

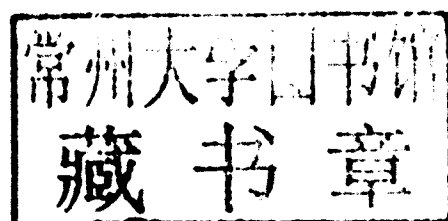
2012

State of the World's Forests



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2012



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Foreword

This tenth edition of *State of the World's Forests* elaborates on a fundamental truth: forests, forestry and forest products play a critical role in sustainable development. *State of the World's Forests* is published every two years.

The first chapter in this edition provides an overview of the main issues raised in the first ten editions of *State of the World's Forests*. One interesting trend observed is the growing recognition that forests and their use lie at the centre of any serious discussion of a sustainable future for planet earth. Forests play an essential role in mitigating climate change and providing products and ecosystem services that are essential to the prosperity of humankind. Forests and forestry played a central role in the development of modern civilization.

Chapter two, "Forests and the evolution of the modern world", looks back at the successes and failures of past societies. Understanding ecological and economic history is an essential first step towards building a sustainable future.

Throughout history, deforestation has accompanied economic development. It was primarily in response to deforestation that the concept of sustainable development originated and evolved within forest science. The good news is that deforestation ceases to be a serious problem in most of the countries where economic development has progressed and sound forest practices, backed by political commitment, have been implemented. However, it must be clear that including forests at the core of a strategy for a sustainable future is not an option – it is mandatory.

Chapter three, "Forests, forestry and forest products for a sustainable future", describes a world where economic output has more than doubled in the 20 years since the Rio Earth Summit; but this growth has been achieved at the expense of natural resources, including forests.

The world now needs to change its thinking about "progress" and develop new approaches for future economic success.

Photosynthesis – nature's way of capturing solar energy and storing carbon – is necessary for the survival and prosperity of planet earth. Wood is produced by photosynthesis, and wood products continue to store carbon throughout their lifetimes. A sustainable global economy will use more wood for energy, shelter and an increasing array of products. To understand why "wood is good", it is necessary to understand the entire life cycle of a forest. The same could be said of other forest products, such as bamboo and cork.

However, if wood products are produced from non-sustainable sources, the result will be deforestation or forest degradation, impeding sustainable development. In addition, not all forest products are positive in themselves. The forest practices that are collectively known as "sustainable forest management" must be used throughout the world for the global economy to become greener. At the core of sustainable forest management is the simple idea that as trees are used, they are replaced by new trees.

To the extent that "good wood" is used in the manufacture of higher percentages of buildings, infrastructure and other consumer products, the economy will become greener and more sustainable. Wood and charcoal are already the dominant form of renewable energy worldwide. In a greener economy, more wood will be used for energy as the use of fossil fuels declines. Net carbon dioxide in the atmosphere will decline as new trees are planted and nurtured to replace those that are used. Dealing with the increased demand for food, fodder, fibre, fuel and wood requires optimizing energy use, ambitious landscape restoration, intensive plantations where appropriate, imaginative agroforestry

activities, and coordination among all the activities present at the landscape level (such as agriculture, livestock, forestry, hunting, fisheries and biodiversity preservation).

A challenge for the forestry profession is to communicate the simple idea that the best way of saving a forest is to manage it sustainably and to benefit from its products and ecosystem services. If the principles of sustainable forest management are applied and forest products and ecosystem services play an increasing role, the global economy will become greener.

State of the World's Forests 2012, like its nine predecessors, is intended to serve as a reference source to support policy and research related to forests.

In addition, I hope that some of the ideas it advances will stimulate debate and lead to innovative approaches that help move the global economy in a greener direction.

A handwritten signature in black ink, consisting of a large, stylized 'J' followed by a series of loops and a final flourish.

José Graziano da Silva
FAO Director-General

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Chapter 3: Forests, forestry and forest products for a sustainable future

In the two decades following the United Nations Conference on Environment and Development, the world economy has increased from USD 24 trillion to 70 trillion of annual production and consumption. This economic explosion has been led by developing countries. However, unprecedented growth has been achieved at the expense of natural resource sustainability, and economic benefits are unequally distributed.

There is growing awareness that an economy based on the continuously increasing depletion of natural resources is not sustainable. New ways of thinking about progress are needed, and agriculture and forestry will play central roles in this transition. The economy will become greener as more and more of the products consumed in mass quantities are based on photosynthesis. When plants are harvested for food, they are replaced by a new crop to grow more food for the next cycle. The same principle applies to forests. Production systems, including energy, must be based on sustainable processes, especially photosynthesis, if the world is to have a sustainable future.

Most people understand that forests could play a role in a green economy, but not many people realize that this role is not optional – for a sustainable world, it is mandatory. Without forests, the global ecosystem would collapse. The good news is that the global economy can be sustained indefinitely through the widespread use of renewable energy, including wood-based energy.

Forests provide resources for people, including a renewable source of energy. If the global economy is to be sustainable, the land-use principles, policies and practices that are collectively known as sustainable forest management must be used all over the world. Net carbon dioxide in the atmosphere will decline as long as new trees are planted to replace those that are used.

This chapter considers an important but often ignored segment of developing economies – the use of wood as the basic material for furniture, woodcarving, handicrafts and other small or medium enterprises. Increased investment in wood-based enterprises will generate additional employment, create real and durable assets, and help revitalize the lives of millions of poor people in rural areas. At a broader scale, this green economy approach (low-carbon, resource-efficient and socially inclusive) can expand the possibilities for disadvantaged segments of the global economy. Opportunities for rural people in emerging economies are especially high.

The chapter concludes with four broad strategies for a sustainable future:

- Plant trees and invest in ecosystem services.
- Promote small and medium forest-based enterprises, and gender equity.
- Use wood for energy; reuse and recycle wood products.
- Enhance communication, and coordinate development.

Contents

Foreword	v
Acknowledgements	vii
Acronyms and abbreviations	viii
Executive summary	ix
<hr/>	
1. <i>State of the World's Forests</i> : the first ten issues	1
<hr/>	
2. Forests and the evolution of the modern world	7
Forests	8
Forestry	18
Sustainability: an enduring value	21
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3. Forests, forestry and forest products for a sustainable future	23
Forests and forest industries in a global economy	24
Turning the corner on how progress is perceived	26
Carving out a better future	30
Forest products in a sustainable future	33
Strategies for the future	37
References	43
Figures	
Figure 1: World population and cumulative deforestation, 1800 to 2010	9
Figure 2: Estimated deforestation, by type of forest and time period	9
Figure 3: Shares of total primary energy supply in 2008 (percent)	28
Boxes	
Box 1: The Agdal system of traditional resource management in Morocco	11
Box 2: Underlying causes of deforestation and forest degradation	17
Box 3: Alternative ways of measuring wealth and human well-being	27
Box 4: Is REDD a "game changer"?	29



Chapter 1

State of the World's Forests: the first ten issues



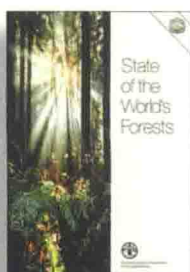
State of the World's Forests 2012 is the tenth edition of SOFO. It was launched at the twenty-first session of the FAO Committee on Forestry (COFO).

The first edition was launched in 1995, to coincide with the twelfth session of COFO. SOFO has been published every two years since then. Traditionally, one of the main agenda items at COFO is a review of the state of the world's forests, including a debate on topical issues in the forest sector.

Beginning in 2012, SOFO will be published in even-numbered years to coincide with the new COFO schedule, which changed from odd- to even-numbered years in 2010, to align with the new FAO Conference schedule.

This chapter provides a guide for readers who are interested in drawing on the knowledge encompassed in the first ten issues of SOFO, available online.¹ It provides a review of topical issues that were important when each edition of SOFO was prepared.

The most striking observation of this review is that every edition of SOFO remains relevant today. SOFO is an important resource for those seeking wisdom about forests, forestry and forest products.



SOFO 1995

In 1995, the international forest community was struggling to reach consensus on how to move forward after the United Nations Conference on Environment and Development (UNCED). The Tropical Forestry Action Plan was clearly out of date,

and many countries were trying to find ways of halting increasing deforestation rates. The world was seeking to develop more effective forest policies. Consequently, forest policies were the focus of the first issue of SOFO in 1995 (FAO, 1995b).

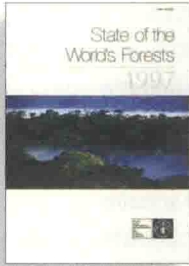
SOFO 1995 traces the evolution of forest policies from when forests were viewed mainly as resources to be exploited: in the 1970s, there was increasing awareness of the need to involve communities in forest management; in the 1980s, forests' role in stabilizing the

global environment was recognized; and by the 1990s, forests were widely regarded as having an important role in sustainable development.

By the mid-1990s, there was consensus on the need for each country to determine its own forest policies based on its unique culture, its forest ecosystems, and its stage of economic development; these country plans became known as "national forest programmes".

In addition to reviewing the state of forest policies, the first issue of SOFO presents statistics collected by FAO on the production, consumption and trade of forest products, and data on forest area in different regions of the world, based mainly on the results of the 1990 Global Forest Resources Assessment (FRA) (FAO, 1993; 1994). Subsequent editions of SOFO have included similar tables, updated to reflect the results of the most recent national surveys of forest products and the latest global assessment.

¹ www.fao.org/forestry/sofo/en/.



SOFO 1997

SOFO 1997 (FAO, 1997) reports in detail on deforestation in tropical countries, drawing heavily on the results of FRA 1990, updated to 1995 (FAO, 1995a). SOFO 1997 reports an estimated deforestation rate of

13.7 million hectares per annum between 1990 and 1995 in natural forests in developing countries. The net global deforestation rate, taking into account increases as well as decreases in forest area, was estimated at 11.3 million hectares per annum.

SOFO 1997 also contains detailed reports on trends in forest management, forest utilization and forest products. Projections for consumption and trade of forest products until 2010 are summarized. SOFO notes that FAO had already lowered the projected consumption levels compared with the projections made in 1996.

A chapter on policy issues reflects major global concerns of the time, including the large number of national economies that were undergoing the transition to a free market system, and the impact of structural adjustment programmes. Many countries were experimenting with decentralization of the forest sector.

In commenting on trends in national forest planning, SOFO 1997 notes that many countries were placing more emphasis on iterative processes involving stakeholders, rather than trying to impose “one-size-fits-all” planning blueprints within a country.



SOFO 1999

SOFO 1999 (FAO, 1999) reports on the initiatives of other organizations that assess global forest resources, including the European Union (EU) Joint Research Centre, the

International Geosphere-Biosphere Programme, the World Conservation Monitoring Centre and the World Resources Institute.

This edition also includes an extensive report on the status of and trends in forest management worldwide. It reports an increase in national initiatives to manage forests according to scientific principles and management plans that consider economic, social and environmental dimensions.

SOFO 1999 reports on the consensus achieved at the Intergovernmental Panel on Forests (IPF) that “national forest programme” is a generic term referring to a country-specific approach to forest planning and policies. This was a breakthrough in that many organizations (including FAO) had previously focused on global “best practices” for use in all countries. The new approach recognized that decentralization can work at the global level as well as within a country.

Regarding forest policy, SOFO 1999 makes an interesting observation: “National policy-makers have become more aware of the complex nature of policy reforms and the uncertainty of their effects. The interrelationships between forests and other sectors of the economy are better understood. Finally, there is a greater recognition that policy statements mean little in practice without strong institutional capacity to implement them.”



SOFO 2001

SOFO 2001 (FAO, 2001) opens by noting two seemingly opposite trends in the forest sector: localization and globalization. Many countries were decentralizing the responsibility for forest planning and management

while facing the impacts of expanding global trade and globalization.

SOFO 2001 reports on the results of FRA 2000 (FAO, 2000), the most comprehensive global forest assessment ever undertaken, at the time. SOFO also includes the new global forest map displaying the world's forests in 2000. Important results include estimated annual losses of natural forest area of 15.2 million hectares in the tropics and 16.1 million hectares worldwide; and net deforestation (taking into account expansion of natural and planted forests) of 12.3 million hectares in the tropics and 9.4 million hectares worldwide.

SOFO 2001 provides a wealth of information about forest resources, including area of forests under protection, area of forest available for wood supply, and forest growth rates.

SOFO 2001 includes a major report on climate change and forests. Based on FRA 2000 and other FAO studies, estimates are given for carbon stocks in forest ecosystems, carbon density in different ecosystems and

regions, carbon emissions from land-use changes, and the potential contribution of reforestation and agroforestry to global carbon sequestration. This SOFO report is one of several that eventually led to global recognition of the key role that forests play in climate change mitigation.

SOFO 2001 also contains a report on illegal activities and corruption in the forest sector. This subject had been taboo in international organizations for many years, and SOFO is one of the first respected international publications to confront the problem openly. (In subsequent years, the softer term “governance” has become an acceptable replacement for the more inflammatory reference to “corruption”.)



SOFO 2003

The theme of SOFO 2003 (FAO, 2003) was “partnerships in action”, and entire chapters were contributed by partner organizations, including the Center for International Forestry Research (CIFOR), the

International Union for Conservation of Nature (IUCN) and the International Union of Forest Research Organizations (IUFRO). SOFO 2003 stresses that effective partnerships are the key to making progress toward sustainable development.

CIFOR contributed a chapter addressing the critical issue of forests and poverty alleviation in developing countries. Six strategies with potential for contributing to poverty alleviation are identified:

- people-centred forestry;
- removal of tenure and regulatory restrictions, and return of public forests to local control;
- improved marketing arrangements for forest products (a “level playing field”);
- partnerships;
- redesign of transfer payments;
- integration of forestry into rural development and poverty reduction strategies.

SOFO 2003 addresses several other important issues in depth, including chapters on:

- the role of forests in sustainable use and management of freshwater resources;
- how the sustainable use of forests can contribute to conserving biological diversity;
- science and technology in the forest sector;
- fiscal policies in the forest sector in Africa.



SOFO 2005

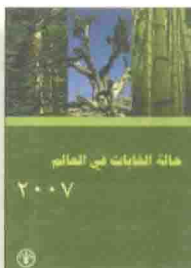
With the theme “realizing the economic benefits of forests”, SOFO 2005 (FAO, 2005b) recognizes that the forest sector is not a high priority in most countries, partly owing to the perception that it makes a relatively small contribution to national economies. Many people in the forestry profession are convinced that the rest of the world does not understand the full value of forests.

SOFO 2005 describes ways in which communities, governments and the private sector are enhancing the economic benefits from forests. It also identifies issues that must be addressed to make sustainable forest management economically viable.

SOFO 2005 includes a comprehensive report on the economics of wood energy, identifying core considerations for the development of future programmes and policies that must take complex economic issues into consideration.

An interesting chapter on “Forests and war, forests and peace”, contributed by CIFOR, concludes this issue of SOFO, and a strategy for action is outlined for countries where there is a tradition of conflict in forest areas.

The chapter suggests that governments should implement policies that integrate forest-dependent people into the wider economy, without forcing them to abandon their homes or cultures.



SOFO 2007

In the early 2000s, international consensus was reached on seven categories that can be applied to the various processes for identifying criteria and indicators for sustainable forest management:

- extent of forest resources;
- biological diversity;
- forest health and vitality;
- productive functions of forest resources;
- protective functions of forest resources;
- socio-economic functions of forests;
- legal, policy and institutional framework.

FRA 2005 was organized around these seven categories (FAO, 2005a). Core information from FRA 2005 was used to prepare reports on progress towards sustainable forest management in six major regions of the world. In 2006, each draft regional report was reviewed by its respective regional forestry commission and revised to reflect regional inputs; the final reports are included in SOFO 2007 (FAO, 2007).

The conclusions of the regional reports are mixed. Some regions had made more progress towards sustainable forest management than others. There were at least some encouraging signs and positive developments in each region. A striking result of FRA 2005 was that about 12 percent of the world's forest area had been set aside for protection, even though ten years earlier a global goal of 10 percent had seemed almost impossible to reach. However, in 2007 there was also widespread acknowledgement of the difficulties that many countries faced in effectively monitoring and enforcing their protected forests.

SOFO 2007 also includes short updates on several issues in the forest sector, such as climate change, desertification, poverty reduction, forest tenure, harvesting, invasive species, mountain development, planted forests, trade in forest products, water, wildlife and wood energy.



SOFO 2009

Continuing the regional approach that was used in 2007, the theme for SOFO 2009 (FAO, 2009) was the outlook for the forest sector.

The results of FAO's regional forest sector outlook studies are

summarized and compared with an updated analysis of global and regional economic trends.

SOFO 2007 emphasizes the supply side by reviewing the state of each region's forest resources and institutions. SOFO 2009 looks at the demand side, by asking: what impacts on the forest sector will future changes in population, economic development and globalization have? Is the explosion in global trade having positive or negative effects on the world's forests?

SOFO 2009 finds a strong correlation between economic development and forests. Countries undergoing rapid

economic development must deal with immense pressures on their forests. Regions that have already achieved a high level of economic development are usually able to stabilize or increase their forest resources. However, the factors affecting forests are very complex, and it is not possible to draw simple conclusions that apply to all countries.

The second part of SOFO 2009 looks at how countries will have to adapt for the future. This analysis includes future scenarios for forest products, ecosystem services and forest institutions.



SOFO 2011

SOFO 2011 (FAO, 2011c) continues the approach of the two previous issues by leading with an analysis of regional trends, focusing on five categories of criteria and indicators for sustainable forest management

based on the results of FRA 2010 (FAO, 2010b): extent of forest resources, biological diversity, protective functions of forests, productive functions of forests and socio-economic functions.

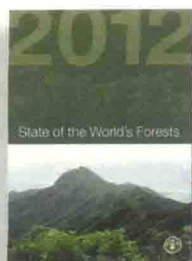
SOFO 2011 reports that global forest area continues to decline. A positive sign is that the estimated loss of forest area at the global level declined from 16 million hectares per year in the 1990s to an estimated 13 million hectares per year between 2000 and 2010. The annual net decrease in forest area, after accounting for regeneration and planted forests, declined from about 6 million hectares to 5 million hectares over the same period.

SOFO 2011 includes a comprehensive report on the development of sustainable forest industries.

This analysis focuses on factors affecting profitability and sustainability in the forest sector over the past 15 years, and reviews the efforts of forest industries to respond to these challenges. Companies in the forest sector face strategic choices that are similar to those faced in other manufacturing sectors.

The report concludes that the overall outlook for the forest industry is one of continued growth, but that the existing structure and location of the industry are not in line with the main economic driving forces. In particular, most of the growth is expected in emerging economies, while much of the existing infrastructure is in developed countries.

SOFO 2011 also includes a major report on the role of forests in climate change adaptation and mitigation; and a new look at the local value of forests, including the importance of traditional knowledge.



SOFO 2012

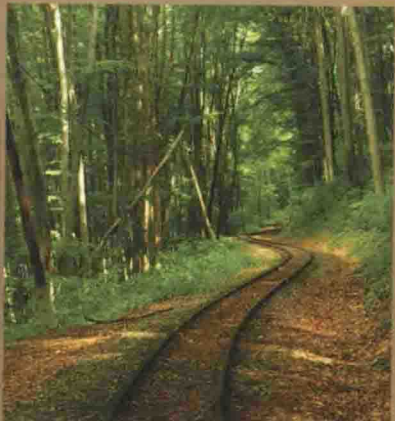
This tenth edition of SOFO focuses on the critical role of forests, forestry and forest products in the transition to a sustainable global economy.

A review of the history of forests suggests that many lessons from the past can inform decisions today. Notably, virtually every country or region that has undergone economic development has experienced high rates of deforestation during the economic transition.

Fortunately, once a national economy reaches a certain level of economic development, most countries have been successful in halting or reversing deforestation.

The concept of sustainability originated as a way of managing forests sustainably to provide a steady supply of wood, and evolved as foresters increasingly understood the importance and value of the wide range of ecosystem services provided by forests. Today, sustainable development is a widely accepted human goal.

As the world looks for ways to ensure a sustainable future, it is increasingly apparent that forests, forestry and forest products must play a central role in this transition. SOFO 2012 concludes with a comprehensive analysis of this process, including suggestions for future strategies for consideration by leaders inside and outside the forest sector at the local, national and global levels.



Chapter 2

Forests and the evolution of the modern world



Forests in a historical context

Forests have played a major role in human history, and periodic deforestation has accompanied population growth and development for thousands of years, throughout the world. Climate, culture, technology and trade have had an important influence on speeding up or slowing down – in some cases even reversing – the pace of deforestation. Over time, the interaction between humans and forests has changed in response to social and economic changes. Among the lessons of history is that there are strong links between forest use (including deforestation) and economic and social development, and between the destruction of forests (with irreversible environmental damage) and economic decline. Policy-makers must confront the paradox that although forests, forest products and forest-based ecosystem services are essential, in some circumstances there are more pressing demands for the land that forests occupy. A historical perspective reveals both the importance and the challenge of sustaining forests and striking a balance between conservation and use – practising sustainable forest management – to ensure the full range of forests' economic, social and environmental contributions.

Forests

The thinning, changing, and elimination of forests – deforestation, no less – is not a recent phenomenon; it is as old as the human occupation of the earth, and one of the key processes in the history of our transformation of its surface.

♦ Williams, 2002

Human history is a story of how the earth's diverse forests and their many products have been used. Forests have been a source of raw material for buildings, transportation and communication; a source of food, and the fuel for cooking it; and – when forests are cleared – a source of land for farms and cities. Although the need to manage forests and forest-based commodities gave rise to some of the earliest laws, most societies found it extremely challenging to manage forests sustainably. The search for new supplies of scarce forest products was a motivation for trade; and

unremitting scarcity eventually spurred migration. Human history is also a story of deforestation and the severe environmental consequences that can result – at times contributing to the collapse of societies.

As an aid to developing the long-term perspective needed for sustainable forest management, this chapter looks at the history of humans and forests. It provides a brief survey of several thorough and detailed studies, foremost among which is Williams' (2002) exhaustive survey of the interaction between human history and forests. The survey also draws on other sources, including Perlin (1989) and Winters (1974), who document the importance of forests and wood to a wide variety of societies over thousands of years.²

² Additional historical material is available in Tucker and Richards (1983) and Richards and Tucker (1988).

Forests: looking back

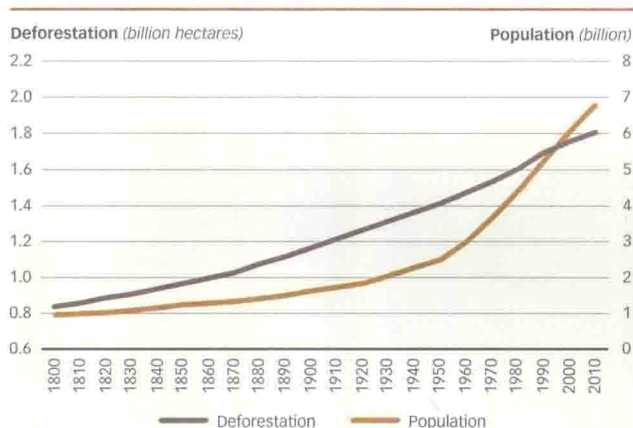
History clearly shows that in countries with abundant natural resources and sparse population there is no thought of the future, and all energy is directed to the exploitation and reckless use of what nature has abundantly provided. The waste under such conditions is naturally very great and a more economic utilization does not pay. As the population increases and industry grows, the demand for raw material of all kinds increases, and there is a gradual awakening of public opinion for the need for a more careful husbanding of natural resources. Practically all nations have travelled the same road. Some reach this point sooner than others, but everyone is inevitably bound to face the same situation.

◆ Zon, 1910

The forests of today have evolved over millions of years and have been profoundly shaped by swings between warm and cold climates. Glacial periods usually lasted 80 000 to 100 000 years, interspersed with warmer interglacial periods of 10 000 to 15 000 years. The last great ice age ended about 10 000 years ago, leaving forests on nearly 6 billion hectares, about 45 percent of the earth's land area. During the last 10 000 years, cycles of changing climate and temperature have continued to influence the world's forests, while human activity has also had an increasing impact.

Forests currently cover about 4 billion hectares, about 31 percent of the earth's land surface (FAO, 2010b). As human population and economic activity have increased, so too has humans' ability to manipulate the natural world. This manipulation is most evident in the clearing of forests.

Figure 1: World population and cumulative deforestation, 1800 to 2010



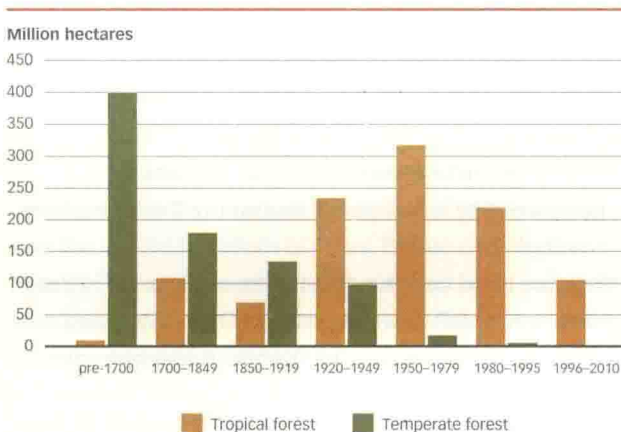
Sources: Williams, 2002; FAO, 2010b; UN, 1999.

Deforestation – the clearing of forests to use the land for other purposes, or to leave it as unused wasteland – is one of the most widespread and important changes that people have made to the surface of the earth. Over a period of 5 000 years, the cumulative loss of forest land worldwide is estimated at 1.8 billion hectares – an average net loss of 360 000 hectares per year (Williams, 2002). Population growth and the burgeoning demand for food, fibre and fuel have accelerated the pace of forest clearance, and the average annual net loss of forest has reached about 5.2 million hectares in the past ten years (FAO, 2010b). The trajectory of global deforestation has more or less followed the global growth rate of the human population, although the pace of deforestation was more rapid than population growth prior to 1950, and has been slower since then (Figure 1).

Deforestation and population growth rates have several other aspects in common: both tend to vary among different regions of the world; and both tend to increase during periods of economic development, while stabilizing or even falling after a society has reached a certain level of wealth.

Until the early twentieth century, the highest rates of deforestation occurred in temperate forests in Asia, Europe and North America. The expansion of agricultural production accounted for most forest clearing, but economic development and the related, often unsustainable, use of forests for raw material and fuel was another contributing factor. This pattern changed during the twentieth century (and even earlier in Europe) and, by mid-century, deforestation had essentially come to a halt in the world's temperate forests (Figure 2). As deforestation slowed in the temperate zone, it rapidly

Figure 2: Estimated deforestation, by type of forest and time period



Source: Estimates based on Williams, 2002; FAO, 2010b.