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This booklet presents the key messages and content extracted from Chapters 2, 3, 4 and 5 of the publication, **State of the World's Forests 2016.** The figures, tables and maps are taken from the same publication.

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MONGOLIA



FOREWORD

tate of the World's Forests 2016 could not be better timed, as FAO is gearing up to fulfil its key role in helping countries develop national plans, policies and programmes to achieve the Sustainable Development Goals (SDGs). The 2030 Agenda recognizes that we can no longer look at food, livelihoods and the management of natural resources separately. It calls for a coherent and integrated approach to sustainability across all agricultural sectors and food systems.

This report explores the challenges and opportunities represented by the complex interrelationship between forests, agriculture and sustainable development. It demonstrates that the sustainable management of both forests and agriculture, and their integration in land-use plans, is essential for achieving the SDGs, ensuring food security and tackling climate change.

We know that forests and trees support sustainable agriculture by, for example, stabilizing soils and climate, regulating water flows, giving shade and shelter, and providing a habitat for pollinators and the natural predators of agricultural pests. When integrated judiciously into agricultural landscapes, forests and trees can therefore increase agricultural productivity. Forests and trees also help ensure the food security of hundreds of millions of people, for whom they are important sources of food, energy and income, including in hard times.

However, agriculture is still the major driver of deforestation globally, and agricultural, forestry and land policies are often at odds.

State of the World's Forests 2016 shows that some countries have been able to reconcile the aspirations of the different sectors, increasing the agricultural productivity and food security of their populations while also halting and even reversing deforestation. The report presents case studies for seven such countries, and others have made similar transitions. The challenge today is to encourage such positive trends in countries – especially low-income countries – in which food insecurity is still rife and where forests are still being lost.

Integrated land-use planning provides an essential strategic framework for balancing land uses. Importantly, such planning processes must be participatory – because it is farmers and other rural people who must ultimately put the plans into practice, and will do so only if they meet their needs and interests.

FAO strives to act as a neutral forum where countries can access objective information and come together to discuss openly the options available for intensifying agriculture sustainably. This report serves to inform that dialogue. State of the World's Forests 2016 makes several recommendations for approaches that countries can adopt, assisted by the international community, to better integrate forests and agriculture while increasing food security and reducing forest loss. Inevitably, in some countries, forests will still make way for agricultural lands. However, if carried out in a planned, integrated way, changing land use from forests to agriculture will be less damaging to the environment and will produce better economic and social outcomes.

Forests and agriculture have an enormous role in achieving the 2030 Agenda's historic commitment to rid the world of the twin scourges of poverty and hunger. However, this urgently requires closer collaboration and partnerships, cross-sectorally and at all scales. I trust that this report will encourage the forest and agriculture sectors, and other important sectors such as energy, water and rural development, to work together for achieving the Sustainable Development Goals.

José Graziano da Silva

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FAO Director-General

KEY MESSAGES

STATE OF THE WORLD'S FORESTS 2016



1 Meeting the world's increasing demand for food and other land-based products will require **HIGHLY PRODUCTIVE LANDSCAPES** that are managed sustainably.



2 Forests play key roles in the WATER CYCLE, SOIL CONSERVATION, CARBON SEQUESTRATION, and HABITAT PROTECTION, including for pollinators. Their sustainable management is crucial for sustainable agriculture and food security.



3 Agriculture remains the most significant driver of global deforestation, and there is an urgent need to promote more **POSITIVE INTERACTIONS** between agriculture and forestry.



4 The 17 Sustainable Development Goals (SDGs) agreed by countries in 2015 are "INTEGRATED AND INDIVISIBLE". Progress towards sustainable agriculture, food security and sustainable forest management, core elements of the SDGs, should be made simultaneously.











- **5 IMPROVED COORDINATION** is required between policies on forests, agriculture, food, land use, and rural development. Equally important are clear legal frameworks governing land-use change, including secure land-tenure systems that recognize traditional customary rights to use land and forest products.
- **6** Where large-scale commercial agriculture is the principal driver of land-use change, effective **REGULATION OF CHANGE,** with appropriate social and environmental safeguards, is needed. Private governance initiatives, such as voluntary certification schemes and commitments to zero deforestation, also have a positive impact.
- 7 Where local subsistence agriculture is the principal driver of land-use change, wider **POVERTY ALLEVIATION** and RURAL DEVELOPMENT measures should be implemented alongside actions to improve local agricultural, agroforestry and other land-use practices.
- 8 INTEGRATED LAND-USE PLANNING provides a strategic framework for balancing land uses at the national, subnational and landscape scales. This should include meaningful stakeholder participation to ensure the legitimacy of land-use plans and obtain stakeholder buyin for their implementation and monitoring.
- 9 Food security can be achieved through AGRICULTURAL INTENSIFICATION and other measures such as social protection, rather than through expansion of agricultural areas at the expense of forests.

TRENDS IN LAND-USE CHANGE

Trends in land-use change are analysed in chapter 2 of the State of the World's Forests, which focuses on the loss of forests through conversion to agriculture and gains in forest area on land previously used for agriculture. A brief historical review shows that the relationship between population growth, increased demand for agricultural land, and forest loss dates back thousands of years and that forests have sometimes re-established naturally as deforestation pressures have eased. Deforestation was most prevalent in the temperate climatic domain until the late nineteenth century and is now greatest in the tropical climatic domain. Net forest area has increased in the temperate domain in recent years, and there has been relatively little recent change in forest area in the boreal and subtropical climatic domains.

There was a net forest loss of 7 million hectares per year in tropical countries in 2000 – 2010 and a net gain in agricultural land of 6 million hectares per year. The greatest net loss of forests and net gain in agricultural land over the period was in the low-income group of countries, where rural populations are growing. Large-scale commercial agriculture accounts for about 40% of deforestation in the tropics and subtropics, local subsistence agriculture for 33%, infrastructure for 10%, urban expansion for 10% and mining for 7%. There are significant regional variations, however: for example, commercial agriculture accounts for almost 70% of the deforestation in Latin America but for only one-third in Africa, where small-scale agriculture is a more significant driver of deforestation.



NIGER

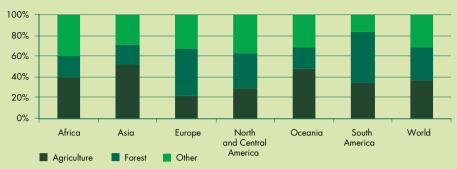
Animals sheltering from the hot sun under a shade tree on their journey from Niamey to Tera.

Underlying factors affecting forest conversion include population growth and changing food consumption patterns; agricultural developments, such as changing markets, technological improvements and active policy interventions; land-tenure security; and the governance of land-use change.

Forest losses in 2010–2015 (most of which was natural forest) were offset partially by a combination of natural expansion, often on abandoned agricultural land (2.2 million hectares per year), and the establishment of planted forests (3.1 million hectares per year).

FIGURE 2.1

LAND AREA BY MAJOR LAND-USE CLASS, 2010



Note: "Other land" is all land not categorized as agricultural or forest land. SOURCE: FAO, 2015a, 2016a.

The above figure shows the proportions of the total land area occupied by agriculture, forests and other land uses in various regions of the world, as of 2010. Asia has the highest proportion of agricultural land (52%) and the lowest proportion of forest (19%). Europe, including the Russian Federation,

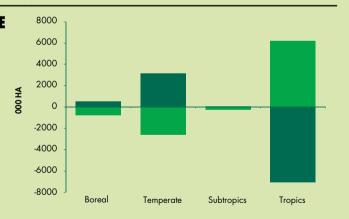
has the lowest proportion of agricultural land (21%) and the second-highest proportion of forest (46%). Globally, agriculture accounts for more than one-third (37.7%) of the land area, and forest and "other" for just under one-third each (30.7% and 31.6%, respectively).

FIGURE 2.2

NET ANNUAL AVERAGE CHANGE IN FOREST AND AGRICULTURAL LAND, BY CLIMATIC DOMAIN, 2000–2010

- Net annual average change in forest area, 2000–2010
- Net annual average change in agricultural area, 2000–2010

SOURCE: FAO, 2015a, 2016a.



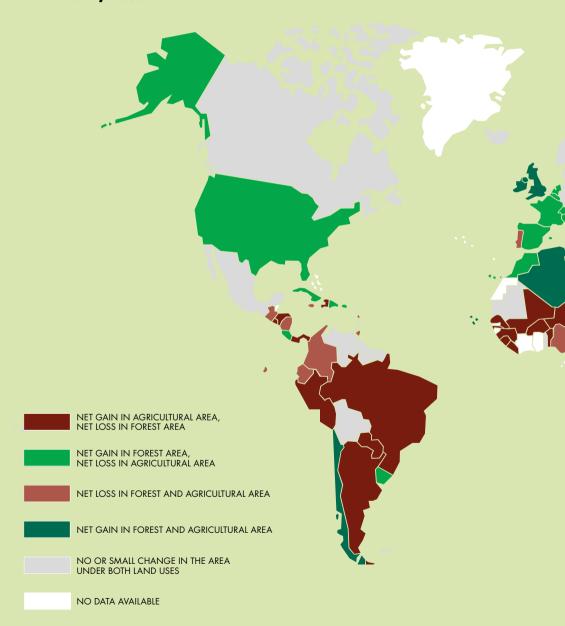
Here we see the net annual average change in the areas of forest and agricultural land in the period 2000–2010 in the four major climatic domains (boreal, temperate, subtropical and tropical). In the boreal domain, the area of forest increased over the decade and the area of agricultural land declined. A similar change occurred in the temperate domain – an increase in forest area was accompanied by a

decrease in agricultural area. The trend can largely be explained by the natural expansion of forest on abandoned agricultural lands, including rangelands, in territories that were part of the former Soviet Union. For example, there was an increase in forest area of 26 million hectares on abandoned farmland in Belarus, Kazakhstan and the Russian Federation (Lambin and Meyfroidt, 2011).

TRENDS IN LAND-USE CHANGE

FIGURE 2.8

NET CHANGES IN AGRICULTURAL AND FOREST AREA, BY COUNTRY/ TERRITORY, 2000–2010



The various combinations of net gains or losses in forest area and agricultural area, are mapped out by country/territory worldwide, in the period 2000–2010.

Most of the 33 countries and territories shown in dark brown in this map (indicating net losses in forest area and net gains in agricultural area in 2000–2010) are in Africa, South and Central America, and Southeast Asia.

Seventeen countries and territories (shown in light brown)

reported a decrease in both the area of agricultural land and forest area: Australia, Bangladesh, Colombia, Ecuador, Guadeloupe, Equatorial Guinea, Guatemala, Jamaica, the Republic of Korea, Mauritius, Nepal, Nicaragua, Nigeria, Portugal, Saint Lucia, Trinidad and Tobago, and the United States Virgin Islands.

Forest area increased and agricultural area decreased in the 29 countries or territories shown in light green (mainly in the temperate climatic domain). Combined, the forest area in

these increased by 6% over the period, including a 25% increase in the area of planted forest.

The area of agricultural land and the forest area both increased from 2000 to 2010 in the 15 countries or territories shown in dark green. Combined, the forest area in these increased by 8%, including a 31% increase in the area of planted forest.

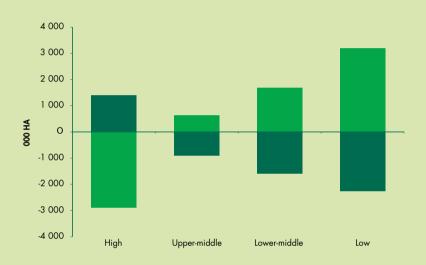
Other countries or territories for which data were available showed only small changes in one or other of the land uses.

Factors affecting global trends in land use are considered in more detail in sections 2.4 and 2.5 of the publication, State of the World's Forests. As the case studies presented in the last section of this booklet (or Chapter 4 in the State of the World's Forests 2016) highlight, the significance of particular drivers of deforestation depends to a large extent on the circumstances of each country.

TRENDS IN LAND-USE CHANGE

FIGURE 2.5

NET ANNUAL AVERAGE CHANGE IN AGRICULTURAL AND FOREST AREA IN COUNTRIES GROUPED BY INCOME CATEGORY, 2000–2010



- Net annual average change in forest area, 2000–2010
- Net annual average change in agricultural area, 2000–2010

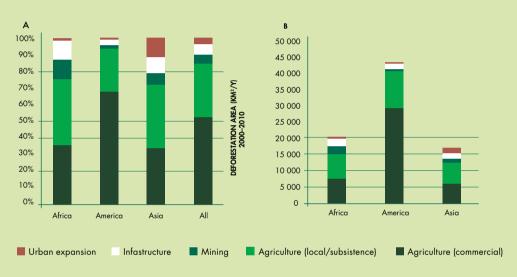
SOURCE: FAO, 2015a, 2016a.

Land-use change dynamics in 2000–2010 were further explored by examining net annual average changes in forest and agricultural area when countries were grouped in income categories. Those in the high-income category showed, overall, a reduction in agricultural area and an increase in

forest area over the period. There was an overall decrease in forest area in the upper-middle-income, lower-middle-income and low-income categories. The largest annual net loss of forest area and annual net gain in agricultural area occurred in the low-income category of countries.

FIGURE 2.9

ESTIMATE OF (A) PROPORTION OF TOTAL AREA OF LAND-USE CHANGE ASSOCIATED WITH VARIOUS PROXIMATE DRIVERS OF DEFORESTATION, AND (B) ABSOLUTE NET FOREST AREA CHANGE ASSOCIATED WITH PROXIMATE DRIVERS OF DEFORESTATION, BY REGION, 2000–2010



SOURCE: Adapted from Hosonuma et al., 2012.

The relative importance of various proximate deforestation drivers varies between regions. Commercial agriculture accounted for almost 70% of the deforestation in Latin America in the period 2000–2010. In the Amazon, in particular, agribusiness production for international markets such as cattle ranching, soybean farming and oil-palm plantations has been identified as a main driver of post-1990 deforestation (Rudel et al., 2009: Boucher et al., 2011).

In Southeast Asia, oil-palm plantations established for the food industry and, to some extent, the production of biofuels have replaced substantial areas of natural forest. For example, the area of oil-palm plantations in Malaysia increased from 2.4 million to 4.2 million

hectares from 1990 to 2005, replacing an estimated 1 million hectares of forest (or more) over the period. The area of oil-palm plantations in Indonesia increased from 1.7 million to 6.1 million hectares from 1990 to 2000, replacing an estimated 1.7 million–3.0 million hectares of forest (Fitzherbert *et al.*, 2008).

Small-scale agricultural processes dominate deforestation in Africa, where many poor households, particularly in sub-Saharan Africa, adopt low-risk, low-return agricultural and other income-generating strategies (FAO, 2015b); large-scale commercial agriculture, on the other hand, accounts for only one-third of deforestation in Africa (DeFries et al., 2010; Fisher, 2010).

KEY MESSAGES

TRENDS IN LAND-USE CHANGE



I Humankind has converted forest land to agricultural use for thousands of years as part of the process of **ECONOMIC DEVELOPMENT.** Deforestation was most prevalent in the temperate climatic domain until the late 19th century and is now greatest in the tropical climatic domain.



2 IN THE TROPICAL DOMAIN, NET ANNUAL LOSS OF FOREST area from 2000 to 2010 was about 7 MILLION HECTARES, and net annual INCREASE IN AGRICULTURAL LAND area was more than 6 MILLION HECTARES. There were significant regional variations: Central and South America, sub-Saharan Africa and South and Southeast Asia all had net losses of forest and net gains in agricultural land.



3 There were NET GAINS IN FOREST AND NET LOSSES IN AGRICULTURAL AREA IN EUROPE, NORTH AMERICA AND NORTHEAST ASIA. Factors contributing to net increases in forest area included reduced pressure on forests as a result of economic growth, declining rural populations or improved agricultural productivity; and effective policies aimed at expanding forest area.



4 The LARGEST NET LOSS OF FOREST area and the LARGEST NET GAIN IN AGRICULTURAL AREA in 2000–2010 was in the **LOW-INCOME** group of countries, with net forest loss associated with increasing rural populations.



5 In TROPICAL AND SUBTROPICAL countries. large-scale commercial agriculture and subsistence AGRICULTURE ACCOUNTED FOR 73% OF DEFORESTATION, with significant regional variations. For example, commercial agriculture accounted for almost 70% of deforestation in Latin America but for only one-third in Africa, where small-scale agriculture is a more significant driver.



6 GLOBAL DEMAND FOR AGRICULTURAL PRODUCTION WILL CONTINUE TO RISE.

Technological improvements can increase global supply by increasing productivity, but there is a clear need for a strategic, integrated approach to agriculture, forestry and other natural-resource policies.

THE GOVERNANCE AND MANAGEMENT OF LAND-USE CHANGE

The ways in which **countries address land-use change** from forest to agriculture, and vice versa, differ greatly, for example in national policies, legal frameworks, investments in agriculture and forestry, and institutional mechanisms. *De facto* rules often have a strong influence on policy outcomes, especially where formal policies fail to provide adequate guidance, are weakly implemented, or do not conform with legitimate stakeholder needs.

An analysis of the national policies of 35 countries revealed that just under half those countries explicitly addressed landuse change from forest to agriculture and vice versa in their main policy documents. There is an increasing need for countries to address land-use change in national policies, including in light of recent international agreements such as the 2030 Agenda on Sustainable Development and the Paris Agreement on climate change.

The forest policies of seven countries that experienced decreases in forest area and increases in agricultural area in the period 1990–2015 attributed those changes to: agricultural pressures, including shifting cultivation, encroachment, land



VIET NAM

A local engineer demonstrates the links between forest management and soil and water protection.

grabbing and livestock grazing; exploitation for forest products, including woodfuel; and social factors, including population growth, poverty, and the development of human settlements and industry. In those agriculture policies that referred to forests, the most frequently cited forest benefits were the use of non-wood forest products for food and animal feed; protective measures for crops and soils; carbon sequestration; water-related benefits; and agroforestry.

Despite acknowledging the importance of a coordinated and consistent approach to land-use policies, few of the assessed policy documents gave details of how this was to be done, and only about one-quarter showed clear evidence of coordination between agriculture- and forest-related interests. Some policy documents, including on food security and national development, presented good examples of coordination measures.

An analysis of legal frameworks showed the importance of formally recognizing traditional rights based on customary tenure, especially for vulnerable and forest-dependent people. The analysis also provided information on legal provisions for the conversion of forest to agriculture, and implementation challenges.

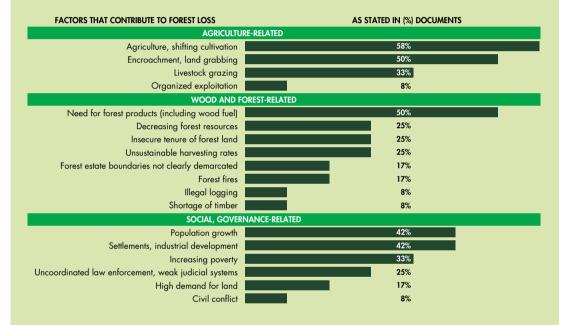
An examination of investments in agriculture and forestry and their impacts on land use illuminated relationships between changes in forest cover, investments in agriculture and forests, and poverty. In general, forest losses are greater in low-income countries when investments in agriculture and forests are relatively low. Direct public investment is increasingly focused on environmental and social protection programmes and other public goods (such as research and development), and there is increasing emphasis on creating enabling environments for private-sector investment. Social and environmental safeguards should be in place in any scheme aiming to incentivize investments.

The analysis demonstrated the importance of integrated land-use planning and participatory approaches using tools such as land capability assessments and taking the views of stakeholders fully into account. The institutional framework should include civil-society and private-sector organizations, as well as government bodies. Such inclusion helps legitimize national policies, improve the governance and management of land-use change, and stimulate partnerships that increase the effectiveness of implementation.

THE GOVERNANCE AND MANAGEMENT OF LAND-USE CHANGE

FIGURE 3.2

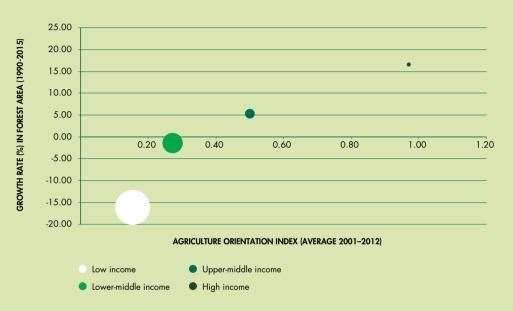
FACTORS CONTRIBUTING TO FOREST LOSS, AS STATED (SINGLE MENTION) IN THE FOREST POLICIES OF SEVEN COUNTRIES EXHIBITING DECREASES IN FOREST AREA AND INCREASES IN AGRICULTURAL AREA IN 2000–2010



The forest policy documents of seven countries that had experienced decreases in forest area and increases in agricultural area from 2000 to 2010 were examined in more detail to shed light on the causes of forest loss, as stated in forest policies. Agriculture (including shifting cultivation, encroachment, land grabbing and livestock grazing) was recognized as a contributing cause to forest loss in the forest policies of all seven countries, and the conversion of forest to agricultural land was seen as instigated by both corporate and smallholder farmers. The documents variously identified demand for forest products, population growth, poverty, and development as other causes of forest loss.

FIGURE 3.8

RELATIONSHIP BETWEEN INVESTMENT IN AGRICULTURE, CHANGE IN FOREST AREA, AND POVERTY



Note: Size of the bubbles represents the Poverty Head Count Ratio. SOURCE: FAO, 2015a, 2015b.

For many developing countries, particularly low-income, food-deficit countries, agriculture is the largest sector in terms of both employment and share of gross domestic product (GDP), which can be as high as 30%. In such countries, public spending on agriculture is an important policy instrument for promoting agriculture growth and food security (FAO, 2012c). According to the FAO Agriculture Orientation Index (FAO, 2015c), however, agricultural expenditure as a proportion of its contribution to GDP is declining in many of these countries. Poverty and hunger, perpetuated by a lack

of economic opportunity, force poor people to exploit the natural resources around them. Forest loss, therefore, is a chronic feature in many low-income, food-deficit countries where government investment in agriculture is low. The graph above shows that the loss of forest cover is greatest in countries with a low Agriculture Orientation Index and that these are also low-income countries. This finding is in conformity with earlier studies that identified subsistence agriculture and large-scale commercial agriculture as significant causes of deforestation in some countries and regions.

KEY MESSAGES

THE GOVERNANCE AND MANAGEMENT OF LAND-USE CHANGE







2 Complexities in the governance of land-use change could be reduced with **BETTER COORDINATION** between policies on forests, agriculture, food, land use, rural development, water and climate change. Such coordination would include setting cross-sectoral priorities or strategic targets for land-use change, and appropriate institutional arrangements.



3 LEGAL FRAMEWORKS for the conversion of forest to agricultural land are often complex, and informal local practices may have a strong influence where implementation and law enforcement is weak. The role of customary law, based on traditional rights, is especially important for vulnerable groups.









- 4 Forest loss is a feature of many low-income, food-deficit countries where government investment in agriculture and forestry is low. Countries that promote AGRICULTURAL **INVESTMENT AND VALUE ADDED,** and provide **ENABLING INFRASTRUCTURE,** have addressed the problem of forest loss more effectively than those where investment is low.
- 5 The governance and management of land-use change requires a MULTIPRONGED APPROACH that includes coordinated policy development; secure land tenure; effective law enforcement; targeted economic incentives to promote sustainable agricultural intensification, sustainable forest management and social investment in rural areas; strong stakeholder engagement; public-private partnerships; integrated land-use planning; and adequate monitoring of land-use change.
- 6 Where countries have SECURED **INVESTMENT** in the forest sector, forest loss is generally lower. Some countries are investing in forests in ways that help achieve wider social and environmental goals related to employment, climate change, land degradation, landscape restoration, and the resilience of agriculture.
- 7 Integrated land-use planning is important for creating a **STRATEGIC FRAMEWORK** to balance competing land uses among stakeholders. This framework should encompass government agencies, local communities, civil society organizations, and responsible private-sector interests.

MAKING ROOM FOR FORESTS AND FOOD SECURITY

Case studies from seven countries – Chile, Costa Rica, the Gambia, Georgia, Ghana, Tunisia and Viet Nam – demonstrate the opportunities for improving food security while increasing or maintaining forest cover. All case-study countries except one achieved positive change in the period 1990–2015 in two food-security indicators – the prevalence of undernourishment and the number of undernourished people – as well as increases in forest area. They were also chosen to provide examples from different regions and income levels.

In each case study, information is presented on the economic and demographic context; trends in food security, agriculture and forest condition; the policy, legal and institutional frameworks; and key factors contributing to positive trends in food security and forest area.

All the case-study countries have experienced favourable economic growth, in some cases associated with structural economic reforms. Most case studies demonstrated links between poverty and food insecurity and the importance of including poverty eradication and the reduction of inequality as key national economic policy objectives.



SIERRA LEONEThe chairwoman of a local Agri-business

centre on a community cabbage plot.

A number of case studies demonstrate the value of a balanced approach to the agriculture and forest sectors when developing policies and policy instruments aimed at

Sebastian Liste/NOOR for FA

achieving positive developments in the forest sector while also improving food security and agricultural productivity. They suggest that the development of market-oriented and open agricultural economies should feature complementary social and environmental safeguards, for example to protect vulnerable households from the impacts of global market fluctuations and to prevent environmental damage from more intensive agricultural production. Casestudy countries have recognized the full economic, social and environmental benefits of forests, including their contributions to wider sustainable development, poverty reduction and climate-change programmes.

The case studies demonstrate the importance of using the right policy instruments to increase agricultural productivity and promote sustainable forest management; case-study countries have used various fiscal measures - such as incentives and tax breaks - and regulatory tools to achieve this. All the case studies showed the need for effective legal and institutional frameworks, with predictable and secure land tenure and measures to regulate land-use change, including requirements for environmental impact assessments and special protection for designated areas. They also showed the importance of adequate funding through public-sector investment in the agriculture sector, the forest sector and wider rural development programmes. Funding sources identified in the case studies included government budgets, payments for environmental services (PES) mechanisms, the sale of products from publicly owned forests, royalties, licence fees, taxes on forest products, export levies, official development assistance and, potentially, REDD. Some case studies indicated that devolving forest management rights to local communities had helped improve livelihoods and strengthen local support for sustainable forest management. The respective roles and responsibilities of governments and local communities need clear definition when management rights are devolved.

The case studies demonstrated the importance of integrated land-use approaches at the national, landscape and local levels. Examples of such approaches include landuse master plans; collaboration between agricultural and forest research institutes and extension services; watershed management; and agroforestry systems.

MAKING ROOM FOR FORESTS AND FOOD SECURITY



KEY FACTORS CONTRIBUTING TO POSITIVE TRENDS IN FOOD SECURITY AND FOREST COVER IN CHILE

- Economic growth in an open and competitive market environment has led to increased exports and reduced unemployment and poverty. A framework of reliable institutions has supported economic growth and provided social protection.
- The agriculture sector has been flexible in reacting to changing market conditions, including export potential, and it has responded positively to tariff reductions by replacing traditional crops with more profitable alternatives.
- Crop productivity has increased due to the use of the best available technologies and increases in farm size, which has brought economies of scale.
- Finance has been available, mainly from commercial banks. Governmental financial instruments have focused on encouraging private-sector investment, restoring

- degraded soils and improving irrigation systems.
- Well-targeted programmes with both social and production objectives have supported small and medium-sized enterprises, including by providing technical assistance, financial support and training to improve the productivity and sustainability of family farms.
- ▶ Forest plantations to produce timber for industrial processing and to deliver environmental benefits such as soil protection have been encouraged by subsidies for afforestation, a legal requirement to replant after harvesting, and a positive response to such opportunities in the private sector.
- Policy recognition of the potential of agriculture and forestry, based on the suitability of the land for different uses, has led to strong and effective support for both sectors.



KEY FACTORS CONTRIBUTING TO POSITIVE TRENDS IN FOOD SECURITY AND FOREST COVER IN COSTA RICA

- Structural changes in agriculture reduced pressures to convert forest to agricultural use and led to an increase in the area of secondary forest.
- Agriculture and food policies have aimed to increase the competitiveness of entrepreneurship at all scales, including local production.
- ➤ The government responded to an escalation in food prices in 2008 by promoting food production and providing vulnerable families with social assistance.
- Legal controls have been introduced to prevent land-use change from natural forests.
- ▶ Stable funding for forests has been provided since 1997 through a system of payments for environmental services (PES). Priorities for PES funding include forest and watershed protection, conservation, agroforestry and silvopastoral systems, and reforestation with native species.
- Publicly owned protected areas have been consolidated, and there is a willingness among some private owners to adopt similar approaches on their land so they can benefit from ecotourism and PES.
- ➤ The significance of primary forests for the ecotourism sector, and recognition that forests are crucial for Costa Rica's strong environmental credentials, mean that forest policy – as well as agriculture and food policies – are priorities for government.



KEY FACTORS CONTRIBUTING TO POSITIVE TRENDS IN FOOD SECURITY AND FOREST COVER IN THE GAMBIA

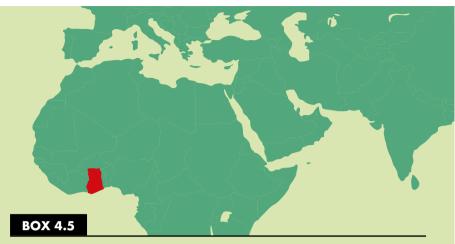
- ➤ The development of domestic agriculture (for example through an increase in the area of arable land under cultivation and increased rice production) and an increase in food imports have reduced both the prevalence of undernourishment and the number of undernourished people.
- ▶ The transfer of forest ownership to communities for sustainable management, and increased recognition of the importance of participatory forest management, have helped reduce pressure on forest resources and increase the benefits of forests accruing to local communities.
- External support has helped promote innovation and development in the agriculture and forest sectors, for example by strengthening community-based producer organizations.
- ➤ The incorporation of sustainable forest management in the Gambia National Agricultural Investment Plan reflects the importance of a holistic approach, recognizing, for example, that upland erosion causes lowland siltation and that agricultural expansion should take place on undercultivated land to avoid forest encroachment
- Public awareness has increased of the problems associated with land degradation, and of its causes (e.g. human activities and climatic variation).

MAKING ROOM FOR FORESTS AND FOOD SECURITY



KEY FACTORS CONTRIBUTING TO POSITIVE TRENDS IN FOOD SECURITY AND FOREST COVER IN GEORGIA

- Migration away from forest areas has reduced pressure exerted on forests by excessive cutting and grazing.
- ➤ The replacement of short-term permits for timber harvesting with longerterm licences (for up to 20 years) has improved forest management.
- Recognition that current legislation does not comply with the principles of sustainable forest management has led to work on a new forest code. There has also been capacity building in the National Forestry Agency.
- ➤ The involvement of stakeholders in the development and implementation of national forest policies has helped generate support for the principles of sustainable forest management.
- ➤ Since 2013, assistance for agricultural development has been one of the government's main priorities, leading to increased investment by the state and through official development assistance in this area.



KEY FACTORS CONTRIBUTING TO POSITIVE TRENDS IN FOOD SECURITY AND FOREST COVER IN GHANA

- ► There has been political stability and consistency in policy implementation.
- The Economic Recovery Programme recognized the importance of modernized and sustainable agricultural production and sustainable forest management as part of its vision for a structurally transformed economy.
- Agricultural productivity increased by applying the outcomes of research and development, investing in infrastructure (such as irrigation), the application of fertilizers, and targeted support for smallholders.
- Environmental impact assessments are used to regulate the conversion of forest land to agricultural land, and vice versa.
- Forest governance has improved due to institutional reform and capacity strengthening.

- Tree-tenure reform is ongoing to give farmers the right of ownership in and benefits from the trees they have planted.
- Private-sector investment in plantations has been encouraged through financial instruments (such as those funded from levies on the export of air-dried lumber) and the allocation of land in degraded parts of forest reserves.
- Stakeholder participation in policy development has been encouraged and policies introduced to safeguard the interests of communities and small and medium-sized forest enterprises. Collaborative forest management approaches are used to improve community access to forest benefits.

MAKING ROOM FOR FORESTS AND FOOD SECURITY



KEY FACTORS CONTRIBUTING TO POSITIVE TRENDS IN FOOD SECURITY AND FOREST COVER IN TUNISIA

- Poverty and population growth have both declined.
- ▶ National development plans recognize the beneficial role of forests in protecting land against erosion and desertification. Forests are an integral element in the agriculture policy with the aim of conserving water resources, protecting agricultural land from erosion, preventing flood risk, and increasing agricultural production.
- Agricultural production has increased through intensification that makes better use of existing agricultural land through, for example, irrigation, fertilizers, mechanization, improved seeds and better farming practice.
- Significant government and official development assistance funds have

- been invested in agricultural and forestry development. This has improved agricultural productivity while expanding forest cover to provide forest products and environmental services and employment for poorer people living in or near forests.
- ▶ Incentives are available for establishing plantations, including free seedlings and compensation for the loss of agricultural income.
- Forest development is a political priority, and a financing strategy for forests is in place to help mobilize funds, including official development assistance, for the implementation of forest policies.
- Regulations for controlling landuse change and protecting forests are enforced.



KEY FACTORS CONTRIBUTING TO POSITIVE TRENDS IN FOOD SECURITY AND FOREST COVER IN VIET NAM

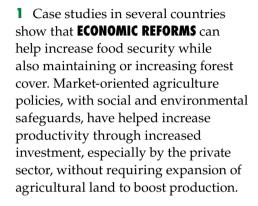
- ▶ Economic reform, including trade liberalization, integrated Viet Nam into the global economy; agricultural reform placed farm households at the centre of economic activities; and state forest enterprises were restructured to become business-like enterprises.
- Political will has existed for maintaining and increasing forest cover, with policy directions translated into sectoral strategies, programmes and plans.
- National-level land-use planning documents have been used to inform decisions on land conversion, including from agricultural and forest land to other uses.
- Support has been given to both the agriculture and forest sectors, with clear targets for agricultural development, food production and forest protection and development.
- Land tenure was reformed to provide secure land tenure as a way of encouraging longterm investment.

- Policy instruments have been applied to promote the implementation of an agriculture policy aimed at increasing agricultural productivity. These include land tax exemptions; soft loans; export promotion; price guarantees; support for mechanization and reductions in post-harvest losses; and contributions towards agricultural insurance premiums.
- Financial instruments, such as payments for forest environmental services, have been used to support sustainable forest management, livelihood improvement and environment protection.
- There has been a shift from state forestry to multistakeholder forestry, with a focus on the active participation of local people and community-based forest management, including the forest land allocation programme and forest protection contracts with local households.

KEY MESSAGES

MAKING ROOM FOR FORESTS AND FOOD SECURITY







2 Effective land-use policies recognize the full **ECONOMIC, SOCIAL AND ENVIRONMENTAL VALUES** of forests, including their role in delivering wider economic development and poverty reduction programmes.



3 Effective and inclusive legal and institutional frameworks provide PREDICTABLE AND SECURE LAND AND FOREST TENURE, with rights to trees, tree products and services, and measures to regulate land-use change effectively. Building the capacity of producer and community organizations contributes to improving institutional frameworks.





4 DEVOLVING FOREST MANAGEMENT

RIGHTS to local communities and smallholders helps improve access to forest benefits, leading in turn to greater recognition of the value of forests. Effective collaborative forest management requires that public institutions and community organizations understand their roles and have the capacity to perform them.

5 Approaches for integrating land uses and landscape management include STRATEGIC LAND-USE FRAMEWORKS, collaboration among agricultural and forest institutes on research, development and extension, strengthening of farmforest links, and the promotion of agroforestry.

TOWARDS BETTER GOVERNANCE OF LAND USE FOR FORESTS AND AGRICULTURE

Global forest area declined by 129 million hectares (3.1%) in the period from 1990 to 2015 and is now just under 4 billion hectares. Although the rate of global net forest loss slowed from an average of 7.3 million hectares per year in the 1990s to 3.3 million hectares per year in 2010-2015 (FAO, 2015a), deforestation remains a matter of deep concern (UN, 2015b). Halting the loss of forests will benefit hundreds of millions of people, including many of the world's poorest people, whose livelihoods depend on forest goods and environmental services. It will also help combat climate change, protect habitats for 75% of the world's terrestrial biodiversity, and maintain ecosystem resilience - thereby supporting sustainable agriculture.

Most of the loss of forest area in the last 25 years has been in the tropical climatic domain, where populations are still growing, including in rural areas. In contrast, there have been gains in net forest area in the temperate domain, where rural populations are generally decreasing. There are clear associations between forest loss and national income: in 2000–2010, high-income countries registered an overall increase in forest area, while the upper-middle, lower-middle and low-income country categories all showed overall decreases in forest area (and the largest decreases were in the low-income group).

The conversion of forest land to agricultural use remains the main driver of deforestation. In 2000–2010 the loss of forest in the tropical domain (7 million hectares per year) was similar to the increase in agricultural area (6 million hectares per year). Most of this forest loss, and increase in agricultural area, occurred in South America, sub-Saharan Africa and South and Southeast Asia. It is estimated that, in the tropics and subtropics, large-scale commercial agriculture accounts for 40% of deforestation; local subsistence agriculture accounts for 33%; and urban expansion, infrastructure and mining account for 27%.

Large-scale agricultural developments are often export-focused and contribute relatively little to local food supplies, although they can bring wider economic benefits. Commercial agriculture accounts for almost 70% of deforestation in Latin America; in the Amazon region, cattle ranching, soybean farming and oil-palm plantations have been major drivers of deforestation since 1990. Oil-palm plantations are replacing substantial areas of natural forest in Southeast Asia. Social and environmental safeguards are needed to avoid negative consequences; voluntary measures by the private sector, such as certification schemes and moratoria on the purchase of products grown in deforested areas, have been helpful in achieving positive outcomes (e.g. a reduction in deforestation in the Amazon).

Large-scale commercial agriculture accounts for one-third of deforestation in Africa. Subsistence agriculture is important for the livelihoods of many poor households in Africa; opportunities to improve the efficiency of this form of agriculture, such as the strengthening of farmer organizations, need to be combined with wider rural development and social protection programmes. Some case studies provided examples of support programmes aimed at, for example, the co-financing of agroforestry and agricultural investment projects; the strengthening of producer organizations; skills development; and access to microcredit, financial incentives, soft loans and price guarantees. Such measures often form part of wider socioeconomic development and poverty alleviation programmes targeted at vulnerable groups and areas with special difficulties.

Underlying factors affecting forest conversion include population growth, agricultural development, land tenure, and the governance of land-use change. As illustrated by the case studies, the significance of particular drivers depends on the circumstances of each country. Global population has grown by 37% since 1990, and food consumption has increased by 40%. Food consumption will continue to increase as the population grows and also as food consumption patterns change; demand for land to produce other products such as biofuels is also likely to increase. Food security is increasingly tied to international trading relationships, as is the vulnerability of forests, as agriculture in lower-income countries often develops in response to the demands of higher-income countries.

Although food security, sustainable agriculture and sustainable forest management are all global priorities, the analysis of policy documents presented here suggests that decisions on land use and natural-resource priorities are not always addressed in an integrated way at the **national level.** There is a need to improve coordination between policies on forests, agriculture, food, land use, rural development and national development. For example, agriculture policies should be more explicit about the potential implications of food production strategies for forests and sustainable land management. Several case studies highlighted the importance of recognizing the value of forests, as well as the importance of agriculture and food security, in wider national economic development, rural development and poverty reduction strategies.

Problems arise where the legal framework governing land-use change is fragmented and inconsistent. This can occur where national policies on land use are weak or non-existent, or if there is inadequate coordination when drafting legal instruments. Such fragmentation and inconsistency can make it more difficult to enforce laws effectively and increase the likelihood of forest loss, including through the illegal conversion of forests to agriculture or other land uses. Law enforcement is likely to be more effective when legal requirements are understood and supported by all stakeholders. Other prerequisites for sustainable land management are land-tenure security, the formal recognition of customary rights to the use of land and forest goods, and the strengthening of the rights of vulnerable groups, such as poor, forest-dependent women.

Selecting the right tools to support policy implementation is vital. For example, if large-scale commercial agriculture is a principal driver of land-use change, important policy tools include effective processes for regulating land-use change, such as the use of social and environmental impact assessments, to ensure that such change does not lead to undesirable deforestation. On the other hand, where local subsistence agriculture is a principal driver, policy tools may include wider measures to address poverty, together with actions to improve local agricultural and other land-use practices. In some of the case-study countries, analysis of the causes of deforestation helped inform the design of appropriate policy instruments.

Forest loss is often associated with low levels of investment in agriculture and forests. Encouraging agricultural investment may involve research and extension, as well as measures to improve distribution and marketing, address inefficiencies in value chains, and increase access to appropriate forms of finance. Innovative investment in forests can help achieve wider social and environmental public policy goals; examples include major afforestation and landscape-scale forest rehabilitation

programmes and the integration of forestry into poverty reduction and rural development strategies. Some countries have created successful enabling environments for private-sector investment in forestry and pioneered innovative funding mechanisms, such as PES. In a number of the case-study countries, public-sector support has shifted away from production support towards research and development, rural finance, export promotion and the strengthening of producer organizations. Direct public-sector investment is often targeted at environmental priorities such as soil restoration and tree planting; social priorities, including social protection programmes; and catalysing private-sector investment.

There is an opportunity to mainstream integrated land-use planning as a tool for achieving sustainable land management and improving ecosystem resilience, enhancing synergies and complementarities among land uses at various scales, and addressing potential conflicts. Integrated land-use planning can create a strategic framework within which to balance competing land uses and to bring together relevant government bodies and stakeholders to assess technical information on, for example, land capability, natural resource availability and expected future needs. Another tool for improving consistency in land-use management is the unification of maps and databases that combine authoritative land-based information from different agencies. Measures taken in casestudy countries to achieve integrated approaches to land use at different scales

include the development of overarching strategic land-use frameworks to inform decisions, improved cooperation between agricultural and forest research institutes, and the promotion of agroforestry systems.

Partnerships with civil society and the private sector are a key part of institutional arrangements. Stakeholder commitment is essential for effective policy implementation. There is potential to further develop private governance initiatives, such as voluntary certification schemes, moratoria and commitments to "zero-deforestation" supply chains, by strengthening partnerships between the private sector, civil society organizations, national and local government bodies, and international organizations.

Devolving forest management rights to local communities and smallholders can improve access to, and recognition of, forest benefits through collaborative forest management. In the case-study countries this has also led to greater recognition among local communities of the value of forests. Effective collaborative forest management requires clear definition of the respective roles and responsibilities of public bodies and community organizations and ensuring that they have the capacity to deliver.

A multipronged approach is needed to achieve multiple land-use and natural-resource goals involving coordinated policy development and land-use planning; the effective legal protection of forests; greater tenure security; strong stakeholder engagement; improved monitoring of deforestation; strong cooperation with the private sector and civil society on voluntary initiatives; and the use of well-designed and targeted financial instruments. The case studies provide illustrations of how this can be achieved but also demonstrate the importance of adopting different approaches in different contexts and the need to adapt to changing circumstances.

2016 STATE OF THE WORLD'S FORESTS

FORESTS AND AGRICULTURE: LAND-USE CHALLENGES AND OPPORTUNITIES

Forests and trees support sustainable agriculture. They stabilize soils and climate, regulate water flows, give shade and shelter, and provide a habitat for pollinators and the natural predators of agricultural pests. They also contribute to the food security of hundreds of millions of people, for whom they are important sources of food, energy and income. Yet, agriculture remains the major driver of deforestation globally, and agricultural, forestry and land policies are often at odds.

State of the World's Forests (SOFO) 2016 shows that it is possible to increase agricultural productivity and food security while halting or even reversing deforestation, highlighting the successful efforts of Costa Rica, Chile, the Gambia, Georgia, Ghana, Tunisia and Viet Nam. Integrated land-use planning is the key to balancing land uses, underpinned by the right policy instruments to promote both sustainable forests and agriculture.

This booklet presents the key messages and content from the publication, State of the World's Forests 2016.

