of forestry practices at the local level. While Section 7.2 will be focused on the significant differences between the respondents groups in the three study

areas, the rest of the sections will be based on investigating the significant influences of the respondent groups in terms of their characteristics; attitudes and behaviours; and their action and goals on forest land in general, and on forest resources in particular.

7.2 Characteristics of householders

In this section the focus will be on the characteristics of householders living in the three selected areas (i.e. Al Foronloq (AF), Abo Kbeis (AK) and Abd Aziz Mountain (AAM)) (see Chapter 3: Section 3.4). The respondent groups were characterised in terms of their ages; income; size of family; occupation and educational levels; and the potential influences of their characteristics on the use of forest resources in the three study areas. Analysis of the characteristics of rural householders in the context of the SFM framework clarifies the relationship between the socio-economic factors and their understanding of the effect of their actions on the state of forest land in the three study areas.

7.2.1 Householders' ages

The sample of 142 respondents was subjected to a series of analyses. The results showed that the mean age of householders was 32 years: it was 32 years in the Al Foronloq study area (AF), 29 years in the Abo Kbeis study area (AK) and 35 years in the Abd Aziz Mountain study area (AAM) (Table 7.1).

Table 7.1: The statistical analysis for the respondent groups in the three study areas (source: Author's questionnaire survey, 2008)

Study area/householders' ages	N	Mean	Std. Deviation	Median
AK	40	29	11.1	29.2
AF	50	32	10.7	31.1
AAM	52	35	8.5	35
Total	142	32	10.2	32.4

Table 7.1 shows that respondents' ages tended to be middle aged. (In AAM the results were particularly skewed with almost 50% in the middle and retired age groups.) There were apparent differences between the distribution of householders' ages in the three study areas at the 95% confidence limit (Pvalue=0.03; P=16.88; see Appendices 3: 1). This result can partly be explained because in AAM, the young men moved out in late 1994 because the rangeland was reclaimed by the afforestation programme (Reported by Mulahasan, 2005).

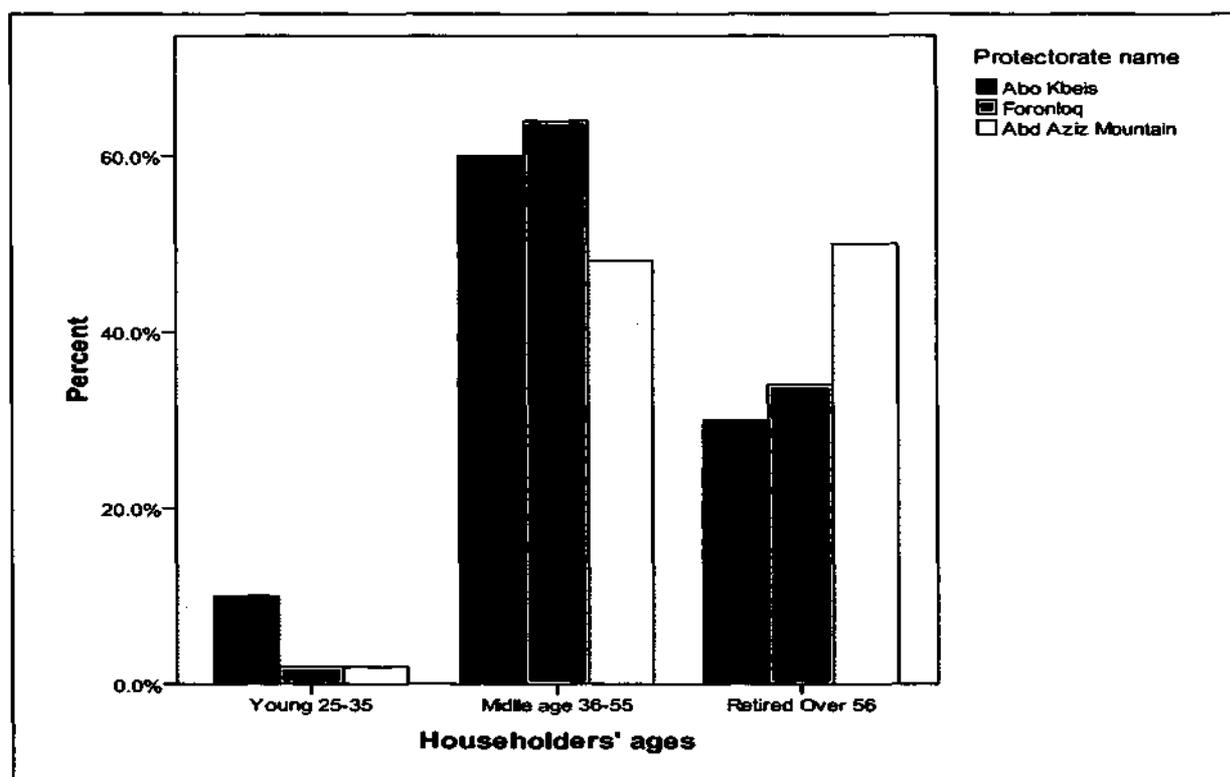


Figure 7.1: The distributions of householders' ages in the three study areas (source: Author's questionnaire survey, 2008)

The sample results (Table 7.1 and Figure 7.1) were compared with the National Report of Social Services in Syria. According to the official statistical data (2005), the mean age of householders in the three study areas was similar to that of the survey at 33 years. Note that some households in rural areas may not have been registered officially because of cultural issues (i.e. education background; ignoring the role of women or girls in outdoor workplaces or society) (Author's interview with the manager of Al Foronloq study area in Syria, 2008) (Chapter 8). In the context of this study, the proportion of middle and retired aged peoples could affect the use of forest resources in the study areas because they could manage the forest area according to traditional more exploitive practices. In order to develop the analysis further, Section 7.3 will investigate the significant relationship between the characteristics of respondent groups and the use of forest resources.

7.2.2 Size of families

It could be argued that differences in the size of families in respondent groups could lead to differences in their use of the forest resources: larger sizes of family, for example, may require more firewood.

Household sizes in the entire sample group range from one person to fourteen, with an average size of between six and seven (Mean = 6.8; Table 7.2). Official data (Table 7.2) show that the mean size of families in the three study areas is equal or slightly higher than found in the sample survey. As with the age of householders, some women and girls in rural areas in Syria have not registered in the social department, and as a consequence the official data do not show the correct figures of family size (Author's interview: chairperson of women union in Syria, 2008).

Table 7.2: The mean of family size in the three study areas (Source: the National Syrian Social Census Services, 2005; Author's questionnaire, 2008)

Study area	The mean size of family	
	Sample	Census data
AK	6.2	8.1
AF	6.3	6.2
AAM	7.9	8.8
Weighted average	6.8	

Table 7.2 shows that the largest families were found in AAM. This result can be explained by the low family income (Section 7.2.4) which may lead to households

to have more children than in more affluent areas as an 'insurance' for their future. One interviewee linked the large family size to poverty in the area and confirmed that 'the basic needs of the local community in AAM are not being met and indeed have been directly impaired by forest regeneration projects and the establishment of the protected land' (Author's interview: the Director of UNDP in Syria, 2009).

Further analysis in terms of the distribution of respondents' size of family in the three study areas was conducted to investigate the significant differences between their characteristics. Figure 7.2 shows that the distribution of respondents with three children or more for the whole sample equated to 66.9% of the total. The majority of them were from the AAM study area (77%). The size of families is normally distributed in AK and AF study areas, whereas it is skewed in AAM. As expected, the results showed that there were apparent differences between the distribution of householders' size of family in the three study areas (Pvalue=0.001; P=23.67; see Appendices 3: 2).

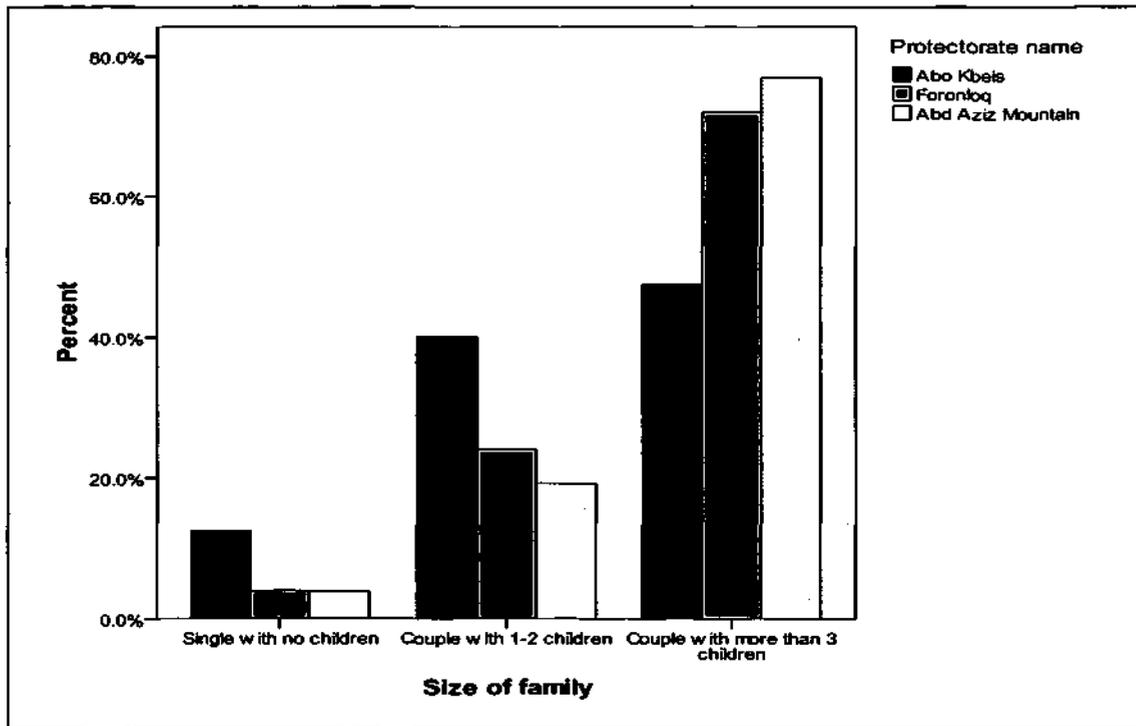


Figure 7.2: The distribution of householders' family size in the three study areas (Source: Author's questionnaire, 2008)

Increasing the size of a family could affect the household's income (Section 7.2.4) and attitudes towards the forest as larger families need to get more resources from the woodland, which in turn impact on the state of forest land.

7.2.3 Education level

As emphasised in Chapters 2 and 4, education background plays an important role in the formulation and implementation of SFM in ASAZs in general and in Syria in particular (Owubah *et al.*, 2001; Junnila *et al.*, 2006; Kang *et al.*, 2007). The aim of this section is to investigate the differences between respondent groups in terms of their formal² education level and the potential influences of their formal education on the use of forest resources in the three study areas. To

² Formal educational level means the number of years spent at school, college or university.

achieve this aim, a comparison was made between the sample data and the official data for the respondent groups in terms of their formal education.

Table 7.3 shows that the majority of householders have some degree of formal education (62.7%). In the AK study area, almost 98% of householders confirmed that they have some degree of formal education. In the AF study area, 72% of householders also have some degree of formal education. In contrast, only 26.9% of respondents in the AAM study area have had some formal education.

Table 7.3: Householders' formal educational levels in the three study areas (Source: the Ministry of Education in Syria, 2005; Author's questionnaire, 2008)

Study area	Non-educated (Census data in 2005)	Education level		Total
		Non-educated	Educated	
AK	16.5%	1 2.5%	39 97.5%	40 100.0%
AF	12.9%	14 28.0%	36 72.0%	50 100.0%
AAM	35%	38 73.1%	14 26.9%	52 100.0%
Total	21.5% (Rural area)	53 37.3%	89 62.7%	142 100.0%

The difference between householders in the three study areas in terms of their formal educational levels can be related in part to the availability of educational facilities and the existence of large universities in Lattakia and Hamah, where the AF and the AK study areas exist (see Chapter 3). As expected, there was a significant difference between the distribution of respondent groups in terms of

their education levels in the three study areas (Pvalue=0.000; P=51.01; see Appendices 3: 3). Official data, obtained from the Ministry of Higher Education in Syria (see Table 7.3), confirmed a high percentage of rural people in AAM who are recorded as having no formal education (35%). According to the Ministry of Higher Education in Syria (2005), the total percentage of non-educated people in the three study areas was 21.5%. (About 17% of them were in AK, 13% were in AF and 35% were in AAM). The differences between the results obtained from the questionnaire survey and the official data (37.3% and 21.5% respectively) could be related to the high percentage of non-educated people in the mountain area in the AAM study area, which is drawing up the percentage of the whole sample.

In order to examine the relationship between householders' educational levels and the potential use of forest resources in the three study areas, a comprehensive analysis of the data was undertaken to confirm or refute the hypothesis that well educated and therefore wealthier householders have less impact than non-educated households. This point will be discussed further in Section 7.3. The importance of income level, as one of the householders' characteristics affecting the use of forest resources in the three study areas, will be discussed next.

7.2.4 Income

As mentioned in Chapters 2 and 4, poverty is one of the possible social factors that could affect local communities' attitudes and behaviours, which in turn affect their use of forest resources in ASAZs generally and in Syria in particular (FAO, 2000; Junnila et al, 2006; Kang et al, 2007; Owubah et al, 2001; Tufuor, 2005; Bauer and Corredor, 2006). However, wealthier families may have other options to

satisfy their energy and other needs instead of relying on the forest for firewood etc. In addition, they may recognise the huge potential of the forest if looked after well in terms of benign providing water and other indirect uses (Section 7.3.3). In this present section, the analysis was based on the results of the questionnaire survey and also census data obtained by the Ministry of Finance in 2005.

Table 7.4 shows that the percentage of respondents with low income in the whole sample (who earn between 10000-29000SP annually i.e. £140 to £400) equated to 68.3% of the total. In the AAM and the AK study areas, 88.5% and 72.5% of respondents have low income respectively. In contrast, more than half of the householders in the AF study area (56%) have an average income. These results were compared with the latest Syrian census data (e.g. in 2005) for rural income in the three study areas. The census data shown in Table 7.4 confirmed that the majority of householders (62%) in the three study areas have a low income; where 84% of householders in AAM and 69.7% of householders in AK have low income, 58.7% of householders in AF have an average income (e.g. annual income is between 30000-49000 SP i.e. £400 to £700).

Table 7.4: Householders' income in the three case study areas (sources: Author's questionnaire, 2008; the Ministry of Finance, 2005)

Study area	Total annual rural householders' income (Census data, 2005)		Annual householders' income (Survey)		Total
	10000-29000*	30000-49000*	10000-29000*	30000-49000*	
AK	69.7%	30.3%	29 72.5%	11 27.5%	40 100.0%
AF	41.3%	58.7%	22 44.0%	28 56.0%	50 100.0%
AAM	84%	16%	46 88.5%	6 11.5%	52 100.0%
Total	62%	38%	97 68.3%	45 31.7%	142 100.0%

* 1000 SP= £140

It should be noted that the local community in AF has greater income than those in the other study areas (AK and AAM). This result could be explained both by the location of the AF study area close to the large industrial area in Lattakia, and by the relatively high number of educated people. As expected, there were significant differences between the householders' income levels in the three study areas (Pvalue=0.000; P=23.4; see Appendices 3: 4). In fact, low income could affect local community attitudes and their behaviour, which in turn could put pressures on the forest resources. For example, in the AK and the AAM study areas, the demand for firewood and a high grazing density could lead directly to depletion of trees; whereas householders in the AF study area have a higher income, where there are many business opportunities, and would be less dependent on the forest. In other words, the high percentages of householders with low income in the AK and the AAM study areas impact adversely on forest resources.

7.2.5 Householders and their land tenure

This section aims to analyse and explain the differences between the three study areas in terms of householders' land tenure to determine whether there are any differences in occupancy and use of forest resources. To do this, householders were asked whether they were land owners, tenants or illegally occupying the land. Table 7.5 shows that the majority of householders in the three study areas either own the land that they occupy (40.8%) or rent it (42.3%). Interestingly, there is a high percentage of illegal occupation (16.90%) overall of which 23.1% were from AAM. A chi-square test showed that there were no significant differences between householders' occupancy in the three study areas (Pvalue=0.5; P=3.6; see Appendices 3: 5).

Table 7.5: Land tenure in the three case study areas (source: Author's questionnaire, 2008; the official census data from the Ministry of Agriculture 2005)

Study area	Census data of owner occupier (2005)			Land tenure			Total
	Owner occupier	Tenant	Illegal Occupation	Owner occupier	Tenant	Illegal occupation	
AK	66%	10.4%	8.3%	17 42.5%	19 47.5%	4 10%	40 100%
AF	25%	12.3%	10.5%	19 38%	23 46%	8 16%	50 100%
AAM	6.68%	6.3	21.2%	22 42.3%	18 34.6%	12 23.1%	52 100%
Total	32.6%	29%	40%	58 40.8%	60 42.3%	24 16.9%	142 100.0%

According to the official census data from the Ministry of Agriculture in Syria (2005), more than a third of householders in the three study areas were owners (32.6%); 29% of householders were tenants; and the remains of householders (about 40%) were recorded as illegal occupiers. Table 7.5 also shows that there were apparent differences between the results obtained from the questionnaire survey and the Ministry of Agriculture in 2005. These results could be explained by the high percentages of low income levels in AK and AAM; and of non-educated people in AAM. Munlahasan (2005) reported that householders in AF were dependent upon agricultural production, which could affect their behaviour towards converting forest land to agricultural land to raise income. In the other two areas the villagers' low income could affect the community's attitude and behaviour, which in turn could increase their pressure upon the forest resources.

In summary, Section 7.2 has presented an analysis and discussion of the differences between the characteristics of respondent groups which could affect the use of forest land in the three study areas in Syria. The analysis and discussion in this section has focused on five indicators of social factors. These indicators were: householders' ages, family size, income; educational level and householders' occupation. The statistical analyses have confirmed the differences between the respondent groups in the three study areas in terms of these indicators. Of particular note, the statistical analyses showed that respondents in the mountains (in the AAM study area) seemed to be older than the respondent groups in the other study areas. The size of families in AAM is skewed towards the elderly, whereas there is a normal distribution in AK and AF. More than three quarters of the respondents in AAM were not educated, compared with 28% in AF and 2.5% in AK. While the majority of respondent groups in AK (88.5%) and in

AAM (72.5%) had a low income, 56% of respondents in AF had an average income. Finally, statistical analysis of land tenure confirmed that there were no significant differences between the respondent groups in the three study areas. However, it should be noted that respondent groups in AAM and AF seem to be more dependent upon forest resources than respondents in AK; and they occupied land illegally because of their mission to develop agricultural activities and low income (Reported by UNDP, 2007).

In the context of the SFM framework used in this study, identifying the characteristics of respondent groups is important in terms of understanding the pressures or influences of respondent groups upon the forest resources, and consequently of understanding the impact of these pressures on the state of forest land in Syria. Therefore, it is important to investigate how householders' characteristics could influence the use of forest resources in the context of the SFM framework employed in this study. This point will be discussed next.

7.3 Householders' attitudes and their behaviours

As mentioned in Chapter 5, the social sub-component of the SFM framework relates to the action taken by individuals (Adams, 1996). This section, therefore, aims to discuss the relationship between respondents' characteristics (age, family size etc.) and their use of forest resources in the three study areas. To achieve this aim, the evidence derived from the entire sample of 142 respondents was analysed (Table 7.6): the classification of forest resources was based on one devised by Mulahasan (2005).

Table 7.6: The major use of forest resources in the three study areas (Sources: Author's questionnaire, 2008)

Study area	Utilization						Total
	³ Collecting medical & aromatic plants & seeds	⁴ Shop/ popular tourism	⁵ Cut branches, leaves and roots & firewood	⁶ Hunting	⁷ Drinking water, spring water	⁸ Agriculture activities	
AK	14 35.0%	0 .0%	10 25.0%	1 2.5%	4 10.0%	11 27.5%	40 100%
AF	10 20.0%	3 6.0%	8 16.0%	3 6.0%	13 26.0%	13 26.0%	50 100%
AAM	5 9.6%	10 19.2%	9 17.3%	0 0%	0 0%	28 53.8%	52 100%
Total	29 20.4%	13 9.2%	27 19.0%	4 2.8%	17 12.0%	52 36.6%	142 100%

Table 7.6 shows that 36.6% of respondent groups in the three study areas confirmed that they use forest land for agricultural purposes including grazing: the respondents in AAM (53.8%) in particular used the forest / rangeland for agricultural activities. Table 7.6 also shows that while 20.4% of respondent groups use forest land for collecting non-wood products, 19% of the sample use forest land for obtaining wood products. It should be noted that a similar number of respondents in AF use forest land for collecting water from springs (26%) as for agricultural purposes (26%). In contrast, only 10% of respondents in AK and 0% in AAM use forest land for collecting water. Differences were apparent between the respondent groups in terms of their use of forest resources in the three study areas (Pvalue=0.000; P=42.7; see Appendices 3: 6).

³ Non-wood products

⁴ Such as a stall or 'Kushk' in forest land as a shopping place

⁵ Wood products

⁶ Hunting refers to hunting game on forest land for pleasure

⁷ Water springs are distributed throughout Syrian forest land and any encroachment on them could affect the natural environment of forest areas.

⁸ Agricultural activities include grazing, cropping, growing fruits and hedging.

Having confirmed that there were significant differences between the respondent groups in terms of their use of forest areas, it is important to examine the relationship between householders' characteristics and their potential use of forest resources in the three study areas.

7.3.1 Householders' ages and the utilization of forest resources

In Section 7.2.1, householders' ages were identified as one of the respondents' characteristics which could affect their actions in using forest resources in the three study areas. Therefore, it is important to investigate the influence of householders' ages upon the use of forests, so that evidence of this potential influence could be explored (Table 7.7).

Table 7.7: Householders' ages and the major use of forest resources in the three study areas (Source: Author's questionnaire, 2008)

Utilization of forest resources	Householders' ages			Total
	Young 25-35	Middle age 36-55	Retired Over 56	
Collecting medical & aromatic plants & seeds	2 6.9%	16 55.2%	11 37.9%	29 100.0%
Shop/popular tourism	1 7.7%	5 38.5%	7 53.8%	13 100.0%
Cut branches, leaves and roots & firewood	1 3.7%	18 66.7%	8 29.6%	27 100.0%
Hunting	0 .0%	3 75.0%	1 25.0%	4 100.0%
Drinking water, springs	0 .0%	12 70.6%	5 29.4%	17 100.0%
Agricultural activities	2 3.8%	27 51.9%	23 44.2%	52 100.0%
Total	6 4.2%	81 57.0%	55 38.7%	142 100.0%

Table 7.7 shows that the majority of respondent groups fall into the age bands of middle and retired (i.e. 57% and 38.7% respectively). The middle aged men seem to use forest resources more than the other respondents i.e. young and retired people (Table 7.7). Chi-square test results confirmed, however, that there is no apparent relationship between householders' ages and the use of forest resources in the three study areas (Pvalue=0.8; P=6.4; see Appendices 3: 7), but care must be taken interpreting the statistical analysis because 44% of figures had a count less than 5. It is likely that there are other indicators related to householders' characteristics that could influence the potential use of forest resources in the three study areas.

7.3.2 Family size and the utilization forest resources

In Section 7.2.2, family size was identified as one of the respondents' characteristics which could affect their attitudes and behaviours in using forest resources in the three study areas. Therefore, it is important to investigate the relationship between householders' family sizes and the major use of forest resources in the three study areas (Table 7.8).

Table 7.8: Householders' family sizes and their major use of forest resources (Sources: Author's questionnaire, 2008)

Utilization of forest resources	Size of family			Total
	Single with no children	Couple with 1-2 children	Couple with 3 children and more	
Collecting medical & aromatic plants & seeds	4 13.8%	6 20.7%	19 65.5%	29 100.0%
Shop/popular tourism	0 .0%	2 15.4%	11 84.6%	13 100.0%
Cut branches, leaves and roots & firewood	1 3.7%	11 40.7%	15 55.6%	27 100.0%
Hunting	0 .0%	1 25.0%	3 75.0%	4 100.0%
Drinking water, spring water	1 5.9%	7 41.2%	9 52.9%	17 100.0%
Agricultural activities	3 5.8%	11 21.2%	38 73.1%	52 100.0%
Total	9 6.3%	38 26.8%	95 66.9%	142 100.0%

Table 7.8 shows that the majority of respondent groups comprise a couple with 3 children or more (66.9%). It might be hypothesised that as the majority of respondent groups who use forest land for agricultural purposes fall into this category of family size, that they might place increased demand on the forest resources. However, the Chi-square test results found that there was no significant relationship between householders' family size and their use of forest resources (Pvalue=0.4; P=10.9; see Appendices 3: 8).

7.3.3 Education level and the utilization of forest resources

In Section 7.2.3, education level was identified as one of the respondents' characteristics which could affect their attitudes and behaviour in using forest resources in the three study areas. Therefore, it is important to investigate the relationship between householders' formal education levels and their major use of forest resources in the three study areas (Table 7.9).

Table 7.9 shows the respondents' education levels and their use of forest resources in the three study areas. The majority of respondent groups (62.7%), have some formal education and they seem to use forest land for collecting both wood products (75% of the total) and non-wood products (75.9% of the total); collecting water (88.2% of the total); and for agricultural purposes (44.2% of the total). Chi-square test results confirmed that there were significant relationships between the respondent groups in terms of their education level and their use of forest resources in the three study areas ($P_{\text{value}}=0.003$; $P=17.7$; see Appendices 3: 9).

Table 7.9: Householders' educational level and their major use of forest resources in the three study areas (Sources: Author's questionnaire survey, 2008)

Utilization of forest resources	Education level		Total
	Non-educated	Educated	
Collecting medical & aromatic plants & seeds	7 24.1%	22 75.9%	29 100.0%
Shop/popular tourism	7 53.8%	6 46.2%	13 100.0%
Cutting branches, leaves and roots & firewood	7 25.9%	20 74.1%	27 100.0%
Hunting	1 25.0%	3 75.0%	4 100.0%
Drinking water, spring water	2 11.8%	15 88.2%	17 100.0%
Agriculture activities	29 55.8%	23 44.2%	52 100.0%
Total	53 37.3%	89 62.7%	142 100.0%

These results concur with the work of Obua *et al.* (1998) and Sharma *et al.* (2009), who argued that educated people use forest resources more than non-educated people. The results could be related to the income levels of the respondents (Sections 7.2.4 and 7.3.4). In addition the impact of educated and non-educated users of forest resources could be different. For example the majority of educated people (88%) collected water which will have only a limited impact. There may also be differences between the study areas, depending on their economic status. It should be taken into account that the majority of respondents in the AAM study area (73.1%) have no formal education, and therefore, they could make much greater demands on the forest resources than the respondents in the other study areas. These results can also be explained partly by the practice of the afforestation programme in AAM, which restricts a local community in using forest

resources, which in turn leads that local community to use forest resources illegally. However, the results shown in Table 7.9 refute the hypothesis mentioned earlier in this chapter (Section 7.2.3) that well educated people have less impact on forest resources than non-educated people.

As mentioned earlier, this section aims to investigate the influence of householders' characteristics upon their use of forest resources. Therefore, there are other indicators related to householders' characteristics which could influence the use of forest resources in the three study areas.

7.3.4 Income level and the utilization of forest resources

In Section 7.2.4, income level is identified as one of the respondents' characteristics which could affect their attitudes and behaviours in using forest resources in the three study areas. Therefore, the relationship between householders' income levels and their major use of the forest will be investigated (Table 7.10).

Table 7.10 shows that the majority of respondents used forest land for collecting non-wood products (62.1%); for collecting water from springs (70.6%); for collecting wood products (70.6%); and for agricultural purposes (69.2%), have a low income (e.g. between 10000-29000 SP i.e. £140 to £400). There was no relationship between a householders' income and their use of forest resources (Pvalue=0.3; P=5.7; see Appendices 3:10).

Table 7.10: Householders' income level and their major use of forest resources in the three study areas

Utilization of forest resources	Householders' annual income		Total
	10000-29000*	30000-49000*	
Collecting medical & aromatic plants & seeds	18 62.1%	11 37.9%	29 100.0%
Shop/popular tourism	11 84.6%	2 15.4%	13 100.0%
Cut branches, leaves and roots & firewood	19 70.4%	8 29.6%	27 100.0%
Hunting	1 25.0%	3 75.0%	4 100.0%
Drinking water, spring water	12 70.6%	5 29.4%	17 100.0%
Agriculture activities	36 69.2%	16 30.8%	52 100.0%
Total	97 68.3%	45 31.7%	142 100.0%

* 1000 SP= £140

However, there were some indications that the poorer people tended to use the forest for grazing and collecting firewood: those on a low income, particularly the householders in the AAM study area seemed to have a different attitude to using the forest. This could be related to the restrictions by the Syrian government which prevent the local community from grazing their animals in the protected area (Interview the Director of UNDP in Syria, 2009). On the other hand, the Syrian government has not provided any alternative resources such as land, loans, or jobs to meet the needs of the local community in the AAM study area. Consequently, householders suffering from financial problems may be less aware of the importance of forest protection and try to solve their individual needs by

increasing the pressures on the forest resources, such as by overgrazing, in order to fulfil their needs.

7.3.5 Householders' tenure and the utilization of forest resources

In Section 7.2.5, householders' tenure was identified as one of the respondents' characteristics which could affect their actions in using forest resources in the three study areas. Therefore, the influence of householders' tenure upon their use of the forest was examined (Table 7.11).

Table 7.11: Householders' occupation and their major use of forest resources (Source: Author's questionnaire, 2008)

Utilization of forest resources	Ownership			Total
	Owner occupier	Tenanted - legal occupation of land owned by another	Illegal occupation	
Collecting medical & aromatic plants & seeds and fruits	7 24.1%	14 48.3%	8 27.6%	29 100.0%
Shop/popular tourism	7 53.8%	3 23.1%	3 23.1%	13 100.0%
Cutting branches, leaves and roots & firewood	13 48.1%	10 37.0%	4 14.8%	27 100.0%
Hunting	0 .0%	3 75.0%	1 25.0%	4 100.0%
Drinking water, spring water	4 23.5%	11 64.7%	2 11.8%	17 100.0%
Agricultural activities	27 51.9%	19 36.5%	6 11.5%	52 100.0%
Total	58 40.8%	60 42.3%	24 16.9%	142 100.0%

As shown in Table 7.11, the majority of respondent groups owned land or rented it. Over half of the respondent groups (51.9%) who use forest land for agricultural purposes owned land; and nearly half of the respondent groups who use forest land for collecting wood products, as well as 53.8% of respondents who use forest land for building a small business in the forest land, owned land (e.g. building a stall or Kushk by receiving a licence from the government). However, the majority of respondent groups who use forest land for collecting water from springs; non-wood products and hunting were either tenants or illegal occupiers. There was no relationship between householders' land tenure and their use of forest (Pvalue=0.1; P=16; see Appendices 3: 11).

This section has presented an analysis and discussion of the potential influences of householders' characteristics upon their attitudes and behaviours related to their use of forest resources in the three study areas in Syria. The analysis and discussion in this section has focused on the influence of five indicators of social factors upon the utilization of forest resources. These indicators were: income, occupation, educational level, size of family and householders' ages.

The statistics analysis showed the following results:

- *Householders' ages and their use of forest resources:* there were no relationships between householders' ages and their use of forest resources;
- *Size of family:* there were no relationships between the size of family and their use of forest resources;
- *Householders' educational levels:* there was an apparent relationship between householders' educational levels and their use of forest resources;

- *Householders' income*: there was no relationship between householders' annual income and their utilization of forest resources.
- *Householders' land tenure*: there were no relationships between householders' occupancy and their use of forest resources.

So, can the use of forest resources lead to a major impact on forest land in the three study areas? And if so, what are the main effects and how can they be explained? In the next section, the analysis and discussion will be focusing on the householders' perceptions of their impacts on the state of forest land.

7.4 Awareness of pressures affecting forest areas

As mentioned in Chapters 2 and 4, pressures on forest resources can lead to the degradation of the land. For example, overgrazing puts pressures on forest resources leading to biodiversity loss and soil erosion. Thus, a comprehensive understanding of the relationships between the main pressures and degradation of forest land is required. In the context of the SFM framework, the main pressures affecting forest land were grouped into five sub-components (see Chapter 5): while the first and second sub-components represent environmental and economic issues, the third sub-component represents social and cultural issues (e.g. human activities or immediate actions that directly relate to the overall reduction in forest land), the final two sub-components represent the state of forest land and the political issues. This section, therefore, aims to discuss the relationship between the overall reduction of forest land and the major pressures that affect forest land in the three study areas with especial regard to the social pressures. To achieve this aim, the entire sample of 142 respondents was subjected to cross-tabulation statistical analysis, and evidence then could be made available either to confirm or

refute the hypothesis that the major social pressures affecting forest land can lead to an overall reduction in forest land in the three study areas. The major pressures indicators (see Chapter 3), which will be addressed in this section, are: cutting wood, branches, leaves and roots; fire; soil erosion; overuse of water springs; conversion to agricultural land; conversion for construction purposes and tourism.

7.4.1 Collecting wood products:

The aim of this section is to investigate whether the villagers are aware that cutting wood, branches, leaves and roots (CWBLR) leads to degradation of the forest (Tables 7.7 and 7.12).

Table 7.12 shows the percentages and figures of respondent groups who confirm they think that there is a major impact on the woodland by cutting wood, branches etc. The majority of respondent groups (82.4%) confirmed that they were aware of the very considerable impact of CWBLR on the forest. In the AK study area, 95% of respondents were aware of the problem, in AF 88% of respondents were very concerned, whilst 67.3% of respondents in AAM noted the problem. However, there was a difference between the levels of perception of three groups about the impact of CWBLR on forest land ($P_{value}=0.01$; $P=13.8$; see Appendices 3: 12).

Table 7.12: Perception of the impact of cutting wood, branches, leaves and roots on forest land in the three study areas (Source: Author's questionnaire, 2008)

Study area	Cutting of wood, branches, leaves and roots			Total
	Very significant	Low	Not applicable	
AK	38 95.0%	1 2.5%	1 2.5%	40 100.0%
AF	44 88.0%	4 8.0%	2 4.0%	50 100.0%
AAM	35 67.3%	12 23.1%	5 9.6%	52 100.0%
Total	117 82.4%	17 12.0%	8 5.6%	142 100.0%

As mentioned in Chapters 2 and 4, other threats could lead to the overall reduction in the quality of forest land in ASAZs in general, and in Syria in particular. Therefore, it is important to investigate the awareness of damage caused by other threats such as overgrazing.

7.4.2 Overgrazing and soil erosion

This section aims to investigate the awareness of the problems of overgrazing and resultant soil erosion leading to a reduction in the quality of forest land in the three study areas (Tables 7.13). It should be stated at the outset that the questionnaire responses may be biased as the villagers may have given the answer which they thought that the author would wish to hear.

Table 7.13 shows that the majority of respondent groups confirmed that they were aware of the very significant threats that were posed by overgrazing (74.6%) and

soil erosion (76.8%) in forest land. While 67.5% in AK; 78% in AF and 82.7% in AAM confirmed the large threats due to soil erosion, the majority of respondents in AK (82.5%) and in AAM (100%) also confirmed the large threats posed by overgrazing. Fewer respondents in AF (42%) thought that overgrazing could lead to forest degradation. However, statistically, there were differences between the perception of respondent groups in the three study areas in terms of either the major threat of soil erosion (Pvalue=0.02; P=12.4; see Appendices 3: 14) or overgrazing (Pvalue=0.000; P=55.9; see Appendices 3: 13).

Table 7.13: Perception of the threats of soil erosion and overgrazing in the three study areas (source: Author's questionnaire, 2008)

Study area	Soil erosion			Total	Overgrazing			Total
	Large	Low	Not applicable		Large	Low	Not applicable	
AK	27 67.5%	10 25.0%	3 7.5%	40 100.0%	33 82.5%	5 12.5%	2 5%	40 100%
AF	39 78.0%	2 4.0%	9 18.0%	50 100.0%	21 42%	29 58%	0 0%	50 100%
AAM	43 82.7%	5 9.6%	4 7.7%	52 100.0%	52 100%	0 0%	0 0%	52 100%
Total	109 76.8%	17 12.0%	16 11.3%	142 100.0%	106 74.6%	34 23.9%	2 1.4%	142 100%

According to the results obtained from Table 7.13, there is good awareness that overgrazing and soil erosion could lead to depletion of forest resources in the three study areas. These results lead to the question about whether the awareness of the problems lead to action. Personal observation suggested otherwise, for example, in AK men have the predominant role in the family to increase the family's income (Women there have been restricted from being involved in society because of religious faith (Chapter 8)). Often, such pressure

leads to conversion of forest land for agricultural purposes, which in turn could increase the possibility of soil erosion occurring in this area. The second observation is that local communities in AAM have been suffering from poverty which in turn leads them overgrazing, which leads to an increase in the possibility of soil erosion occurring in forest land (Reported by Munlahasan, 2005).

7.4.3 Collection of water from springs

The main purpose of this section is to determine awareness of problems with the forest due to over abstraction of water from springs. In order to achieve the main aim of this section, and based on the discussion presented in Section 6.3.1, the present section investigates the perception of overuse of water springs and the problem of overall reduction of forest land in the three study areas.

Table 7.14 shows that over half of the respondent groups (52.8%) confirmed they were aware of very significant threats of overuse of water resources in both the AF and the AK study areas (70% of respondents in AK and 94% of respondents in AF). Comparing this with the householders in AAM, 59.6% of them perceived low threats of overuse of water resources. It should be noted that people of Abd Aziz Mountain have to buy their water from the government, since there are not springs in this area, as the reason why they do not care about water springs (Reported by Munlahasan, 2005).

Table 7.14: The awareness of the problem of overuse of water resources in the three study areas (Source: Author's questionnaire, 2008)

Study area	Overuse of water resources			Total
	Large	Low	Not applicable	
AK	28 70.0%	11 27.5%	1 2.5%	40 100.0%
AF	47 94.0%	2 4.0%	1 2.0%	50 100.0%
AAM	0 .0%	31 59.6%	21 40.4%	52 100.0%
Total	75 52.8%	44 31.0%	23 16.2%	142 100.0%

There was a significant difference in terms of the perception of respondent groups in the three study areas in relation to the overuse of water resources (Pvalue=0.000; P=101.1; see Appendices 3: 15).

7.4.4 The problem of fires, conversion to agricultural land and for construction purposes

Fire, conversion of forest land to agricultural land (CFLAL) and for construction purposes (CFLCP) were identified in Chapter 4 as three of the greatest factors leading to forest degradation and soil erosion in Syria (Jalol and Kabibo 1996; WB/UNDP, 1998; Olak and Rotherham, 2006; Croitoru, 2007; FAO, 2007). Being located in ASAZs, Syrian forest land is severely affected by fires resulting from climatic variations and human activities and their interactions (Alexandrian *et al.*, 1999). In some areas population growth which could increase the encroachment onto forest land resulting from more housing needs, industrial development and agricultural development for food security (FAO, 2007). As a result of growing

demand for new dwellings and agricultural land, the overuse of wood, non-wood products and forest land could lead to forest degradation. Therefore, it is important to investigate the awareness of threats such as fires, CFLAL and CFLCP and the overall reduction in quality of forest land in the three study areas. Before analysing these relationships, it is important to determine the differences between the perceptions of respondent groups in terms of the occurrences of fire, CFLAL and CFLCP in the three study areas (Table 7.15).

Table 7.15: The perception of threats of fires, CFLAL and CFLCP and the overall reduction of forest land in the three study areas (Source: Author's questionnaire, 2008)

Study area	Fire			CFLAL			CFLCP			Total
	Large	Low	Not applicable	Large	Low	Not applicable	Large	Low	Not applicable	
AK	2 5%	28 70%	10 25%	22 55%	14 35%	4 10%	24 60%	11 27.5%	5 12.5%	40 100%
AF	49 98%	1 2%	0 .0%	45 90%	5 10%	0 0%	42 84%	8 16%	0 0%	50 100%
AAM	0 .0%	38 73.1%	14 26.9%	25 48.1%	17 32.7%	10 19.2%	33 63.5%	1 1.9%	18 34.6%	52 100%
Total	51 35.9%	67 47.2%	24 16.9%	92 64.8%	36 25.4%	14 9.9%	99 69.7%	20 14.1%	23 16.2%	142 100%

Table 7.15 shows that the majority of respondents in the three study areas confirmed that they thought that CFLAL and CFLCP had severe impacts on forest land (e.g. 64.8% and 69.7% respectively). By contrast, just 35.9% of the whole sample confirmed the very significant impact of fires on forest land with especial regard to the AF study area where 98% of respondents in AF confirmed the large occurrence of forest fires; and none of respondents in the AAM study area

confirmed this constraint. Table 7.16 confirms the significant differences between the perceptions of respondent groups in terms of the major pressures of fires, CFLAL and CFLCP on forest land.

Table 7.16: Chi-square test, the differences in perception about the impacts of fires, CFLAL and CFLCP in the three study areas

Threats	Value	DF	Sig
Fires	129.5	4	0.000
CFLAL	24.5	4	0.01
CFLCP	32.3	4	0.03

These results, as shown in Table 7.16, could be explained by three reasons. *The first one* is the location of the AAM in the north-eastern part of Syria, which is classified as an arid area, which in turn could be affected by the consequences of drought events, and the locations of both study areas (AK and AF) on the border of the Mediterranean Sea, where climatic conditions are classified as semi-arid and which in turn could be affected by the consequence of wind erosion. *The second reason* could be related to the effect of overgrazing, which could affect the structure of soil and forest tree species. For example, grazing in forest land could lead to depletion of the young tree species, where dry wood would be left, which is more vulnerable to drought events and fires. It should be noted that the pressure of fires in this area could be connected to many factors such as, high temperature, soil erosion, overgrazing and desertification. Thirdly, six householders from the AK and the AF study areas were concerned that their low income and the poor system of transportation facilities have led them to work far away from their home land, and this has led them to extend their farmland for providing food and to open an

illegal road in order to export their farm produce (Householders 6, 19, 48, 71, 80 and 88).

This section has discussed the perception of householders of the major constraint indicators (pressures) on forest land in the three study areas. In particular, the statistical analysis showed that there were apparent relationships between the overall reduction in forest land and the pressures of overgrazing (Pvalue=0.000), soil erosion (Pvalue=0.02), fires (0.000); CFLCP (Pvalue=0.03); CWBLR (Pvalue=0.01), overuse of water resources (Pvalue=0.000) and CFLAL (Pvalue=0.01).

Having discussed the major pressures on forest land in the three study areas, it is important to investigate the perceptions of respondent groups in the three study areas in terms of current action and future goals of forestry practices.

7.5 Perceptions regarding the current and future goals of forestry practices

Chapter 6 discussed the interventions of Syrian governance in formulation and implementation of SFM policy and practices and in other environmental agreements, with especial regard to the interventions of the Syrian government; although Chapter 6 identified the role of local communities in forest management in terms of their negative influences on forest resources. Thus, it is important to investigate comprehensively the positive role of local communities in forest management and their perceptions of the current action of forest management and future goal of implementation of SFM in the three study areas. In the context of the SFM framework, a set of indicators that represent the social and cultural factors

and the public policy regarding political factors were presented as a list of the component and sub-component (see Chapter 5). This section, therefore, discusses the new training undertaken by households; and public action and perception on and of the current forestry practices and on the future goals of forest policy and practices.

7.5.1 Training courses undertaken

This section discusses and analysis the differences between the perceptions of respondent groups who have undertaken training courses in forestry and those who have not regarding the impact of increased pressure on forest land. Many researchers have discussed the importance of training and skills received by local communities in forestry practice. An evaluation report on a conservation biodiversity project in Syria made this important distinction: 'In Syria, training is considered to be the top priority for improving the awareness of local communities at the local level and of managers at Headquarters' (Author's interview: the Director of UNDP in Syria, 2009).

There are several questions related to the training which is undertaken by the local communities in order to develop good forestry practice in the three study areas, and their experiences. For example, how many householders received training courses in improved forestry practices and what type of courses did they engage with? To address these two questions, the total sample was subjected to cross-tabulation analysis in order to confirm or refute the hypothesis that training courses received by households have a significant relationship to forestry practices such

as forest protection and, ultimately, whether this may affect the state of forest land in Syria.

Table 7.17 shows that the total percentages of respondent groups who received training courses in forestry practice were just 29.6%. Table 7.17 also confirms the differences between the respondent groups in terms of receiving training courses in forestry practice. In particular, while over half of the respondents in the AF study area (58%) received training courses, 25% of respondents in the AK study area received training courses and just 5.8% of respondents in the AAM received training courses for forestry practice.

Table 7.17: Forestry training undertaken by householders in the three study areas (Source: Author's questionnaire, 2008)

Study area	Training received by householders related to forestry practices		Total
	Yes	No	
AK	10 25.0%	30 75.0%	40 100.0%
AF	29 58.0%	21 42.0%	50 100.0%
AAM	3 5.8%	49 94.2%	52 100.0%
Total	42 29.6%	100 70.4%	142 100.0%

Chi-square test results confirmed the significant difference between the three respondent groups in terms of receiving training courses in forestry practices (Pvalue=0.000; P=33.95; see Appendices 3: 19). The results could be due, firstly, to the cultural issues of restricting some rural women from contributing in the workplace (see Chapter 8). Secondly, some rural areas received training courses more than other areas because of subsidy issues such as transportation and road maintenance (Munlahasan, 2005; UNDP' survey, 2007). Thirdly, it could be related

to time available and income level. In the AAM study area, for example, households have a low income level (see Section 7.2) which leads them to work more hours in order to satisfy their needs, and as a consequence they would not be able to attend courses in forestry practice (Author's interview: the manager of AAM, 2008). In response to a question about the type of training given, 15 of the respondent groups received training in hand craft skills; while, in particular, 15 households in AK and 5 households in AF received training in forest protection; and seven households from both of these areas received training in forest production and livestock production (Author's questionnaire survey, 2008).

This section assesses whether there is a difference between those groups who received forestry training and their awareness of the need to conserve and protect the forest. In the first instance, the percentages of the community who support the setting up of protected areas (PA) in the three study areas are presented in Table 7.18.

Table 7.18: The establishment of protected areas in the three study areas (Source: Author's questionnaire, 2008)

Study area	The establishment of the PA		Total
	It is necessary	Do not know	
AK	28 70.0%	12 30.0%	40 100.0%
AF	33 66.0%	17 34.0%	50 100.0%
AAM	9 17.3%	43 82.7%	52 100.0%
Total	70 49.3%	72 50.7%	142 100.0%

Table 7.18 shows that nearly half of the respondent groups (49.3%) in the total sample confirmed the necessity of establishing PAs. Table 7.18 also shows that there was huge variation between the perceptions of respondent groups in terms setting them up. While 70% of respondents in the AK study area and 66% of respondents in the AF study area confirmed the necessity of establishing the PAs, just 17.3% of respondents in the AAM thought it was necessary to establish the PA. Statistically, there was a significant difference between the perception of households about the establishment of the PAs in the three study areas (Pvalue=0.000; P=33.7; see Appendices 3: 20). The relationships were explored between the perception of respondent groups in terms of establishment of the PAs and the training received by them in terms of forestry practices.

The results from Tables 7.19 and 7.20 confirm the reasonably significant link between training received by respondents and the establishment of the PAs in AF and AAM. On the other hand, the relationship was not significant in AK. Therefore, these results confirm that the effectiveness of training upon some respondents' practices may depend indirectly on the respondents' level of educational background (Section 4.2.3) and directly upon the geographical location (Section 4.2).

Table 7.19: Training received by households and the establishment of the protected areas (Source: Author's questionnaire, 2008)

Study area			Training received by householders related to forestry practices		Total
			Yes	No	
AK	The establishment of the PA	It is necessary	6 21.4%	22 78.6%	28 100.0%
		Do not Know	4 33.3%	8 66.7%	12 100.0%
	Total		10 25.0%	30 75.0%	40 100.0%
AF	The establishment of the PA	It is necessary	24 72.7%	9 27.3%	33 100.0%
		Do not know	5 29.4%	12 70.6%	17 100.0%
	Total		29 58.0%	21 42.0%	50 100.0%
AAM	The establishment of the PA	It is necessary	2 22.2%	7 77.8%	9 100.0%
		Do not know	1 2.3%	42 97.7%	43 100.0%
	Total		3 5.8%	49 94.2%	52 100.0%

Table 7.20: Chi-square test, training and establishment of the PAs

Study area	Value	DF	Sig.
AK	0.6	1	0.4
AF	8.6	1	0.01
AAM	5.4	1	0.02

Further analysis of the nature of the relationship between training and different perceptions of respondent groups in terms of the current forestry practices in the three study areas will be needed to confirm the previous evidence. To investigate the relationship between the training courses received by respondent groups in the study areas and preventing violation against the PAs, Table 7.21 shows figures and percentages of respondent groups in the three study areas and Table 7.22 shows the significance of these relationships.

Table 7.21: Training and preventing violations against the PAs (Source: Author's questionnaire, 2008)

Study area			Skills received by householders related to forestry practices		Total
			Yes	No	
AK	Prevent violations against the PA	It is necessary	4 20.0%	16 80.0%	20 100.0%
		Do not know	6 30.0%	14 70.0%	20 100.0%
	Total		10 25.0%	30 75.0%	40 100.0%
AF	Prevent violations against the PA	It is necessary	4 28.6%	10 71.4%	14 100.0%
		Do not know	25 69.4%	11 30.6%	36 100.0%
	Total		29 58.0%	21 42.0%	50 100.0%
AAM	Prevent violations against the PA	It is necessary	0 .0%	4 100.0%	4 100.0%
		Do not know	3 6.3%	45 93.8%	48 100.0%
	Total		3 5.8%	49 94.2%	52 100.0%

Table 7.22: Chi-square test, training and preventing violations against the PAs

Study area	Value	DF	Sig.
AK	0.5	1	0.4
AF	6.9	1	0.01
AAM	0.3	1	0.6

The results shown above confirm that there is a close link between training undertaken by respondents in AF and their perceptions about the need to prevent violations against the PA. This was not the case for respondents in AK and AAM despite this being one of the main objectives of forest policy in Syria (Table 7.22; Section 4.4). The differences between the three study areas can be explained in the light of the differences in their educational background (Section 7.2.3); their age (Section 7.2.1); their income level (Section 7.2.4); their illegal occupation of land and therefore their illegal source of living from those forest resources (Section 7.2.5). Such differences can also be related to the need for resources that are alternatives to forest resources. Respondents in AF were more aware about protecting forest areas, according to the way in which they have been trained (Respondents 56 and 70). On the other hand, respondents in AK and AAM were less aware about protecting forest areas because they have been suffering from low income and education levels as well as experiencing the negative cultural issues of women's lack of contribution in the workplace (Chapter 8). It is, therefore, important to investigate the differences between the respondent groups in terms of

their need for securing additional sources of living instead of relying solely on forest resources in the three study areas (Table 7.23).

Table 7.23 below shows that the majority of respondent groups (79.6%) confirmed the need for securing additional sources of living instead of relying only on the PA: 94% of respondents in AF; 73% of respondents in AAM and 70% of respondents in AK confirmed that they were aware of this. However, there was a significant difference between respondents (Pvalue=0.01; P=10.01; see Appendices 3: 21).

Table 7.23: The perception of respondent groups of the need for securing sources of living other than the PA (Source: Author's questionnaire, 2008)

Study area	The need for secure source of living instead of the PA		Total
	It is necessary	Do not know	
AK	28 70.0%	12 30.0%	40 100.0%
AF	47 94.0%	3 6.0%	50 100.0%
AAM	38 73.1%	14 26.9%	52 100.0%
Total	113 79.6%	29 20.4%	142 100.0%

These results could be related partly to the current afforestation programme in AAM which restricts local community from practicing their traditional grazing in the forest area, which in turn affects their economic status; and as consequence they need to secure sources of living other than the PA resources (Author's interview with the Director of UNDP, 2009).

Forest policy has been changed from the traditional concept of forest management, which focused primarily on forest production, to the concept of multifunctional management of forest land which focuses on the three pillars of SFM (i.e. environmental, economic and social and cultural) (Chapter 4; Darwish, 2004; Abido, 2005; Darwish et al., 2007; FAO, 2009). As confirmed in Section 6.2, forest policy has changed direction since 2007, focusing on the concept of multifunctional management of forest land which impacts directly on human beings and the environment and indirectly on economic development with especial regard to the government's priority (Author's interview: the Minister of MAAR, 2008). It is, therefore, important to discuss and analyse the perception of respondent groups of the future goals of forest policy and practice in the three study areas (Tables 7.24 to 7.26).

Table 7.24 shows that over half of the respondent groups in the total sample confirmed the importance of looking after natural resources e.g. 74% of the respondents in AF and 67.5% of the respondents in AK agreed. On the other hand, over half of the respondents in AAM (65.4%) suggested that looking after natural resources was unimportant.

Table 7.24: The perception of respondent groups on the future goal of forest policy and practice in terms of looking after natural resources (Source: Author's questionnaire, 2008)

Study area	Looking after natural resources		Total
	Important	Not important	
AK	27 67.5%	13 32.5%	40 100.0%
AF	37 74.0%	13 26.0%	50 100.0%
AAM	18 34.6%	34 65.4%	52 100.0%
Total	82 57.7%	60 42.3%	142 100.0%

There was a significant difference between the respondent groups in terms of their perception of the goal of forest policy and practice of looking after natural resources (P value= 0.000; $P=18.4$; see Appendices 3: 22). These results could be partly related to the disappointment of local communities in AAM by the current forestry practice regulations, which have restricted the local community from grazing in the protected area (Author's interview with the Director of UNDP in Syria, 2009). Another possible explanation of these results could be related to their educational level (Section 7.2.3) and income level (Section 7.2.4). With reference to the differences between respondents' characteristics in terms of their income level, a further investigation is required to examine the importance of a stable income in the future goals of forest policy and practice in the three study areas. Table 7.25 shows the figures and percentages of the perception of respondent groups about the future goals of forest policy and practice in terms of stable income.

Table 7.25: The perception of respondent groups about the future goal of forest policy and practice in terms of stable income (Source: Author's questionnaire, 2008)

Study area	Stable income		Total
	Important	Not important	
AK	27 67.5%	13 32.5%	40 100.0%
AF	42 84.0%	8 16.0%	50 100.0%
AAM	44 84.6%	8 15.4%	52 100.0%
Total	113 79.6%	29 20.4%	142 100.0%

Table 7.25 shows that there is no variation between the perceptions of respondent groups on the importance of a stable income. The majority of them (79.6%) confirmed the importance of a stable income for future goals of forest policy and practice. Chi-square test results confirmed that there is no significant difference between the perceptions of respondent groups on the future goals of forest policy and practice in the three study areas in terms of stable income (Pvalue= 0.08; P=5; see Appendices 3: 23).

As mentioned in Chapter 4, participation of local communities in good forestry practice is one of the main objectives of the new forest policy issued in 2007 with especial regard to achieving SFM policy and practice (Darwish, 2004; FAO, 2009). It is, therefore, important to investigate the perceptions of respondent groups on the future goals of forest policy and practice in terms of community participation in forest management (Table 7.26).

Table 7.26: The perception of respondent groups on the future goal of forest policy and practice in terms of community participation in forest management (Source: Author's questionnaire, 2008)

Study area	On community participation in forest management		Total
	Important	Not important	
AK	29 72.5%	11 27.5%	40 100.0%
AF	37 74.0%	13 26.0%	50 100.0%
AAM	18 34.6%	34 65.4%	52 100.0%
Total	84 59.2%	58 40.8%	142 100.0%

Table 7.26 shows that nearly two thirds of the respondent groups (59.2%) confirmed the importance of community participation. In particular, 74% of respondents in AF and 72.5% of respondents in AK confirmed the importance of community participation in forest management; whereas just 34.6% of respondents in AAM confirmed that community participation in forest management is an important target for the future goals of forest policy and practices. Chi-square test results confirmed the significant differences between the perceptions of respondent groups on the future goals of forest policy and practice in terms of community participation in forest management (Pvalue= 0.000; P=20.5; see Appendices 3: 24). These results could be explained in the light of the growing awareness about the importance of SFM in AK and AF study areas, which has been reflected by the new project of conservation of biodiversity which is applied by the UNDP organisation and Syrian government (Respondents 12, 35, 60, 75). It

also could be related to the reaction of local communities in AAM on the current afforestation programme, which affects their economic status (Respondents 112, 130, 135).

7.6 Conclusion

This chapter has discussed the engagement of local communities in forest management and investigated whether key social and cultural factors influence the awareness of pressures on forest resources (bottom-up action). Section 7.1 introduced the importance of investigating the engagement of local communities in forest management in the context of the SFM framework. In Section 7.2, the discussion focused on identifying the differences between the respondent groups in the three study areas in terms of their social and economic characteristics. The statistical analysis results showed that there were apparent differences between the respondent groups in terms of their ages ($P=0.03$), size of family ($P=0.001$), education level ($P=0.000$) and income level ($P=0.000$), and no significant differences in terms of land tenure ($P=0.5$). Section 7.3, meanwhile, discussed and analysed the relationship between households' characteristics and the potential use of forest resources in the three study areas. The statistical analysis results showed that there were apparent differences between the respondent groups in terms of their potential use of forest resources ($P=0.000$), although the statistical analysis results showed that there were no relationships between the characteristics of respondent groups in terms of their age ($P=0.8$), family size ($P=0.4$), income level ($P=0.3$) and occupation ($P=0.1$), and their potential use of forest resources. On the other hand, there was an apparent relationship between respondent groups' education levels and their use of forest resources ($P=0.003$).

The discussion and analysis in Section 7.4 focused on investigation of the major pressures that lead to forest degradation. The statistical analysis results showed that there were apparent relationships between the overall reduction in forest land and the pressures of overgrazing (Pvalue=0.000), soil erosion (Pvalue=0.02), fires (0.000), CFLCP (Pvalue=0.03), CWBLR (Pvalue=0.01), overuse of water resources (Pvalue=0.000) and CFLAL (Pvalue=0.01). Finally, Section 7.5 discussed the perception of respondent groups of the current action of forestry practices with especial regard to the training received by householders; and explained the perception of respondent groups on the future goals of forest policy and practice in the three study areas. The statistical analysis suggested a significant difference between the respondent groups in terms of training courses received by them (Pvalue=0.000). There was also a significant relationship between the training received by respondents and the current forestry practices (forest protection) in the AF study area (Pvalue=0.01) and in the AAM study area (0.02); but no significance was perceived in AK (Pvalue=0.4). In addition, there was a significant relationship between the training received by respondents and the need for preventing violation in AF (Pvalue=0.01), but not significant in AK (Pvalue=0.4) and AAM (Pvalue=0.6). Moreover, there were significant differences between the perception of respondent groups in the three study areas and the future goals of forestry practice in terms of the need for alternative sources (Pvalue=0.01); looking after natural resources (Pvalue=0.000); and the participation of local communities in forestry practices (Pvalue=0.000). There was no significant difference in terms of the need for stable income (Pvalue=0.08).

In the next chapter, the analysis and discussion will be focussing on the contribution of women in forest management in Syria generally and in the three study areas in particular.

Chapter 8: The role of women in forest management

Chapter 6 discussed the role of governments and in formulating and implementing SFM policies in Syria. They highlighted the awareness of government officials regarding SFM and indicated how the policies had changed through time. Chapter 7 focused on role of communities and particularly the links between stakeholders' behaviour and awareness of their impact on forestry land. Chapter 8 is written in order to achieve one of this study's objectives: 'to explore the contribution of women in forest management in centralized countries such as in Syria.' The role of women in society, labour force, forest management and SFM policy and practice will be investigated with especial regard to the main factors affecting the contribution of women in forest management in Syria at the national, regional and local levels.

8.1 Introduction

Many researchers have considered that education, poverty, gender inequality, family size, religious and cultural factors are the main factors affecting the contribution of women in forest management in arid and semi-arid countries (Chapter 2; Atkins, 1999; Toksöz and Şen, 2001; Pearl, 2003; Assaad & Arntz, 2005; Atmis *et al.*, 2005; Mogahed and Abdo, 2006; Zaru *et al.*, 2006; Allan, 2006). Islam is the predominant religion in the majority of Arab countries: women have worked as housewives and have been restricted to involvement in the society in accordance with the Islamic faith. The religion, for example, does not allow any Muslim women to work with any men without the permission of their husband (Mogahed and Abdo, 2006). While the Syrian constitution has always required that

the president of Syria has to be a Muslim, Syria has no official religion. A majority of Syrians (74 percent) are Sunni Muslim. The country is also home to other Muslim groups and Christians (about 10 percent), as well as the Alawites (12 percent of the population) who dominate the Ba'ath Party and parts of the government. There is a general tendency in some rural areas in Syria for girls or women to leave school at a younger age to support their families financially and as reflection of the dominance of the Islamic religion in Syria. The Islamic religion in some rural areas in Syria (e.g. in Hamah) has still restricted the role of women in society (El-Safty, 2004). On the other hand, women in other rural areas have started to be involved in the society and workplace in general and in forest management practice in particular, (e.g. women's role in the Forest Protection Project in Al Foronloq) but lower levels of education and poverty level and increasing the size of the family may further affect women's participation in forest management (Pearl, 2003; Assaad & Arntz, 2005). This chapter explains how education level, family size and poverty level can affect the contribution of women in forest management in Syria.

8.2 The contribution of women in forest management and SFM practice

Previous studies have suggested that the contribution of women in forest management forms a 'keystone' for achieving SFM in arid and semi-arid areas (Chapter 2; Rodda, 1993; Atkins, 1999; Rahman, 2000; Toksöz and Şen, 2001; Pearl, 2003; Iffat, 2003; Assaad & Arntz, 2005; Atmis *et al.*, 2005; Mogahed and Abdo, 2006; Zaru *et al.*, 2006; Allan, 2006). Iffat (2003: 3), for example, argued that 'women play the key role in the management and day-to-day collection of non-timber forest products (NTFPs) and processing of tree products for self-use, as

well as income generation to meet household needs'. Rodda (1993) and Rahman (2000) also suggested that women often have an important role in household activities, forest protection and conservation. Therefore, the importance of women's role in society, in the labour force in general and in forestry in particular in the three case study areas in Syria will be investigated in this section.

It is generally assumed that men have almost exclusive authority on matters related to buying and selling of land, working in tree nurseries and other forestry practices. Conversely, women tend to make decisions about household activities. According to the official statistics (FAO, 1996), only about 6% of those economically active in forestry in 1993 in Syria were women. This figure rose to about 10% when unpaid family labour was included. However, such data often do not reflect the true contribution of women in society in general and in forestry in particular, because women's participation at the national, regional and local levels is generally excluded from the statistics. In interviews with the forest managers in the three study areas, it was found that the division of labour between men and women in Syria was determined by religion, education level, poverty level and family size. Overall, while men carry out most of the forest preparation, planting, harvesting and irrigation, women's contribution in forest management focuses on collecting charcoal, non-wood products, grazing (e.g. tending sheep) and collecting water for householders' uses (Author's interview with manager respondent: N2, 2008).

The contribution of women in the labour force at the national level in Syria is low (e.g. 12.4%), however, significant inequalities between the contribution of women

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and men in the labour force still exist, with 46% of men and just 12.4% of women employed (UNDP Syrian Human development Report, 2008). Women's salaries are lower than men's salaries (e.g. about 75 SP per day for a woman and 150 SP for a man) (FAO Syria forestry development Database, 2008). This fact also affects the percentage of women involved in the labour force in Syria.

It has been stated by many researchers and studies that women play a vital role in agricultural production in Syria (Table 8.1) and in other developing countries (Galdo, no date; Dollar *et al.*, 2001; Chattopadhyay & Duflo, 2004; Issa, 2004; Lindh, 2006; Papfam, 2006).

Table 8.1: The contribution of women in the labour force in Syria (Source: UNDP Syrian Human development Report, 2008)

Occupation types	1994	2004	2006
Managers and business directors	1.3	0.3	1.1
Scientific and technical fields	36.0	37	43.5
Clerical occupations	9.1	14.5	14.0
Sales	1.7	2.0	3.3
Services	5.3	6.1	3.5
Agriculture	31.8	27.2	26.3
Engineering and industrial activities	14.8	13	8.3
Total	100	100	100

Table 8.1 shows that the percentage of women's contribution in the scientific and technical fields has increased from 36% in 1994 to 43.5% in 2006 of the total

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occupation types. On the other hand, their percentage in agricultural occupation has dropped from 31.8% to 26.3%. In the context of this study, the most important questions are: do women's contributions in forest management affect the formulation and implementation of SFM policy and practice? And are there significant differences between the three study areas in Syria in terms of women's contribution in forest practices? Many women have been involved in forest management during the last ten years at the local level, especially in Al Foronloq, where the forest service has employed several women for its afforestation programme; most of them worked as temporary forestry employees (Author's interviews, 2008).

It has been noted during the data collection period that there was not a single woman in charge of the family decision-making, although the Syrian national report for combating desertification mentioned that about 5.3% of households in Syria are headed by women. The reasons for the latter are religious faith, gender inequality and family instability (Issa, 2004). The importance of women's role in the three study areas comes from their contribution in some activities such as collecting charcoal, collecting medical plants and other activities, but this participation does not become visible in the official statistics and the forestry annual census (Tables 8.2 and 8.3).

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Table 8.2: Women's participation in the family in the three study areas (source: Author's questionnaire, 2008)

Women's participation in the family	Study areas			Total
	AK	AF	AAM	
Collecting charcoal	3 7.5%	7 14.0%	7 13.5%	17 12.0%
Grazing	0 .0%	0 .0%	31 59.6%	31 21.8%
Collecting medical plants	5 12.5%	9 18.0%	6 11.5%	20 14.1%
House activities	29 72.5%	13 26.0%	8 15.4%	50 35.2%
Agricultural works	0 .0%	9 18.0%	0 .0%	9 6.3%
Employment at the government	2 5.0%	2 4.0%	0 .0%	4 2.8%
Transporting water	1 2.5%	10 20.0%	0 .0%	11 7.7%
Total	40 100.0%	50 100.0%	52 100.0%	142 100.0%

Based on this study's results (Table 8.2), the more women are involved in household activities (35.2%) than any other activities; 21.8% of the total women are involved in tending sheep and goats, 14.1% are involved in collecting medical plants and 12.1% are involved in collecting charcoal. Unsurprisingly, these results reflect other studies mentioned earlier in this chapter regarding the contribution of women in the society as they play an important role in household activities, forest protection and conservation (Rahman, 2000; Rodda, 1993). Table 8.3 shows that about 54% of respondents groups confirmed the contribution of women in forestry

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practices; although the percentage of women' contribution in forest management in both AF and AAM was higher than the percentage of women' contribution in AK (70% of respondents from AF and 59.6%. from Abd Aziz Mountain against 30.7% from Abo Kbeis).

Table 8.3: Women's contribution in the PA in the three study areas (source: Author's questionnaire, 2008)

Women's contribution in forest management	Study areas			Total
	AK	AF	AAM	
Women's contribution to forestry practice	10 25.0%	35 70.0%	31 59.6%	76 53.5%
Women don't contribute to forestry practice	30 75.0%	15 30.0%	21 40.4%	66 46.5%
Total	40 100.0%	50 100.0%	52 100.0%	142 100.0%

Chi-square tests confirmed the significant differences between the respondents groups in the three study areas in terms of their perceptions about the contribution of women in the family and in forestry practices (see Table 8.4). This result could be explained by the effects of religious, education level, poverty level and size of family on the contribution of women in the family activities and in forest management.

Table 8.4: Chi-square test results; women and family role in forest management practice in the three study areas

Chi-square test	Value	DF	Sig.
Women's participation in family	112.43	12	0.000
Women's contribution in forest management	19.3	2	0.000

(100% significance level)

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As mentioned above, the education level affects the contribution of women in forestry practice. It is, therefore, important to explain how women's education level can influence the contribution of women in the labour force and in forest management practice in the three study areas. As data results showed, fifty six householders in the three study areas (38.7%) confirmed that the age of their daughters who helped in the PA were between 15 and 19 years old. In Abo Kbeis, one householder (Respondent N 40) confirmed that the ages of his daughters who helped in the PA were between 15 and 19 years old. By contrast, the percentage of daughters' ages between 15 and 19 years in Al Foronloq and Abd Aziz Mountain was 52% in Al Foronloq and 55.8% in Abd Aziz Mountain. These facts could be confirmed from the figures obtained from Syrian Human development Report (2005) for the region of Lattakia¹, Hamah² and Alhasake³, where the three study areas are located (see Table 8.5).

Table 8.5: Women's status: Education and Labour force in agriculture and forestry (Source: UNDP, Syrian Human Development Report, 2005)

Governorate	Basic Education				Females 15+ with secondary or higher education %	Women in Labour Force (A&F) (as % of total)
	Elementary	Preparatory	Secondary	Total		
Lattakia (AF)	47.2	45.9	49.1	51.6	35.6	32.9
Hamah (AK)	74.1	35.6	25.1	22.8	20.1	13.4
Alhasake (AAM)	46.8	40.1	33.4	38.6	25.2	18.8

¹ Lattakia is the country where the Al Foronloq study area is located.

² Hamah is the country where the Abo Kbeis study area is located.

³ Alhasake is the country where the Abd Aziz Mountain is located.

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All indicators (Syrian Human development, UNDP, 2005) have shown that Lattakia has higher percentages of women with a higher education level and with a higher contribution in the labour force than Hamah and Alhaskeh (see Table 8.5). Looking for reasons for this, firstly the education level of women in Lattakia has risen because the need for girls to leave school at an early age has been altered. Secondly, the Islamic role in Hamah affects the women's contribution in the society's practices because of the inequality between women and men. The third reason is related to the poverty level in Alhasakeh. There are several ways in which householders in Abd Aziz Mountain study area can respond to the poverty level. One is to look for an alternative job to improve the householder's income. Another possibility is to invest some of their money in some government projects which are designed to help the householder to increase their profitability. This explanation was supported by interviewing householders in Abd Aziz Mountain study area. They confirm that one of the reasons for choosing the crafts business with their farming occupation is the availability of employment in a craft centre, particularly with regard to females. A householder from Abd Aziz Mountain emphasised this (Householder respondent N129):

'My daughter is working in the craft business in order to attain her private needs, as I cannot afford all my family needs'.

In an interview with another householder in Al Foronloq study area (householder N59), he confirmed that:

'It is important to save some money for my family's future, as well as to have help from my family members (i.e. wife and son) who are working part time in the forestry project in this area, especially when I am working in full time farming activities'.

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Although Soubh (2006) confirmed that Syrian women, who are contributing in the labour force, suffer from high illiteracy of between 26.4% and 68% in some rural areas of Syria. So, how do these figures and facts explain the relationship between women's educational levels and their participation in forest management? Equally, how do other issues such as size of family and poverty level affect the contribution of women in forest management? To answer these questions, it is essential to investigate the relationship between respondents' educational level and women's participation in forestry practice. The statistical analysis revealed in Table 8.6 shows the differences between the respondents groups in terms of their educational level and their perceptions on the contribution of women in forest management, and Table 8.7 shows the significant relationship.

It appears from the figures and percentages in Tables 8.6 and 8.7 that the total percentage of women's contribution in forest management is high in a family headed by educated householders in the three study areas (e.g. 56.6 % of 53.5% of the total percentage of women's contribution in forest management in a family headed by educated and non-educated householders in the three study areas) (see Table 8.6). In this sense, educated householders seek help from their partner (e.g. wife, daughter and sisters) in everyday practices, for example, dealing with figures and data in order to successfully cope with forestry practices (cutting wood, collecting charcoal and medical plants and protecting forest areas).

Table 8.6: Women's role in forestry practice and householders' educational levels (source: Author's questionnaire, 2008)

Study area			Women's contribution in forest management		Total
			Yes	No	
AK	Education level	Non-educated	0 .0%	1 100.0%	1 100.0%
		Educated	10 25.6%	29 74.4%	39 100.0%
	Total		10 25.0%	30 75.0%	40 100.0%
AF	Education level	Non-educated	9 64.3%	5 35.7%	14 100.0%
		Educated	26 72.2%	10 27.8%	36 100.0%
	Total		35 70.0%	15 30.0%	50 100.0%
AAM	Education level	Non-educated	24 63.2%	14 36.8%	38 100.0%
		Educated	7 50.0%	7 50.0%	14 100.0%
	Total		31 59.6%	21 40.4%	52 100.0%
Total			53.5%	46.5%	142 100%

Table 8.7: Chi-square test, women's participation in forestry practice and householders' educational levels

Study areas	Value	DF	Sig.
AK	0.34	1	0.6
AF	8.01	1	0.02
AAM	0.7	1	0.4

(95% significance level)

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The significant relationships in the AF study area, as shown in Table 8.7, was supported by interviewing the manager of the Al Foronloq study area. He confirmed that the reasons for involving women in the workplace in general and in forest management in particular are related to a perceived need for equality between women and men, and the improvement in the education level among householders in general and women in particular. He emphasised this (the manager of Al Foronloq N13):

'As the education level has improved in this area, educated householders believe that the equality between women and men has become visible, and women have the same right as men to be involved in the workplace, such as in the protected areas.'

Unsurprisingly, these results reflect the earlier studies mentioned in Chapter 4 regarding the relationship between householders' education levels and women's contribution in forest management as lower levels of education in householders may restrict women's participation in forest management (Pearl, 2003).

Other evidence for a significant relationship between women's contribution in forestry practices and family size in the study areas can be seen from Table 8.8 and 8.9. The percentage of women's contribution in forest management was high in a family which consisted of a couple with more than three children (Table 8.8). In other words, householders with more than three children need help from their family members including wives, daughters and sons to improve their income, which in turn affects the involvement of women in the workplace in general and in forest management in particular.

Table 8.8: Women's contribution in forestry practice and family size in the study areas (source: Author's questionnaire, 2008)

Study areas		Women's contribution in forest management		Total
		yes	No	
Size of family	Single with no children	6 66.7%	3 33.3%	9 100.0%
	Couple with 1-2 children	18 47.4%	20 52.6%	38 100.0%
	Couple with more than 3 children	52 54.7%	43 45.3%	95 100.0%
Total		76 53.5%	66 46.5%	142 100.0%

Table 8.9: Chi-square test, the relationship between women's contribution in forestry practice and family size in the three study areas

Chi-square tests	Value	DF	Sig.
Women' contribution / family size	11.26	2	0.02

(95% significance level)

Table 8.9 confirmed the significant relationship between women's contribution in forest management and family size in the three study areas ($P=0.02$). This study's results and analyses reflect the earlier study mentioned in Chapter 4 regarding the effect of family size on the role of women in forest management in Syria as one of the most important tasks in women's contribution to forest management (Assaad & Arntz, 2005).

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Poverty level has been considered earlier in this chapter as one of the possible factors affecting the role of women in forest management practices (Rodda, 1993). Therefore, taking into account the relationship between women's contribution in forest management and householders' income will further help in assessing the role of women and will identify the significant differences between the three study areas. Table 8.10 shows that the total percentage of women's contribution in forest management is high in a family which has low income. Chi-square tests also confirmed (Table 8.11) the existence of a significant relationship between women's contribution in forestry practices and householders' income in the three study areas ($P=0.02$).

Table 8.10: The relationship between women's contribution in forestry practices and householders' income in the three study areas (source: Author's questionnaire, 2008)

Study areas		Women's contribution in forest management		Total
		yes	No	
Annual householders' income	10000-29000	54 55.7%	43 44.3%	97 100.0%
	30000-49000	22 48.9%	23 51.1%	45 100.0%
Total		76 53.5%	66 46.5%	142 100.0%

Table 8.11: Chi-square test, the relationship between women's contribution in forestry practices and householders' income in the three study areas

Chi-square tests	Value	DF	Sig.
Women's contribution / Annual householders income	6.56	1	0.02

(95% significance level)

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Gender inequality and the requirement of men's permission to allow women to be involved in the society in Syria make women's contribution in decision-making very weak (Kaidbey, 2003). However, low income in Syria in general and in the study areas in particular, forces the head of the family to ask for help from family members, including women; but this contribution of women does not appear in any official statistics. These results confirmed earlier studies regarding the role of women in reducing the level of poverty in their families, partly as an influence of their contribution in forestry practice (Kaisi and Al Zoughbi, 2006; Al Zoughbi, 2006). In this context, one question can be asked: are householders in the three study areas able to participate in forest management practices without women's contribution in forest management practices? The answer to this question is that as long as householders with more than three children have a low income (e.g. 64.9% of the total householders with very low income), the size of family affects the householders' income dramatically because they are unable to look after their children without help from their partners or family' members (e.g. women and children) (Table 8.12).

Table 8.12: the relationship between family' size and poverty level (source: Authors' questionnaire, 2008)

Study areas		Size of family			Total
		Single with no children	Couple with 1-2 children	Couple with more than 3 children	
Annual householders' income	10000-29000	8 8.2%	26 26.8%	63 64.9%	97 100.0%
	30000-49000	1 2.2%	12 26.7%	32 71.1%	45 100.0%
Total		9 6.3%	38 26.8%	95 66.9%	142 100.0%

Table 8.13: Chi-square tests, the relationship between family size and poverty level

Chi-square tests	Value	DF	Sig.
Family size / Annual income	11.5	2	0.03

(95% significance level)

Chi-square tests have confirmed (Table 8.13) the significant relationship between the size of family and their poverty level in the three study areas ($P=0.04$). These results are anticipated by Widyanti *et al.* (2009: 1) who argued that 'the larger the number of household members, the higher the probability that a household is chronically poor.' Therefore, women's contribution in the workplace in general, and in forest management in particular, could support their partners (e.g. men) in relation to improving their income or to saving money for their children.

It is important to conclude that women's contribution in forest management practice at the local level was high (e.g. 53.5% of total percentage of women's contribution in forest management against 46.5% of the total percentage of women who do not contribute in forest management at the local level). The improvement of women's contribution in forest management could be partly related to the improvement of forestry educational background and the involvement of women in the society and workplace in Syria at the local level (Munlahasan, 2005)

Therefore, family size, poverty level, education level and religious are expected to be the major issues that affect the contribution of women in forest management which in turn can affect the implementation of SFM policy and practice in Syria.

8.3 Conclusion

This chapter presented an analysis and discussion of the role of women who are assumed to affect the formulation and implementation of SFM practice in the three study areas in Syria at the national, regional and local levels. The statistics analysis showed the results of women's contribution in the society, labour force and forest management at the regional and local levels. Overall, the contribution of women in the labour force at the regional level was high in Lattakia (Al Foronloq study area) compared with other study areas (e.g. 32.9% in Lattakia against 13.4% in Hamah and 18.8% in Alhasake) (Syrian Human development, UNDP, 2005). In addition, there was a significant differences between the respondent groups in terms of the contribution of women in the family (Pvalue=0.000) and in forest management (Pvalue=0.000) at the local level; although, there was a significant relationship between education level, poverty level, family size and women's contribution in forest management at the local level. However, the role of the Islamic religion in Syria has restricted the contribution of women to forest management and SFM at the national, regional and local levels. This issue will be fundamental for future research on the role of Islamic religious practices in forest management in Syria with especial regard to women's contribution in forest management (see Chapter 9).

Chapter 9: Conclusions and future work

9.1 Introduction

This thesis aimed to investigate the role of government and communities in terms of forest policies and management in Syria. The study has provided a key theoretical understanding of the factors affecting SFM policy formulation and implementation (top down), and engagement with sustainable forestry practices by communities (bottom up). There were four specific objectives:

1. To outline the principal characteristics of forests in Syria, explain the issues of forest degradation and the changes of forestry policies and apply the SFM model.
2. To assess the role of government in SFM at the national level.
3. To analyse the environmental, economic, social and cultural factors that affect householders' attitudes and behaviour with regard to their perceived impact on forests (local level) and to investigate community engagement in forest management.
4. To explore the contribution of women in forest management.

The context of this forestry study is that the country has a centralized government, a semi-arid climate and the forests range from dense tree cover near the coast to rangeland with sparse trees in the interior. The findings of the research are therefore particularly valuable because there have been few previous studies of government intervention and of communities' engagement in forest management processes in ASAZs generally and in Syria in particular.

This chapter will summarise the key contributions made by this thesis to understand the role of government and communities in SFM debates. Section 9.2 will discuss the key conclusions of this study linked to the principal characteristics of forests with especial regard to the essential factors affecting the formulation of SFM policy and the essential factors affecting the implementation of such policy in Syria. Section 9.3 will summarize the main methods used in this thesis. Section 9.4 will summarize the actions of government, external and internal bodies in forestry policy and practices at the national level (e.g. the third component of the SFM model used in this study). Section 9.5 will discuss the influences of the first component of the SFM model (e.g. environmental, economic, social and cultural) on the change of forest land. Section 9.6 will summarise the strengths and weaknesses of using the SFM model in this study. Section 9.7 will present details on how this thesis can be used as a platform for future research in other country in ASAZS.

9.2 Forestry in Syria

The main discussion in Chapter 4 emphasized that Syrian forest lands have experienced major pressures and constraints with regard to the EESCP issues particularly in forest governance issues. Two main findings emerged from this discussion.

Firstly, forest lands have experienced major pressures due to the climate, geographical distribution and human impact such as agricultural development. The results confirmed that there is the expansion of rural-urban settlements and agricultural land onto forest land. Such expansion was related to the government

mission and national policy which encouraged the development of the agricultural sector to maintain food security. Another reason was the political position of Syria, a middle-income developing country, which necessitated the development of the internal resources of the country to satisfy the needs of human maintenance (IFAD, 1994).

Secondly, scrutinising formal documentation for forest legislation; engagement in international agreement and the centralisation of the government's responsibility for forestry practices, considerable development of forest policies were noted through time in terms of forest protection and plantation. Such changes were partly related to the increasing numbers of large programmes and projects sponsored by external bodies (i.e. UNDP, FAO) designed to protect both natural forests and plantations in Syria. There was also the need to fulfil the terms of the international agreements concerning climate change; biodiversity and the principles of forest and human development. Another reason was related to the mission of the Syrian government to improve the capacity of a forest institution or institute in Syria (the Institute of Forestry or the Forestry Department); improving knowledge about the impacts of climate and land-use changes on forest ecosystem processes, including forest biodiversity; improving understanding of the role of forests in the environmental perspective and quality of water resources, as well as in preventing soil erosion; improving the understanding of how climate change will affect forest areas; and improving and supporting the forestry extension system.

9.3 The approach adopted to research SFM in Syria

The literature review in Chapter 2 highlighted some of the models used by researchers in order to investigate SFM with especial regard to the environment, economic, social, cultural and political issues (Kant *et al.*, 2003; Barklund and Teketay, 2004; Jeakins *et al.*, 2004; Andersson *et al.*, 2005; Koleva, 2005; Bull *et al.*, 2005; O’Laughlin, 2006; Hickey, 2007; Reynolds *et al.*, 2007; Vierikko, 2010). The rationale for using this model was discussed in Section 2.6 including its capability of analysing complicated issues (Mahalingam *et al.*, 2007; German and Taye, 2008). Chapter 5 discussed the application of the SFM model used in this study, including the discussion of the main components of this model (EESC component; State component and Political component). The influences of EESC issues and the political issues on the state of forest land in Syria will be summarized in Sections 9.4 and 9.5. The strengths and limitations of the SFM model used in this thesis will be presented in Section 9.6.

As highlighted in Chapter 3, the case study approach was selected as the main methodological approach to attain the main aims and objectives of this study. Different sources were selected to obtain the primary and secondary data and information required in this study (e.g. questionnaire data, face-to-face interviews, participant observation and secondary sources). This study was based largely upon questionnaire survey with local communities in three selected areas in Syria (142 households at local level) and face-to-face interviews with decision-makers (27 officials, experts, managers). It should here be emphasised that, at local level, people answered the questions honestly as I explained carefully that this accurate research is vital for them as well as for me in taking their voice directly from the

ground to the headquarters of government. At the national level, interviews were conducted with forestry decision-makers and census data were also checked. Before discussion of the main finding which emerged from Chapter 6, it is important to emphasise that the aim of this research was to investigate the role of government and communities in formulation and implementation of SFM policy and action in Syria. It was vital, therefore, to capture an overview of what was happening on the ground; and to achieve this task, quantitative and qualitative information such as census data and national reports on forestry were used because they were readily available. The challenge for this study was to use these data and determine how the Syrian government intervenes to put forest policy into practice (top-down action), and how local communities engage in such policy and action (bottom-up action) in a centralized country such as this.

9.4 The awareness of government officials regarding SFM in Syria

As demonstrated in Chapter 6, firstly, the Syrian government has given SFM priority to achieve what was decided in the international agreement which includes Forest Principles of Agenda 21, the Conventions of Climate Change and Biodiversity (with especial regard to the interaction between water resources and forest land and conservation biodiversity) and the Millennium Development Goals for Sustainable Development (with especial regard to the relationships between population growth, poverty and education levels, forestry degradation and the importance of women in forest management). In summary, conservation of biodiversity and the development of windbreak systems in water catchment areas, around the agricultural land and on the main roads, as well as on the motorways, were found to be paramount in the political factors. The main constraints affecting the state of forest land in Syria (policy and practices) were found to be related to:

- Insufficient financial resources, technology and of expertise;
- Inadequate management from the national level to regional and local levels;
- Local communities' attitudes and behaviours regarding the extensive use of land resources; their education and income levels; and
- The ignorance of the role of women in forest management with especial regard to the effects of religious beliefs and practices.

Secondly, the main discussion found that top-down action is the dominant approach used in Syria in formulation and implementation of SFM policy and practices, with particular engagement of NGOs' actions and external organisations and governments (Figure 9.1). The increasing level of awareness of environmental problems; the capacity of administrations and institutions; community participation in natural resources management and achieving international agreements were also found to be paramount in any contracts or sub-contracts between the Syrian government and internal and external organisations with especial difficulties in terms of community participation in forest management, including women's contribution to forest management.

One of the main lessons learned about the role of the Syrian government in forest management was that with the advantages of top-down action in forcing grassroots to follow the forestry regulations for protecting forest land in Syria, inasmuch as the grassroots are not involved in forestry decision-making and forestry practices, they would increase their overuse of forest resources and as consequence forest resources could be depleted. It should be noted that if the Syrian government can incorporate into its forest policy and action strategies some key elements related to local communities, then their local knowledge and

expertise can be harnessed and the pressures on forest resources can be decreased. These key elements are:

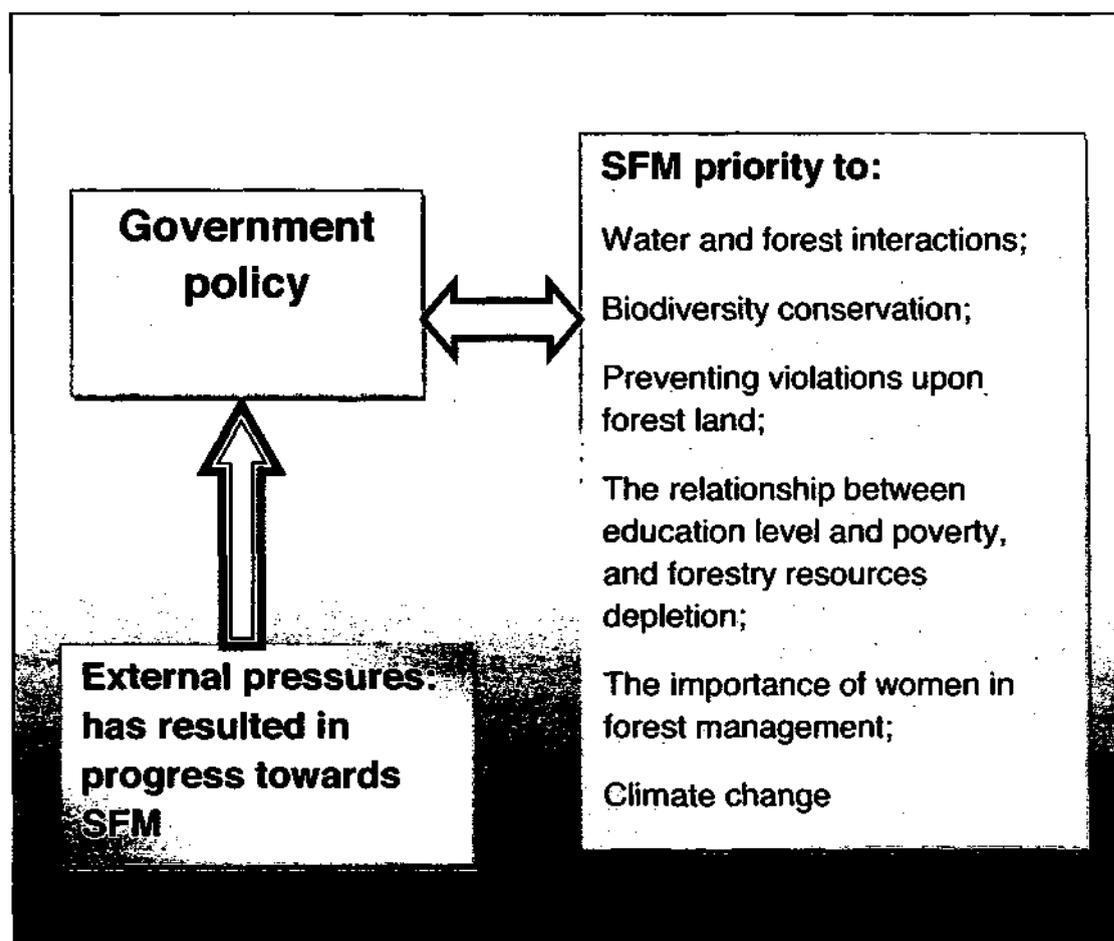


Figure 9.1: Government intervention and external pressures regarding SFM (source: Author)

- Increase the role of media in advertising the importance of trees in mitigating the effects of climate change;
- Engage local communities in forestry practices at the local level and in forestry decision-making at national, regional and local level;
- Support local communities with alternative sources of forest resources such as energy and free medicines;

- Increase wages in order to mitigate the cost of human maintenance through forest resources;
- Add new subjects of forest and environment at an early stage in the school curriculum, which could increase understanding of the interaction between forest and environment and could increase children's awareness of the importance of trees.

9.5 The role of communities including women in SFM at the local level in Syria

This section will summarize the main findings which emerged from analysing the influence of the EESC factors on the communities' attitudes and behaviours; the engagements of local communities in forest management at the local level; and will also highlight the role of women. Five main findings emerged from the analysis in Chapters 7 and 8 (Figure 9.2).

Firstly, five indicators were used to characterise households in the three study areas: income; educational level; size of family; occupation and householders' ages. The statistical analyses suggested that respondents in the mountains (in the AAM study area) seemed to be older, poorer, mostly with non-educated backgrounds, with more than three children, than in the other study areas. Proportionally more households in AAM were found to occupy land illegally, which may explain why forest resources in AAM have been depleted (Reported by Munlahasan, 2005). These results were supported by the UNDP (2007) which confirmed that respondent groups in AAM and AF seem to be more dependent upon forest resources than respondents in AK; and they occupied land illegally

because of their mission to develop agricultural activities (Reported by UNDP, 2007).

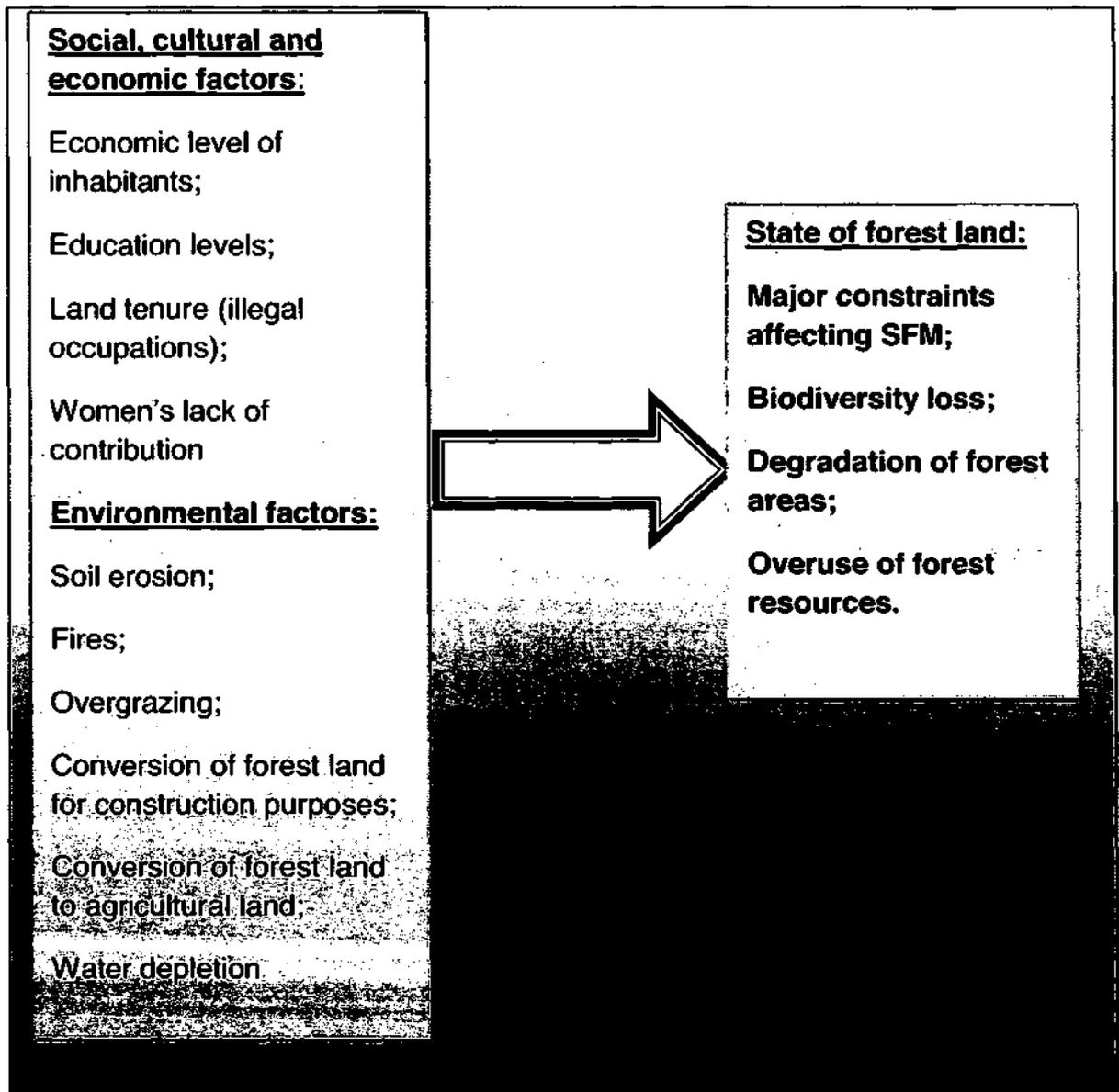


Figure 9.2: The influences of environmental, economic, social and cultural factors at local level (source, Author)

Secondly, educational level was found to influence the potential use of forest resources in the three study areas (Chapter 7). Indeed, education was a critical indicator in determining the forestry practices in Syria (Section 4.3). It was found

that educated households in AF and AK use forest resources more than non-educated households, albeit many practices such as collecting water had only a limited effect. Conversely, non-educated households in AAM suffer from gaining only a local income which may in turn affect their attitude and behaviours in using forest resources; and as consequence, householders suffering from financial problems may be less aware of the importance of forest protection and try to solve their individual needs by increasing the pressures on the forest resources, such as by overgrazing. These results were in line with other studies which suggested that householders' education is important to accelerate good forestry practices (Obua *et al.*, 1998; Munlahasan, 2005; Sharma *et al.*, 2009).

Thirdly, the discussion and analysis in Chapter 7 also found that the major pressures of overgrazing, soil erosion, fires and CFLCP lead to overall reduction in forest areas. These results were echoed by other studies which investigated the effects of overgrazing, soil erosion, fires and conversion of forest land for construction purposes (Alexandrian and Esnault, 1999; Kigomo, 2003; Olak and Rotherham, 2006; Croitoru, 2007; FAO, 2007). The results of this study were supported by Shrestha (1999). He argued that overgrazing, soil erosion and conversion of forest land to agricultural land and for construction development in Nepal, all play an important part in forest degradation.

Fourthly, the statistical analysis suggested that training received by respondents significantly affected the current forestry practices in the AF study area. Respondents in AF were more aware about protecting forest areas, establishing the protectorate area and preventing violations against the protected area, according to the way in which they have been trained. On the other hand, respondents in AK and AAM were less aware about protecting forest areas

because they have been suffering from low income and education levels as well as experiencing the negative cultural issues of women's lack of contribution in the workplace. These results were in line with the work of Nurse (2004), who argued that training local communities in Asia plays an important role in protecting forest areas and in managing forest resources.

Fifthly, women's contribution to the workplace generally and to forestry practices in particular affect the state of forest land to some extent in Lattakia (the Al Foronloq study area) but not in Hamah (the Abo Kbeis study area) nor in Alhasake (the Abd Aziz Mountain). The contribution of women to forestry practices has been investigated by many authors (Atkins, 1999; Toksöz and Şen, 2001; Pearl, 2003; Assaad & Arntz, 2005; Atmis *et al.*, 2005; Mogahed and Abdo, 2006; Zaru *et al.*, 2006; Allan, 2006). The investigation in Chapter 8 found that each indicator related to households' characteristics (i.e. income level and family size affects significantly the contribution of women in workplaces and forestry practices in the three study areas. The results of this study were supported by Odera (2004). He argued that women in central Africa play an important role in forestry practices but are often excluded from consideration in regional analyses with especial regard to the role of their income level and size of family. Indeed, their contribution often does not appear in formal statistics. However, it is important to emphasise the crucial role which women play in forestry and the state of forest land. One of the main contributions of this thesis to knowledge is the importance of understanding the role of government and communities including women in formulation and implementation of SFM policy and practices, particularly in ASAZs of the centralized countries. This conclusion was in line with the findings of a workshop held in Tehran, Iran in 2003, which concluded that 'proper consideration should be

given to gender issues in the region, in order to facilitate the participation of women as full partners in forestry development' (Iffat, 2003: 3). Section 9.7 will consider future work with regard to the role of women in forest management and the possible factors affecting their contributions.

9.6 The strengths and limitations of the SFM model in this thesis

One of the key practical findings from this study relates to the role of the SFM model (Chapter 1) in analysing the government intervention and communities' involvement in forest management in top-down political actions (see Chapter 2). This model was adapted from Rebugio and Camacho (2003) who used it to investigate social justice and gender inequality in forest management; protection of indigenous people's rights; conservation of soil; water; biodiversity and other natural resources, as well as economic factors and technologies in developing countries. This section summarises the strengths and weaknesses of using the SFM model in this study.

Firstly, the SFM model was found to be a useful framework for incorporating different types of information from a variety of actors, it was found to be a comprehensive model in terms of organising and classifying the indicators which reflected the issues that affect the state of forest land (e.g. environmental, economic, social, cultural and political determinants).

Secondly, and in particular, this model was found to be successful in addressing the role of government and community in forestry policies in many different social and cultural characteristics and in political contexts (top-down and bottom-up actions). The reason behind its successful application in this study was related to

its capabilities in explaining government intervention in forestry policy and practices in centralized political systems (top-down actions), and in analysing the interaction between the government and communities in terms of responses and feedbacks; as well as in emphasising the pressures of external and internal bodies at national level and local communities level (Figure 9.3). An example of such success included:

- Syrian government is paramount in driving the agenda and action regarding SFM;
- Government can affect forests in direct ways (creation of protected areas; increasing afforestation areas; rehabilitation of rangeland; integration forestry and agricultural activities - agro-forestry-; preventing violation) and in an indirect way (education level; income level; the role of women);
- Governments do not operate in isolation but respond to external pressures e.g. from UNDP; IFAD; FAO, external governments;
- NGOs and internal agencies engage in forestry practices as a respond to Syrian government, external bodies and local communities;
- Communities respond to government but often in negative ways e.g. move out of the protected areas, but this action causes overgrazing elsewhere;
- Educated communities participate in forestry practices but illegal occupations cause forest resources depletions;
- Householders help in forestry practice to increase their income level but increasing their size of family affects their attitudes and behaviours which in turn lead to forest resources depletion;
- Women contribute in forestry practices and workplaces but cultural issues are still driving the role of women in outdoor activities.

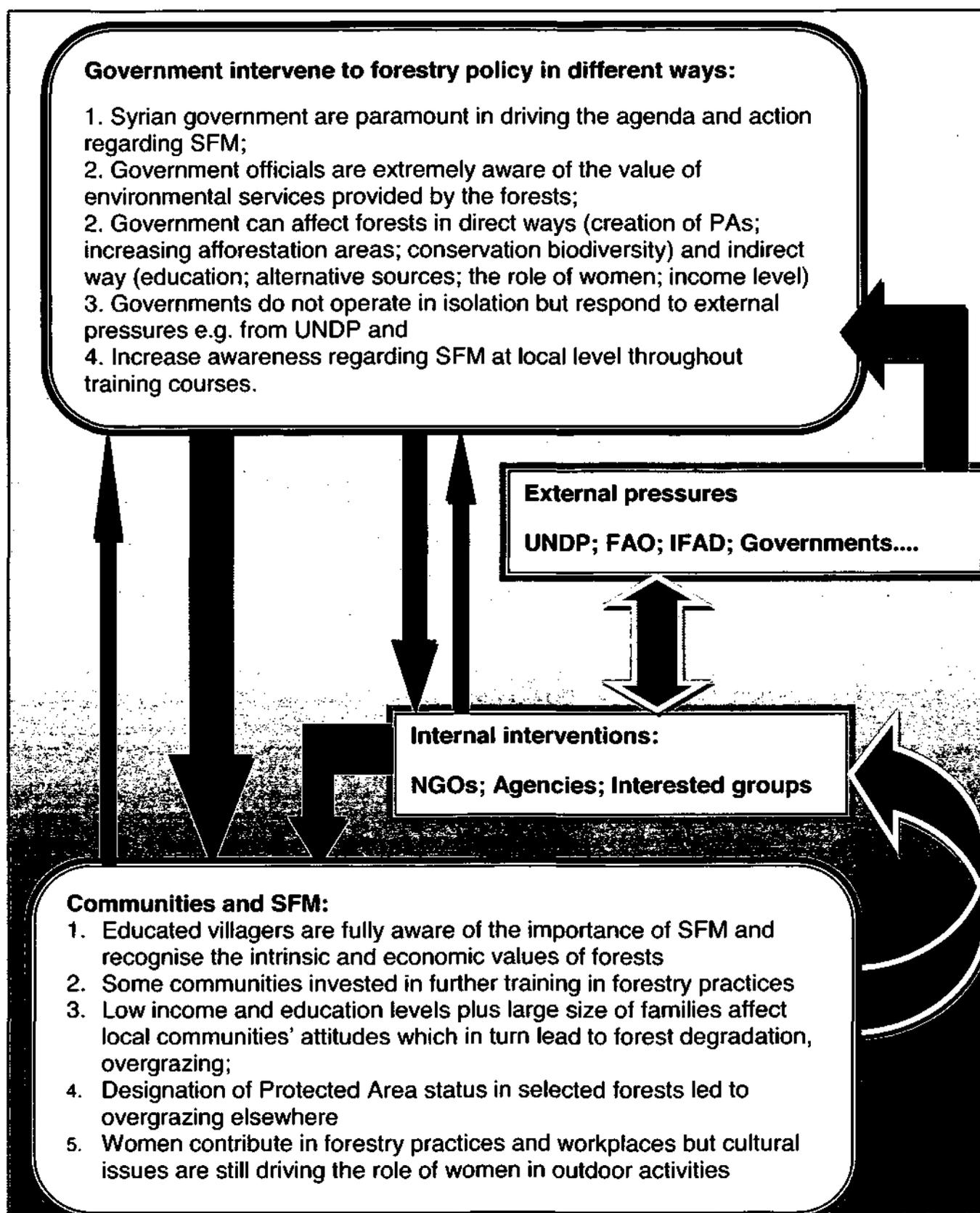


Figure 9.3: Integration of government intervention and communities' engagement in forestry policy and practices using the SFM model (source: Author)

The comparisons between government interventions and communities' engagement in forestry policy demonstrated a dominant role by the Syrian government in forestry policy and practices (top-down actions) with extreme pressures from external bodies such as UNDP to put forest policy into practice. The responses from communities (bottom-up actions) to government interventions in forestry policy and practices appeared to be varied in different geographical locations e.g. positive and negative practices with especial regard to the differences between local communities' attitudes; their behaviours; the influences of their characteristics on the use of forest resources; the incorporation of internal bodies i.e. NGOs with local communities' issues and with the external bodies' activities (Figure 9.3).

Finally, the SFM model proved to be ideal for the socio-political and environmental situations which exist in Syria; a key tool to explain the diversity meaning of the three components (e.g. EESC, State and political) and their interrelationships; and to suggest the possible feedbacks and responses from the political factors to the other factors affecting the state of forest land, as well as to suggest a set of policy recommendations to improve the current state of forest land. The reason was related to its capability of analysing the complexity of issues (i.e. social, cultural, environmental, economic and political) that affect the state of forest land in Syria and its ability to highlight the political components as issues and feedbacks. Examples of its applications included:

- Geographic locations and climatic conditions (mountain, slopes, flat-land set within an arid to semi-arid climate);
- Water availability: water pollution and depletion;

- Biodiversity: extreme loss of flora and fauna;
- Family size: substantial rate of increase;
- Education: from illiterate to private education centres for local communities.
- Income: poor to extremely poor in some areas.
- Policy changes (e.g. centralised decision-making towards involving external bodies in formulation and implementation of policies).

The diversity of meaning of some indicators within the model (e.g. political factors as issues affecting the state of forest land and as responses towards the formulation and implementation of SFM policy and practices) was one of the key advantages of using this model in the present study. For example, the change in forestry policy was considered as a response to reduce an increasing influence of local communities on the use of forest resources in this study, even though it could be argued that it is also a political factor that is one of the causes of the increasing encroachment on forest resources as a reflection of this change upon the attitude and behaviours of local communities (Yiridoe and Nanang, 2001). This result was supported by other studies (Iffat, 2003; Pravat, 2006; Howlett and Rayner, 2006; Howlett and Rayner, 2006; Koleva, 2006; Coll *et al.*, 2009). Coll *et al.* (2009), for example, suggested that the SFM model is an analytical model utilising different qualitative information and quantitative data for the purpose of understanding the complexities arising from the political systems. Howlett and Rayner (2006) also suggested that the SFM model is a comprehensive framework designed to understand the interaction between the environmental and social factors as well as inside each factor.

However, obtaining some information required for analysing some indicators was difficult (e.g. wood consumption, soil erosion and wind erosion, as well as quality data of areas affected by overgrazing), and therefore I had to incorporate different sources of data and information (triangulation and cross-checking, based on a review of literature, previous reports, interviews with forest managers and experts and on a questionnaire survey with local communities). It could be said that the strengths of the SFM model achieved the main aims of this study in investigating the role of government and communities in forest management in Syria.

9.7 Future work

The above discussion highlighted fruitful avenues for future research, such as the formulation of government policies in association with NGOs and the engagement of residents of rural location in SFM. In addition, there are some specific research opportunities emerging for me as a Syrian female researcher. As mentioned in the research methodology (Section 3.4.6), the author was brought up in the Syrian countryside and have considerable experience of the woodland and natural environment in Syria; and I am employed as a lecturer in the Faculty of Agriculture (Damascus University). To take this forward, I wish particularly to contribute to an understanding of SFM policy and practices in another Arabic speaking country in the ASAZs, and to the growing debate regarding differences and similarities in the role of government and communities, including women in forest management. In this context, Cassidy (cited in Mead, 1982: 159) argued in her study about women and conservation in the developing countries,

'Never doubt that a small group of thoughtful, committed people can change the world: indeed, it's the only thing that ever has!'

Building on experiences gathered during this thesis, the principal characteristics of forests will be identified using forestry census data and will be analysed using comparative analyses and the SFM framework. The key factors affecting SFM policy and practices in a small region in the ASAZs will be identified and their role will be compared with those found in and for Syria. The main focus could be on the SFM framework as demonstrated in this study (Figure 1.1), and how the role of government and communities, including women in forest management in a non-centralized government, may influence the state of forest land in terms of policy and practices. A particular focus of the proposed study could be to analyse government intervention and communities' engagement in SFM policies and practices in a non-centralised country and to investigate the main issues that affect the formulation and implementation of SFM using the SFM model.

This study has shown that there is a need to focus research on the role of women in forest management and on key issues that affect their role in the workplace generally and in forest management in particular with especial regard to the role of religious belief and practices in restricting the involvement of women in outdoor activities. Additional lessons have also been learned with regard to the various sources of data and documentation used in this thesis. One of the most important lessons was that living with rural people in their own community (participating observation) and linking a broad questionnaire survey with more deeply textured interviews (with national, regional and local decision-makings, experts and external and internal bodies) yielded valuable data about the awareness of SFM principles, policy and practices in a centralized country; and a comparative analysis between a centralized and a non-centralised country could attempt to apply similar methodologies and approaches. Given the strengths of the SFM

model as discussed earlier, further investigation with regard to the application of the SFM framework in another country in ASAZs is fundamental to understand the state of forest land under a decentralised government with different political, economic as well as social and cultural factors affecting the formulation and implementation of SFM policy and practices, where the bottom-up approach could be more effective.

In conclusion, it is hoped, therefore, that future work in an arid country will help better to understand the complex interactions of factors affecting the state of forest land with particular regard to the political issues of centralisation and decentralisation of systems, as well as to religious issues. Thus, recommendations to national policy makers and international organisations should result in more sustainable forest management in arid and semi-arid zones generally and in more engagement of women in forest management in particular. In addition, further, deeper and a more comprehensive understanding could be generated from the comparative analysis between Syria and other countries in ASAZs in terms of formulation and implementation of SFM policy and practices. Finally, future work will, more specifically, also help me critically to reflect on the findings from this PhD study.

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Appendices 1**Questionnaire Survey****Sustainable Forest Management*****Introduction***

1- The overall objective of the questionnaire survey is to add your response and attitude to any developments that there may have been in sustainable forest management in your area.

2- In doing that, I hope to be able to understand the various factors affecting public policy and action. This will help to inform present and future response from the public policies to the development of SFM in the local scale.

3- Data and information collector are requested to comply with the following:

3.1. Explain the purpose of this questionnaire to the person included in the research and that the information given by his/her would remain confidential, i.e. not to be disclosed to any other person.

3.2. Put (√) accept (correct) or (X) not accept (wrong) in the relevant box of the answer.

3.3. There might be more than one answer to one question? Put the proper sign in the box opposite to each answer.

3.4. Some questions are requested to arrange as per priority or importance for you? Put numbers (1, 2, and 3) in the opposite box, as:

1- First priority.

2- Second priority.

3- Third priority....so on.

3.5. There are questions which have many answers? Please read all questions and put the sign in the box opposite to your answer.

3.6. Note that some questions require abstract numbers of percentages, put it in the required box.

3.7- Emphasize confidentiality, and that it will not possible to identify any person's individual response in any published document.

3.8. No obligation to answer any question.

Responder:

Researcher:

Date:

Section one: Personal background:

1. Protectorate name

2. Village (farm).....

3. Population rate

- Less than 200 persons
- 200-400 persons
- More than 400 persons
- More than 1000 persons

4. Size of family

- Single with no children
- Couple with 1-2 children
- Couple with 3-5 children
- Couple with more than 5 children

5. Material status of the person included in the research:

Single Married DivorcedWidow.....

6. Educational level:

- Illiterate
- Reads & write
- Elementary and secondary education
- University and institution

7. Age:years old

8. Sex:

- Male with no female
- Male with one female
- Male with two female
- Male with more than two female

9. Age of your daughters, who help in the PA work

- Daughter' age between 15-19 helped in the PA
- Daughter' age under 20 doesn't helped in the PA
- Daughter' age over 20 helped in the PA
- No daughter

10. Occupation:

- Owner occupier
- Tenanted - legal occupation of land owned by another
- Illegal occupation

- 11. Profession:**
- Farming and part time farming
 - Non-farming/craft business
 - Government employee
 - Combination of PT employment

- 12. Income:**
- Very poor
 - Poor
 - Average
 - Rich

- 13. Annual income:**
- 10000-29000
 - 30000-49000
 - 50000 and over

- 14. Utilization from the PA:**
- Collecting medical & aromatic plants
 - Shop/popular tourism
 - Collecting charcoal
 - Hunting
 - Drinking water, spring
 - Cutting branches, leaves and roots - animal feed
 - Grazing
 - Cutting firewood
 - Collecting seeds and fruits
 - Agriculture land

Section two: Forest management practices

15. What's your opinion or estimation to the following?

Householders' opinion	Necessary	Not bothered either way	Don't know
A- Establishment of the PA			
B- Community's participation in forest management in the PA			
C- Protection of natural resources in the PA			
D- The need to prevent violations against the PA			

E- The need for secure source of living instead of the PA			
F- The need for guidance for inhabitants to preserve the PA			

16. How do you estimate the following existed threats and risks in the PA?

Threats	Large	Average	Low	I don't know
A- Cutting wood, branches, leaves and roots				
B- Collecting charcoal				
C- Fire				
D- Soil erosion				
E- Overuse of spring water				
F- Overgrazing				
G- Over hunting				
H- Conversion to agriculture land				
I- Conversion for construction purposes				
J- Overuse of pesticide				
K- Impacts from tourism				
L- Overall reduction in forest area				

17. How do you estimate current state of tourism in the PA?

- Poor
- Average
- Good
- I don't know

18. Any of these tourist businesses are available in the PA?

- Hotel/restaurant.....
- Country park.....

- Tourist shop
- I don't know.....

19. What are your expectation of the future action and goals of forestry practices?

Householders' expectation	Very important	Neutral	Unimportant
A- Look after land for future generation			
B- Maximizing profit			
C- Production food and medicine			
D- For leisure time			
E- Stable income			

Section three: Public policy

20. How do you estimate the level of teamwork spirit in the PA work?

N/A..... Low..... Average..... Good.....

21. A. How do you estimate the skills and experiences of inhabitants in the village?

B. And have received any skills training related to forestry practices?

A. N/A..... Low..... Average..... Good.....

B. Yes..... Can you give example?

No..... Can you explain why not? . . .

22. What are the projects in which you work voluntarily (arrange as per priority from 1-4)?

- Road maintenance in the PA or village
- Participation for reserve the PA
- Assisting with state enterprise in the PA
- No interest in such activities/involvement

23. How do you participate in the PA (arrange as per priority from 1-7)?

- Donation Money
- Providing own management services
- Employed by the state in the PA
- Providing / lending equipment
- Raising money for the PA work
- Offering skilled advice and consultation
- I am not interested in participation

24. Do any women in your family (your wife, daughters and sisters) participate in forest management in this area?

- Yesif so Can you tell how they contribute in forestry practice in the PA
- No if so can you tell why they do not engage in the PA?

25. How old your daughters, when they started working in the PA?

- Daughter' age between 15-19 helped in the PA
- Daughter' age under 20 doesn't helped in the PA
- Daughter' age over 20 helped in the PA
- No daughter

26. How can women participate in the following jobs (give percentage for each of the following (%))?

- House activities
- Collecting wood
- Employment at the government
- Agricultural works
- Transporting water
- Grazing
- Collecting medical plants from the forest
- Marketing production

27. What is your opinion on the establishment of the PA?

- It is necessary
- Don't bothered either way
- Don't know

28. What is your opinion on community's participation in forest management in the PA?

- It is necessary
- Don't bothered either way
- Don't know

29. What is your opinion on the protection of natural resources in the PA?

- It is necessary
- Don't bothered either way
- Don't know

Section four: Forest Policy

30. Is there any forest violation report against you: yes..... No.....?

If yes, go to Q 25:

31. How many reports?

32. What is the type of this report? 1..... 2 3

33. What are the reasons of this violation? 1..... 2 3

34. What is your opinion on the need to prevent violation in the PA?

- It is necessary
- Don't bothered either way
- Don't know

35. What is your opinion on the need to form voluntary to prevent violation in the PA? (Arrange as importance from 1-7)?

- Pay cash to each family.
- Offer some areas for investment purposes.
- Encourage participation approach.
- Provide diesel instead of using wood fuel with low price.
- Encourage tourism.
- Available of training course.
- Prevent people to enter to the protectorate areas.

Thank you very much for your time

Rim Alberni

Appendices 2**Face-to-face Interview questions****QUESTIONNAIRE ON SUSTAINABLE FOREST MANAGEMENT:
A CASE STUDY IN SYRIA****A. Interview guide for managers**

Name of organisation:

Contact name:

Address:

Telephone:

E-mail:

1. What is your position and what are your responsibilities?
2. What is your experience? Educational background?
3. How many years in your current post?
 - a. Where are the major forests that you manage
 - b. What is the area of each forest
 - c. How many employees
 - d. How much timber is produced per year
4. What are your main duties and which are the most important?
5. Which do you regard as most important issues in terms of:-
 - a. Strengths
 - b. Weaknesses
 - c. Opportunities
 - d. Threats
6. What are the most important forestry policies in Syria? Why?
7. What are the main forestry management practices?
 - a. Type of system used – conventional - explain
 - b. Regrowth of crop or planting of saplings
 - c. Clear cutting
 - d. Contractors
 - e. Species choice versus land capability
 - f. Where do you get most of your management information
8. What do you think are the main objectives of forest management?
 - a. social
 - b. economic

- c. environmental
9. Which ONE forest management objective is the most important?
 10. What evidence is there that shows that social priorities are important
 - a. Number of people employed. Men , Women
 - b. Ages
 - c. Income levels
 - d. Staff training
 - e. Other – recreation use
 11. What evidence is there that shows that economic priorities are important?
 - a. Amount of timber sold in last few years
 - b. Predictions for the future
 - c. Main expenditure
 - d. What discount rate do you use
 12. What evidence is there that shows that environmental priorities are important?
 - a. What is the understory
 - b. Wild life present? Types of birds
 - c. Wind erosion
 - d. Soil erosion prevention practices
 - e. Fire prevention
 13. What are your perceptions about sustainable forest management in Syria?
 14. Are all activities / plans working as they were aimed to?
 15. What kind of approach are you applying to achieve the set targets?
 16. How do you integrate local communities into planning and management activities of forest area?
 17. What administrative constraints do you face in carrying out the project plans?
 18. Is there any encroachment or conflict posed by the local forest communities?
 19. If so, what could be the reasons for encroachment?
 20. How do you cope with administrative constraints, conflicts & encroachment etc.?
 21. What do you suggest toward sustainable forest management?
 22. How do the new forest policy work and contribute towards SFM?

23. How much have the government been helpful for efficient forest management?
24. Are the existing forest policy and the enforcement mechanism of the government helpful in achieving SFM or is any kind of review required?
25. How did politicians and other power structures try to influence the designing, implementation and results towards SFM?
26. How do you improve planning processes and update management plans?
27. What mechanism and methodology have you adopted to conserve the plant species and ecosystems?
28. How do you manage enterprise opportunities and forest visitation without environmental harm?
29. Do you have any focused public environmental awareness? (If yes, please specify)
30. How does forest land facilitate local communities in regards to the provision of wood fuel, fodder and timber for their household use?
31. Are you satisfied with forest management outcome?
32. How do you monitor the management of forest value?
33. What are the important of local forest management objectives?
34. What is your opinion about the management of rare plants?
35. What are the number experts employed in forest sector?
36. What are you experiences with outdoor recreation?
37. What are the numbers of women employed in forest sector?
38. What is the role of Syrian forest policy within dry areas?
39. What are the main forest ownership in Syria/ state/ private/ other institutions?
40. What are the plantation systems in Syria?
41. How can you classify Forest type/ Forestry system/ characteristics of species/ Water protection system/ Air protection system/ Soil protection System?

42. Do you recognize any local forest management issues? (if so please specify)

B. Interview guide for forest officers

Name of organisation:

Contact name:

Address:

Telephone:

E-mail:

1. What size is forest area in Syria?
2. Are there any plant and animal species within forest area of particularly high conservation value?
3. Which species are these? (please give details of species)
4. Did you know which forest area is categorised as protected forest land?
5. What is forest management system in Syria?
6. Which of the following management activities (if any) are normally carried out in forest land area?
 - Action to control soil erosion
 - Action to control water pollution
 - Action to control wind erosion
 - Action to protect existing species
 - Other (please specify)

.....

.....

.....

7. Why are these management activities carried out?
 - To create and maintain wildlife habitats
 - To protect native plant species
 - To allow regeneration of forest land
 - To prevent livestock from grazing in forest land
 - To improve timber quality
 - To improve timber production
 - To maintain public access
 - Other

.....

-
8. Why are these activities carried out?
 9. Who is responsible for carrying out management activities within forest land?
 10. What control over the management of forest land do you have in this agreement?
 11. Do you have any obligations concerning the management of forest land?
 12. What are your perceptions about sustainable forest management and conservation?
 13. What do you understand by the term 'SFM'?
-

SFM has been defined as: *'...The stewardship and use of forest land in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil now and in the future, relevant ecological, economic and social functions at local, national and global levels, and that does not cause damage to other ecosystems.'* (Second Ministerial Conference on the Protection of Forests in Europe, Helsinki, 1993).

14. How does the management of forest land demonstrate SFM?

No management activities are carried out
 It does not demonstrate SFM
 To conserve biodiversity
 Public access to forest land
 Improvements to local economy
 Provision of local employment
 Other

.....

.....

15. Are you aware of the Syrian Biodiversity Sustainability Indicators, as a mean to measure and monitor SFM in Syria?
16. In your opinion, are there any limitations or opportunities for improvement of the Syrian biodiversity indicators for measuring and monitoring the biodiversity benefits of SFM?
17. How does forest policy integrate local forest communities?
18. In your opinion, what is the level of communication about the concept of SFM from policy makers to private forest owners?

19. How are the sustainable forest management benefits for local communities engendered and how do they bring any improvement for the living conditions of women?
20. How important is the concept of SFM to you?
21. How does forest area facilitate local communities in regards to the provision of fodder, wood fuel and timber for their household use?
22. Are the existing forest laws and the enforcement mechanism of the Forest Department helpful in sustainable forest management and conservation or is any kind of review required?
23. How do politicians and other power structures try to influence the forest management and implementation towards SFM?
24. How do you assess the performance of SFM and how do you see the future of it?

C. Interview guide for Ministers of forest

Name of organisation:

Contact name:

Address:

Telephone:

E-mail:

1. What is your position and what are your responsibilities?
2. How many years in your current post?
3. What are your main duties and which are the most important?
4. What are the most important forest policies in Syria?
5. What are the main forest management practices?
6. What are the main objectives of forest management in Syria?
7. What is the evidence of the priority of environmental/ social and economic?
8. What is the main expenditure in Syria?
9. How do you classify the number of people employed? (Men/Women, Ages, Income levels, Staff training)

10. What was the amount of timber sold in last few years?
11. How do you assess the implementation and initiatives for SFM in Syria?
12. Is current planning an appropriate way to help forest owners plan management effectively?
13. Is a lack of suitable contractors preventing SFM?
14. Do forest owners and managers need additional advice or training to help them manage forests sustainably?
15. In your opinion, how are funds effective at encouraging SFM in forest area?
16. Are you satisfied with the progress of forest sector?
17. Is SFM progressing and delivering according to the forest policy plan and expectations?
18. How has the Forest Department contributed towards the successful implementation of SFM?
19. How do you see the future of SFM?

D. Interview guide for the director of UNDP office in Damascus

1. Could you please outline the UNDPs involvement with the Syrian government regarding the environment and biodiversity in general and forests in particular?
2. Do you work with the Syrian government to formulate SFM policy? If so, at what level of the Syrian government do you engage with? Can you provide an example of how you have helped the government formulate SFM policy?
3. Are you aware of any particular limitations in the capacity of the government to put the policies into practice? If so would could you rank the factors limiting the capacity to deliver:
 - a. Administrative weaknesses.
 - b. Lack of cross sector co-operation
 - c. Limited vision at national or regional or local level.
 - d. Lack of finance
 - e. Lack of trained personnel
4. Have you been able to work with the Syrian Government to help to put the environmental policies into practice. Could you provide any examples?
5. What criteria did you apply to select the three protected areas which form the study? Decision based on:

- a. best examples of biodiversity in Syria
 - b. habitats of international status
 - c. existing administrative capacity
 - d. community involvement
 - e. geographical areas most at risk
 - f. size of the area
6. What role, if any, does the government play in enhancing biodiversity in these areas? Please provide an example. Provision of trained personnel such as foresters and community workers? Access to local groups?
 7. How successful do you consider the work is with the local community? What criteria do you use to determine the degree of success? Can you provide some examples where UNDP is working with the community? How important do you consider it is to work with women's' groups. Is there any priority for women's contribution in this project? Are you aware of any issues of UNDP workers co-operating with women's' groups?
 8. In your opinion, are local community and women knowledgeable about the PA? About existing threats to it? About ways of conserving it?
 9. Please could you provide me with any further information on community survey which was used in the three protected areas? I would be particularly interested in seeing the final report arising from this work and, if possible, a copy of the questionnaire and, again, if possible, a copy of the response data, to allow me to conduct further analysis and comparison with my own dataset.
 10. Could you please provide some information about the UNDP/WB/FAO project which started in 1999? (I am particularly interested to know which Ministries in the Syrian government were involved and to what extent they formulated the policies. How were the policies put into practice? Which areas were selected for consideration and what was the final choice? To what extent was the local community involved? Could you please provide any details of the evaluation report?

Thank you

Appendices 3

Chi-square Tests

Householder's characteristics in the three study areas:

1. Householders' ages

	Value	df	Sig.
Pearson Chi-Square	16.876	4	.028

2. Householders' family size

	Value	df	Sig.
Pearson Chi-Square	23.674	4	.001

3. Householders' education level

	Value	df	Sig.
Pearson Chi-Square	51.009	2	.000

4. Householders' income level

	Value	df	Sig.
Pearson Chi-Square	23.729	2	.000

5. Householders and their land tenure

	Value	df	Sig.
Pearson Chi-Square	3.622	4	.460

Householders' attitudes and their behaviours in the three study areas:

6. Utilization forest resources

	Value	df	Sig.
Pearson Chi-Square	42.698	10	.000

7. Householders' ages and their utilization of forest resources

	Value	df	Sig.
Pearson Chi-Square	6.368	10	.783

8. Householders' family size and the utilization of forest resources

	Value	df	Sig.
Pearson Chi-Square	10.852	10	.369

9. Householders' education level and the utilization forest resource

	Value	df	Sig.
Pearson Chi-Square	17.742	5	.003

10. Income level and the utilization of forest resources

	Value	df	Sig.
Pearson Chi-Square	5.698	5	.337

11. Householders' tenure and the utilization of forest resources

	Value	df	Sig.
Pearson Chi-Square	15.943	10	.101

Awareness of pressures affecting forest areas**12. Collecting wood products**

	Value	df	Sig.
Pearson Chi-Square	13.809	4	.008

13. Overgrazing

	Value	df	Sig.
Pearson Chi-Square	55.906	4	.000

14. Soil erosion

	Value	df	Sig.
Pearson Chi-Square	12.367	4	.015

15. Collection of water from springs

	Value	df	Sig.
Pearson Chi-Square	101.057	4	.000

16. The problem of fires

	Value	df	Sig.
Pearson Chi-Square	129.511	4	.000

17. The problem of conversion to agricultural land

	Value	df	Sig.
Pearson Chi-Square	24.523	4	.005

18. The problem of conversion for construction purposes

	Value	df	Sig.
Pearson Chi-Square	32.326	4	.029

Perceptions regarding the current and future goals of forestry practices

19. Training courses undertaken

	Value	df	Sig.
Pearson Chi-Square	33.945	2	.000

20. The establishment of protected areas in the three study areas

	Value	df	Sig.
Pearson Chi-Square	33.729	2	.000

21. The perception of respondent groups of the need for securing sources of living other than the PA

	Value	df	Sig.
Pearson Chi-Square	10.009	2	.007

22. The perception of respondent groups on the future goal of forest policy and practice in terms of looking after natural resources

	Value	df	Sig.
Pearson Chi-Square	18.376	2	.000

23. The perception of respondent groups about the future goal of forest policy and practice in terms of stable income

	Value	df	Sig.
Pearson Chi-Square	5.004	2	.082

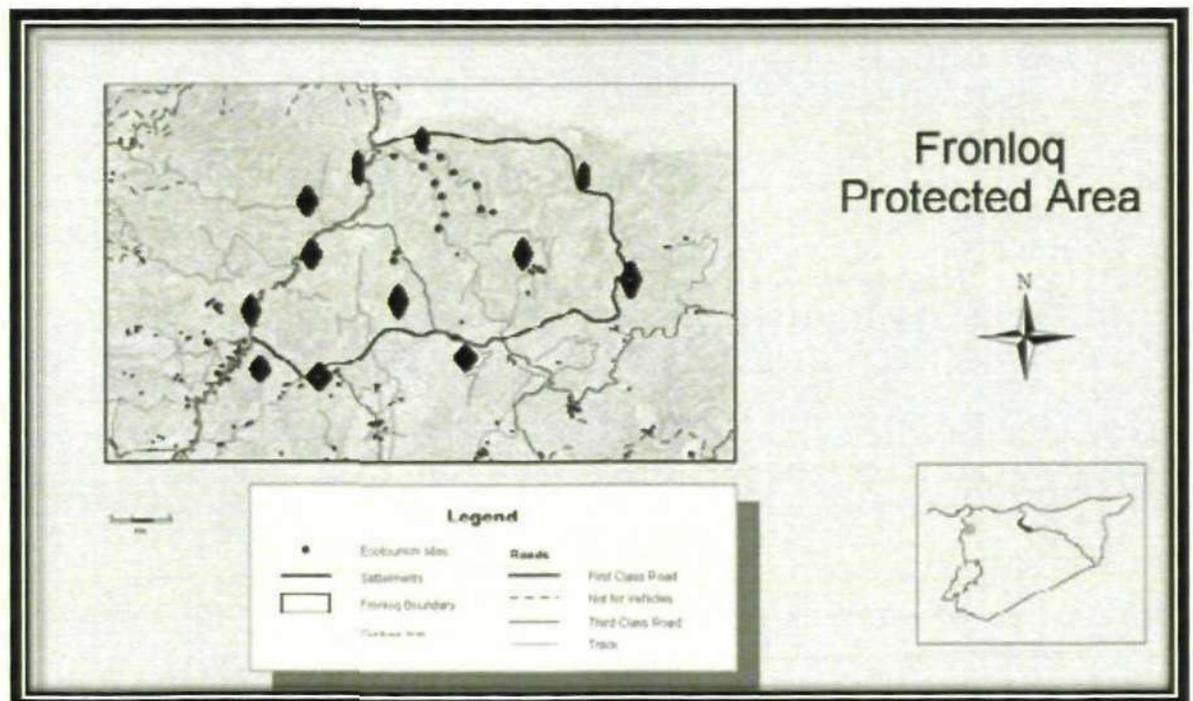
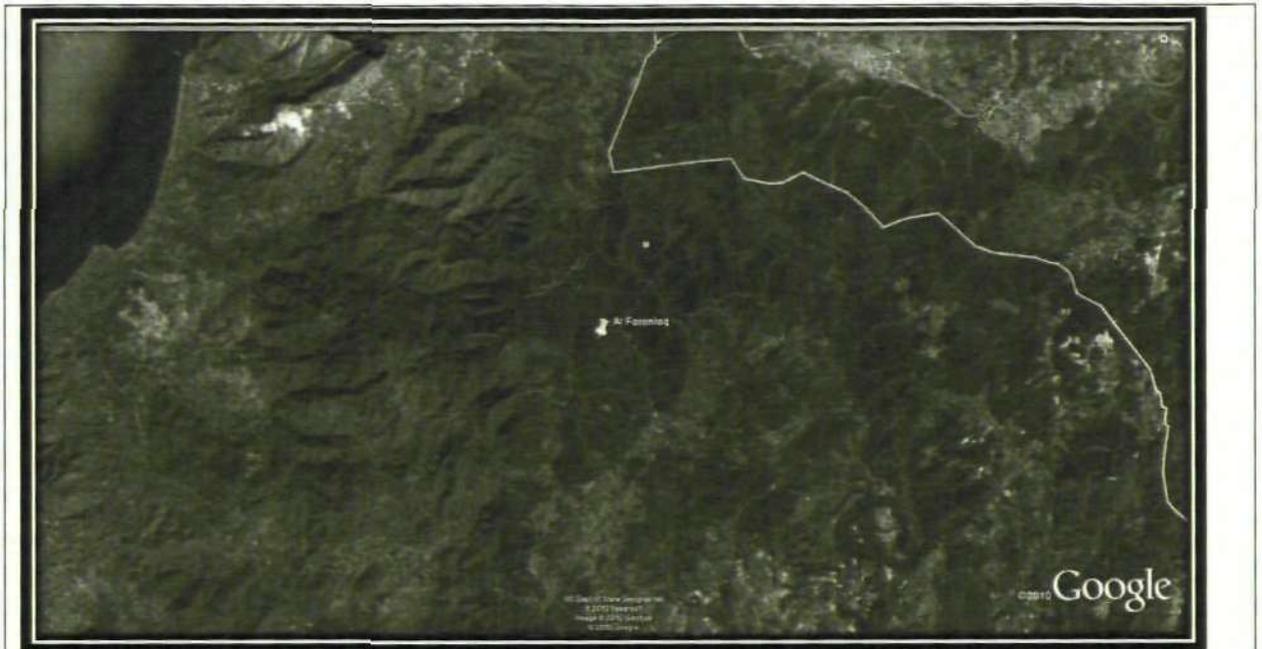
24. The perception of respondent groups on the future goal of forest policy and practice in terms of community participation in forest management

	Value	df	Sig.
Pearson Chi-Square	20.469	2	.000

Appendices 4: The air photos and key species of the selected areas

Appendices 4.1: Map of the three study areas

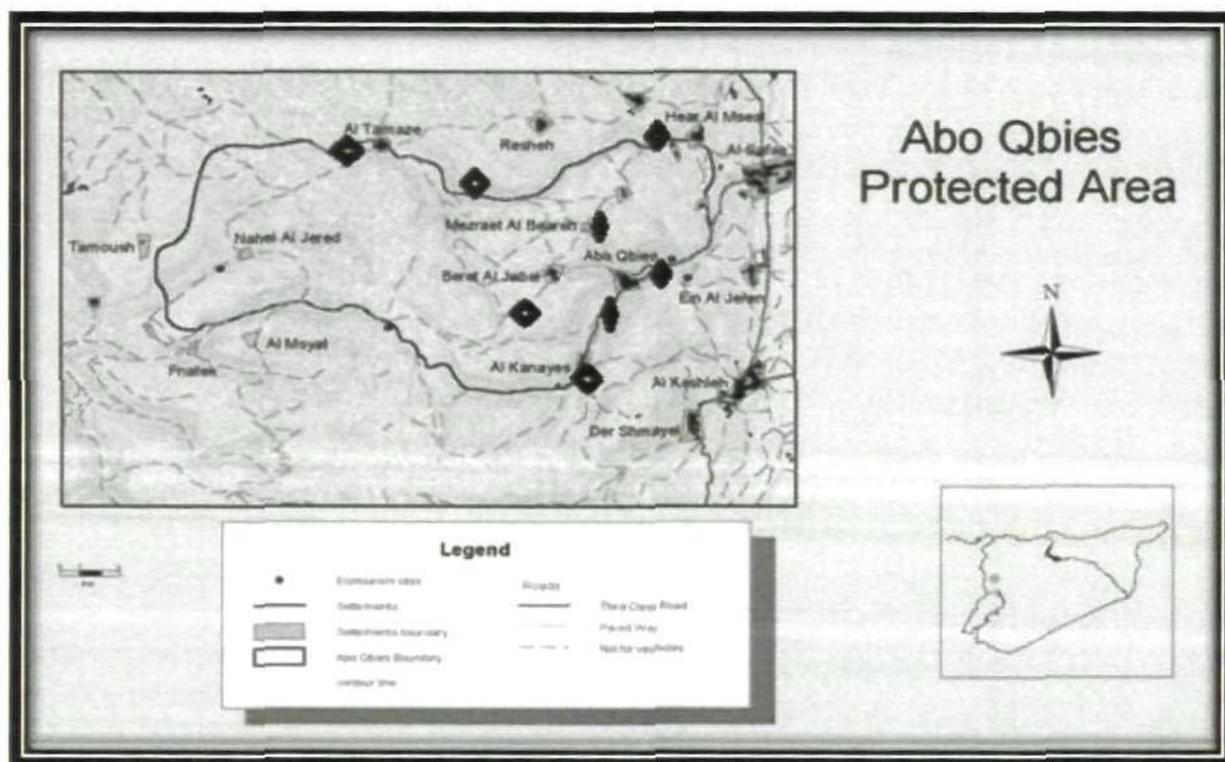
4.1.1: Al Foronloq



◇ 12 villages in and around the Al Foronloq study area

Map of the Al Foronloq study area (Sources: Google Earth, 2010; Remote sensing Centre in Damascus, 2005)

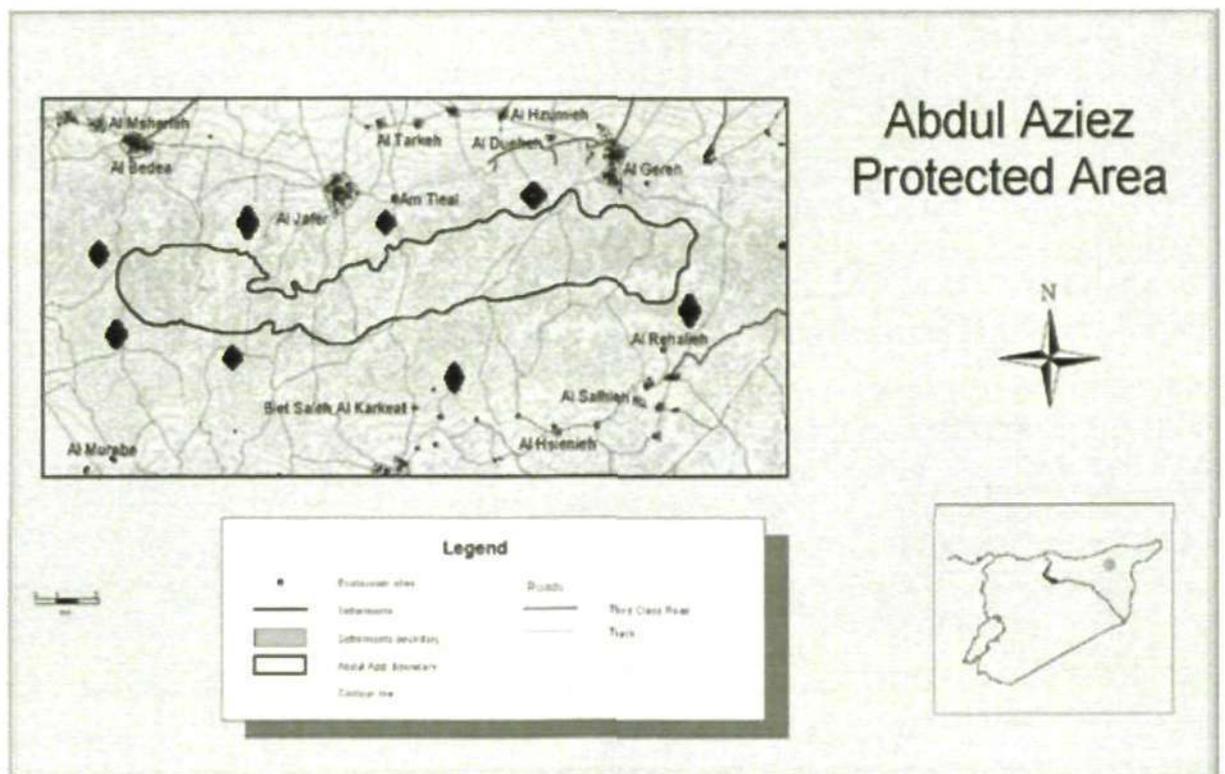
4.1.2: ABo Kbeis



◇ 8 villages in and around the Abo Qbeis study area

Map of the Abo Kbeis study area (Sources: Google Earth, 2010; Remote sensing Centre in Damascus, 2005)

4.1.3: Abd Aziz Mountain



◇ 8 villages around the Abd Aziz Mountain study area

Map of the Abd Aziz Mountain study area (Sources: Google Earth, 2010; Remote sensing Centre in Damascus, 2005)

Appendices 4.2: List of species in the three study areas (Abido, 2005)

Forest area	Dominant species	Sub-dominant species	Others
Al Foronloq	<i>Pinus brutia</i>	<i>Arbutus andrachne</i>	<i>Thymus vulgaris</i>
	<i>Quercus psuedocerris</i>	<i>Carpinus orientalis</i>	<i>Salvia rubitolia</i>
	<i>Platanus orientalis</i>	<i>Ceratonia siliqua</i>	<i>Micromaria myrtifolia</i>
	<i>Cercis siliquastrum</i>	<i>Rhus cotinus</i>	<i>Viola odorata</i>
	<i>Alnus orientalis</i>	<i>Cornus mass</i>	<i>Rhus continus</i>
	<i>Quercus calliprinos</i>	<i>Crataegus monogyna</i>	<i>Myrtus Communis</i>
		<i>Erica arborea</i>	<i>Arbutus andrachne</i>
		<i>Fraxinus ornus</i>	<i>Styrax officinalis</i>
		<i>Juniperus oxycedrus</i>	
		<i>Laurus nobilis</i>	
		<i>Myrtus communis</i>	
		<i>Nerium oleander</i>	
		<i>Ostrya spp.</i>	
	<i>Pistacia lentiscus</i>		
	<i>Prunus spp.</i>		
	<i>Pyrus syriaca</i>		
Abo Kbeis	<i>Pinus brutia</i>	<i>Arbutus andrachne</i>	<i>Laurus nobilis</i>
	<i>Quercus psuedocerris</i>	<i>Ceratonia siliqua</i>	<i>Thimus vulgaris</i>
	<i>Quercus calliprinos</i>	<i>Cercis siliquastrum</i>	<i>Salvia. rubitolia</i>
		<i>Cornus mass</i>	<i>Micro miriamiritifolia</i>
		<i>Crataegus monogyna</i>	<i>Calicotoma villosa</i>
		<i>Erica arborea</i>	<i>Origanum. bargyli</i>
		<i>Fraxinus ornus</i>	<i>Iris nusariansis</i>
		<i>Juniperus oxycedrus</i>	<i>Malus trilobata</i>
		<i>Myrtus communis</i>	<i>Daphne libanotica</i>
		<i>Nerium oleander</i>	
		<i>Pistacia lentiscus</i>	
		<i>Prunus spp.</i>	
		<i>Pyrus syriaca</i>	
	<i>Rhus cotinus</i>		
Abd Aziz Mountain	<i>Pistacia atlantica</i>	<i>Noaea mucronata</i>	<i>Tulipa Montana</i>
	<i>Pinus khinjuk</i>	<i>Salsola vermiculata</i>	<i>Erodium spp</i>
	<i>Amygdalus orientalis</i>	<i>Astragalus gossypinoides</i>	<i>Asphodelus sp</i>
	<i>Crataegus azarolus</i>	<i>Astragalus diptherites</i>	<i>Malva spp</i>
	<i>Ficus carica</i>		<i>Avena fatua</i>

	<i>Rhamanus palestina</i>		<i>Cousinia weshen</i>
			<i>Noaea mucronata</i>
			<i>salsola volkensis</i>
			<i>Hordeum glaucum</i>
			<i>Helianthemum sp</i>
			<i>Cyperus rotundus</i>
			<i>Solanum halepensis</i>
			<i>Atriplex sp</i>
			<i>Lyceum barb arum</i>
			<i>Poa sp</i>
			<i>Anemone coronavia</i>
			<i>Tilthaea rosea</i>
			<i>Papaver rhoeas</i>
			<i>Salsola vermiculata</i>
			<i>Achillea fragrantissima</i>
			<i>Capparis ovatadesf</i>

Appendices 5
List of acronyms

AAM	Abd Aziz Mountain
AK	Abo Kbeis
ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area
ACSAD	Arab Centre for the Studies of Arid Zones and Dry Lands
AEWA	African-Eurasian Migratory Water-Birds Agreement
AF	Al Foronloq
ASAZs	Arid and semi-arid zones
CFAN	Canadian Forestry Advisers Network
C & I	Criteria and Indicators
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
ECCE	Early Childhood Care and Education programme
EESC	Environmental, economic, social and cultural
EESCP	Environmental, economic, social, cultural and political
EFA	Environment Friendly Agency
FAO	Food and Agriculture Organisation
FD	Forestry Department
FU	Forage Unit
GCEA	General Commission for Environmental Affairs
GDP	Gross Domestic Product
GEF	Global Environment Facilities
HCA	Higher Commission for Afforestation
IFAD	International Fund for Agricultural Development
IFF	Intergovernmental Forum on Forests

IISD	International Institute for Sustainable Development
ITTO	International Tropical Timber Organisation
IUCN	International Union for Conservation of Nature
IUFRO	International Union of Forest Research Organisations
MAAR	Ministry of Agriculture and Agrarian Reform
MCPFE	Ministerial Conference on the Protection of Forests in Europe
MDG	Millennium Development Goals
ME	Ministry of Environment
MF	Mediterranean forest
MS	Mediterranean Sea
MSDA	Moroccan Social Development Agency
NBU	National Biodiversity Unit
NCBCD	National Commission for Biodiversity Conservation and Development
NGOs	Non-Government Organisations
NWFPs	Non-wood forest products
P	Political
PA	Protected Area
RAMSAR	Convention on Wetlands
SANA	Syria Arab News Agency
SCES	Supreme Council for environmental Safety
SD	Sustainable development
SFM	Sustainable Forest Management
SP	Syrian Pound
SPSS	Statistical Package for the Social Sciences
STFD	Syrian Trust for Development Organization
TEV	Total economic value
WCED	World Commission on Environment and Development
WSSD	World Summit on Sustainable Development
UNFF	United Nations Forum on Forests

UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNCBD	United Nations Convention on Biological Diversity
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United Nations Convention to Combat Desertification
UNESCO	United Nations Educational, Scientific and Cultural Organization