

Forest fires and the law

A guide for national drafters
based on the Fire Management
Voluntary Guidelines



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by
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for the
Development Law Service
FAO Legal Office

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PREFACE

Fires impact upon livelihoods, ecosystems and landscapes. Despite incomplete and inconsistent data, it is estimated that 350 million hectares burn each year. However, the nature of fires determines whether their social, cultural, environmental and economic impacts are negative or positive. Up to 90 percent of wildland fires are caused by human activities primarily through the uncontrolled use of fire for clearing forest and woodland for agriculture or arson, but also through maintenance of grasslands for livestock management, extraction of non-wood forest products, industrial development, resettlement and hunting. Therefore proactive fire management needs integrated, inter-sectoral, multi-stakeholder and holistic approaches. The situation, however, varies markedly in different regions of the world.

In accordance with the recommendations of the International Wildland Fire Summit in October 2003, the Ministerial Meeting on Sustainable Forest Management in March 2005 and the FAO Committee on Forestry (COFO), also in March 2005, FAO coordinated a multi-stakeholder process to prepare the Fire Management Voluntary Guidelines (Voluntary Guidelines) as part of a global strategy for international cooperation in fire management.

The Voluntary Guidelines set out, and encourage the use of, a framework of non-legally binding principles and internationally accepted strategic actions. They address the cultural, social, environmental and economic dimensions of fire management at all levels.

The principles and strategic actions are global in scope and target all elements of civil society and the private sector; member nations of FAO and non-members; policy makers and senior managers of sub-regional, regional and global organizations, whether governmental or non-governmental; owners and managers of forest, range, grassland and other ecosystems; and all stakeholders concerned with the protection of lives, property and resources from the effect of unwanted, damaging fires and with the use of fire to enhance ecosystems and economic benefits. Other sectors may also find the principles and strategic actions useful in their roles in society: insurance companies, advocacy groups, and specialists in communications, disaster management and public relations.

The principles and strategic actions are expected to be promoted for use in governance, education, guidance, benchmarking, cooperation and advocacy related to all aspects of fire management. Their various features will provide contexts for social, economic, cultural, environmental and political discussions at sub-national, national, regional and international levels. The principles and strategic actions can serve as a checklist to strengthen policies, legal and regulatory frameworks, plans and procedures and, where these do not exist, will be a useful basis for their development and implementation. Special consideration is given to social and community values and to engaging the community in fire-management planning and implementation. The Fire Management Voluntary Guidelines can be accessed at: www.fao.org/docrep/009/j9255e/j9255e00.htm.

The Fire Management Voluntary Guidelines also support the formulation of legal and regulatory frameworks for a holistic approach to fire management. Specifically, Principle 8 of the Guidelines clearly recognizes the role of legislation in supporting and institutionalizing forest fire management. This is because empirical observation leads to the conclusion that fire prevention and suppression are often hampered by unclear lines of institutional responsibilities and by conflicting policies and legislation. A variety of approaches in formulating national legislation can, however, be envisaged: prevention and repression, incentives, coordination and planning, participatory and community-based tools.

Against this background, the present study seeks to systematically identify the elements of sound legislation on forest fires, capitalizing on the experience gained by FAO in advising on the improvement of forest legislation in member countries. Emerging trends (such as common approaches and tools, as well as common gaps), best practices and innovative legal solutions are identified in national and sub-national legislation on forest fires in a representative group of countries from different regions, having different ecosystems and different legal traditions. This comparative study led to the formulation of systematic recommendations for the analysis, review and drafting of legislation to ensure appropriate legal measures on forest fires are supportive of a holistic approach to forest fire management.

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EXECUTIVE SUMMARY

Fires in vegetation, forests, woodlands and rangelands are a major and continuing threat to human life, health and livelihoods, to economic development and to the environment. The most common causes of forest fires are human-induced: land clearing (especially for shifting cultivation, other agricultural activities, and the maintenance of grasslands for livestock management), extraction of non-wood forest products, industrial development, resettlement, hunting, negligence and arson.

The *Fire Management Voluntary Guidelines – Principles and Strategic Actions*, elaborated under the aegis of FAO, provide a set of priority principles on fire management, which is an essential component of sustainable forest management. Fire management is the discipline of using fire to achieve land management and traditional use objectives, together with the safeguarding of life, property, and resources through the prevention, detection, control, restriction, and suppression of fire in forest and other vegetation in rural areas. It encompasses prevention, preparedness, early warning, detection and mobilization, suppression, and restoration (including research and technology transfer). It also includes the appropriate use of natural or human-caused fire in maintaining ecological values and integrity of certain ecosystems, and the use of fire to reduce the accumulation of natural fuel and residues from commercial and non-commercial activities.

The *Fire Management Voluntary Guidelines* support the formulation of legal and regulatory conditions for a holistic approach to fire management. Specifically, Principle 8 of the *Guidelines* clearly recognizes the role of legislation in supporting and institutionalizing fire management. This is because empirical observation leads to the conclusion that fire prevention and suppression are often hampered by unclear lines of institutional responsibilities and by conflicting policies and legislation. A variety of approaches in formulating national legislation can, however, be envisaged: prevention and repression, incentives, coordination and planning, participatory and community-based tools.

Based on the *Fire Management Voluntary Guidelines*, the present study seeks to systematically identify the elements of solid legislation on forest fires, capitalizing on the experience gained by FAO in advising on the improvement of forest fire legislation in member countries. Emerging trends (such as common approaches and tools, as well as common gaps), best

practices and innovative legal solutions are identified in national and sub-national legislation on forest fires in a representative group of countries from different regions, having different ecosystems and different legal traditions. This comparative analysis leads to the formulation of systematic recommendations for the analysis, review and drafting of forest fire legislation to support a holistic approach to fire management.

From the outset, it should be clarified that this study does not intend to provide a model law on forest fires: as technical issues and ecological and social conditions vary greatly from country to country and from one eco-region to another, legal solutions should also differ to effectively address forest fire management in a specific national context. It should be also stressed that forest fires may influence the attainment of the goals of the 1992 Rio Forest Principles, the Non-legally Binding Instrument on All Types of Forests, the Convention on Biological Diversity, the international climate change regime, and the UN Convention to Combat Desertification.

National legislation on forest fires generally consists either of texts which deal specifically or fully with forest fires, or of texts that deal partly with certain aspects of forest fire management along with other forest management aspects. In addition, other legal provisions are directly or indirectly related to forest fires, such as legislation on agriculture, environmental protection, and disaster management.

Overall, solid forest fire legislation should address the following key elements:

- **definitions**, which should be clearly spelt out, in order to prevent confusion and ambiguity and to delineate the scope of application of legislation;
- **institutional set-up**: unclear or overlapping responsibilities are among the most prevalent weaknesses of national forest fire legislation, resulting in uncoordinated duplication of efforts rather than effective pooling of resources, and in burdensome bureaucracies. Legislation should prevent confusion over roles and functions among government institutions, as well as the failure to properly allocate powers among different levels of government in a decentralized system;
- **coordination**: legislation can institutionalize coordination with various public bodies directly and indirectly concerned with forest

fires, and clarify how and when inter-institutional coordination should be sought. Although legislation is not the only means to achieve coordination, it can be a very useful instrument to facilitate it;

- **planning, monitoring and assessment:** legislation can ensure that the obligation to prepare fire management plans is clearly allocated, together with an indication of minimum contents and periodicity, including issues of public participation in decision-making and integration with other relevant planning exercises;
- **prevention:** legislation may set fire seasons, institutionalize certain pre-season activities, establish an early warning system and its legal consequences, prohibit certain dangerous activities, and provide certain preventive rules on fuel management;
- **suppression:** legislation may provide details on how fire fighting must be organized by responsible entities, specifying powers, communication and coordination requirements, and possibly equipment or practices that should or cannot be used;
- **controlled use of fire:** blanket prohibitions on the use of fire have often proven ineffective, if not even counterproductive, so an appropriate legal system to control the planned use of fire may be more useful in preventing forest fires and satisfying other land use objectives. Legislation can therefore clarify that planned burnings are not prohibited in times and under circumstances that overtly exclude any purpose of propagation. In addition, legislation can specify definitions, procedures and minimum cautions for the authorized use of fire;
- **participatory and community-based approaches:** legislation may support or institutionalize the participation of local communities or individual concerned stakeholders in fire prevention and suppression, by requiring provision of information, supporting the creation of local groups or committees for monitoring or early action, and/or requiring individuals to take action to detect, prevent and extinguish fires;
- **rehabilitation:** legislation may allocate responsibilities in this regard, such as the obligation to undertake replanting of trees or prepare a rehabilitation plan after extensive fires, with a view to ensuring consistency between various rehabilitation operations and preventing new fires; and
- **law enforcement** may be considered part and parcel of fire prevention measures, as a tool that may result in the prevention of

outbreaks of fires or in the reduction of fire severity and spread. To these ends, legislation may clarify the powers of law enforcement officers; clearly identify offences and sanctions that should be sufficiently dissuasive; create incentives; and address issues of compensation and insurance, financing, research, training and awareness raising.

1. INTRODUCTION

Fires in vegetation, forests, woodlands and rangelands are a major and continuing threat to human life, health and livelihoods, to economic development and to the environment. FAO global estimate of land area affected by fire in 2000 was 350 million hectares, much of which was forest and woodland. The same overview underscored that people are the overwhelming cause of fires in every region. The most common causes of forest fires are: land clearing, especially for shifting cultivation, other agricultural activities and maintenance of grasslands for livestock management; extraction of non-wood forest products; industrial development; resettlement; hunting; negligence and arson. The overview concluded that fire prevention and suppression are often hampered, among several factors, by unclear lines of institutional responsibilities and by conflicting policies and legislation (FAO, 2007).

In accordance with the recommendations of the 2003 International Wildland Fire Summit, of the 2005 Ministerial Meeting on Sustainable Forest Management and of the 2005 meeting of the FAO Committee on Forests (COFO), FAO coordinated a multi-stakeholder process that resulted in 2007 in the *Fire Management Voluntary Guidelines – Principles and Strategic Actions* (FAO Guidelines). The Guidelines provide a set of priority principles that aim at, *inter alia*, supporting the formulation of legal and regulatory conditions for a holistic approach to fire management. The Guidelines indeed stress the importance of an appropriate legal framework for effective fire management and provide some principles that may guide legislators to this effect.

Earlier research on forest fire legislation by FAO (FAO, 2003) mostly focused on international agreements on forest fires. An initial overview of existing national legislation on forest fires was also conducted at the time and the need for "further review and assessment" was recognized.

Against this background, the present study seeks to systematically identify the elements of solid legislation on forest fires, capitalizing on the experience gained by FAO in advising on the improvement of forest fire legislation in member countries. A comparative study of existing national legislation on forest fires will help identifying emerging trends (common elements and shifts in approach, as well as common gaps) and singling out best practices and innovative legal solutions in the formulation of national and sub-national legislation on forest fires. The study will conclude by formulating systematic

recommendations for the analysis, review and drafting of forest fire legislation to support a holistic approach to fire management.

From the outset, it should be clarified that this study does not intend to provide a model law on forest fires: as technical issues and ecological and social conditions vary greatly from country to country and from one eco-region to another, legal solutions should also differ to effectively address forest fire management in a specific national context. Rather, this study will identify areas that could benefit from regulation and within each area different legal solutions that may provide useful inspiration for countries in similar situations or with similar regulatory goals. As a result, both general recommendations as well as specific legal options target legal drafters, but may also be useful to policy experts and forest managers interested in the legal issues related to forest fires and fire management.

The study starts with an overview of the key concepts related to fire management in general and forest fire management specifically. It highlights the links between forest fires and the attainment of the goals of international environmental agreements. It also briefly illustrates the role of legislation in supporting a holistic concept of forest fire management as well as the benefits of participatory approaches to legal analysis and development (Chapter 1). The following section will address some general legal questions: how forest fire legislation is structured and how it relates to the broader legal framework in a country, coupled with an overview of a sample of countries' legal approaches on forest fires (Chapter 2). The central part of the study will proceed on a thematic basis, comparing legal solutions related specifically to: opening provisions (definitions, objectives and scope of application); institutional set-up and coordination; planning, monitoring and assessment, including issues of public participation in decision-making; prevention and suppression; controlled use of fire; participatory and community-based approaches; rehabilitation; and questions of law enforcement (Chapter 3). Concluding remarks will highlight the strengths and weaknesses of the legislation analysed and identify priority legal issues and approaches to guide national legislators and forest managers.

1.1 The key concepts of fire management

Fire management is an essential component of sustainable forest management (FAO, 2007). Its negative, as well as its positive, impacts in a specific country should become well-known to legislators involved in forest

fire legislation in order to avoid an excessively restrictive approach, while at the same time preventing excessive fire application in land use systems and land use change and its transboundary effects.

Negative impacts of forest fires may include impairment of human health and safety, air and water pollution, loss of biodiversity in fire-sensitive or fire-intolerant ecosystems, site degradation, desertification and soil erosion and depletion of terrestrial carbon by fires burning under extreme conditions. Positive impacts may include naturally sustaining certain fire-tolerant or fire-dependent ecosystems, or providing for livelihoods through agricultural or other use (providing habitats for hunting and gathering food sources, improving forage for domestic and wild animals, increasing livestock production, preparing agricultural land and reducing pests and diseases). Planned fires may also reduce the excessive amounts of vegetation for ensuring adequate flows of quality water and risk of fires burning vegetation. Critical concerns related to fire management also include due consideration to the security of firefighters and local communities and the protection of traditional practices.

In accordance with the FAO Guidelines, "fire" is any fire burning living or dead vegetation outside the urban environment. Legislators should also be aware that while forest fires may be identified only as fires in forests (whether these are administratively or scientifically defined), forest fire experts should refer more generally to "**wildland fires**" as fires concerning all type of burnable vegetation (forests, other wooded land, rangelands, grasslands, bush lands and agricultural lands) (FAO, 2007). **Wildfires** are thus any unplanned and uncontrolled fire that, regardless of ignition source, may require suppression response or other action according to agency policy (FAO Guidelines, Glossary). These should be distinguished from "**prescribed fires**", which concern the use of fire as a planned management practice and "**suppression fire**", which relates to the use of fire as a means of fighting wildfires (FIRE / PARADOX). Effective forest fire management indeed requires an integrated consideration of natural and human-induced wildfires and or planned application of fire in forestry and other land uses.

"**Fire management**" is thus the discipline of using fire to achieve land management and traditional use objectives, together with the safeguarding of life, property and resources through the prevention, detection, control, restriction and suppression of fire in forest and other vegetation in rural areas. It encompasses prevention, preparedness, early warning, detection and

mobilization, suppression and restoration (including research and technology transfer). It further includes the appropriate use of natural or human-caused fire in maintaining ecological values and integrity of certain ecosystems and the use of fire to reduce the accumulation of natural fuel and residues from commercial and non-commercial activities.

Against this background, **forest fire management** comprises all activities required for the protection of burnable forest and other vegetation from fire and the use of fire to meet land management goals. It includes strategic integration of knowledge of fire regimes, probable fire effects, values at risk, level of forest protection required, costs of fire-related activities, prescribed fire technology into multiple-use planning, pre-attack plan, fire suppression plan and end-of-season appraisal (FAO Guidelines). It also calls for the integration of activities and use of capabilities of rural populations, government, agencies, NGOs, to meet the overall objectives of land management, forest protection and smoke management (FAO, 2007).

1.2 Forest fires and the international framework on sustainable forest management

The importance of forest fire management and fire management in general, can be better understood against the backdrop of international goals and obligations. Fire negative effects on livelihoods and on food security of the poorest, disadvantaged, minorities and women can be severe, particularly in developing countries. Thus efficient forest fire management may contribute to reaching the **Millennium Development Goal (MDG) 1** – eradicating extreme poverty and hunger. Appropriate forest fire management may also contribute to ensuring environmental sustainability, in line with MDG-7. Furthermore, integrated approaches to forest fire management may play a role in developing a global partnership for development, as called for by MDG-8 (FAO, 2007).

Indeed, appropriate fire management may significantly contribute to achieving the objectives of the international framework related to forests and to environmental protection more generally. According to the **1992 Rio Forest Principles**, appropriate measures should be taken to protect forests against the harmful effects of fires, in order to maintain forests' full multiple values (Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable

Development of All Types of Forests, para. 1.b). According to the **Non-legally Binding Instrument on All Types of Forests**, adopted by the UN General Assembly in early 2008, Member States should adopt national measures and policies to analyse the causes of and address threats from fire to forest health and vitality (para. 6.o).

The **Convention on Biological Diversity** (CBD) concerns forests both as a component of biodiversity and as a habitat to terrestrial biodiversity and commits parties to biodiversity conservation, the sustainable use of its components and fair and equitable sharing of the benefits arising from the use of genetic resources (art. 1). Key obligations relevant to forests in the CBD include: developing national strategies and plans for the conservation and sustainable use of biological resources (art. 6); establishing protected areas, restoring or rehabilitating degraded ecosystems and preventing the introduction of invasive alien species (art. 8); introducing environmental impact assessment for projects likely to have adverse effects on biodiversity (art. 14); and involving local populations and the private sector in sustainable use (art. 10). Inappropriate use of fire at wrong frequency or intensity leads to loss of plant species, change or reduction in vegetation structure and corresponding loss of animal species. Effects of fires crossing from fire-adapted to fire-sensitive ecosystems may also lead to consequent negative effects on biodiversity, especially species composition, regeneration and stand structure (FAO, 2007). Thus, forest fires may undermine countries' efforts to protect and use sustainable biological resources. On the other hand, appropriate forest fire management can ensure that fire-deteriorated ecosystems be rehabilitated or restored and that local populations and the private sector participate in resource management. Finally, forest fire management should be integrated in planning exercises related to the conservation and sustainable use of forest biodiversity.

The **UN Convention to Combat Desertification** (UNCCD) requires parties to draw up national plans and strategies to combat land degradation and desertification, which usually include forest-related measures. Thus, implementing the UNCCD contributes to support an ecosystem approach to sustainable forest management as part of national efforts to prevent drought and desertification. To this end, the Convention also calls upon parties to facilitate the participation of local populations (art. 5). Secondary effects of forest fires include soil erosion, which may certainly affect the attainment of the goals of the UNCCD. Land degradation plans should, therefore,

integrate forest fire management as appropriate and the involvement of local populations is called for in this regard.

The **UN Framework Convention on Climate Change** (UNFCCC) commits parties to the sustainable management of forests for their climate-related functions as carbon sinks (art. 4). The Kyoto Protocol calls upon all parties to develop programmes related, *inter alia*, to forests containing measures to mitigate climate change and measures to facilitate adequate adaptation to climate change (art. 10).¹ The importance of forests for the implementation of the international climate change regime is expected to increase in the future, with current negotiations on an international framework after 2012 focusing on reducing emissions from deforestation and forest degradation in developing countries.² Forest fires are a critical element to take into account when considering the climate change-related functions of forests. The frequency and severity of extreme weather and climate events are projected to increase and will lead to an alteration of fire regimes. Frequent droughts may result in increasing occurrences of high-severity wildfires, with consequences for vegetation cover loss, desertification and reduced terrestrial carbon sequestration. Both land-use fires and wildfires in all ecosystems affect carbon pools and the global carbon cycle. According to FAO global estimates, for instance, the Northeast Asian region may account for more than 2 percent of global biomass burning and carbon emissions yearly. Global fires in vegetation consume 5130 million tonnes, 42 percent of which is in Africa (FAO, 2007). On the other hand, the cyclic nature of fire disturbance in fire-adapted and fire-dependent ecosystems involves sequestration of atmospheric carbon for regrowth of plant biomass. Thus, natural and anthropogenic fires in fire-adapted ecosystems are not contributing to a net release of carbon into the atmosphere (FAO, 2007).

Furthermore, forest fires are singled out as major stationary sources of emissions of the persistent organic pollutant PAH (polycyclic aromatic hydrocarbons), which is regulated by the **Protocol to the 1979 Convention on Long-range Transboundary Air Pollution on Persistent Organic Pollutants** (art. 8(a)), which entered into force in 2003 and currently counts 23 parties.

¹ Rosenbaum, K. Schoene, D. & Mekouar, A. *Climate change and the forest sector: possible national and subnational legislation* 2004. FAO Forestry Paper 144, Rome. (available at: www.fao.org).

² See para. 1(b) (iii) of the Bali Action Plan, adopted by the UNFCCC Thirteenth Conference of the Parties in December 2007 (available at www.unfccc.int).

The relevance of forest fire management for the attainment of internationally accepted goals and international obligations related to sustainable forest management and environmental protection is, in conclusion, a key element for national legislators and forest managers to bear in mind when identifying appropriate management practices and designing supportive national legislation. The specific role of national legislation in this regard and the ways in which it can be effectively developed, are addressed in the next section.

1.3 The role of legislation and of participatory legislative drafting in fire management

Principle 8 of the *Fire Management Voluntary Guidelines* states: "all fire management activities should be based on a legal framework and supported by clear policy and procedures." The role of legislation in supporting and institutionalizing forest fire management is thus clearly recognized: a variety of approaches can, however, be envisaged.

Generally, law supports management by according powers, rights and responsibilities, defining the relationships between different persons and entities in a sector and setting out the mechanisms for settling disputes and for enforcing rights and responsibilities that are accorded. In the specific realm of forest fires, legal measures can use a **preventive and repressive approach** to regulate human interventions in or near forests (agriculture, grazing and forestry) aiming at reducing the risks of forest fires. Certain prohibitions may be necessary when the risk is high and there is a need to identify and punish those responsible for forest fires according to the extent of their fault and the damage caused (FAO, 2001). Legislation can further justify the continued use of fire, ensuring **accountability** for fire management and guarantees that managers will use it responsibly, as well as providing a basis for cooperation between land managers, landowners and fire suppression agencies. From a management planning perspective, legislation can establish responsibilities for planning, set out clear procedures for inter-institutional coordination and public participation and ensure that plans are integrated across different sectors, are regularly updated and have certain legal consequences. Legislation can also provide **incentives** for responsible fire use and for contributing to forest fire prevention, detection and suppression. It can also create a basis for the allocation of public funds to certain fire-related activities.

For legislation to effectively and realistically attain the objectives set out above, the way in which legislation is developed is a critical factor. Good legislative drafting requires an inter-disciplinary approach, which would build upon the knowledge of the actual causes of forest fires in the country, the relation of specific ecosystems with fire (fire-adapted or fire-sensitive), the economic and social circumstances related to forest fires and to the use of fire – possibly including traditional practices and the available resources for implementation and law enforcement.

A fundamental problem in the development of law is the failure to adequately tailor the law to the capacity of those charged with its implementation (financial and human resources available in government and civil society to implement them). Provisions that exceed what is necessary to achieve reasonable and legitimate objectives or that exceed what is socially acceptable may lead to the paradoxical result of rendering the law so difficult to implement or comply with that people will prefer undertaking illegal practices. Legislation should therefore be realistic: to ensure law compliance, legal instruments should provide for obligations that people can reasonably comply with, taking into account the capacity of public authorities and other stakeholders.

Complying with restrictions in the law and exercising rights effectively also requires general understanding of what the law says and knowing how to use it. Therefore, to ensure that legislation will be respected and will actually impact on the behaviour of society, laws must be drafted in clear language and be user-friendly, being accessible to both forest fire professionals and forest users.

Principle 9 of the *Fire Management Voluntary Guidelines* indeed supports a multi-stakeholder approach to fire management, so that leadership and management are appropriately shared by public and private landholders, the fire services and communities of interest. This also entails recognizing and using knowledge, leadership and experience of local citizens and community groups. It further requires open processes that are accessible to people of different backgrounds and cultures (especially indigenous and traditional rural communities) at the central and local levels. By the same token, preparing legislation on forest fires significantly benefits from a participatory approach in which different stakeholders have an opportunity to be informed of the legal issues related to forest fires and contribute to identify the most appropriate legal solutions, on the basis of their knowledge, interests and concerns.

The process by which legislation is written can indeed facilitate or obstruct efforts to have legislation implemented and respected. To ensure that the law reflects reality and is subsequently understood by those affected by it, new legal provisions should be drafted in a participatory manner which will build capacity among stakeholders to understand and use legislation and exercise their rights. **Participatory legislative drafting** involves the genuine involvement of all categories of stakeholders (government and non-governmental institutions, central and local institutions, communities and local forest-dependent people, private sector organizations, farmers) with a true commitment to listening and understanding the needs, objectives, insights and capacities of intended users of the law and finding ways to accommodate multiple interests at stake.

According to FAO experience gained in many countries and recommendations of international fora, participatory legislative drafting greatly contributes to the quality and clarity of the laws, thanks to the information and perspectives gathered through public consultations. In addition, as a result of the sense of ownership and legitimacy nurtured by the legislative process, public acceptance and compliance with the law is usually increased.

2. OVERVIEW OF NATIONAL LEGISLATION ON FOREST FIRES

This chapter will address some general questions related to the types and structure of national legislation on forest fires and the way in which forest fire legislation relates to the other areas of law in a given country. An overview of a sample of legal approaches on forest fires of selected countries from different regions will illustrate these points, as well as providing some initial insights into thematic elements of national forest fire legislation that will be addressed in further detail in the next chapter.

2.1 The choice of legal instruments

National legislation on forest fires generally consists either of texts which deal specifically or fully with forest fires, or of texts that deal partly with certain aspects of forest fire management along with other forest management aspects. According to an overview of national legislation on forest fires undertaken by FAO in 2003, over 250 legal instruments address forest fires around the world and among them some 120 deal exclusively

with forest or wildland fires, while the others dealt with forestry generally and only covered forest fires to some extent. In certain countries, furthermore, forest fires are completely disregarded by forest legislation and rather comprehensively dealt by general legislation on fire management or (possibly in an implicit manner) on disaster management. There may also be cases in which provisions on fires are generally scant and because of their general nature they apply also to forest fires. One such example is Tonga, where the only general provisions on fire are contained in the Fire Services Act, whereas the item is not mentioned in the Forest Act.

In some countries the legal framework on forest fires can be particularly fragmented, as provisions may be scattered across laws and regulations on forests, protected areas, hunting, crisis management, local governance, civil defence, environmental protection, agricultural land protection and use and on internal affairs. A compendium of laws and regulations of relevance to forest fire management, with explanatory annotations, may become a key tool in this context, as a guide for all actors concerned, including non-state actors in ensuring law implementation (FAO case studies: Bulgaria).

Among the forest fire-specific legal texts, the minority are Parliament-enacted instruments, such as New Zealand's Forest and Rural Fires Act. Laws more often function as frameworks providing general principles and directions for the enactment of more specific sub-national legislation on forest fires (such as Italy's Framework Law on Forest Fires). In most cases, however, it is subsidiary legislation that focuses specifically on forest fires (for example, the 2004 Forest (Fire Protection) Regulations of Victoria, Australia, and Brazil's Decree No. 2.959 of 1999 establishing measures to be applied to combat forest fires). In the latter case, minimum provisions on forest fires are usually included in laws with broader scope, most frequently in forest laws.

The question as to whether forest fires should be dealt in primary legislation or rather in secondary legislation may largely depend on the rules and legislative tradition within a country. Nonetheless, the question as to which legal provisions should be contained in primary legislation (a law or an act) or in subsidiary legislation (a regulation or decree) may have some general implications. In light of the chronic lack of/slow enactment of implementing regulations in many countries in the world, drafters should indeed consider carefully the **content of the law as opposed to the content left to subsidiary legislation**. It should be ensured that the level of detail in the

law suffice for it to be operational as it stands in the delays of developing and adopting implementing regulations. To avoid these difficulties, it will be necessary to ensure that the law spells out at least the rights and obligations it creates (or rather powers and responsibilities, when public authorities are concerned) and the basic objectives and principles for the processes to implement them. This should not result in an overly detailed law, but rather clarify the mandate for and facilitate enactment of, subsidiary legislation. Technical specifications should generally be left to subsidiary legislation.

Overall, in light of the specific – and often complex – structure of the legal framework on forest fires in a given country, it is critical to ensure the consistency and coherence of the legal discipline emerging from the multiplicity of legal instruments applicable. It is also important, as highlighted in the case of Bulgaria, to make the composite legal discipline known and accessible to managers and users. A third essential element, discussed below, concerns the relationship between forest fire legislation and other sectoral laws on matters related to forests and fire.

2.2 The need to analyse the broader legal framework

Principle 8 of the *Fire Management Voluntary Guidelines* recognizes that the implementation of strategic actions may impact, or may be impacted on, by other sectors such as forestry, agriculture, environmental protection, air quality, climatology, hydrology and general land use management. This clearly applies also to forest fire legislation, which is inherently related to legislation on agriculture, environmental protection, disaster management, etc. As legislation usually includes forest fire management in the broader concept of forest protection, necessary actions to limit the adverse environmental, social, political, cultural and economic effects of wildland fire necessarily involve different sectors (FAO, 2007).

In this respect, it has been observed that forest-sector policies and legislation related to fire can limit effective fire management in forests because of overlaps or conflicts with other pieces of legislation (especially on agriculture and livestock) (FAO, 2007). These observations are in line with the general principle that legislation should never be considered in a vacuum. On the contrary, the process of drafting new legislation needs to be guided by a vision of integration and harmony with different laws and sectoral strategies, in order to avoid potential conflicts, contradictions and lack of connection with other laws. Drafting forest fire legislation is no exception.

Before developing new legislation, therefore, it is essential to identify and analyse the whole of the existing legal provisions that are **directly or indirectly related** to the subject area. This helps determine the range of reforms that would be necessary, while outlining the parameters with which any new regulation may have to comply. Such analysis will aim at identifying gaps (no rules exist on forest fires, or if they exist they are insufficient or outdated), inconsistencies within the forest fire-specific legal framework, or between that and other connected laws, or the lack of realism of rules that have proven difficult (sometimes impossible) to implement or to enforce. Carrying out an initial analysis of the existing framework serves, therefore, to map the scope of legal reforms needed: the preparation of a new legal instrument, or in other cases, only amendments to existing legal instruments, for example to add a few specific obligations or to enhance coordination.

An analysis of the existing legal framework should begin with the constitution, if any, as it serves as the supreme law of the land and defines how the legislative, executive and judicial functions and responsibilities are assigned within the country. It may allocate some powers to the national authorities (or federal authorities, in a federal system), some to the state or provincial governments and some to the local or municipal authorities. The constitution may also indicate which subject matters are to be regulated at which level of government, which will affect both how new legislation is developed and how it will be enforced. Equally, if the constitution establishes a hierarchy between international obligations and national legal provisions, then this will be an important consideration.³ Thus, the constitution is an essential text to become familiar with to better understand what legislation can and cannot do. For example, some constitutions forbid bills to cover multiple subjects. Constitutions may forbid the legislature from exercising judicial powers (for example, through a bill declaring someone guilty of a crime) or executive powers (for example, through a bill giving a legislative committee veto power over actions of a ministry).⁴

³ Inspired by Chapter 5 of FAO, Perspectives and guidelines on food legislation, with a new model food law, Legislative Study 87, 2005 (hereinafter, FAO LS 87).

⁴ K. Rosenbaum, Legislative drafting guide: A practitioner's view, Legal Paper Online No. 64, 2007 (hereinafter FAO LPO 64).

The analysis should then proceed to identify legal instruments and legal rules that are directly or indirectly related to forest fires. These may usually be included, or referred to, in:

- forest legislation;
- civil protection/disaster management legislation;
- (central and local) government structure legislation;
- land use planning legislation and instruments;
- environmental legislation;
- wildlife/hunting legislation;
- agricultural legislation;
- protected area legislation;
- air pollution legislation; and
- criminal law and civil law (sanctions and compensation).

Specialized terms, such as "forest" or "wildfire" may have already been defined in other pieces of legislation covering the subject, so it may be useful to follow that practice to avoid confusion. Specific legal mechanisms (such as permit systems, compounding of offences, etc.) that may be preserved, modified, or used as models in forest fire legislation, may have been disciplined in other pieces of legislation. Furthermore, there may be cross-references that should be taken into account, as when the agricultural law incorporates by reference the definition of "forest fire" from the forest law that is under review. In this example, if the term changes in one piece of legislation, it will have effects also in the other.⁵

Legislation that may be considered as "indirectly related" to forest fires includes those legal instruments that may have unintended effects on forest fire management. Some regulatory obstacles and constraints may be indirect but nonetheless affect forest fire management activities by increasing costs, often through bureaucratic rules and procedures. There are examples in virtually every legal system of procedural hurdles that make legislation extremely difficult to use or apply, while the policy reasons for creating those hurdles in the first place may be long-forgotten.⁶

⁵ FAO LPO 64.

⁶ Inspired by FAO LS 87.

Finally, parallel policy and institutional processes affecting the forest fire sector should be closely monitored by legislators, so that they may be taken into account in legal reforms and the legal framework may be adequately adjusted to policy developments. At the same time, it is necessary to identify legal consequences of the proposed reforms that may require adjustments to the existing legal framework.

2.3 Some examples of legal frameworks on forest fires

A few countries (and the European Union) have been selected on the basis of regional representation to illustrate the different types and structure of national legislation on forest fires and the way in which forest fire legislation relates to the other areas of law in a given country. Each of the following sub-sections is purposely structured in a different way, to underline the variety of possible approaches. Argentina and Senegal are interesting examples of decentralized approaches to forest fire legislation. Indonesia, on the other hand, provides a useful illustration of community-based approaches to fire management, while the Russian Federation significantly involves holders of leased forests in fire management. Both the European Union and the USA have chosen a mix of policy and legal instruments to address forest fires. All these legal frameworks, finally, point to key substantive elements of national forest fire legislation that will be systematized and discussed in detail in the next chapter, on the basis of further examples of national legislation.

2.3.1 Senegal

Senegal has not enacted forest fire specific legislation; rather, forest fire related provisions are included in sectoral legal instruments. Numerous provisions in the 1996 Decentralization Law,⁷ the 1998 Forest Code and the 2004 Agro-Sylvo-Pastoral Orientation Law are concerned with forest fires, as are some of the provisions in the Decree No. 96-1134 implementing the Decentralization Law and Decree No. 98-164 implementing the Forest Code.

⁷ *Loi n° 96-07 portant transfert de compétences aux régions, aux communes et aux communautés rurales*, as modified by Law No. 2002-15 and Law No. 2004-21.

(a) Institutional set-up

Both the state and the local entities are called upon to guarantee the rational management of natural resources, the protection of the environment and sustainable forest management, including forest fire management (Decentralization Law, 1996). At the central level, the 1998 Forest Code clarifies that **the Waters and Forests Agency** of the Ministry of the Environment, Nature Protection, Water Catchment Areas and Artificial Lakes secures the management of state forest areas, except for national parks to which particular rules apply (Forest Code, 1998, art. L.55). According to Decree No. 98-164, the Waters and Forests Agency is also mandated to supervise the use of fire. The officers of the Waters and Forests Agency are in charge of the protection, the conservation and the development of the national forest resources (art. L.56) and are responsible for forest law enforcement, including violations of forest fire-related legal provisions, throughout the national territory (art. L.66).

Other forest fire-related competences have been transferred to the **local level** by the Decentralization Law and the Forest Code. Three categories of local entities, namely regions, "*communes*" (municipalities) and "*communautés rurales*" (groups of neighbouring rural villages that have a legal personality according to public law), have different competencies (Decentralization Law, Chapter II), but must all respect the international conventions and agreements entered into by the state (Decree No. 96-1134, art. 12). In exercising their competences, these local entities must take an integrated, interdisciplinary and participatory approach (Decree No. 96-1134, art. 3).

- **Regions** are to create voluntary fire brigades and take all appropriate (preventive) measures for the protection, the maintenance and the surveillance of forests or actions to combat dangers which directly or indirectly threaten the forest, such as forest fires (Decree No. 96-1134, art. 17), in collaboration with the "*communes*", "*communautés rurales*" and all other concerned parties (Decree No. 96-1134, art. 19). Regions may, *inter alia*, set up fire barriers and make use of prescribed fires to prevent and combat forest fires (Decentralization Law, art. 28; Decree No. 96-1134, art. 18). They are also called upon to educate, train, inform and sensitize the public (Decree No. 96-1134, art. 18).

- "**Communes**" are in charge of reforestation operations (Decentralization Law, art. 29), the setting up of communal forests (Decentralization Law, art. 29), the elaboration of environmental action plans (Decree No. 96-1134, art. 31) and the implementation and follow-up of projects and programmes (Decree No. 96-1134, art. 32).
- "**Communautés rurales**" are responsible for developing local plans and schemes and may create dialogue frameworks on the management of natural resources and the protection of the environment. Moreover, they are to set-up and control "vigilance committees" for the combating of forest fires. They can make recourse to state, the region, or any other party for support in the launching, the training, the functioning and the equipment of those committees (Decentralization Law, art. 30; Decree No. 96-1134, art. 42).

The rights, competences and deriving obligations for each local entity are set out in a **Forest Plan**, which must be approved by a "state representative" (Forest Law, 1998, arts. L.2 and L.7). The Forest Plan, including all performance and management methods, is required for every forest of 20 hectares or more (Decree No. 98-164, art. R.11). A slightly less detailed plan must be prepared for forests between 5 and 20 hectares (art. R.11). The Forest Plan must include, *inter alia*, forest cover regeneration, reforestation and protection actions (art. R.12). The owner or holder of usufruct rights must prepare the Forest Plan (art. R.11), unless the forest area is state-owned or under the jurisdiction of a local entity, in which case it is for the Waters and Forests Agency or the local entities respectively to prepare it, either directly or through intermediaries (art. R.14). The legislation fails to specify whether the Forest Plan should specifically address forest fires, although it can be inferred that these plans can also include protective measures against forest fires. In addition, other plans, such as the intervention and risk management plans referred to in the Decentralization Law and Decree No. 96-1134, may include forest fire-related measures.

The Decentralization Law and its implementing Decree No. 96-1134 also clarify the relationship among local entities and between local entities and the state, with the possibility of concluding agreements among them. In addition, Decree No. 96-1134 makes it clear that where the capacities required for the protection and the maintenance of forests exceeds the means of the local entities, the state or any other party may provide assistance (Decree No. 96-1134, art. 5).

(b) Use of fire

The 2004 Agro-Sylvo-Pastoral Orientation Law prohibits bushfires altogether (art. 41). Similarly, Decree No. 98-164 forbids the lighting of a pile of wood, branches or brushwood, trees, bushes or any other material susceptible of causing a bush fire within state forests (Decree No. 98-164, art. 56). There are, however, specific exceptions to these prohibitions.

Both the 2004 Agro-Sylvo-Pastoral Orientation Law and Decree No. 98-164 allow the **lighting of fire for domestic purposes, the incineration of grassland and slash-and-burn practices** provided the following preventive measures are taken:

- i. the area to be set on fire must be protected through a border from which all grass and undergrowth has been removed;
- ii. the fire may only be lit at the end of day with favourable weather conditions; and
- iii. the fire must be supervised by the farmers, who must remain close by and ready to intervene at all times in the event that the fire spreads beyond foreseen limits (Agro-Sylvo-Pastoral Orientation Law, art. 41; Decree No. 98-164, art. 56).

In addition, Decree No. 98-164 permits the use of **prescribed fires** under limited conditions. They may only be lit in areas where the vegetation permits to do so (art. R. 58), on advice and under the supervision of the Waters and Forests Agency (art. R. 58) and during a period set by the President of the Regional Council (art. R. 57). Whereas the Decree sets out the modalities of determining the period in which prescribed fires are authorized (art. R. 58), it fails to clarify the types of vegetation suitable for prescribed fires. The period in which prescribed fires are allowed is to be communicated to all local entities of the region and at least 15 days before the setting of the prescribed fire, to allow the concerned villages to take all necessary security measures. Local entities are responsible for informing the administrative authorities and neighbouring communities at least 15 days before the setting of the prescribed fire. The terms and conditions for the use of fire in national parks are to be clarified through the internal regulation of each park (Decree No. 98-164, art. R.58).

(c) Preventive, fire-fighting and restoration measures

The Forest Code, 1998, imposes very specific preventive and fire fighting duties on companies, enterprises or public establishments/institutions, which are making use of railways that cross or go along forests, afforested land or bush land and susceptible of catching fire (art. L.49). They must not let any vegetation, herbaceous, or bush remain on the rails or within a radius of 20 metres on both sides of the rails during the dry season. Failure to do so and on order of the Chief of the Waters and Forests Agency, these works may be carried out by a contracted party at the expense of the companies, enterprises or public establishments/institutions in question. In calm weather, the companies or services are authorized to proceed to incineration of the grass and bushes in a zone of 40 metres.

Furthermore, the Forest Code requires individuals to participate in the combat of a fire threatening a forest upon request of an administrative authority, the executive organ of a local authority or a sworn agent of the Waters and Forests Agency (art. L.50).

Finally, the Forest Code provides for a **national forest fund** to contribute towards precautionary, conservation and management measures (art. L.6). Resources from the fund may be allocated to local entities and organizations, public and private institutions, physical persons, with a view to support their actions to conserve and improve forests (Decree No. 98-164, art. R.36). It can be argued that these measures can also include protective measures against forest fires. Although the legislation in Senegal does not include any specific provisions related to the rehabilitation of forest areas that were destroyed by forest fires, the national forest fund may contribute towards reforestation and restoration actions in these circumstances (Forest Code, 1998, art. L.6; Decree No. 98-164, art. R. 36).

(d) Offences and sanctions

The Forest Code makes detailed provisions on offences and sanctions related to forest fires. The Code punishes:

- i. intentionally, inadvertently, or negligently causing a bush fire, by a fine and imprisonment, without prejudice to damages and interests (art. L.47);
- ii. arson for personal interests, with confined imprisonment (art. 48);

- iii. avoiding or not fulfilling a written or oral request lawfully made by the administrative authority, the executive organ of the concerned local entity, or by a sworn water and forest agent, to combat a fire threatening a forest, with a fine and/or imprisonment (art. L.50); and
- iv. voluntarily hindering from performing their tasks a Forest and Water Agency officer or an agent, with a fine and/or imprisonment (art. L. 53).

Decree No. 98-168 adds that where a prescribed fire was lit outside the period set by the president of the regional council, the offenders will be punished in accordance with article L.48 of the Forest Code (art. R.57).

2.3.2 The European Union

It is the prime responsibility of the Member States of the European Union (EU) to prevent and manage forest fires and to implement and improve their national legislation in this respect. Nevertheless, the EU supports the efforts of its Member States by identifying policy priorities related to forest fires in the context of sustainable forest management, providing financial assistance to forest fire-related activities and creating a common forest fire information system. The instruments enacted to these effects by the EU may be relevant not only for the EU Member States, but also for other countries that are candidate members, or that are otherwise associated with the EU and may benefit from certain EU assistance.⁸

(a) Policy priorities

As anticipated, the EU has enacted certain legal instruments with a view to identifying policy priorities for sustainable forest management, thereby including elements of forest fire management. Council Resolution of 15 December 1998 on a **Forestry Strategy** for the European Union established a framework for forest-related actions to contribute towards sustainable forest management. Although the Council recognizes "that

⁸ Indeed, countries that have concluded an Association Agreement with the EU are often called upon to approximate or harmonize their national legislation (particularly on natural resources management) to that of the European Union. See Gracia Marin Duran and Elisa Morgera, "Towards Environmental Integration in EC External Relations? A Comparative Analysis of Selected Association Agreements", 6 *Yearbook of European Environmental Law*, 2006, pp. 179–210.

responsibility for forest policy lies with the member states", it declares that "the Community can contribute positively to the implementation of sustainable forest management and the multi-functional role of forests" (Recital 2 (b)). To this end, the strategy promotes a number of Community actions concerning forests and forestry. Amongst others, it "advocates the continuation and evaluation of and consideration of a possible improvement to the Community scheme for the protection of forests against fires" and calls upon the Commission "to pay special attention to the development of the Community forest-fire information system" in order to better assess the effectiveness of the protection measures against fires (Recital 6).

Building upon the EU Forestry Strategy, the European Council adopted in 2006 a five-year **Forest Action Plan** (2007–2011) (Communication from the Commission to the Council and the European Parliament on an EU Forest Action Plan of 15 June 2006). The Action Plan aims to improve long-term competitiveness, to enhance and protect the environment, to contribute to the quality of life and to foster coordination and communication. To this end, it suggests a number of forest-related actions to be either implemented jointly by the EU and Member States, or by the Member States with support from existing Community instruments.

A number of key actions under the Forest Action Plan relate directly or indirectly to forest fires:

- Key Action 8 on European Forest Monitoring System declares that "the Commission, together with the Member States and relevant international organizations, will work towards establishing a European Forest Monitoring System that draws on existing forest databases and monitoring system". Furthermore, a European Forest Data Centre will be established by the Joint Research Centre of the Commission.
- Key Action 9 on the enhancement of the protection of the EU forest refers specifically to forest fires. It states that the Commission will further develop the European Forest Fire Information System and conduct studies on the main factors influencing the evolution of forest fires, the efficiency of current Community instruments and measures for forest protection and potential future options to improve the efficiency of the measures. Furthermore, the Commission will encourage Member States to conduct forest fire

studies. Still under Key Action 9, Member States, with the financial assistance from the European Financial Funds EARDF and the Life+ (described below), may support forest fire prevention measures, studies on the causes of forest fires, awareness raising campaigns and training and demonstration projects. Moreover, EARDF and LIFE+ may be used to support the restoration of forests damaged by natural disasters, to develop national afforestation guidelines and to promote afforestation for environmental and protective objectives.

- In addition, pursuant to Key Action 11 on maintaining and enhancing the protective functions of forests, Member States may, with the support from the EARDF, enhance investments and sustainable forest management for natural hazard prevention and safety and include these aspects in forest education and awareness-raising activities. Furthermore, Member States may enhance investments for natural hazard prevention and safety, notably in the framework of cross-border cooperation. The Commission will facilitate exchanges of experience on measures taken to enhance the protective function of forests.

(b) Forest fire information

The first move towards a harmonized information database on forest fires at EU level was made with Regulations EEC No. 2158/1992 (expired in 2002) and EEC No. 804/94 (repealed in 2006 by Commission Regulation (EC) No. 1737/2006) on forest fire prevention. In 1998, the Regulations led to the setting up of a research group on forest fires (Forest Fire Experts Group) and to its regular meetings. These activities resulted in the establishment of the **European Forest Fire Information System (EFFIS)** which became operational in 2000. In 2003, EFFIS was endorsed by the Regulation (EC) No. 2152/2003 on monitoring forests and environmental interactions (Forest Focus Regulation). The Forest Focus Regulation deals with the protection of forests against air pollution and fire, with the specific goal of safeguarding, *inter alia*, forests' climate change and carbon sequestration protective functions (Preambles 3 and 12). Although the Forest Focus Regulation expired in 2006, foreseen activities for the enhancement and operation of EFFIS continue under its umbrella until 2009. The Forest Focus Regulation is further implemented by the Regulation (EC) No. 1737/2006, which clarifies that the EFFIS will be operated by the Joint Research Centre of the Commission (art. 8).

In line with Commission Regulation (EC) No. 1737/2006, EFFIS records the information provided by the Joint Research Centre on forecast of fire risk within the framework of the **European Forest Fire Risk Forecasting System** and on mapping and evaluating damages caused by fire which affects an area of at least 50 hectares within the framework of the European Forest Fire Damage Assessment System (art. 8). Furthermore, it collects common core data, including the date and local time of first alert, first intervention and extinction, location of the outbreak, total fire-damaged area, breakdown of the fire-damaged area into forest and other wooded land and non forested areas and the presumed cause (art. 9, Regulation 1737/2006). On an annual basis, Member States may provide additional data for forest fires affecting areas of at least 50 hectares (art. 10).

(c) Financial assistance

The EU has also used its legislative functions to provide several financing schemes supporting Member States in their efforts to prevent and combat forest fires and mitigate their consequences. LIFE+ and EAFRD specifically refer to forest fires.

Regulation (EC) No. 614/2007 of the European Parliament and of the Council sets up **LIFE+**, a financial instrument supporting the implementation, updating and development of Community environmental policy and legislation, including the integration of the environment into other policies (art. 1). Financing is available for one of three components: nature and biodiversity; environment policy and governance; and information and communication (art. 4). LIFE+ co-finances projects in the EU and in certain third countries (art. 8).⁹

For the period from 1 January 2007 to 31 December 2013, the financial envelope for the implementation of LIFE+ was set at € 2 143 409 000 (art. 10). The maximum rate of co-financing of action grants is 50 percent of the eligible costs, unless the project regards the protection of priority habitats or priority species; where the contribution may correspond to up to 75 percent of the eligible costs.

⁹ EU candidate countries, European Free Trade Association (EFTA) member countries that are members of the European Environmental Agency and the Western Baltic countries that are part of the Stabilisation and Association Process.

Public and/or private bodies, actors and institutions may benefit from LIFE+ (art. 7) in the form of grant agreements or public procurement contracts (art. 5). Among other conditions, eligible measures must satisfy at least one of these criteria:

- be a best-practice or demonstration project for the implementation of Council Directive (EEC) 79/409 on the conservation of wild birds or Council Directive (EEC) 92/43 on the conservation of natural habitats and of wild fauna and flora;
- be an innovative or demonstration project relating to Community environmental objectives;
- comprise awareness-raising campaigns and special training for agents involved in forest fire prevention; or
- be a project for the development and implementation of Community objectives relating to the broad-based, harmonized, comprehensive and long-term monitoring of forests and environmental interactions (art. 3).

The list of eligible measures for which financial assistance may be provided (art. 4(5)) includes the following measures that are directly or indirectly related to forest fires:

- studies, surveys, modelling and scenario building (Annex 1(c));
- monitoring, evaluation and assessment of forests, including forest fires (Annex 1(d), art. 3(2)(d), art. 4(2)(b) and (c) and art. 4(4)(c));
- capacity building (Annex 1(e)) and training, workshops and meetings, including the training of agents involved in forest fire prevention initiatives (Annex 1(f));
- networking and best-practice platforms (Annex 1(g));
- information and communication actions and dissemination, including awareness-raising campaigns (Annex 1(h), art. 3(2)(c) and art. 4(4) (a) and (b)).

In addition, article 48(1) specifically covers measures of support for restoring forestry production potentially damaged by natural disasters and fire.

Another relevant funding opportunity was created by Council Regulation (EC) No. 1698/2005, which establishes the **European Agricultural Fund for Rural Development (EAFRD)**, aiming to advance rural development

(arts. 1 and 3). The aid provided under the EAFRD is to contribute towards: improving the competitiveness of agriculture and forestry by supporting restructuring, development and innovation; improving the countryside by supporting land management; improving the quality of life in rural areas and encouraging the diversification of economic activities (art. 4). These objectives are to be implemented by specific measures, which are set out in Title IV.

Forest fire-related measures are included among those improving the environment and the countryside. They comprise measures targeting the sustainable use of forestry land through restoring forestry potential and introducing prevention actions (art. 36(b)(vi)). Forest areas that were damaged by fire are entitled to support under EAFRD for the restoration of the forestry potential and for the introduction of appropriate prevention actions (art. 48 (1)). Moreover, preventive actions against fires may be financed under EAFRD for areas which were classified by the Member States as high or medium forest fire risk according to their forest protection plans (art. 48 (2)).

The overall amount of funding is allocated annually for each Member State and determined by the Council on a proposal from the Commission. The least developed Member State and regions receive more funding. Each decision adopting a rural development programme must set the maximum contribution from the EAFRD for each axis (axis 1 and axis 3: 75 percent of the eligible public expenditure for least developed Member States and regions and 50 percent for other regions; axis 2 and axis 4: 80 percent and 55 percent). The minimum EAFRD contribution rate at axis level is 20 percent (art. 70).

To ensure that EAFRD funding is consistent with the Community's priorities within the field of rural development, the Council establishes strategic guidelines for the programming period of 2007 to 2013 (arts. 5 and 9). On the basis of the strategic guidelines, each Member State submits a national strategy plan for rural development, which will be carried out through rural development programmes (art. 15). The development programmes are prepared by the Member States and must be approved by the Commission (art. 18).

2.3.3 Argentina

Legislation dealing with forest fires in Argentina is enacted at three levels of government – national, provincial and municipal, according to the National Constitution (arts. 75 and 121) and the constitutions of each province. National legislation on forests (enacted by the *Congreso de la Nación*) provides the general framework for the protection of forests from fires, while at the sub-national level, provinces (*Legislaturas Provinciales*) can enact legislation implementing the national norms, as well as creating stricter rules than national ones. Provinces, through their legislation, can also require municipalities (through their *Consejos Deliberantes*) to take further legislative measures (*ordenanzas*) on a certain matter. This section will analyse national-level legislation, as well as taking one province as an example to illustrate provincial-level legislation on forest fires.

(a) National-level legislation

In principle, the primary responsibility for preventing and combating forest fires and wildfires rests with the provinces (Constitution of the Argentine Nation, Section 124). In 1996, however, a **National Fire Management Plan** (*Plan Nacional de Manejo del Fuego*) was developed by the Department of Environment and Sustainable Development of the Ministry of Social Development and Environment,¹⁰ in order to identify the roles and responsibilities related to forest fire management at regional and national levels (Resolution No. 465/96¹¹). The Plan integrates, coordinates and supports the actions taken by the provinces, the national parks administrations and the federal government.

The internal organization of the National Fire Management Plan was approved by Resolution No. 222/97, creating a National Fire Management Service (*Servicio Nacional de Manejo del Fuego*). Today, the Service consists of a National Coordination Unit (Resolution No. 738/2005¹²) with five subordinate Coordination Units (Resolution No. 111/2005). These are:

- the Administrative Coordination Unit;

¹⁰ The website of the National Fire Management Plan can be found at ambiente.gov.ar.

¹¹ The Department of Environment and Sustainable Development of the Ministry of Social Development and Environment includes the special report "*Actuación N° 720/04 Unidad Ejecutora del Plan Nacional Manejo del Fuego*", available at www.agn.gov.ar.

¹² Ibid.

- the Fire Management Coordination Unit responsible for land and aircrafts;
- the Technical Coordination Unit responsible for the technical equipment research and planning activities;
- the Coordination Unit for Prevention, Human Resources and Training, dealing with capacity, prevention and dispersal issues; and
- the Regional Coordination Unit responsible for the coordination with the regions, provinces and national park administrations.

The Fire Management Plan grouped provinces with similar fire behaviour and occurrence problems into six regions and installed a regional centre in each of them. Each centre is responsible for the development and implementation of a fire management program for their region. The centres coordinate activities with the different local administrations (national park administrations and provinces) and are responsible for the initial suppression of fires. Upon request by one of the regions, the National Fire Management Plan can provide specific assistance.

The 1948 Forest Law, as amended by Decree No. 710/95, contains the main provisions on forest protection. One chapter (arts. 34–39) is specifically devoted to forest fires, providing **generic obligations**, such as:

- a general obligation to communicate without delay the occurrence of fire within forests to the nearest authority (art. 34);
- an obligation for civil and military authorities to provide tools and personnel to extinguish fires (art. 35); and
- an obligation for individuals living in a fire-prone area to contribute to fire-fighting upon request of a forest or other authority (art. 36).

The national forest authority may promote the creation of national **associations** for the prevention and suppression of fires. According to the Constitution, provinces may also enact legislation creating associations.

The law also requires **international cooperation** between neighbouring states to be based upon the principle of reciprocity. When a forest fire is detected in a border area and there is the danger of the fire spreading to a neighbouring country, authorities must immediately inform the nearest authority of the neighbouring country that could be affected (art. 22).

The Forest Law regulates the **use of fire** in and near forests, establishing that fire can only be used under the conditions determined by an administrative regulation (*reglamentación*). The national forest authority (*Administración Nacional de Bosques*) may determine the appropriate uses of fire and adopt the measures necessary to prevent, fight and circumscribe forest fires.

Furthermore, there are certain uses of fire that are **prohibited** by the Forest Law:

- i. production of charcoal;
- ii. slashing (*rozamientos*);
- iii. land clearing without an official authorization; and
- iv. installation (without prior administrative approval) of sawmills and other establishments which may cause fires inside or near the forest.

With regard to **rehabilitation**, some general provisions on afforestation of the Forest Law may be interpreted as applying also to rehabilitation after forest fires. Other laws also contain certain provisions on rehabilitation after forest fires, such as Decree No. 71/99 implementing the law on forest protection, development and use of forests and forest lands and the 1998 Law on investments for planted forests, which foresees a general framework for investments regarding forest plantations after the occurrence of forest fires.

At the national level, **offences and sanctions** related to forest fires are determined by the Forest Law and by the Criminal Code (which is approved by the national congress and is mostly applied by provincial judges, with the exception of certain federal crimes). The Criminal Code, 1984, includes among the "crimes against public safety":

- i. causing a fire that creates "a danger to the common property" (art. 186.1);
- ii. destruction by fire of different types of crops (art. 186.2); and
- iii. havoc caused by fire because of fault, negligence, incompetence in an art or profession, or the disregard of regulations or ordinances (art. 189.1).

Penalties are more severe if the act or omission caused the death of a person (arts. 186.4, 186.5 and 189.2).

The Forest Law identified the following forest fire-related offences that are punishable with administrative sanctions (art. 64):

- i. causing a fire inside the forest and in adjacent areas; and
- ii. failing to communicate without delay the occurrence of fire within forests.

The Forest Law also includes other generic offences that may relate to forest fires:

- i. disobeying orders issued to ensure the implementation of laws or regulations;
- ii. disregarding the operating plan approved; and
- iii. giving false statements or reports.

The main type of penalty is monetary. Fines are graduated according to the gravity of the offence (art. 65). The law also foresees withdrawal of concessions and permits (art. 67).

(b) Provincial-level legislation

Argentina is divided into 23 provinces and one autonomous city. Provinces can enact legislation on forest fires, in accordance with their competence as defined by each province's Constitution and in line with national legislation. Provinces which have enacted legislation relating to fire establish different authorities to implement such laws depending on the type of vegetation concerned. When the vegetation concerned cannot be classified under forests, fire prevention, detection and suppression are in charge of the Secretariats for Agriculture and Natural Resources (e.g. provinces of *Córdoba*, *La Pampa* and *Mendoza*). In those provinces with forests, these functions are assigned to specific forest administrations (e.g. provinces of *Corrientes* and *Entre Ríos*).

In this respect, it should also be pointed out that provinces are largely responsible for developing and implementing preventive plans. In recent years, provinces have also enacted legislation to create special funds to address both prevention and suppression measures in case of fire.

By way of example, this sub-section will analyse the legislation enacted by the Province of *Chubut* (Law No. 5232 on fire management, forest fires and rural areas of 23 September 2004). The law established that the General Direction

for Forests and Parks (*Dirección General de Bosques y Parques*) is the main authority in charge of forests in the Province, also responsible for the coordination with national agencies. The law also created the Provincial Fund for Fire Management (*Fondo Provincial de Manejo del Fuego*) for preventive activities as well as for other forest fire management actions like suppression and rehabilitation.

In addition, the 2004 Chubut Forest Law favoured a **participatory approach** in forest fire management (arts. 10–13). Landowners, forest concessionaires and private organizations may participate in prevention, extinction and restoration activities, in cooperation with official agencies. The law calls upon individuals to conduct activities in the management of fuel with extreme care and caution. Landowners, forest concessionaires and local communities are required to take preventive measures according to the regulations issued by the provincial authority (*autoridad de aplicación*, which is the *Dirección General de Bosques y Parques*) (arts. 14–19).

The Chubut Forest Law devotes a chapter to the **planned use of fire** (arts. 20–22). The general rule is that the use of fire is prohibited, unless expressly authorized for certain purposes. The use of fire for land clearing, forest waste disposal and rural work is only admitted in the locations, under the conditions and during the periods indicated by the provincial authority.

The Chubut Forest Law also expressly concerns **planning** (arts. 23–28), by requiring the preparation of plans for the protection against forest or agricultural fires at different levels: provincial, local and each property. The importance of early warning and coordination with the other agencies is stressed by the law. The law further provides that forest areas affected by fire should be restored (arts. 35–38), in accordance with a plan for restoration. No incentives, however, are provided to this effect.

The same law provides for the creation of a provincial service specifically devoted to fire management (*Servicio Provincial de Manejo del Fuego*, arts. 32–34) to prevent and extinguish forest fires.

2.3.4 Indonesia

The 1945 Constitution of the Republic of Indonesia vests the primary responsibility for forest management in the government by declaring that land and natural resources shall be controlled by the state and used for the

greatest welfare of the people (art. 33). Due to the decentralization process that followed the 1998 Reformation, more and more competences, including forest fire-related ones, have been transferred from the central government to regional governments. The legal framework is complicated by the fact that most pre-1998 legal instruments have not been expressly repealed, but remain in force as long as they do not conflict with more recent measures. Moreover, although the implementation of most post-1998 instruments depends on the enactment of subsidiary legislation, this is often delayed.

The main legal instrument in the field of forest fires is the forest law (Law No. 41/1999, as amended by Law No. 19 of 2004), which sets out the guiding principles for forest management. It declares that all forests are under the state's control for the people's welfare, thus empowering the government to regulate and organize all aspects related to forests, forest areas and forest products (art. 4). The Forest Law remains somewhat general and vague with regard to forest fires, comprising only few provisions on the matter and leaving most details about implementation to regulations, decrees and other measures at the central and regional level.

(a) Institutional set-up

The institutional set-up related to forest fires is regulated primarily by the Decentralization Law (Law No. 32/2004 on Regional Administration) and Government Regulation No. 38 of 2007 on Local Governance. In addition, other specific legal acts created institutions directly or indirectly related to forest fires. Presidential Decree No. 22/1995 established a **Central Integrated Forest Safeguarding Team**, which is responsible for the formulation of integrated policies on forest safeguarding and which must control, supervise and coordinate their implementation (art. 2). In the exercise of its functions, it is assisted by a Task Force (art. 3).

Moreover, the following agencies specifically deal with forest fires:

- the Judicial Coordination Team for Forest and Land Fires, which is placed under the responsibility of the Ministry of Environment;
- the National Forest Fire Control Centre was created by the Director General of Forest Protection and Nature Conservation, who is also the Chief of this agency, by Decree No. 21/2004 on the Establishment of a Fire Brigade in Indonesia;

- the National Coordinating Board for Disaster Management and Refugee Control, established by Government Regulation No. 83/2005, is headed by the Vice President of the Republic of Indonesia; and
- The National Coordination Team on Forest and Land Fires Control was created by Decree of the Minister of the Environment No. 18/MenLH/3/1995. The Minister of the Environment acts as the Chief of the Steering Committee and the Director General of Forest Protection and Nature Conservation as the Executive Chief of the National Coordination Team.

(b) Preventive measures

The Forest Law completely prohibits the burning of forests (art. 50(3)). This is confirmed by Government Regulation 4/2001, which bans entirely the burning of forest and land (art. 11). The Forest Law further regulates forest protection with the aim to, *inter alia*, prevent and limit the destruction of forests, forest area and forest products as a result of fires (art. 47). Forest protection within state forests is the responsibility of the government (art. 48(2)), while forest protection within so-called "right forests" (i.e. forests subject to private ownership rights) is to be undertaken by the right holder (art. 48(4)). In addition, holders of forest utilization licenses and other parties who are granted the authority to manage the forest are obliged to protect the forests in the area in which they operate (art. 48(3)). With a view to preventing forest destruction by fires, the Forestry Law also bans the destruction of infrastructure and facilities for forest protection (art. 50(1)) and the abandonment of any inflammable material in forest areas (art. 50(3)(l)).

Already before the Forest Law, a duty was imposed on people living in the proximity of forests to participate in any forest fire prevention and combating activity (Government Regulation No. 28/1985, art. 10(2)).

Government Regulation No. 4/2001 introduces further preventive measures in relation to land or forest wildfire. Accordingly, every person is required to prevent environmental degradation and/or pollution caused by wildfire (art. 12) and must mitigate wildfire in the areas in which they operate (art. 7).

With regard to control and mitigation activities, Regulation No. 4/2001 requires those who are responsible for a business that may contribute significantly to environmental degradation and pollution caused by forest

wildfire to prevent the occurrence of wildfire in the area in which they operate (art. 13) and to possess adequate facilities and infrastructure to prevent wildfires, including early detection systems, preventive equipment, periodic training, as well as a standard operating procedure and an organizational unit for wildfire prevention and mitigation (art. 14). Moreover, they must monitor the implementation of preventive measures and periodically (at least once in six months) convey by a written report the monitoring results of fire prevention (including hotspot data in the concession area in which the business operates, the existence of fire based on hotspot data monitored and efforts done by business operator to prevent forest and land fires) together with satellite remote sensing to the governor, regent or mayor and the relevant technical agency (art. 15). The relevant agencies that receive the report are the Forestry Office, the Estate Office and the Environmental Impact Control Office.

Finally, a person responsible for a business that may contribute significantly to environmental degradation and pollution caused by forest or land wildfire is obliged to ensure wildfire mitigation in the area in which they operate (art. 18). It is usual for the governor, regent or mayor to supervise those responsible for a business that may contribute significantly to environmental degradation and pollution caused by forest or land wildfire, to ensure their compliance with the law and intervene in case of non-compliance (arts. 35, 38 and 40), but under certain circumstances this may also be done by the minister and or head of the agency in charge (art. 36).

(c) Fire-fighting measures

Government Regulation No. 4/2001 regulates fire-fighting measures. Accordingly, the minister charged with forest-related matters is responsible for the coordination of fire-fighting activities in adjacent provinces or neighbouring countries (art. 23) and, within the framework of the minister's fire-fighting function, also for the development of human resources and international cooperation and the supply of facilities (art. 24). The governor is responsible for the control of wildfire with inter-regencies/cities impacts (art. 27) and for the coordination of wildfire mitigation across the regencies/cities (art. 28(1)). The governor may seek assistance from the nearest governor and/or the central government for the coordination of wildfire mitigation (art. 28(2)) and may establish or appoint the appropriate agency for wildfire control in the region (art. 29). The regent or mayor is responsible for the control of wildfire in a region (art. 30) and must, in the

event of a wildfire, take mitigation actions and inform the public about its impacts and the steps that are necessary to minimize these (art. 31). In conducting mitigation activities, the regent or mayor may seek assistance from the nearest regent/mayor (art. 32) and must establish or appoint an institution authorized for controlling the wildfire (art. 33).

It should also incidentally be noted that both the Forest Law, 1999, and the Forestry Extension System Law, 2006, promote **learning processes** in the area of forestry. The Forestry Law promotes forestry research and development to enhance the national capacity, culture, science and technology in forest administration on the one hand (art. 53(1) and (2)) and forestry education and training to develop and improve human resources on the other (art. 55(1) and (2)). Forestry research and development is to be implemented by the government, who can cooperate with universities, private sector and communities (art. 53(3)). Forestry education and training is to be implemented by government, private sector and communities (art 55(5)).

A **Forestry Extension System** was created by law in 2006, to embrace all efforts to develop capacity, knowledge and skills of the "main agents" (i.e. persons who are successful in their business and have the potential to provide extension by self-supporting), other individuals responsible for business activities, and other stakeholders, in forest management through the provision of technical advice (art. 1). The objective is to develop human resources (art. 3(a)) and raise awareness (art. 4(f)). Although not specifically mentioned in the legislation, it may be argued that these learning processes may be used also for the purpose of improving forest fire prevention and suppression.

(d) Participatory mechanisms

It has already been mentioned that the Forest Law not only allocated responsibility for forest protection to the state, but also to right holders in "right forests" (art. 48(4)). Holders of a forest utilization license and other parties, who are granted the authority to manage the forest, are obliged to protect the forests in the area in which they operate (art. 48(3)). Moreover, the Forest Law mandates the government to encourage people participation through certain forest activities (art. 70), but it fails to further clarify the nature of these activities. The Forestry Law also grants local communities the right to enjoy a healthy forest environment and access forest information (art. 68). It requires communities to be involved in all forest protection

efforts (art. 48(5)). For the implementation of forest rehabilitation, communities are entitled to assistance, guidance and support from non-governmental organizations, government and other parties (art. 69). Simultaneously, communities are obliged to participate in maintaining forest areas and preventing disturbance and damage to them (art. 69). Because of their generality, these norms may also apply to the specific case of forest fires.

Government Regulation No. 4/2001 does not only place numerous duties on those responsible for a business activity (see above), but also promotes participation through community awareness raising and requiring the appropriate authority to inform communities of their rights, responsibilities and capabilities to prevent wildfire (art. 42). The governor, regent or mayor must provide information on current wildfires and their impacts through printing, electronic media or a public announcement board (arts. 43 and 45). Such information, to which everyone has equal access, must cover amongst other the location and the extent of the wildfire, maps of the wildfire hot areas and wildfire danger rating, the impacts on the ecosystems and the health and lives of the communities, the actions taken to minimize the impacts, as well as forest and/or land preparation (for example clearing) and the results of satellite remote sensing (arts. 43 and 45).

Moreover, Government Regulation No. 4/2001 obligates any person presuming or knowing of a forest or land wildfire to report this to the local regional authority (art. 39(1)). The local regional authority must record the person's identity, the reporting date, the time and site of occurrence, the fire source, as well as the estimated impact of the fire (art. 39(2)). The local regional authority must then, within 24 hours of receipt of the report, pass the report on to the governor, regent or mayor (art. 39(3)). Thereupon, the governor, regent or mayor must verify, within 24 hours of receipt, the real occurrence of the fire (art. 39(4)). If the verification reveals the occurrence of a wildfire, the governor, regent or mayor must instruct the person responsible for the business and/or activity to mitigate the fire and its impacts (art. 39(5)).

It should be noted that Indonesian legislation distinguishes between community forests and social forestry. On the basis of Government Regulation No. 6/2007, **community forests** are regarded as state forests, whose main objective is community development. Community forests form part of the social forestry systems, which are forest resources management systems in state forests or right forests managed by local communities to

increase their prosperity and to realize forest sustainability. The ministerial decree on community forests mandates community members, who are individuals whose source of income is in a forest area and who voluntarily play an active role in community forests activities (art. 1), to prevent forest fires and take all measures in controlling it (art. 11).

The ministerial decree on **social forests** intends to involve and empower local communities in the management of state forests (arts. 1(1) and 3). Local communities are entitled to undertake management activities – thereby including rehabilitation and protection efforts (art. 23) – once they have been granted the right to do so by a "social forest activity licence" (art. 18). They can receive such a licence upon application to the regent or the mayor, provided they are considered to have reached a sufficiently high level of institutionalization (art. 17), which implies having (art. 11):

- internal regulations on decision making process, conflict settlement and other organizational arrangements;
- rules on forest management in accordance with laws in force;
- recognition of the community by heads of villages or districts; and
- plans for the location and size of areas for operations as well as for the concession time period.

Rehabilitation covers planting, plant enrichment, maintenance and application of land conservation techniques with the aim to restore, maintain, increase the functions of forests and land so that their capacity, productivity and role in supporting life continue to be maintained (art. 42). Holders of licenses are obliged to rehabilitate forests in their working areas, in accordance with laws in force (art. 43).

Protection efforts seek to maintain and preserve forests, forest areas and their environment (art. 44) by trying to avoid and overcome damage caused by, *inter alia*, fire to forests, forest areas and forest products (art. 45). For protection purposes, the licence holders are obliged to maintain and preserve forests and forest areas in the areas of their operations and to coordinate with forests institutions in protecting forests (art. 46). Moreover, license holders are considered responsible for the occurrence of forest fires in the areas of their operations (art. 47). Failure to comply with the obligations imposed on licence holders can lead to the revocation of a licence (art. 57).

It should be finally noted that the guidelines on forest fire prevention and extinction (Decree of the Minister of Forestry No. 260/Kpts-II/95) were established to define the respective responsibilities of public authorities and communities. Accordingly, the head of a Forestry Service, National Park, (Sub-)Centre for the Conservation of Natural Resources or of a unit of Perum Perhutani (a state-owned corporation that manages forest concession in Java) are responsible for efforts to cope with forest fires in their respective areas of operations. The community must pay attention to, understand and comply with a guideline for the control of forest fires, according to the advice, education and training it received. Moreover, communities residing in a fire-prone forest are obliged to remain on alert and assist in activities carried out to prevent a forest fire and observe the directives from authorized officers. Similarly, communities residing in the proximity of forests which have caught fire must actively assist fire extinguishing activities initiated by the Fire-Extinguishing Executive Unit (SATLAK).

(e) Planning and monitoring

The Forestry Law makes limited planning provisions (arts. 12 and 21), without linking such plans to forest fires specifically. The only planning and monitoring provisions directly referring to forest fires are those included in the 1995 Ministerial Decree, which establishes a guideline on forest fire prevention and extinction efforts (First Stipulation). Although the Decree has never been expressly repealed by subsequent measures, it can be assumed that its provisions only apply in so far as they do not contradict more recent legal instruments and especially those instruments which were adopted after 1998. Pursuant to the guideline, it is for the first-level regions, i.e. provinces, to develop regulations on efforts to prevent and extinguish forest fires. In drawing up regional forest fire prevention and extinguishing measures, all first-level regions of Indonesia must observe the guideline (Second Stipulation).

The guideline distinguishes between three phases of forest fire control, namely the pre-fire, the fire and the post-fire phase (sec. II, Chapters A, B and C). For each phase, the guideline sets out the forest fire control efforts, which are to be undertaken.

For the pre-fire phase, the guideline foresees planning (sec. II, Chapter A.1), early detection (sec. II, Chapter A.2), technical advice (sec. II, Chapter A.3), education and training (sec. II, Chapter A.4) and awareness raising (sec. II,

Chapter A.5) activities, as well as the reduction of the forest fire likelihood (sec. II, Chapter A.6), the identification of fire-prone areas (sec. II, Chapter A.7), the construction and maintenance of adequate dams (sec. II, Chapter A.8), the preparation of adequate equipment (sec. II, Chapter A.9) and the stipulation of a standing procedure for forest fire extinction efforts (sec. II, Chapter A.10).

The planning efforts cover: the drawing up of fire-prone area maps, statistical data and software; the monitoring of the weather, the fuel accumulation and fire-prone indications; the construction of fire partitions, control towers, guard posts and dams; the supply of extinguishing equipment (including the preparation of transportation and communication facilities), allocation of personnel, and the setting up of fire-extinguishing organizations; coordination between the relevant agencies and the public; and education and training (sec. II, Chapter A.1.).

For an early detection of a forest fire outbreak, forest fire control towers, equipped with detection and communication facilities, shall be set up (sec. II, Chapter A.2.a). Moreover, patrols shall be undertaken and efficient use shall be made of flight information, satellite data and guard posts (sec. II, Chapter A.2.b, c and d). Guard posts receive and pass on reports from the community and tourists which believe that there may be a forest fire outbreak (sec. II, Chapter A.2.c). Technical advice shall be provided to communities living in the proximity of forest areas through school education, NGOs, mass media, posters, warning signs and warning devices.

From the beginning of the dry season until the beginning of the wet season, all apparatuses concerned with forest fire control are involved in the efforts to raise the level of alertness. To this end, operational forest fire controlling centres and executive units must be established and all fire-extinguishing equipment, communications and mobility facilities must be well maintained and ready for use. Moreover, the officers involved in forest fire control activities must always be ready and alert. So as to reduce the likelihood of a forest fire outbreak, migrant farmers shall be controlled, prescribed forest burning (burning of waste, weed and twigs) shall be conducted and burning partitions shall be established and maintained before the dry season and during the cleaning of roads, pathways and combustibles. Furthermore, tight requirements shall be imposed for and rigid control exercised over the entering into forest areas and land clearing through burning. Since the reformation of Indonesia and the consequential decentralization process, the Province Forestry Offices have the authority and competence to develop standing procedures for forest fire extinction.

The activities for the forest-fire phase encompass the extinguishing of the forest fire through direct and indirect measures (sec. II, Chapter B.1.), the finding of the fire source (sec. II, Chapter B.2) and the mobilizing of a Task Force of Assistance (in the form of personnel, facilities and infrastructures) to extinguish the forest fire (sec. II, Chapter B.3).

The activities anticipated for the post-fire phase encompass the measuring of the forest area which has caught fire (sec. II, Chapter C.1), the calculation of the economic and ecological losses, as well as of the reforestation costs (sec. II, Chapter C. 2 and 3), reforestation (sec. II, Chapter C.4) and the evaluation of the implementation of the forest fire extinction (sec. II, Chapter C.5).

(f) Rehabilitation

The Forest Law and Government Regulation No. 4/2001 make provisions for forest rehabilitation and reclamation with a view to recovering, maintaining and improving damaged land and forest vegetation so as to restore the land and/or forest to their original state (Forestry Law, 1999, arts. 40 and 44).

Specific rehabilitation obligations are imposed on the following three categories of stakeholders:

- persons having, managing and/or utilising critical or unproductive forests are required to rehabilitate them for protection and conservation purposes and may seek assistance, service and support from the government, non-governmental organizations or other parties to this end (Forestry Law, 1999, art. 43);
- anyone causing a wildfire is to conduct environmental impact rehabilitation in line with the rehabilitation guidelines issued by the head of agency in charge (Government Regulation No. 4/2001, arts. 20 and 21(2)); and
- persons responsible for businesses activities that may cause major or significant environmental degradation and pollution are required to conduct environmental impact rehabilitation of areas affected by wildfire in the area of their operations, regardless of the cause of the fire (Government Regulation No. 4/2001, arts. 20 and 21(1)).

Under the 2004 Ministerial Regulation on Ecosystem Restoration in Production Forest Areas, forest restoration activities, including forest protection efforts, are encouraged and managed in production forest areas with the aim to restore the biotic and abiotic ecosystem functions and the economic potential of production forests (arts. 1 and 5). Forest protection covers activities which seek to prevent and restrict damage of forest, forest area and forest products arising from fire (art. 1(8)).

(g) Funding

Measures related to the prevention, management and combating of forest fires, as well as forest protection, rehabilitation and reforestation, can be financially supported by the Reforestation Fund, which was established by Government Regulation No. 35/2002. Holders of forest concession rights, who have permits to derive timber products from natural forests, must make payments to the fund (art. 1(1)). The contributions depend on the planned and actual timber volume (arts. 2 and 6). Forty percent of the reforestation fund is distributed to the production area and 60 percent to the central government (Ministry of Forestry) (art. 10). The fund can be used for reforestation, forest rehabilitation and supporting activities (arts. 1(1) and 16(1)). Supporting activities cover forest protection (art. 17(5)(a)) and prevention and management of forest fires (art. 17(5)(b)). The Clarification Note to Government Regulation No. 35/2002 elucidates that forest protection includes activities to prevent and manage forest fires, thereby including all efforts to prevent, extinguish and control fires, evaluate forest fires' consequences and prepare rehabilitation programs for burnt areas. The supporting activities are only financed by the central government's portion of the reforestation fund (art. 18(3)). The minister of finance, the minister of forestry and the governor monitor and control the imposition, collection, payment, management and the utilization of the reforestation fund (art. 19(2)).

(h) Offences and Sanctions

Anyone who fails to prevent the occurrence of environmental degradation and pollution related to forest and land wildfire is subjected to administrative sanctions. Administrative sanctions are also applied to those responsible for a business that may cause major significant impacts to environmental degradation and pollution related to forest and/or land fire if they fail to (Government Regulation No. 4/2001, art. 52):

- possess the adequate facilities and infrastructures to prevent forest or land wildfire in their location;
- monitor the forest or land wildfire prevention measures in their location; and
- report the results of the monitoring activities at least once in six months.

In addition, the following forest fire-related acts have been classified as criminal acts:

- (negligent) burning of forests and land (Forestry Law, 1999, art. 50(3)(d); Government Regulation No. 4/2001, art. 11) is punished by imprisonment and/or fines (Forestry Law, 1999, art. 78(3); Government Regulation No. 4/2001, art. 52);
- the deliberate destruction of forest protection infrastructure and facilities (Forestry Law, 1999, art. 50(1)) is punished by imprisonment and a fine (Forestry Law, 1999, art. 78(1));
- the intentional abandonment of inflammable material into forest areas (Forestry Law, 1999, art. 50(3)(l)) is punished by imprisonment and fine, subject to the relevant provisions of the Criminal Code (Forestry Law, 1999, art. 78(10));
- failure to mitigate land or forest wildfire in a person's location of activity, causing environmental degradation and pollution (Government Regulation No. 4/2001, art. 52);
- failure by those responsible for a business that may cause major environmental degradation and pollution related to forest and/or land fire and that actually caused environmental degradation or pollution – subject to the relevant provisions of the Criminal Code (Government Regulation No. 4/2001, art. 52), to:
 - possess the adequate facilities and infrastructures to prevent forest or land wildfire occurrence in the location of business operations;
 - monitor the measures to prevent forest or land wildfire occurrence in the location of business operations and report the results at least once in six months; or
 - conduct mitigation to forest and or land wildfire occurring in the location of business operations.

To ensure the implementation of forest protection, the Forest Law allows certain forestry officials to execute patrol activities, receive and seek information and evidence on criminal acts, apprehend the suspects of criminal acts and prepare and sign reports of criminal acts (art. 51).

In addition, every criminal and non-criminal act in violation of the Forest Law obliges the party responsible for the act to pay compensation in accordance with the extent of damage or the consequence caused to the state for costs of rehabilitation, forest condition restoration or other necessary act (art. 80(1)).

Finally, Government Regulation No. 4/2001 subjects numerous activities leading to environmental degradation and pollution related to forest and or land wildfire to compensation and/or specific remedial actions (art. 49(1)). The judge may also order a coercive payment for each day of delay in complying with the specific remedial action requested (art. 49(2)).

Moreover, where a person responsible for a business or activity caused significant negative impacts on the environment, which either was caused by hazardous and poisonous material or resulted in hazardous and poisonous waste, that person shall be absolutely responsible for the losses caused, with the obligation to pay compensation immediately, upon the occurrence of pollution and degradation (art. 51(1)), unless the person concerned can provide evidence that the environmental degradation and/or pollution was caused by a natural disaster, war, *force majeure*, or actions by a third party (art. 51(2)).

2.3.5 The Russian Federation

Provisions concerning forest fires in the legislation of the Russian Federation are found in the principal legislation regulating forests (the Forest Code), as well as in more specific legislation, which includes a Federal Law on Fire Prevention.

(a) Institutional aspects

Various provisions, both in the Forest Code and in the legislation relating to forest fires address institutional aspects. The Federal Law on Fire Prevention (No. 69-FZ of 1994, as amended by Law No. 38-FZ of 2004) states that fire prevention is one of the principal functions of the state. The Federal Forest Service is made responsible for "state fire supervision" in forests. Respective

powers of state executive bodies and local self-government as regards prevention of fires are set out.

Pursuant to the Forest Code of the Russian Federation of 8 November 2006, the forestry administration ("authorized federal executive body") must set out rules for fire safety (art. 15.4). This is further stated in article 84, which lists among the powers of the "public authorities of the Russian Federation" that of setting out rules for fire safety in forests and aerial protection and of "executing the state fire oversight in forests" (art. 81). "State fire oversight" in forests is to be undertaken by the authorized federal executive body following the procedures laid down in the Federal Law on Fire Safety and in the Code (art. 97). Oversight in forest use, protection and renewal of municipal forests is a responsibility of the local authorities (art. 98).

Some specified forest management powers may be delegated to "subjects" of the Russian Federation (art. 83). These include the power to protect forests from fires, except where the population density is fifteen times higher than the average population in the Russian Federation. The list of concerned forest districts and forest parks and of such subjects of the Russian Federation is in any case to be approved by the Government of the Russian Federation. For such delegated functions, funds are provided from the federal budget, on the basis of various criteria which include fire danger indicators (art. 83(3) and (4)).

Order No. 100 of the Federal Forest Service of 30 June 1995 validating the Regulation on Detection and Extinguishing of Forest Fires entrusts the prevention of forest fires to regional governments, which must inspect the activities of forest owners and managers in order to check compliance with required fire protection arrangements. *Lesbozes* (individual forest organization units) are also given specific responsibilities, which include the building of ground-based watchposts and the facilitating of patrolling by forest protection aviation.

(b) Substantive aspects

"Forest protection" includes protection against fires (art. 51), which must be granted in accordance with Federal Law No. 69-FZ of 1994 on Fire Safety and with the Forest Code (art. 52). Pursuant to the Forest Code, citizens have the right to go into forests freely, subject to applicable fire safety and other rules (art. 11). Citizens and legal persons must be involved into forest

fire fighting in accordance with Federal Law No. 68-FZ of 1994 on Protection of Population and Territories from Natural and Technogenic Emergencies.

Citizens and legal persons may harvest wood under lease agreements or under contracts for sale of forest stands (art. 29.8). An exemption to this general rule is envisaged for wood for personal needs, which in the case of indigenous peoples of the North and Far East, may be taken in accordance with their traditional lifestyles (art. 30). State or municipal forests may be leased for periods from ten to forty-nine years, or shorter periods in specified cases, with preferential right to renewal for the lessee (art. 72). Lease agreements are allocated through auctions (art. 74).

Holders of leased forest parcels must adopt fire safety measures, which are specified as follows:

- "1) making fire management arrangements in forests, including construction, reconstruction and maintenance of fire roads, landing grounds for planes and helicopters employed for the purposes of aerial forest protection operations, rides and fire-breaks;
- 2) installing systems and means for forest fire prevention and fighting (fire machinery and equipment, tools, clothing etc.), maintaining such systems and means and providing stand-by stocks of fuel and lubricants for seasons of high fire danger;
- 3) monitoring fire danger in forests;
- 4) developing forest fire fighting plans;
- 5) fighting forest fires; and
- 6) other measures to ensure fire safety in forests."

All these should be based on the forest development plan (art. 53(3)). The provisions on forest management planning, however, are very general as to the contents of plans and do not make specific reference to fire (arts. 67–70).

Order No. 290 of the Federal Forest Service validating Rates of Provision with Fire Prevention Equipment and Means for Combating Forest Fires of 1993 establishes requirements for **fire-fighting equipment** for various types of forests, depending on relevant fire-related conditions. The Order specifies that these requirements are binding for holders of forest leases as well as forest owners whose lands are not equipped with fire-chemical

stations. Failure to comply with forest management rules by any person or entity entitled to utilize forests may lead to the termination of lease agreements or of contracts for sale of forest stands (Forest Code, art. 24(2)). The use of toxic chemicals for fighting forest fires is prohibited within protected areas (art. 103), water conservation zones (art. 104), green zones and forest parks (art. 105).

Instruction of the Federal Forest Service on **prevention** of forests fires and regulation of activity of forest fire emergency service of 1997 establishes that forest fire prevention arrangements must be carried out by the Forest Service and specialized organizations for aerial protection of forests. Prevention includes regulation of the composition of forests, sanitary fellings, removal of waste, creation of natural fire barriers, containment of fire outbreaks, appropriate networking of water and roads. Ministerial Decree No. 35 of 1999 sets out the programme for "Forest fire prevention for the period 1999–2005". The programme aims at increasing efficiency of forest fire prevention and includes organizational and financial measures.

Also regarding prevention, an Order of the Federal Forest Service (Order No. 68 of 1999) requires the heads of regional forests institutions to undertake the creation of firebreaks and other fire-prevention zones by controlled burning, setting out rules on planning and implementation of these works.

"Fire safety" is more specifically addressed in Ministerial Decree No. 417 of 2007, which lists types of forest fire safety arrangements, including building of facilities, forest fire monitoring, formulation of plans, as well as extinguishment of forest fires.

A piece of legislation is specifically devoted to **protection of forests by aerial means** (Ministerial Decree No. 385 of 19 June 2007 validating the Regulation on Aerial Protection of Forests). The Decree specifies the types of forests and the cases in which aerial means may be utilized. These include forest fires, where identification and extinguishing from the ground is prevented by any reasons or is otherwise impossible. Aerial "protection" may consist of aerial patrol, prevention of forest fires and disasters caused by them, use of technical means and monitoring of diseases.

Ministerial Decree No. 273 of 2007 regarding Calculation of Damage caused to Forests by the Infringement of Forest Legislation sets out the method of calculation of **compensation** for damages caused to forests. Damage derived from fire must be calculated taking into account the need for soil improvement and the cost of extinguishing the fire.

2.3.6 The United States of America

Since the creation of the Federal Forest Service in 1905, wildland fires management efforts in the United States of America (hereinafter referred to as the United States) focused on the total suppression of fire, despite the knowledge of the ecological importance of fires and of the fire-dependence of some areas. The "Smokey Bear approach", so called after the name of the official forest-fire-fighting mascot of the federal government, was not substantially modified until at least the 1970s.

In line with this approach, the Forest Fires Emergency Act of 1908 allowed the Forest Service to create a Forest Firefighting Fund, practically authorizing unlimited off-budget deficit spending, which would be later reimbursed by Congress, for fire suppression. Through subsequent annual appropriation bills, the same practice was authorized for suppression costs borne by the Department of Interior (Berry, 2007 and Pyne, 1996). The Forest Fires Emergency Act was not repealed until 1978, when policy had gradually evolved towards a more comprehensive fire management approach, leading to the adoption of an official Wildland Fire Management Policy in 1995. Even after the repeal of the Forest Fire Emergency Act, which granted the Forest Service practically unlimited access to funds for wildland fire suppression costs, a distinction generally continues to be made both at the federal and at the state level between funding for fire suppression and for other operating expenses. For fire-related operating expenses, there is normally a line item in the annual budget of the concerned agency, while for fire suppression money usually continues to flow from a special account held by the agency. Congress (or the state legislature) eventually approves supplemental appropriations which may have been incurred in fire-fighting to replenish the account (Pyne, 1996).

The 1995 Wildland Fire Management Policy was followed by a review which led to the publication of a report (Review and Update of the Federal Wildland Fire Management Policy) in 2001. An Interagency Strategy for the Implementation of Federal Wildland Fire Management Policy was then

adopted in 2003. This section will analyse the policy documents on forest fires, as well as federal legislation and some examples of state-level legislation.

(a) Forest Fires Policy

The Policy and implementing Strategy address all wildland fires, including the following definitions in the Strategy's **glossary**:

"Wildland fire: any non-structure fire that occurs in the wildland. Three distinct fires of wildland fire have been defined and include wildfire, prescribed fire and fire use.

Wildfire: an unplanned and unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects and all other wildland fires where the objective is to put the fire out.

Wildland fire use: the application of the Appropriate Management Response to naturally-ignited wildland fires to accomplish specific management objectives in predefined designated areas outlined in Fire Management Plans. [...]

Prescribed fire: any fire ignited by management actions to meet specific objectives."

The Policy and Strategy aim at establishing a "federal" approach to wildland fire, ensuring uniform and cohesive action across administrative boundaries. Pursuant to the Policy, fire-dependent wildlands are to be restored and maintained as the means of better ensuring safer, more resilient conditions, thus better protecting people and community values.

The Strategy recognizes a need to clarify fire protection responsibilities of agencies and individuals at the federal, state, county and city level, as confusion over responsibilities often leads to inefficient protection efforts. It also suggests that shortfalls may need to be addressed through additional statutes, agreements or operating plans.

While there is currently no single piece of federal legislation specifically addressing forest fires, a list of 32 statutes which authorize and provide the means for managing wildland fires on lands or threatening lands under the jurisdiction of the Department of the Interior and the USA Department of Agriculture Forest Service is identified in Appendix F to the Strategy.

(b) Federal legislation

The Sundry Civil Expenses Appropriation Act for Fiscal Year 1898 of 1897, commonly known as the Forest Service Organic Administration Act, already envisaged the creation of forest reserves "to improve and protect the forest" (sec. 1, seventh unnumbered para.). Pursuant to the same section, the Secretary of the Interior (changed to Secretary of Agriculture in 1905) must make provisions for the protection of public forests against destruction by fire and may make rules for this purpose (eighth unnumbered para.). The current powers to issue authorizations for wildfire control, wildland fire use and prescribed fire all derive from these provisions. There is currently no federal legislation exclusively addressing forest or wildland fires.

Following the adoption of a Comprehensive Strategy for a Collaborative Approach for Reducing Wildland Fire Risks to Communities and Environment in May 2002, a Healthy Forests Restoration Act was enacted on 3 December, 2003. Most of the stated purposes of the Act are related to fires, including:

- "to reduce wildfire risk to communities, municipal water supplies and other at-risk federal land through a collaborative process of planning, prioritizing and implementing hazardous fuel reduction projects;" (sec. 2(1))
- "to enhance efforts to protect watersheds and address threats to forest and rangeland health, including catastrophic wildfire" (sec. 2(3)); and
- "to provide grants for the utilization of forest that would otherwise contribute to the risk of catastrophic fire for producing energy for commercial purposes" (sec. 2(2)).

The Act requires the Secretary of Agriculture (with respect to land of the national forest system) and the Secretary of the Interior (with respect to other defined public lands) (sec. 101(14)) to implement **authorized hazardous fuel reduction projects** on specified types of land. Projects must be consistent with the applicable resource management plan and other administrative policies and decisions (sec. 102(b)). The Act lists at section 102(a):

- federal land in wildland-urban interface areas;
- condition class 3 federal land (defined in detail, basically to mean land where fire regimes have been significantly altered from

historical ranges and at high risk of losing key ecosystem components from fire), in such proximity to a municipal water supply that a significant risk exists that a fire disturbance event would have adverse effects on the water quality or maintenance of the system, including a risk to water quality due to erosion following the fire;

- condition class 2 federal land (defined in detail, basically to mean that fire regimes have been moderately altered from historical ranges and there is a moderate risk of losing key ecosystem components from fire) located within fire regime I, II or III (i.e. three defined regimes which take into account fire occurrence, frequency, size and severity), with the same conditions as above regarding effects on water quality;
- federal land on which wind throw, ice storm or other factors pose an immediate threat to an ecosystem component or forest or rangeland resource; and
- federal land, other than that covered above, that contains threatened and endangered species habitats, if natural regimes are important for them or wildfire is a threat for them. The project will provide enhanced protection from catastrophic wildfires subject to other conditions.

Numerous forest management requirements to which projects are subject are set out. For example, efforts must be made to restore or improve old growth stands (sec. 102.(e)) and projects must be carried out in a manner that focuses on small diameter trees, strategic fuel breaks and prescribed fire to modify fire behaviour, maximizing retention of large trees. Results of the projects must be monitored and evaluated by the Secretary (sec. 102(g)(1)), with "multi-party monitoring" by diverse stakeholders, including citizens and Indian tribes, where interest is expressed to this end (sec. 102(g)(5)). Assessment of projects must describe changes in condition class, specifically comparing end results to pre-treatment conditions, historical fire regimes and applicable watershed or landscape objectives (sec. 102(g)(4)). A process for monitoring the need for maintenance of treated areas over time, in order to preserve the forest health benefits achieved, must be developed (sec. 102(g)(8)).

In providing financial assistance for hazardous fuel reduction projects on non-federal land, Secretaries must give priority to communities that have adopted a **community wildfire protection plan** or have taken proactive measures to encourage willing property owners to reduce fire risk on private

property (sec. 103(d)(2)). A community wildfire protection plan may be formulated and agreed to by the concerned local government, local fire department and state agency responsible for forest management, in consultation with interested parties and federal land agencies. It must identify and prioritize areas for hazardous fuel reduction treatments on federal and non-federal land, recommend measures to reduce structural ignitability throughout the at-risk community (sec. 101(3))

"In order to ensure meaningful **public participation**" during preparation of hazardous fuel reduction projects, Secretaries must facilitate collaboration among state and local governments and Indian tribes and participation of interested persons" (sec. 104(f)). In accordance with the National Environmental Policy Act, an opportunity for public comment must be given during the preparation of any environmental assessment or environmental impact statement for a hazardous fuel reduction project (sec. 104(g)).

(c) State legislation

An example of statutes specifically concerning forest fires adopted by one of the states is the State Forest Fire Law of Michigan (Part 515, 451 PA 1994). Under this law, the Department of Natural Resources has charge of the prevention and suppression of forest fires and may appoint assistants as needed (sec. 324.51502). The burning of any flammable material on or adjacent to forest land, when the ground is not snow-covered, is allowed only under permits, at conditions to be specified by the department, except for domestic purposes (sec. 324.51503).

The following activities are **prohibited**:

- disposing of matches or any flaming or glowing substances or items that are likely to ignite a forest, brush, grass or woods fire, or dropping them from a moving vehicle;
- setting fire to, or causing or procuring the setting on fire of, any inflammable material on, or adjacent to, forest land without taking reasonable precautions before, while and after lighting the fire to prevent escape; or leave the fire before it is extinguished;
- setting a backfire or causing a backfire to be set, except under the direct supervision of an established fire control agency or unless it

can be established that the setting of the backfire is necessary for the purpose of saving life or valuable property;

- destroying fire control signs;
- using on, or adjacent to, forest land a welding torch, tar pot or other device that may cause a fire, without clearing flammable material surrounding the operation or taking other reasonable precautions;
- operating or causing to be operating any engine or other machine not equipped with spark arresters or other suitable devices to prevent the escape of fire or sparks; and
- discharging or causing to be discharged a gun firing incendiary or tracer bullets or tracer charge onto or across any forest land (sec. 324.51504).

All **violations** under the law are misdemeanours, except for the case of intentionally setting fire to forest land, land adjacent to it or flammable material on it, or of placing any device in or adjacent to forest land with the intent to set fire (sec. 324.52510), which is a felony punishable with imprisonment up to ten years or a fine up to US\$ 10 000, or both fine and imprisonment (sec. 324.51512). Persons maintaining refuse disposal facilities must provide devices and conditions to promote safe operation and guard against the escape of the fire (sec. 324.51505). Any person who violating provisions of the law causes a forest or grass fire is liable for all damages, including the cost of fire fighting (sec. 324.51506). The governor may, by proclamation, when conditions of extreme fire hazard exist, prohibit the use of fire by any person entering forest lands or lands adjacent to them (sec. 324.51507). The department may call upon able-bodied male persons above the age of eighteen to assist in fighting fires and must pay for their services, unless the persons are inmates of correctional institutions (sec. 324.51508).

South Carolina has a Prescribed Fire Act that sets out a number of requirements for "**prescribed fires**" (controlled fires "applied to forest, brush, or grassland vegetative fuels under specified conditions and precautions which cause the fire to be confined to a predetermined area and allow accomplishment of the planned land management objectives") (sec. 48-34-20). Prescribed fires must have a prescribed fire plan, at least one certified prescribed fire manager supervising the burn until it is declared safe and are considered in the public interest and not a nuisance when conducted pursuant to air pollution legislation (sec. 48-34-40).

Any provisions on prescribed fires at the federal and state level are to be formulated and implemented in close connection with **air quality legislation**, as prescribed fires conducted by federal authorities on federal land will generally be subject to states' air pollution legislation, which in turn is subject to federal standards. At the same time, the involvement of federal authorities will generally have to be sought by state authorities in authorizing prescribed fires which may affect air quality on federal lands.

In order to finance the prevention and fighting of forest fires, some states have charged specific taxes or assessment on forest land. This is the case, for example, in the State of Washington, where if owners of forest land within a forest protection zone neglect to provide fire protection as required, the Department of Natural Resources must provide such protection and impose a specified assessment on each parcel (Revised Code of Washington 76.04.610, Forest Protection Assessment, sec. 1).

3. SPECIFIC THEMATIC ELEMENTS IN NATIONAL LEGISLATION ON FOREST FIRES

This chapter is structured in thematic sections, identifying issues in forest fire management that may require a legal response and signalling different solutions that have been developed in national legislation. Besides the legal frameworks analysed in the previous chapters, other legal materials cited in this section originate from FAO's technical assistance projects and from a desk-review of national legislation available on FAOLEX.¹³

3.1 Definitions

Unless local practice dictates otherwise, some general provisions are placed at the beginning of the law to provide a statement of goals, purposes, or objectives and general definitions. These opening provisions are usually particularly useful in clarifying the policy aim of the piece of legislation to the reader and in linking it with relevant other laws or regulations.

Definitions, in particular, are crucial to the understanding of a piece of legislation, to prevent confusion and ambiguity. Particular care should be

¹³ Available at faolex.fao.org/faolex. FAOLEX is a comprehensive and up-to-date computerized legislative database, one of the world's largest electronic collections of national laws and regulations on food, agriculture and renewable natural resources.

exercised in crafting definitions, while at the same time avoiding definitions that are unnecessary. When a word has a range of possible meanings, the definition serves to narrow its use down to a single clear meaning. In other instances, a complex concept to which it is necessary to refer repeatedly, may be defined so as to create a simple (shorter) way to make reference to it in the rest of the operative part of the text. Legal drafters should also carefully assess whether a technical or scientific definition may serve well the scope of the law, or whether another definition may be preferable, in light of the desired policy. Finally, definitions should not include operative provisions.¹⁴

Key definitions in forest fire legislation concern the concepts of "wildland fire" as opposed to "forest fires" and "prescribed fire" as opposed to "wildfires." Often these terms are not clearly distinguished from each other in national legislation and sometimes not defined at all. One exception is the clear distinction that is drawn in the United States between "prescribed fire" as any fire ignited by management actions to meet specific objectives, as opposed to "wildland fire use" as the application of the Appropriate Management Response to naturally-ignited wildland fires to accomplish specific management objectives in predefined designated areas outlined in Fire Management Plans (Ch. 2.3.6 above).

Where they are defined, certain terms may be useful to delineate the scope of application of legislation. This happens, for example, in the Bushfires Act of Australian Northern Territory, which defines "bush" as including trees, shrubs, bushes, plants, scrub, stubble, grass and undergrowth, whether alive or not and whether standing or not (sec. 5), thus implying that fires in any of these areas are covered by the Act.

Definitions of the expression "**forest fires**" or related expressions such as "bushfires" or "rural fires" may generally be based on a "substantive" criterion (for example covering any fire which may extend to or from a forest) or on a geographic one (considering as forest fire any fire within a certain distance from certain forest boundaries), or on a combination of criteria. An example of the first case is in the Italian Framework Law on Forest Fires, which defines forest fires as any fires which may potentially extend to wooded areas, shrubbery or brush, including artificial structures and infrastructure within them, or to cultivated or uncultivated land or pastures neighbouring such areas (sec. 2). The Regional Law of Tuscany,

¹⁴ FAO LPO 64.

adopted within the Italian Framework Law, gives a more restrictive definition, limiting the application of the "substantive" criterion to a specified distance: pursuant to it, a forest fire is a fire which may concern a forest, equivalent areas ("*aree assimilate*"), forestry plantations (as defined in the same law) or uncultivated or cultivated land and pastures situated within 50 metres from such lands (sec. 69). The wider definition in the Framework Law may be useful to make the law applicable to a larger number of fires which may endanger forests, but its formulation requires a case-by-case interpretation which may lead to conflicts, while the Regional Law's approach may help to prevent them.

Even where the terminology "forest fire" continues to be used, there is a tendency to extend management objectives and techniques to any fires burning vegetation outside the urban or structural environment rather than exclusively affecting forests (FAO Guidelines). This tendency has started to be reflected in legislation, which frequently covers bushfires or rural fires rather than, more restrictively, only "forest" fires. Accordingly, appropriate choices for determining the scope of application of legislation on forest/rural fires and consequently the selection of terms to be defined and their definition have to be made in any single country. Among other factors, legislators may find useful considering the most frequent causes of forest/rural fires, the types of vegetation, the size of forest areas and any other element which may help to make the law an effective instrument for the particular circumstances in which it is going to be applied.

Different types of fires may also be defined. In Portugal, **prescribed fire** (*fogo controlado*) is defined as the forest management tool that uses fire under conditions, rules and procedures ensuring the fulfilment of specific and quantifiable management objectives and that is executed under the responsibility of a qualified technical expert (Decree-Law No. 156/2004, art. 3(a)). The same law distinguishes the use of fire to eliminate leftovers from agro-forestry (*queima*) and the use of fire for the preparation of pastoral lands (*queimada*) (art. 3(j) and (l)). Conversely, in Brazil the term "*queima controlada*" is used, with a view to including all use of fire in forest and agro-pastoral production and management, as well as for scientific and technological research, in areas with physical boundaries that have been previously determined (Decree No. 2.661, art. 2). The Canadian province of Alberta defines "fire under control" as fire being guarded and controlled to the extent that it can, at will, be prevented from burning beyond any desired point or boundary (Forest and Prairie Protection Regulations, Part I, art. 2).

South Carolina legislation (USA) defined prescribed fires as "controlled fires applied to forests, brush, or grassland vegetative fuel under special conditions and precautions which cause the fire to be confined to a predetermined area and allow accomplishment of the planned land management objective" (Ch. 2.3.6 above). Similarly, Cuban legislation defines "prescribed fire" (*quema prescrita o controlada*) as the correct application of fire with a specific purpose and upon determined fuel, taking into account the recommendations and safety measures that will ensure that the fire is under control (Instructions of the Chief Forest Guard regarding rules and administrative procedures for the utilization of fire in forests and neighbouring areas, 2003). "Forest fires" are then defined in Cuban legislation as fire that occurs in an uncontrolled manner in natural and artificial forests, or within a distance of 200 metres from the perimeter of the forest (Decree No. 268 of 1999, art. 134). In Cameroon, a definition is provided for preventive fires (*feu précoce*) as the fire lit at the beginning of the dry season to manage grass (Forestry Code, 2002, art. 1(19)).

The definition of other terms related to forest fires, such as "fire plan", "fire hazard" etc., is frequently given in legislation, particularly if the legislation specifically refers to forest fires rather than covering a wider subject. For example, the law of New Zealand defines "fire plan" as "a statement defining policy, chain of command and procedure, in relation to fire control by a Fire Authority" (sec. 2).

The Canadian province of Alberta defines "burning hazard" as "an actual or potential occurrence of fire or other combustion of organic or inorganic material that could endanger human life or property or damage property" distinguishing it from "fire hazard" (combustible material that, through its nature, location, condition or arrangement, or any combination of those factors, may be ignited and, if ignited, could create a burning hazard (Forest and Prairie Protection Act, art. 1). It also defines "debris" (as "inflammable material" (Forest and Prairie Protection Regulations, Part I, sec. 2).

Where, as in the latter case, various specific terms or expressions are defined, attention must be paid to avoiding the inclusion of unnecessary details or subtle distinctions which, although commonly utilized as technical terms in fire management, do not have practical consequences in the interpretation of the law.

3.2 Institutional set-up and inter-institutional coordination

Institutional issues and their consideration in legal instruments are one of the critical areas for effective forest fire management. According to the FAO global assessment, the national fire service is commonly responsible for fires posing a hazard to people – that is, usually in urban areas, whereas the forestry authorities are responsible for fires in the forested areas under their jurisdiction. Environmental and conservation agencies, such as national parks authorities, may be responsible for fire management in reserves and parks. The national defence force may provide support and agencies concerned with meteorology, tourism, health, infrastructure, development, national emergency and ambulance service are also usually involved in prediction, protection and support. In some cases, the forest service may be the main responsible entity for forest fire prevention and control; in others, a mixed system is in place, in which the forest service is responsible for prevention and the national fire service takes over suppression and pre-suppression activities. In yet other cases, a complete removal of all fire management tasks from the forest authority has occurred and these functions are instead taken over by the fire and rescue services (FAO, 2007). There are also examples of authorities created specifically for the purpose of dealing with forest or rural fires, with functions which may be advisory (as in the case of the Bushfire Council of the Northern territory of Australia), or operational (as in the case of the fire authorities of rural fire districts in New Zealand).

Unclear or overlapping responsibilities are among the most prevalent weaknesses of national forest fire legislation, resulting in uncoordinated duplication of efforts rather than effective pooling of resources and burdensome bureaucracies. Confusion over roles and functions can also arise from the failure to properly allocate powers among different levels of government in a decentralized system, or from the assignment of powers to different sub-agencies that do not function well together and that seek to preserve their proper spheres of influence. Another deleterious result of conflicting assignments of responsibility is that key implementing agencies may find that their authority to undertake certain actions is open to legal challenge. To avoid this, it is crucial that boundaries be clearly identified and that mandates, powers and responsibilities be delineated as specifically as possible. This can be accomplished through clear assignments of authority in primary legislation, bolstered where necessary by carefully drafted memoranda of understanding which are agreed between and among the

various ministries or agencies involved in forest fires. Agreements may also be concluded with a view to contributing to clarifying concurring mandates and ensuring inter-institutional coordination, possibly on a regular basis to ensure their updating in light of changes in the institutional set-up and lessons learnt from one fire season to another.

The question of which ministry or agency should take the lead in the administration of forest fire legislation cannot be answered in the abstract but must be resolved by reference to the circumstances at play in a particular country. The amount and kind of resources which each ministry or unit possesses will influence the decision regarding which should take the lead in enforcement, although the resource situation should not be considered immutable. It is necessary to make a very fair and real assessment of the kinds of resources – physical, financial, human – available within each entity before making such a determination.¹⁵ To avoid the problem of choosing from among the many ministries with legitimate roles and interests in forest fire management and having to iron out the conflicts among them, a number of countries have opted to focus on establishing a coordinating mechanism that could allow for information sharing, joint programming and decision-making in respect of the existing multiple institutional mandates related to forest fires.

This section will address in turn three key issues related to the institutional set-up that have great relevance from a legal perspective. First, laws can be drafted or amended so as to clearly allocate institutional responsibilities to ensure synergies and avoid duplications among institutional mandates. Second, laws can serve to clarify the allocation of responsibilities between the central and local levels of government. Third, laws can create mechanisms for stable inter-institutional coordination.

(a) Clarity of mandates

As a general principle, the law should clarify the mandate and functions of all public authorities related to forest fire management. "Legal mandates" refer to legal provisions requiring or allowing government agencies or persons to engage in activities affecting a resource or its components. This is a deliberately broad concept that encompasses all possible actions, activities, permissions, or even prohibitions. Usually, legal mandates are framed in

¹⁵ Inspired by FAO LS 87.

general terms, thus resulting in provisions of difficult practical application, with no guidance as to the exercise of powers, limits to discretion or procedures for decision-making. The law, however, should provide some guidance to the exercise of discretionary powers of public authorities, in order to increase their legitimacy and accountability.

Another related issue is that offices, institutions, processes and standards set by other laws may change. Ministry jurisdictions, for instance, tend to change over the years. At one point agriculture and forestry are in the same ministry; and successively forestry may be assigned to a new environment ministry and agriculture may subsume fisheries. Similar issues may arise when naming a particular court or a particular officer within an agency, other than the agency head, unless the law creates the position. It may therefore be useful to refer in the legislation to more general expressions (such as "the minister in charge of forests") rather than refer to the exact name of the institution that at the time of drafting is in charge of certain resources.¹⁶

In the previous chapter, for instance, the clear allocation of mandates related to forest fires was highlighted in the case of the Russian Federation. There, not only are functions clearly assigned to central government authorities (Federal Forest Service), local authorities (forest districts and forest parks managers), but also relevant financial issues are expressly taken into account in legislation (Ch. 2.3.5 above). In Argentina, on the other hand, a national plan has been drawn to clarify the different mandates of national authorities in the areas of fire management (Ch. 2.3.3 above).

In the case of Croatia, the complex and fragmented institutional framework for forest fires was the central issue for legislation review. In 2005, competences for fires were moved from the Ministry of Interior to the National Rescue and Protection Directorate (NRPD) as a centralized coordinating agency (2005 Government Regulation on Internal Structure of the National Rescue and Protection Directorate). So the NRPD became responsible for preparing legislation, fire data management, coordination of and participation in fighting fires and overall supervision of fire management and fire-fighting system. The Forest Protection Department within the Forestry Directorate of the Ministry of Agriculture, Forestry and Water Management continued to be responsible for forest-related (including forest fire-related) legislation and for establishing a forest fire data management

¹⁶ FAO LPO 64.

system (Law on State Administration), while the Ministry of Culture, through the Directorate for the Protection of Nature, was responsible for preventing fires in protected areas (FAO case studies: Croatia).

In Algeria, different legal instruments concur to define the allocation of responsibilities among different institutions. The 1984 Forest Law entrusts the prosecution of forest-related offences to the Forest Police (art. 65), which is composed of officers of the judicial police and technical forest bodies (art. 62). Executive Decree No. 90-114 sets up a National Forest Agency, under the supervision of the ministry in charge of forests (art. 2), which is responsible for taking all necessary measures to protect forests (art. 6) and to initiate and develop reforestation programs (art. 8), although there is no specific mention of forest fires specifically. Law No. 04-20 clarifies that the national army may participate in the combat against forest fires (art. 57) and that under the authority of the head of government, a national delegation is responsible for the evaluation and coordination of the activities for the prevention of major risks and the management of catastrophes, including forest fires (art. 68).

The distinction between prevention and suppression activities could be used as a practical criterion for ensuring institutional cooperation because it is widely recognized among fire fighters from an operational point of view (FAO case studies: Bulgaria). Relevant institutions, however, may not only be related to prevention and suppression, but also to conflict avoidance and resolution. In New Zealand, for instance, a Rural Fire Mediator may be appointed by the National Rural Fire Officer from a panel of experts maintained for this purpose, to investigate and settle certain disputes (Forest and Rural Fires Act, secs. 64 and 64A). Decisions of the mediator may be appealed before the district courts (sec. 65).

(b) Decentralization

Clear assignment of responsibility to central, regional and local governments is a precondition for effective forest fire management (Bourrinet, 1992). Many countries have embraced the decentralization of government responsibilities and the devolution of powers to provincial or lower levels of government with regard to forest management. The purpose is to ensure public participation in decision-making and to promote more effective management of resources, since local authorities are generally more familiar with their regulatory needs as well as with their staffing and other resource

constraints. In practice, the existence of a decentralization policy or decentralization law usually means that local authorities are given the power to regulate on certain defined issues, to carry out some inspections and to issue licenses, while the central authority might retain only a broad policymaking role. The decentralization policy might also mean that legislating power remains with the central administration while enforcement of the legislation is entrusted to local authorities.¹⁷ Certain responsibilities, however, such as those to ensure coherence in efforts going across the administrative boundaries of local government, need to be retained by the central government, particularly in the case of forest fires (Contreras-Hermosilla *et al.*, 2008).

The legislation examined in the previous chapter provides some examples of sharing of forest management responsibilities between the central and the local level in federal states, such as Indonesia, Argentina and the United States, as well as in countries with other forms of decentralized structures, such as Senegal. In Senegal, for instance, the allocation of institutional responsibilities at the central and local level was clearly defined in legislation, with the Waters and Forests Agency responsible for supervising fire use and forest law enforcement, while regions are charged with the creation of fire brigades and the setting up of preventive measures and rural villages are called upon to put in place vigilance committees for fire suppression (Ch. 2.3.1 above). In Argentina, on the other hand, a national fire management plan clarified the institutional responsibilities at the national and regional levels, requiring the creation of regional centres for initial fire suppression activities and the development of regional fire management programmes (Ch. 2.3.3 above).

Pursuant to the Italian Constitution, the state has exclusive legislative power on a number of listed subjects, while legislative power is shared with the regions (which may legislate subject to general principles set out in state framework laws) on other listed subjects, which include the enhancement of environmental resources (art. 117). The 2000 Framework Law on Forest Fires of Italy comprehensively addresses respective responsibilities of the central and regional governments regarding prevention and fighting of forest fires. Every region must approve a plan for forest fire forecasting, prevention and fighting (*Piano regionale di previsione, prevenzione e lotta attiva contro gli incendi*), on the basis of guidelines and directives to be adopted by the Council of

¹⁷ Inspired by FAO LS 87.

Ministers, upon the proposal of the minister responsible for "Civil Protection". This minister may for this purpose request the assistance of the State Fire Guards and the State Forest Service and hear the opinion of the "*Conferenza unificata*", a permanently established body to coordinate relations between the central and regional governments (art. 3(1)).

Regional fire plans must include a specific section regarding regional protected areas. This section must be formulated in agreement with the protected area's management entity, after hearing the opinion of the State Forest Service (art. 8(1)). As regards national protected areas, a separate fire plan is formulated by the Ministry of Environment, in agreement with the concerned region, also after hearing the opinion of the State Forest Service (art. 8(2)). Fire forecasting and prevention activities in protected areas are a responsibility of the protected areas' management entities or, in the absence of these, of local authorities (art. 8(3)). Fire fighting in protected areas is subject to the general rules (art. 8(4)).

Italian local authorities within regions (*province, comuni, comunità montane*) are called upon to carry out whichever functions may be allocated to them by the regions regarding forecast and prevention of forest fires (art. 4(5)). Some regions have specified the local authorities' relevant functions in regional laws, as is the case of the Forestry Law of Tuscany (art. 70 *bis* and *ter*). Regions must also ensure coordination of ground fire fighting activities also with a view to facilitating aerial operations (sec. 7(4)).

Fire fighting with aerial means is granted and coordinated by the civil protection authorities at the central level with the state's fleet. Regions must organize the operation of their fire-fighting structure and staff, including aerial means, in coordination with the state's means and may receive assistance from:

- State Fire Guards and State Forest Service, on the basis of agreements;
- recognized volunteer groups with adequate capabilities;
- armed forces and police forces, upon request and where urgently necessary; and
- aerial means of other regions, on the basis of agreements (art. 7(3)).

In countries where fire management is the sole responsibility of states or provinces, such as Australia, inter-state cooperation agreements of federal regulations have been developed for border-crossing fire events and

emergency situations. In the Russian Federation and Spain support from national/federal authorities is provided regularly (FAO, 2007). According to the French Municipal Code (art. L.131-1), fire prevention actions should be taken by municipalities: mayors are responsible for municipal police, who has the duty to prevent accidents, calamities and all types of pollution, including fires.

In Austria, some forest fire-related competences have been transferred to the nine "*Länder*". The 1975 Forestry Act seeks to protect forest from forest fires at the national level by regulating the use of fire in forests and forest areas (art. 40) and by introducing preventive measures (art. 41). Concurrently, it empowers the federal states to regulate on reporting of forest fires, organization of forest fire fighting activities, forest fire control, on-the-spot fire fighting activities, post forest-fire arrangements and reimbursement of costs incurred for the forest fire fighting activities (art. 42). Thus, with the exception of preventive measures and rules on the use of fire, which are regulated by the central government, each individual federal state is responsible for laying down rules on forest fires.

By way of example, Austrian *Land* Tyrol adopted a Forestry Ordinance, which includes a chapter on forest fires. In line with the Ordinance, the Tyrolean Fire Authority Act (Chapters 6–8) and the Tyrolean Fire-Brigade Act (art. 23) apply in the event of forest fires, unless contrary to the Tyrolean Forestry Ordinance. The Ordinance also clarifies that mayors are responsible for managing forest fire actions (preparation and execution of forest fire resistance and forest fire fighting activities) falling under the competence of a municipality (art. 47(3)), whereas governors are responsible for managing forest fire actions (preparation and execution of forest fire resistance and forest fire fighting activities) falling under the competence of the government of a *Land* (art. 47(4)).

The Tyrolean Fire Authority Act and the Tyrolean Fire-Brigade Act organize the cooperation between municipalities, requiring them to assist neighbouring municipalities up to a distance of 20 km from their boundaries, or more if necessary (Tyrolean Fire Authority Act, art. 28) so long as the fire protection of their own municipality is not jeopardized (Tyrolean Fire-Brigade Act, art. 23(1)). Assistance must be provided by municipalities even beyond *Land* boundaries, on condition of reciprocity (Tyrolean Forestry Ordinance, art. 52(1) and (5)). The costs for assistance must be covered by the requesting municipality (Tyrolean Fire-Brigade Act, art. 23(1) and Tyrolean Forestry Ordinance, art. 51(2) and (3)).

In Canada, the responsibility for managing natural resources, including the management of forests and forest fires, rests primarily with the ten provinces and three territories (Constitution Act, 1867, Art. 92A(1)(b)). The Canadian central government is however responsible for fire management on federal lands and in national parks. More specifically, the Department of Natural Resources Canada is responsible for forest fire management on federal lands (Department of Natural Resources Act, 1994, sec. 5(a)), including Forest Experimental Areas (Forestry Act, 1985, sec. 6(c)) and the Department of Parks Canada for forest fire management in national parks (Canada National Park Act, 2000, sec. 16).

In Croatia, a shift from a centralized system to a decentralized system resulted in the transfer of responsibility for the maintenance (including financial responsibilities) of permanent fire brigades to local authorities and the responsibility for management and equipment supply of volunteer brigades to county administrations (Act on Fire Fighting, 2000). Municipalities are now charged to organize fire protection, prepare and monitor the execution of the fire protection plan (Act on Fire Protection, 2005, art. 3), although it has been noted that the Act ignored existing limited human, technical and financial capacities at the municipality level that are not likely to change in the short and medium-term (FAO case studies: Croatia). Funding issues to local authorities may be taken care of through legislation, at least to a certain extent. In the Russian Federation, for example, funds are provided from the federal budget for the implementation of delegated functions, on the basis of various criteria, which include fire danger indicators (Forest Code, art. 83(3) and (4); Ch. 2.3.5 above).

In the case of China, some responsibilities related to forest fires are expressly given to local authorities. Local governments must specify fire prevention periods, during which any fire "in the field in the forest area" is prohibited and may be authorized only under special circumstances by the county government or authorities authorized by the People's Government at the county level (art. 21). Local authorities must also build fire prevention facilities (art. 21(2)) and mobilize military and civilian population to fight fires (art. 21(3)).

(c) Inter-institutional coordination

As forest fire legislation does not exist in a vacuum but must be coordinated with legislation in other relevant areas,¹⁸ so forest fire authorities need to coordinate their activities with other line government agencies with related areas of work. Laws sometimes limit themselves to short or scant provisions on coordination, without prescribing coordinated planning or joint-decision making. There is therefore a need to *institutionalize coordination* with other public bodies and clarify how and when inter-institutional coordination should be sought. Although legislation is not the only means to achieve coordination, it can be a very useful instrument to facilitate it.

The National Fire Service Act of Belize of 2001 establishes and sets out the functions of the Fire Service, including the extinguishing of any fires occurring in any part of Belize (sec. 5(1)(a)). However, no particular reference is made in the Act to forest fires or to the relation of the Fire Service to the forestry administration as regards the prevention and fighting of fires. The same Act, nonetheless, envisages the possibility of "**special assistance arrangements**" between the Fire Service and any persons or organizations "maintaining or providing fire or emergency services, possibly specifying the type of assistance to be given to the Service in case of fire" (sec. 15(1)).

When the institutional set-up is particularly complex, the creation of a **permanent mechanism for coordination** and joint-decision making through legislation may be a useful option to ensure effective forest fire management. This would be in line with the recommendations of the *Fire Management Voluntary Guidelines*, which call for a coordinated approach to effective fire management in areas where multiple organizations and stakeholders have responsibilities and interests in the fire programme (Principle 9) and support the development of cooperative arrangements among various government agencies to mitigate transboundary impacts (Principle 10). Particularly important, in this respect, is also the obligation to develop a comprehensive, pre-fire-season cooperative agreement for coordination of the full range of activities. As was described in the previous chapter, Indonesia has set up a series of coordination bodies, such as a Judicial Coordination Team for Forests and Land Fires, the National Coordinating

¹⁸ See Chapter 2.2 above.

Board for Disaster Management and the National Coordination Team on Forest and Land Fire Control (Ch. 2.3.4 above).

Mexico, for example, established a group for interagency coordination to support fire management activities and ensure coordination of resources for the prevention, detection and suppression of fire (FAO, 2007). The United States created an "Incident Command System" as a group of different units that collectively provide a complete and systematised approach to firefighting (cooperation, common procedures and advanced planning) with representation from each member authority, at the federal, state or county level and possible urban level depending on the circumstances. The system functions in the pre-crisis period to set up coordinated responses, organize cooperation among neighbouring authorities and standardize methods (Bourrinet, 1992). In Portugal, a coordination system (*sistema de commando único*) is established under the Ministry of Internal Administration and comprises representatives of the Ministry of Agriculture, Fisheries and Forestry and of the Ministry of Environment and Land Management for support to decision-making and representatives of the national army for operational aspects (Resolution of the Council of Ministers No. 58/2005, art. 2).

Similarly to Argentina (Ch. 2.3.3 above), in Peru inter-institutional coordination is ensured by the National System of Prevention and Control of Forest Fires, which is formed by the following bodies: the National Institute for Natural Resources, the Ministry of Education, the Ministry of Internal Affairs, the Ministry of Defence, the National Institute of Agricultural Research, the National Service of Agricultural Health, the National Institute of Civil Defence, the General Firemen Body, Regional Agricultural Offices, local governments, Forest Management Committees and civil society (Forestry and Wildlife Regulations, 2001, art. 28.1). The responsibilities of each participant in the National Systems are detailed in the National Plan for Preventing and Controlling Forest Fires (Forest and Wildlife Law, 2000 arts. 4 and 16) in relation to: diagnosis, strategies and coordination mechanisms; prevention, control and monitoring systems; education and communication, training, damage assessment, restoration, research and funding (Forestry and Wildlife Regulations, 2001, art. 28.3).

The Bushfires Act of the Northern Territory of Australia establishes a Bushfires Council of at least nine members to advise the minister on the prevention and control of bushfires (secs. 6–9). There are, however, no particular requirements in the Act regarding composition of the council. The

minister may also declare fire control regions (sec. 10) and a Regional Bushfires Committee is to be established for every fire control region to advise the council and prevent and control bushfires in the region (secs. 12 and 15). The creation of specific bodies to deal with forest fires or bushfires, however, does not seem to be a common arrangement.

In other instances, laws may simply **explicitly regulate** how cooperation should be carried out by different authorities with reference to different tasks. The law can indeed provide mechanisms for exchange of information and data regarding forest fires, which help anticipate situations of fire risk and facilitate rapid response (FAO case studies: Bulgaria). For example, in Bulgaria, specific provisions call for coordination between the state forestry department director with road police to determine the type and location of prohibition signs and for the introduction of temporary prohibitions during the fire season on the use of the forest roads. In addition, the director of the state forestry department is to coordinate with the chief of the regional service for fire and accident safety (Ordinance No. 4 on Conditions and Order for Putting of Prohibitive Signs on Forest Roads and Places in the Forest Fund and for Determining their Models, 2004, arts. 7(1) and 9). In Cuba, the Ministry of Internal Affairs, the Ministry of Agriculture and the National Council for National Defence are specifically tasked to coordinate their inputs into the national programme on forest fires (Forestry Law No. 85, 1998, art. 60).

In a different case, in Cape Verde, legislation does not mention specifically any form of cooperation (or specific mandates) with reference to forest fire prevention and suppression, but certain forms of cooperation are being implemented spontaneously. The role of legislation to institutionalize these arrangements is still considered indispensable, to ensure certainty among operators and users and to establish clear procedures (FAO case studies: Cape Verde).

Overall, legislation can therefore utilize different tools to strengthen inter-institutional coordination, namely:

1. creating specific obligations on information sharing, prior consultation or joint decision-making/action among specific institutions;
2. calling for the conclusion of agreements to this effect; and
3. establishing a permanent forum for inter-institutional coordination and cooperation.

Coordination among authorities or different levels of government may also be strengthened by initiatives which may be formally established although not necessarily consisting of legal provisions, as happens in Canada both at the central and at the provincial level. The Canadian Forest Service (www.nrcan-rncan.gc.ca), within the governmental Department of Natural Resources, is responsible, *inter alia*, for the management of federal lands. The Service conducts research on forest fires since the 1920s and developed an information system (Canadian Wildland Fire Information System) which is utilized by the provinces and territories as the basis for forest policy decisions. The Canadian Interagency Forest Fire Centre (CIFFC) (www.cifffc.ca) is a non-profit federally incorporated organization created in June 1982 at the initiative of the Canadian Council of Forest Ministers (CCFM) [then: Canadian Council of Resource and Environment Ministers]. Its mandate, set out in the 1983 Canadian Interagency Forest Fire Centre Operating Agreement, articles of incorporation and associated by-laws, includes:

- (a) resource sharing: facilitating the exchange of forest or wildland fire fighting resources (personnel, equipment and aircraft), which led to the conclusion of the Canadian Interagency Mutual Aid Resources Sharing Agreement on 14 September 1983;
- (b) information: gathering and exchanging fire management data and information;
- (c) standardization: facilitating the development of national standards and specifications for the same forest fire resources; and,
- (d) analysis and discussion.

3.3 Planning, monitoring and assessment

The FAO 2006 global overview of forest fires underscores the importance of national fire management plans to cover all aspects of forest fire management and reconcile intersectoral considerations (FAO, 2007). Fire management plans are defined as a statement for a specific area of fire policy and prescribed action, as well as a systematic, technologic and administrative management process of determining the organization, facilities, resources and procedures required to protect people, property and forest areas from fire and to use fire to accomplish forest management and other land use objectives (FAO, 2007).

Fire management plans do not determine the use or designation of an area, but rather set out activities and procedures that will be used to fulfil the legislative, institutional and individual mandates. They are essential tools to take into account the role of fire, the need for protection and impact of fire on adjacent areas, communities and civilians and basically for spelling out clearly the objectives of fire management in a certain area. It is possible to develop individual plans for selected aspects of fire management (a prevention plan or a plan for use of planned fire). The process through which these plans are prepared is also very important to determine who will assume the lead role and duties in advance of the occurrence of fire. This should be coupled with a system of monitoring and evaluation, including a feedback process for amending or adapting the plans based on evaluations or changing conditions. Allocation of resources should be based on the probability of ignition and expected fire behaviour, balancing the costs of fire prevention, preparedness and suppression (FAO Guidelines).

Fire management planning should be undertaken through a participatory process (FAO Guidelines). This is in line with general international principles on sustainable management. The assumption is that greater public participation can improve the quality of decisions, increase the public's respect for those decisions and enhance public perception of government. Even when public participation provisions exist in the law, however, these may be very difficult to apply in practice because they have been framed in very general terms, without a guaranteed and specified process for their fulfilment.

Fire management plans should pay special attention to fires in protected areas, certain ecological considerations such as impact of suppress actions on the environment and the role of fire in the ecosystem and cultural practices (FAO Guidelines), as well as to the interaction of climate change with vegetation cover and fire regimes. The possibility to modify management plans and policies to take into account observed and anticipated changes in fuel and vegetation type, burning conditions and additional fire risk as a result of climate change should also be provided for (FAO Guidelines). This should be based on a comprehensive plan for monitoring and assessing all aspects of the implementation of fire management programmes (FAO Guidelines).

Legislation can ensure that the obligation to prepare fire management plans is clearly allocated, together with an indication of minimum contents and

periodicity. The procedure for fire management planning could also be detailed in legislation, with a view to including specific opportunities for public participation. Furthermore, the legal framework can establish the obligation for those preparing fire management plans to take into account the plans of other sectors and could include provisions for conflict resolution (FAO, 2007). In addition, legislation could establish the legal consequences of these plans, such as limits to the property rights over forest areas and adjacent areas in light of the provisions of the plans, as well as the obligation for other general or sectoral planning exercises to integrate certain provisions of the fire management plan concerning the same areas.

The analysis made in the previous chapter already shows some examples of legislation regarding fire management planning, although relevant requirements are not particularly specific. In Argentina, a National Fire Management Plan is to be adopted (Ch. 2.3.3 above) and the Chubut Forest Law specifically requires fire plans at various territorial levels (Ch. 2.3.3 above). In Senegal, the principal forestry legislation does not specify whether the main forest plan should address forest fires, but plans referred to in other laws may include forest fire-related measures (Ch. 2.3.1 above). In the Russian Federation, the general provisions on forest management planning do not address fires, but holders of leased forests must adopt fire-fighting plans (Ch. 2.3.5(b) above). In the United States, communities that have adopted a community wildfire protection plan, whose contents are specified and which is to be agreed to by all concerned public and private parties, are to be given priority in the allocation of funds for hazardous fuel reduction projects (Ch. 2.3.6 above).

Overall, legislation may take different approaches to forest fire management plans by providing for:

1. plans with different geographical coverage (national, local/regional, area-specific);
2. plans with different scope (forest fire management as a whole, only suppression or prevention, or contingency); and
3. different entity required to prepare the plan (central public authorities, local administration, communities, landowners or holders of forest concessions).

French legislation has long established the need to integrate forest fire management plans into **zoning policies and land use planning**, as well as

providing for plans specific to forest fires-prone zones to be adopted by general and regional councils in consultation with affected communities. The plans are then to be taken into account when municipalities issue land occupancy permits (Bourrinet, 1992).

In Portugal, planning is regulated in detail: a **national plan** for the prevention of and protection of forests against, forest fires is a pluri-annual, inter-ministerial plan, to be validated each year and to include policy and measures related to prevention, awareness raising, monitoring, detection, suppression, research, development, coordination and training, with a view to identifying objectives, timelines, financial resources and implementation indicators (Decree-Law No. 156/2004, art. 4). In addition, nation-wide zoning is elaborated to identify areas with higher likelihood of forest fire occurrence (art. 6) and on this basis municipal or inter-municipal plans for forest protection against fire are formulated by municipal committees, in accordance with the national plan and with the regional forest management plan, to ensure proper coordination in preparation and for the extinction of forest fires (art. 8). **Critical areas** to be covered by specific regional plans for forest management are also to be identified by an order of the ministry when the priority need for stricter protective measures is recognized, on the basis of their economic, social or ecological functions (art. 7). Furthermore, a contingency plan should also be prepared for highest-risk situations outside fire season (Resolution of the Council of Ministers No. 58/2005, art. 1(iv)); a common action plan should form the basis for inter-institutional coordination among the National Forest Guard, the Judicial Police, the national army and the institute for environmental protection (art. 1(d)(i)); and a plan for the professional training of those involved in fire fighting and fire use control is also called for (art. 2(h)).

The Italian Framework Law on Forest Fires also includes rather detailed requirements on **regional fire management plans**, which must include:

- (a) factors determining or facilitating forest fires;
- (b) a map of areas hit by fires in the previous year;
- (c) fire hazard areas, with maps and description of prevailing vegetation;
- (d) fire hazard periods, with information regarding winds;
- (e) fire danger rating, based on all relevant quantifiable factors;
- (f) actions which cause or potentially cause fire in the fire hazard areas and periods referred to under (c) and (d);

- (g) action to be taken for the forecast and prevention of forest fires, including satellite monitoring;
- (h) available means and human resources and procedures for fire fighting;
- (i) location and conditions of existing access ways, firebreaks and adequate water sources;
- (l) necessary silvicultural activities, with possibility of taking action for land owners who do not comply with applicable requirements;
- (m) training requirements and related plans;
- (n) information and extension activities; and
- (o) financial requirements for the implementation of the plan (art. 3(3)).

Plans must be adopted by every region within 150 days from the adoption of the relevant guidelines and directives by the Council of Ministers and must be updated every year (art. 3(2) and (3)). In case regions do not comply with these requirements, the minister responsible for civil protection may take emergency action to extinguish forest fires, with the assistance of the State Forest Service and the National Fire Guards (art. 3(4)). The law adopted by the Basilicata Region to implement the national framework law on fires requires the regional fire management plan to be revised every three years and to be implemented through annual fire plans (art. 2).

The identification of areas requiring particular protection against fires is done prior to the adoption of fire plans in Belize, where pursuant to the Forest Fire Protection Act the minister may declare any area to be a "**fire protection area**". A fire protection plan must then be prepared for every fire protection area within six months from its declaration by the forestry administration. The plan is to be "confined to such measures as in the opinion of the minister may be necessary for the prevention of forest fires or bush fires and the suppression of such fires and may include provisions for the building of fire lines, roads, bridges, fire towers or lookouts, telephone systems and the supply of vehicles and equipment for fire fighting [...] and men employed". The plan may include time limits for the completion of specified works or activities (sec. 2). Once approved by the minister, the plan is to be notified to concerned landowners, who are bound by its contents (sec. 5) and must carry out the plan's prescriptions at their own expense (sec. 6). Landowners have a right of appeal to the minister against the prescriptions of the plan (sec. 7). The plan's prescriptions may also be

carried out at the administration's expense, in which case the administration is not responsible for any damage which may result (sec. 10).

Among the functions to be performed by Fire Protection Associations created by land owners in South Africa are the development and implementation of a **veldfire management strategy** for their area (National Veld and Forest Fire Act, sec. 5).

In Brazil, a **programme** for the prevention and control of forest fire was provided for, with a view to identifying areas with higher risk of forest fire occurrence, monitoring the use of fire and informing producers and rural communities about the risks of forest fires, as well as for institutional coordination (Decree No. 2959, 10 February 1999, art. 3). In Peru, legislation clarifies that the National Plan for Preventing and Controlling Forest Fires should include: a diagnosis of causes and environmental impacts of forest fires; coordination mechanisms; prevention, supervision and control systems in critical areas; education and communication campaigns for preventing and controlling forest fires; an annual workplan; follow-up, monitoring and evaluation (Forestry and Wildlife Regulations, 2001, art. 28.4).

In Cape Verde, the lack of legal basis for the elaboration of a national forest fire plan is felt as a serious obstacle to the implementation of forest fire management, which prompted the authorities to undertake the revision of the existing legislation. This is further exemplified by the fact that the Forest Code did not specifically include forest fires among the issues to be addressed by forest protection measures in forest management plans (Law No. 48/V/98, arts. 9–11).

In New Zealand, pursuant to the Forest and Rural Fires Act, every Fire Authority of a district must adopt a "fire plan" (defined in sec. 2 as a **statement defining policy, chain of command and procedure**, in relation to fire control by that Authority (sec. 12)). The Forest and Rural Fires Regulations set out numerous details in this regard, requiring the plans to devise the policies and procedures of the Fire Authority under the following headings:

- (a) Reduction: policies and procedures to reduce the likelihood and consequences of fires, including fire hazard and fire risk management, fire prevention planning, public education, directions to people on the use of fire as a land management tool, details of

forest areas and safety margins, relation to other policy statements or regional or district plans;

- (b) Readiness: policies and procedures in relation to readiness for a fire-fighting event, including maps, roads, Fire Authorities' responsibilities and chain of command, names of Rural Fire Officers or Fire Authority, agencies available for assistance, available equipment and staff, details of the fire season status trigger points for the district and of the trigger points for imposing restricted access or for closing access into any exotic forest, following consultation with land holders, details of fire breaks and other protection works the way in which the Fire Authority implements the New Zealand Fire Danger Rating System;
- (c) Response: policies and procedures for responding to a fire, including how the Fire Authority receives and deals with calls for assistance, the chain of command and control at a fire, logistical support; and
- (d) Recovery: policies and procedures for activities the Fire Authority undertakes following a fire event, including health and safety of personnel, fire operational reviews and post-fire investigations (reg. 39).

A Fire Authority must review the fire plan at least every two years in relation to the matters contained under the headings "Readiness" and "Response" and at least every five years in relation to the matters contained under the headings "Reduction" and "Recovery" (reg. 40(1)).

In Algeria, the Forest Fire Fighting Decree establishes that the organization of forest fire fighting activities in national forests is subject to a **forest fire plan at the local level** (arts. 2 and 5), with a view to reducing risk and coordinating fire fighting. Its contents are listed in detail, including awareness raising campaigns, preventive measures and their expected impact, maps showing existing watchposts, equipment, road and rail networks, water points, firebreaks, area of action and capability of fire brigades and civil protection staff, organization of volunteers and contact details of relevant forest protection commissions members of the "*wilaya*" (art. 3). Detailed provisions are included regarding approval of the plans by authorities at various territorial levels. Plans including all communal plans are to be adopted also at the *wilaya* level (art. 6). The forest fire plan must be updated

annually (art. 10). In addition to the general forest fire plan, Law No. 03-10 on the protection of the environment introduces a major risk plan, which must contain a monitoring and alert system at national, local (metropolitan area, town and village) and site level, with simulation programmes (arts. 16–20). Forest fire plans must also classify forest zones on the basis of risk posed to cities (art. 29), determining applicable measures accordingly (arts. 30 and 31). Furthermore, Law No. 04-20 creates a catastrophe management system for forest fires, including complementary emergency and intervention plans and structural measures (arts. 50–55 and 58). The Forest Fire Prevention Decree makes specific provisions for areas declared as particularly sensitive by the minister, being areas in which fires, their frequency, their gravity and/or their consequences are of such a scale that the public security is compromised or the soil or tree population is threatened by degradation. These areas must be mapped yearly and specific rules must be set out by the minister, if necessary prohibiting any activities which may cause fires (art. 18).

In Cuba, the legislation provides, besides a national programme on forest fires (Cuba Forestry Law of 1998, art. 60), also for **forest managers' or forest owners' plans** for protection against forest fires ("*planes de protección contra incendios forestales*") to be developed according to the methodology established by forest guards (Forestry Regulations, 1999).

3.4 Prevention and preparedness, detection and early warning and suppression

Fire prevention may be "the most cost-effective and efficient mitigation programme an agency or community can implement" (FAO Guidelines): it applies to human-caused ignitions and requires a combination of community education, effective prevention programmes and enforcement of laws or regulations. Planned fires should be included as a component of fire prevention (Ch. 3.6 below). Fire preparedness covers detection and response to fires through training, equipping and staffing prior to the start of a fire, taking into account year-to-year variations in funding, weather and human activities with safety considerations for both fire-fighters and the public as a key component (FAO Guidelines). Notwithstanding such critical importance for effective fire management, according to the FAO global overview, the relative neglect for fire prevention activities was documented by the limited budget allocations as opposed to those for fire suppression (FAO, 2007).

Legislation can play a role in creating a clear enabling environment for forest fire prevention, by setting fire seasons, institutionalizing certain pre-season activities, establishing an early-warning system and its legal consequences, prohibit certain dangerous activities and providing certain preventive rules on fuel management.

3.4.1 Fire seasons

"Fire seasons" are periods of the year in which fires are likely to occur and affect resources sufficiently to warrant organized fire management activities. They can be legally enacted time periods during which burning activities are regulated by the state or local authority (FAO Guidelines).

The majority of laws envisage stricter fire prevention requirements during certain fire seasons, which may either be permanently established or required to be declared or modified as necessary. In some of the legislation examined in the previous chapter (e.g. Senegal Ch. 2.3.1 above; and Indonesia, Ch. 2.3.4 above), the concepts of dry and wet season are referred to for the purpose of determining seasonal fire-related requirements. In New Zealand, the National Rural Fire Authority may establish restricted or prohibited fire seasons by notice in the Gazette and any Fire Authority may do the same in relation to its district by notice in a newspaper (Forest and Rural Fires Act, sec. 22).

Victoria distinguishes between "Fire Danger Periods" and "Prohibited Periods", which apply to different areas. The former are declared by the Country Fire Authority when the risk of bushfires is high due to hot weather and dry vegetation in the "Country area of Victoria" (i.e. the part outside the metropolitan fire district but not including forest, national parks or protected public lands). During Fire Danger Periods, permits from municipalities are required to burn rubbish or vegetation (Country Fire Authority Regulations, 2004, regs. 106 and 107). Prohibited Periods are declared by "the minister" (Department of Sustainability and Environment) and apply to private land within 1.5 km of a park, forest or public land in specified parts of Victoria. During Prohibited Periods, permits are required from the Department of Sustainability and Environment to light any fires except campfires (Forest Act, secs. 3 and 62 and Forests (Fire Protection) Regulations, 2004, reg. 7). Fire restrictions are in force year-round in state forests and national parks. "Total fire ban days" may be declared by the Country Fire Authority in consultation with the Department of Sustainability and Environment when the risk of fire is extremely high (Country Fire Authority Act, sec. 40).

The legislation of Italian regions frequently sets out requirements regarding fire seasons, taking into account also agricultural fires' needs. The Law of Basilicata, for example, specifies the times of the day and of the year at which the burning of stubble may be allowed and requirements for prior notification to the State Forest Service (art. 9).

In South Africa, when the fire danger is rated as high under the official fire risk rating system in any region, the minister must publish a warning in all the main languages spoken in that region on three TV channels, three radio stations and two newspapers prohibiting lighting, using and maintaining fires in the open air for a specified period (National Veld and Forest Fire Act, sec. 10). In Algeria, a number of preventive measures (*campagne de protection des forêts contre les incendies*) apply specifically during the fire season, which is determined by Decree of the *Wali* and typically goes from 1 June to 31 October (Forest Fire Fighting Decree, art. 13).

In the Canadian Province of Alberta and Ontario, the fire season covers the period from 1 April to 31 October and may be extended or shortened by the minister (Alberta Forest and Prairie Protection Act, sec. 17(1) and (2); Ontario Forest Fires Prevention Act, secs. 10 and 37(1)). In Bulgaria, the chief of the National Forest Department is to annually determine the forest fire season by an order (Regulations for Implementation of the Law on Forests, 1998, art. 121(1)). It was noted, however, that given the possible effects on forest owners' and users' rights, an order by the minister, who has general authority to ensure the fulfilment of the Forest Law, would be more appropriate (FAO case studies: Bulgaria).

In Portugal, a "critical period" is fixed between 1 July and 30 September, but it may be altered in the face of exceptional meteorological circumstances by decision of the Ministry of Agriculture (Law-Decree No. 156/2004, art. 3(f)). The legal consequences of the "critical period" are clearly established in legislation as conditions to access to, circulation within and permanence in forests (art. 10).

3.4.2 Pre-fire-season activities

It has already been mentioned that the *Fire Management Voluntary Guidelines* point to the possibility to enter into formal agreements to provide a clear understanding of the role and responsibility of all partners as a pre-fire-season activity (FAO Guidelines). Other options include annual pre-fire

season meetings to review the agreement or other cooperation arrangement and discuss changes and improvements to the annual operational plan (FAO Guidelines). In addition, the conclusion of arrangements with land owners, if access through their property might be required for fire prevention and fire detection may be anticipated (FAO Guidelines), can be provided by law.

In other instances, legislation may provide more specific measures for pre-fire-season activities. Provisions regarding the creation of **firebreaks**, for example, are quite common. In New Zealand, holders of land where exotic trees are being grown for timber production may be required to make firebreaks by the Fire Authority of the District and to keep them clear and must maintain at least two safe alternative through routes for escaping in case of fire (sec. 27). In Algeria, before 1 June of every year, farmers must establish fire breaks that are 5 metres in width and free from all vegetation and inflammable material around agricultural plots situated inside of or within a radius of 500 metres of a national forest area and which present a risk of fire (Decree on Fire Prevention in the National Forest Area and its Proximity, art. 26).

In South Africa, owners from whose land veldfires may start or burn must prepare firebreaks. In case the firebreak is to be created or maintained by burning, an agreement must be made with owners of adjoining land and if no agreement is reached, an owner must proceed in accordance with a specified procedure, notifying owners of adjoining land of the date of burning (National Veld and Forest Fire Act, sec. 12). A firebreak must be wide enough and long enough to prevent fire from spreading to or from neighbouring land, must not cause erosion and be reasonably free from inflammable material (sec. 13). Belize requires the creation of a "firetrace" of a specified size (not less than the average height of vegetation before it was cut and in any case not less than six feet) before any vegetation is burned (Burning of Vegetation Rules, rule 2(a)). The firetrace must be cleared of debris so as to be fireproof before the 31st of March of every year (rule 2(b)).

Similarly, the law may allow **tree cutting** associated with the creation of anti-fire clearings, even in protected forests (Uzbekistan, Forest Law, 1999, art. 26). In Cameroon, a regulation establishes the obligation to adopt a forest fire surveillance system in all forests under management (Decree setting out rules of implementation of the forestry regime, art. 8(2)). If certain activities for forest fire prevention that are specified in the management plan or in the concession are not undertaken by forest owners or concessionaries, the forest

authority may undertake them at the expenses of owners and concession holders (Decree of 23 August 1995, art. 8(3)).

The Italian Law on Forest Fires requires regions to address both **forecasting** activities (i.e. activities aiming at the identification of fire hazard areas and periods and fire risk rating) and prevention activities (i.e. surveillance and appropriate silvicultural works) (art. 4(1) and (2)). Seasonal staff to be involved in fire-fighting must be hired adequately in advance of fire hazard seasons and preference must be given to trained persons. Rewards may be envisaged on the basis of decreased fire incidence (art. 7(6)).

In Algeria, the Forest Fire Prevention Decree No. 87-44 requires the technical services in charge of the forests to **review** the Decree's preventive measures on an annual basis in the month preceding the beginning of the fire season (art. 8).

3.4.3 Prohibited activities and prescriptions

Traditionally, legislation has provided a series of prohibitions and prescriptions as preventive measures to avoid forest fires. Usually, these prohibitions concern potentially dangerous activities undertaken in proximity of forests, so the law typically identifies the distance from the forest that qualifies areas as adjacent to forests. In addition, certain prohibitions can only apply during the fire season (Ch. 3.4.1 above) or under certain emergency circumstances to be determined on a case-by-case basis by administrative acts. For activities that are considered less risky, the law may envisage the requirement to obtain a permit rather than a complete prohibition. In the previous chapter, specific prohibitions have been identified in the legislation of the State of Michigan, United States (Ch. 2.3.6 above) and in that of Indonesia (Ch. 2.3.4 above). It has also already been underscored that in the Russian Federation a programme is developed to address organization and funding issues related to prevention over a period of six years (Ch. 2.3.5 above).

Further examples that could be cited are numerous. In Morocco, for instance, the burning of undergrowth, grass and thatch on lands located less than 4 km away from forests is prohibited from 1 July to 31 October (Decree, 1918, art. 4). In Cyprus lighting a fire in a forest or less than 1 km away from a forest is prohibited year round (Forest Law, sec. 13). In France lighting fires on third parties' private lands within woods or at less than 200 metres' distance from woods is prohibited (Forest Code, sec. LL322-10). A common prohibition

concerns the use of fire in protected areas (Benin, Law No. 87-014 Regulating Nature Protection and Hunting, art. 12; Burkina Faso, Forestry Code, art. 88).

Provisions envisaging the establishment of areas where certain activities are prohibited or regulated, whether for specified periods or permanently, are also quite common. Under the Bushfires Act of the Northern Territory of Australia, for example, the minister may declare any land to be a fire protection zone (sec. 33), within which the minister may require or prohibit any act if necessary for protection from bushfires (sec. 34) and the lighting of any fire is generally prohibited except under a permit (sec. 35). The minister may also declare fire danger areas to which declarations of fire danger periods apply (sec. 37).

In New Zealand, where the National Rural Fire Officer has broadcast a warning or given any person a warning of extreme fire hazard, the lighting of fires in the open air in the concerned area is completely prohibited. The Principal Fire Officer of any district may, in case of conditions of extreme fire hazard, issue orders prohibiting the lighting of fires or any recreational, commercial or other activities (sec. 21). Setting fire to vegetation or any material in registered forest areas (sec. 17) even in open seasons requires a permit issued by a fire officer for the district (sec. 23(1)(a)(ii)). In general, a fire permit may be invalid during periods of strong winds blowing or when conditions are such that the fire is likely to spread beyond the limits of the area in relation to which the permit was issued (sec. 23(3)(a)) or when an extreme fire hazard warning has been issued (sec. 23(3)(b)(i)).

Pursuant to the Forest Fire Protection Act of Belize, the minister may also declare any part of Belize to be a "controlled area", into which access is prohibited except upon written authorization of the Chief Forest Officer, for periods up to six months, subject to any specified conditions (sec. 13(1)–(4)). A right of appeal to the minister is given to any person who has been refused an authorization to enter a controlled area and with respect to conditions set out in the authorization (sec. 13(5)).

In Cuba, explicit prohibitions regard burning waste within or near a forest, or setting a fire within 200 metres from rivers, lakes or wetlands (Instructions of the Chief Forest Guard regarding rules and administrative procedures for the utilization of fire in forests and neighbouring areas, 2003). The Fire Protection Associations of South Africa may adopt rules which bind their members regarding minimum standards and controlled burning,

provision of services, organization and training of members, submission of data to the minister and appointment of a fire protection officer (National Veld and Forest Fire Act, sec. 5).

According to the Forest Fires Prevention Act of Ontario, the Lieutenant Governor in Council may make regulations declaring fire regions with all applicable conditions and setting out rules on permits and precautions to be taken by persons respectively involved in various classes of activities (sec. 36). The Minister for Natural Resources may make orders to declare fire seasons and restricted fire zones or restricted travel zones (sec. 37).

Other measures may concern the regulation of **access to forests**: for instance, through the identification of all vehicles entering a forest by their number plate, or by allowing only certain individuals to use forest roads and making them responsible for surveillance and fire fighting. In Cyprus, this is done by empowering the Director of Forests to prohibit or regulate access to forest roads (Forest Regulations, reg. 25). In the Canadian province of Alberta, the minister may issue closure orders in relation to any land, prohibiting public entry, where burning hazard warrants the closure (Forest and Prairie Protection Act, sec. 14(1)).

Other measures may create limitations to building in areas that are prone to forest fire risks, or prohibit smoking or carrying matches or inflammable materials in exceptionally risk-prone areas (Bourrinet, 1992). In Morocco, for example, an authorization from the Forest Service is requested for **constructing** industrial buildings, in which fire is used or inflammable materials deposited, inside of or at less than 500 metres distance from a state-owned forest (Royal Decree on the Conservation and Exploitation of Forests, 1917, art. 52). With the exception of already existing agglomerations, constructions built or covered with inflammable materials may not be established inside or less than 100 metres distance from a state-owned forest (art. 53), unless in exceptional circumstances when the chief of the administration of waters and forests will determine the precautions to be observed (arts. 52 and 53).

Other preventive measures apply to **railways or roads** crossing or bordering forested areas, as has already been highlighted in the case of Senegal (Ch. 2.3.1 above). In Morocco, railway companies must carry out weeding work along railways that are built within forests or at less than 200 metres from the forest, during the June–November period. Where considered

necessary by common agreement of the Department for Public Works, the Department for Military Rails and the Service for Forests and Waters, the companies must, at their expense, set up and maintain fire breaks for certain sections of the railway (Decree on the measures to be taken to prevent forest fires, 1918, art. 3).

Similarly, in Algeria railway net operators must, before the 1 June of every year, clear an area of at least five metres parallel to the rails crossing the national forest area (Decree on Fire Prevention in the National Forest Area and its Proximity, art. 24). In addition, local communities must, before 1 June of every year, clear a width of five metres on both sides of the road and any other passageway situated inside or within 500 metres of a national forest area (art. 25).

Furthermore, in Morocco, the use of rolls, tractors and any other form of steam-run vehicles on roads crossing through or within the radius of 200 metres of a forest requires the authorization by the Department for Public Works, taken after consultation with the Waters and Forests Service on precautionary measures (Decree on the Measures to be Taken to Prevent Forest Fires, 1918, art. 3).

Specific requirements are imposed by the Forest and Prairie Protection Act of the Canadian Province of Alberta on industrial and commercial operators (arts. 24–27), with more specific rules on operators of millsites and pipelines (Forest and Prairie Protection Regulations, secs. 11–13).

Finally, **hunting** legislation may establish prohibitions with a view to preventing forest fires. In certain countries, hunting laws explicitly prohibit to use fire for hunting wild animals (Benin, Law regulating Nature Protection and Hunting, art. 13b; Burkina Faso, Forestry Code, arts. 52 and 131; and Cuba, Instructions of the Chief Forest Guard Regarding Rules and Administrative Procedures for the Utilization of Fire in Forests and Neighbouring Areas, 2003). In others, using fire for hunting purposes is subject to a specific authorization (Cameroon, Law on the Forestry Regime, art. 80).

3.4.4 Fire danger rating and early warning systems

Systems to determine the level of fire danger and provide early warning of the potential for serious fires are critical to identify periods of extreme fire

danger in advance and are more effective if based on the active involvement of local communities in collecting fire-weather information and disseminating warnings (FAO Guidelines). These systems are a vital component of fire management that integrate the effects of selected fire danger factors into one or more qualitative or numerical indices of current protection needs (FAO Guidelines). Indeed, according to the FAO Global assessment, early warning and fire danger rating systems are increasingly being used to give advance notice of periods of high fire risk (FAO, 2007).

The law may be useful to institutionalize these systems and to clarify their legal implications. For example, in France, forest fire risk is integrated in the land occupation plan, according to the Urban Planning Code (Law 95-101, 1995). The identification of areas directly exposed to fire risk, areas where certain land uses or occupation could worsen the risk or create new risks is used to regulate new constructions projects and define preventive measures for existing buildings. Such risk identification is three-fold: "red" where all new constructions are prohibited unless in few exceptional cases; "blue" where new constructions can be authorized under certain conditions; and "white" where there are no constraints to urban developments (Bourrinet, 1992).

In Portugal, the agency for the prevention of forest fires is responsible for setting a daily forest fire risk rating (reduced, moderate, high, very high and extreme – Law-Decree No. 156/2004, art. 5). Legislation also details the legal consequences of the different ratings, specifying limitations to the permitted use of fire when the fire risk is high or more (art. 20) and to the access to forests (art. 10).

Pursuant to the National Veld and Forest Fire Act of South Africa, a fire danger rating system is to be established by the minister, taking into account factors such as topography, type of vegetation, seasonal climatic cycle, typical, recent current and forecasted weather conditions, by incorporating formulae needed to rate fire danger and by rating fire risk by regions, identifying precautions to be taken accordingly and areas of high risk (sec. 9).

Among the measures to be taken by Rural Fire Authorities in New Zealand are the observation of weather and other conditions and the assessment of fire hazard (sec. 18(1)). In Italy, fire danger rating is part of the required contents of regional fire management plans (Framework Law on Forest Fires, art. 3(3)).

3.4.5 Fuel management

Fuel is the only factor that can be modified in advance as a part of fire prevention or pre-suppression activities aiming at reducing wild land fire hazard (Bourrinet, 1992). "Fuel" is all combustible organic material in forests and other vegetation types, including agricultural biomass, infrastructure in rural and urban areas, which create heat during the combustion process (FAO Guidelines). All methods of fuel treatment and alternation for fire risk reduction, community protection, ecosystem restoration and debris removal following logging should be planned and implemented in full consideration of the potential to change fire intensity, spread and potential damage adjacent to fire-prone vegetation, around habitations, etc. (FAO Guidelines).

Legislation has sometimes provided obligations related to fuel management, such as mandatory clearing of brushwood in areas prone to forest fires. In Morocco, for instance, buildings, houses and construction sites located in a forest or at less than 200 metres from the forest have to be surrounded with a trench of 25 metres without vegetation (Royal Decree on the Conservation and Exploitation of Forests, 1917, art. 46 and implemented by Order, 1918, art. 1).

In Bulgaria, the felling grounds must be cleaned by burning of the wastes produced by felling operations, whereas cleaning of felling grounds during the fire dangerous season is prohibited (Regulations for Implementation of the Law on Forests, 1998, art. 96(16)).

In Algeria, to discharge, dispose of or abandon any object susceptible of provoking fires in forest areas is prohibited (Forest Law, art. 24) and materials lawfully discharged inside or within a radius of 500 metres from the national forest area must be surrounded by a fire break of 50 metres (Forest Fire Prevention Decree, art. 15). Pursuant to the Forest Fires Prevention Act of the Canadian Province of Ontario, camps, mines, timber mills and garbage dumps situated within 300 metres of a forest or woodland must keep an area of at least 30 metres cleared of inflammable debris (sec. 17).

In Uzbekistan, those dealing with forest trees felling, irrespectively of the methods and felling time, are obliged to carry out cleaning of felling debris at the felling sites concurrently with logging (Resolution No. 506 of the Cabinet of Ministers on rules of fire safety). In Cameroon, forest officers are to take the initiative of incinerating grass around classified forests so as to prevent forest fires (Law No. 11/2002, art. 62).

In the United States, legislation provides for the allocation of funding to authorized hazardous fuel reduction projects on specified types of land (Ch. 2.3.6 above). Other legal options include: the obligation for legal owners, occupiers or administrative authorities to undertake brush management activities, or to establish the duty for brush clearing to be conducted under the supervision of certain authorities, or to allow local communities to satisfy their firewood needs with a view to clearing fuel (Bourrinet, 1992).

Overall, a pragmatic approach should be preferred. Establishing a precise legal framework in this specific regard should be avoided, as it would be difficult to adapt to the realities of the natural landscape and changing circumstances (Bourrinet, 1992). Requirements to be progressively adapted, however, could be part of fire management plans. Where legislation sets out the required contents of such plans in some detail, fuel management could be included among such contents.

3.4.6 Suppression

Legislation frequently includes details on how fire fighting must be organized by responsible entities. The 1987 Forest Fire Fighting Decree of Algeria requires fire fighting, once a fire has been declared, to be done in accordance with the forest fire plan (art. 18). First interventions must be carried out by the mobile fire brigades of the local services responsible for the forests, which may, where necessary, request support from the civil protection unit and the next superior operational committee (arts. 19 and 20). If the dimensions of a fire exceed the capacities of a *wilaya*, the president of the forest protection commission of a *wilaya* must inform the president of the national forest protection commission; the latter then gathers all supplementary means (art. 21). The *wali* or the *wali's* representative may request support from the national army (art. 25).

In Austria, fire suppression is regulated by each individual *Land*. In the Tyrol, the preparation and execution of forest fire control and fighting activities are regarded as disaster management actions and governed by federal state measures on disaster management. The mayor, district commissioner or governor are respectively responsible for operational command of forest fire fighting and control operations, depending on the extent of the fire (Tyrol Forestry Ordinance, art. 48(1)–(3)). At the site of the fire, the highest fire-fighter in rank or the commander of the fire brigade that was first on spot is

in charge of the fire fighting activities (art. 48(4)) and must aim at protecting the forest areas not destroyed by the fire (art. 49(1)). Owners are obliged to permit access to their properties and allow excavation of trenches, clearance of fire belts, setting of backfires or any other form of intervention suitable for the containment of fires on their property (art. 49(2)).

In Italy, state civil protection authorities must guarantee and coordinate aerial fire-fighting activities through the state fire-fighting fleet (art. 7(1) and (2)). Regions must take action to fight fires in line with the regional forest fire plans' requirements, in coordination with action taken by the state (art. 7(3)). Russian Federation legislation also embodies specific rules on aerial means for fire suppression (Ch. 2.3.5 above).

It is a common feature of national legal regimes on forest fires to create a **general obligation for individuals to collaborate** with public authorities in the suppression of forest fires, upon a reasonable request. Refusal without valid reasons may consist in an offence, usually punished with a monetary sanction (and possibly also with imprisonment – see Morocco's article 48 of the Royal Decree on the Conservation and Exploitation of Forests, 1917). In Sudan, legislation goes beyond this, by requiring individuals, in the absence of forest guard, policeman, tribal chief, attorney general, judge or any civil servant, to take reasonable action to extinguish the fire (Act No. 11/2002, Forests and Renewable Natural Resources, art. 42).

Other examples of relevant provisions are found in New Zealand: persons who become aware of unattended fires in state areas, forest areas or specially protected sites or during prohibited fire seasons must do everything reasonably within their powers to extinguish the fire (sec. 35). Fire officers may also require persons over 18 residing or working within 8 km of the concerned fire district to assist in extinguishing a fire (sec. 38).

In Canada, a person who, during a fire season knows or has reason to believe that there is an outdoor fire, not authorized by a permit issued to the person, on land that is within a permit area and is owned or occupied by the person or under the person's control, must extinguish the fire, or if the person is unable to extinguish the fire, immediately report the fire to a forest officer, an employee of the municipality in which the fire is located or a member of the Royal Canadian Mounted Police (Forest and Prairie Protection Act, sec. 18(3)).

Similarly, pursuant to the legislation of Austria, any person discovering a forest fire or an unsupervised fire in a forest, forest area or its proximity is required to extinguish it or report it to the nearest fire reporting office (Forestry Act, 1975, art. 46(1)) and Fire Authority Act, 1998, art. 27(1)), unless the fire reporting office has manifestly been informed already. The fire reporting office has to notify the district administration, the municipality concerned and the responsible local fire brigade without delay (Forestry Act, 1975, art. 46(2) and the Fire Authority Act, 1998, art. 28).

In Belize, holders of forest licences in forest reserves or national land are required to "take effective steps to extinguish any fire", providing all available labourers and equipment free of charge if requested by a forest officer and to pay damage if the fire is occasioned by them (Forest Rules, rule 24(2)). Similarly, in the Russian Federation, holders of forest leases have a specific obligation to fight forest fires (Ch. 2.3.5 above).

In South Africa, in case of fire that may endanger life, property or the environment, owners of concerned land or adjoining land must notify the fire protection officer or association and neighbouring owners and do everything in their power to stop the spread of the fire (National Veld and Forest Fire Act, sec. 18(1)). Any other person may enter any land where there is a fire or to which a fire may spread to extinguish it (sec. 18(2)).

Many other countries **allow responsible officers to request assistance** in fighting fires, usually subject to reasonable conditions. An obligation for individuals to contribute to fire-fighting upon such a request exists in the legislation of almost all countries examined in the previous chapter (e.g. Senegal, Ch. 2.3.1 above, Argentina, Ch. 2.3.3 above, Indonesia, Ch. 2.3.4. above and the State of Michigan (United States), Ch. 2.3.6 above). Similarly, in Algeria, able persons may be called upon to participate (Law on the Forestry Regime, art. 20). In the Province of Alberta (Canada), forest officers and guardians may order and authorize payment to use equipment belonging to private persons and order able adults to assist (Forest and Prairie Protection Act, sec. 13(3)) and similar provisions are found in the Ontario (Canada) Forest Fires Protection Act (sec. 7) and in the Cyprus Forest Law (sec. 17(a)).

Other common provisions are those which **strengthen the powers of officers** when fighting fires. In Belize, in case of an outbreak of a forest or bush fire, the chief forest officer or persons directed by him/her may enter

any land and take fire fighting measures, including building of fire lines or destruction of trees (Forest Fire Protection Act, sec. 11).

Under the Bushfires Act of Australia's Northern Territory, fire control officers and fire wardens are empowered to do any act (whether or not it involves the use of fire) necessary for or incidental to controlling a bushfire or protecting property or the life of any person from existing or imminent danger arising out of a bushfire (sec. 50(1)), including entering any land or property, destroying any building, closing any roads and taking any water (sec. 50(3)).

In South Africa, a fire protection officer may order any person who is apparently not younger than 16 and not older than 60 to assist him/her (National Veld and Forest Fire Act, sec. 18(3)). Forest officers may also do so and take control of a fire within 10 km of a forest in the absence of a fire protection officer (sec. 18(4)). In fighting fires, fire protection officers, forest officers or any other authorized persons may, if necessary for the protection of life, property or the environment, enter any land, destroy vegetation and break into any premises (sec. 18(5)).

Finally, legislation may limit the **means or modalities for fire suppression** activities. In the Russian Federation, for instance, the use of toxic chemicals for fighting forest fires is prohibited within protected areas, water conservation zones, green zones and forest parks (Ch. 2.3.5 above).

3.5 Participatory and community-based approaches to fire management

Another key aspect of effective fire management concerns participatory and particularly community-based, approaches as an adaptive and sustainable mechanism (FAO, 2007). This may call for the inclusion of local communities in the proper application of fire, fire prevention and in preparedness and suppression of wildfires. Members of local communities can be established as a response group with adequate training and safety considerations, thus integrating local resources, knowledge and experience into forest fire management. This concept is also linked with that of recognizing the leadership role of land managers in fire and other land-use issues (FAO Guidelines).

With a view to facilitating public involvement in forest fire management, communication to members of local communities and other stakeholders about the positive results of properly applied and managed fire and its

ecological, social and economic benefits is critical. Well-informed public will be more likely to use fire carefully and to adhere to policy and legal requirements. It can assist in the prevention, detection and reporting of fires, work with personnel to control unwanted fires and provide a source of local and traditional knowledge (FAO Guidelines).

Legislation can support or hinder the participation of local communities or concerned individual stakeholders in fire prevention and suppression. Laws could, for instance, provide for forest management plans to integrate the actions of the general public for certain selected and programmed interventions (Bourrinet, 1992) and promote the involvement of the public since the stage of formulation of the plans. Various provisions in the legislation described in the previous chapter take a participatory approach in forest fire management. In the United States, for instance, local communities and particularly indigenous groups, are to participate in the monitoring of authorized hazardous fuel reduction projects (Ch. 2.3.6 above). According to Chubut Forest Law in Argentina, landowners, forest concessionaires and private organizations may participate in prevention, suppression and restoration activities (Ch. 2.3.3 above). In the Forestry Law and other legislation of Indonesia, local communities, particularly those in charge of forest management in Community and Social Forests, are to contribute to fire management alongside with public authorities and they are entitled to receive education, technical advice, training and support for rehabilitation activities. Furthermore, in Indonesia, certain business operators are called upon to take preventive measures, monitor their implementation and report to public authorities (Ch. 2.3.4 above).

One way to facilitate involvement of concerned stakeholders is to require the adoption of **forests fire management plans at local level**, as does the Italian Framework Law on Forest Fires. In the case of South Africa, the National Veld and Forest Fire Act requires consultation of the public as well as of the Forestry Advisory Council and the Fire Brigade Board for the adoption of regulations under the Act (sec. 21). Other legal provisions on local fire management planning have already been identified in the United States with regards to community wildfire protection plans, which enable local communities to receive priority funding (Ch. 2.3.6 above). Also in Argentina there are legal provisions for regional plans and in Chubut for provincial, local and individuals landowners' plans (Ch. 2.3.3 above).

Other ways in which stakeholder involvement in fire management may be promoted in legislation are by providing for the establishment or recognition of **forest fire committees at the local level**, tasked with public awareness, fire prevention, rapid intervention on small fires (Bourrinet, 1992) or other relevant functions. In Burkina Faso, legislation allocates responsibility for monitoring forest fires and supervising use of preventive fires, according to certain plans established by the forest authority, to village committees or to customary authorities, as well as mandating collaboration between the forest service and village inhabitants in fire management (Decree No. 98-310, arts. 13–16, 22 and 29). Pursuant to the National Veld and Forest Fire Act of South Africa, owners may form fire protection associations for the prevention and fighting of veldfires (defined as including veld, forest and mountain fires) in areas which have uniform fire risk or other similar conditions and apply for their registration (sec. 3(1) and (2)). The minister must solicit the creation of associations where appropriate and for this purpose convene a meeting of land owners to seek their support and provide assistance (sec. 3(3) and (4)). The minister may register a fire protection association where satisfied that the applicant is capable of performing relevant duties and is representative of land owners in the area (sec. 4). Associations may receive financial assistance for their activities (sec. 7).

The National Rural Fire Authority of New Zealand may for purposes of fire control create "rural fire districts" on any land, following a procedure for public consultation specified in the Forest and Rural Fires Act (secs. 4 and 5). Rural fire districts may be administered by a Fire Authority that may either be the Minister of Conservation or a rural fire committee (sec. 7(1)). The latter may be (or may comprise) local authorities within whose territories the district extends and it must be ensured that persons holding land or other rights over the area are represented (sec. 8). Holders of concerned forest land extending for at least 20 hectares may request the creation of "forest areas" under the Forest and Rural Fires Act to the Fire Authority of the district. A fire safety margin of up to one km from the boundaries of the forest may be envisaged (sec. 17(3)(d)). Suitable arrangements regarding fire control must have been made with all other concerned Fire Authorities and with the New Zealand Fire Service Commission (sec. 17(3)(g)). Proposals must be advertised as specified, with a statement that objections must be received by the Fire Authority within a specified date (sec. 18(5)(d)). Every eligible landholder who intends that the rights and duties pertaining to that area are to apply for the following 12 months must be responsible for fire protection, subject to the direction of the Fire Authority (sec. 18(6)). In Peru,

forest management committees (*Comités de Gestión del Bosque*) are formed with representatives from national authorities, land owners, forest concessionaires, local governments and native communities and may participate in controlling forest fires (Forestry and Wildlife Law, 2000, art. 35(3), Forestry and Wildlife Regulations, 2001, arts. 51 and 52).

In other cases, the law may allow or even require **citizens to participate** in fire fighting (see also Ch. 3.4.6 above). In Bulgaria, the mayors of municipalities and populated areas are called upon to organize annually teams for forest fire extinction (Regulations for Implementation of the Law on Forests, art. 125(1)). In Croatia, firefighting and surveillance duties are directly allocated to the land owner or, if the owner could not be identified, to the user (Forest Protection Act, art. 23; and Forestry Act, art. 38), while in the Russian Federation the fighting of fires is among the obligations placed onto holders of leased forests (Ch. 2.3.5 above). However, it has been noted that this was not appropriate in the specific circumstances of the country, because the vast majority of agricultural lands was abandoned and often of small size (FAO case studies: Croatia). In Cameroon, local administrations, forest authorities and mayors are called upon to create together with village communities surveillance and fire-fighting teams and centres (Forestry Law, 1994, art. 7). In South Africa, the minister may enter into agreements with any person or fire protection association to provide mutual assistance in fighting fires. The agreements may provide for compensation (National Veld and Forest Fire Act, sec. 19). Land owners must have available equipment as may be prescribed or as may be reasonable to fight fires and must ensure that in their absence in case of fire somebody will be available to extinguish or assist in extinguishing fires and to alert owners of neighbouring land and the relevant fire protection association (sec. 17).

In other countries, as in the case of Cape Verde, professional and voluntary fire fighters are completely unregulated and no specific obligations have been placed on landowners (FAO case studies: Cape Verde).

The law can also play a critical role by creating **duties to inform** the public and also a duty for the public **to report** fires or fire hazards: authorities should have a duty to inform of fire status and threats to communities (FAO Guidelines); and each individual should have the obligation to notify competent authorities of the occurrence of forest fires (as in the case of Bulgaria's Implementing Regulations of the Forest Law (art. 126(2)). Creating an individual duty should be better placed in a law (parliament-

enacted legislation), rather than in subsidiary legislation and failure thereof could be made an offence (FAO case studies: Bulgaria). On the other hand, an incentive-based approach rather than a repressive one may garner more results in practice.

Recent legislation of Algeria, being founded on the principle of participation and information, promotes stakeholder involvement in various ways, by ensuring that the citizens are informed about any aspects regarding forest fires (Law No. 03-10, arts. 3, 6–8 and Law No. 04-20, art. 8) and by allowing the creation of associations to contribute to the actions of public environmental bodies or be consulted by them (arts. 35–37). In addition, the Forest Fire Prevention Decree sets out detailed prevention measures to be taken by local communities and certain organizations, such as those dealing with hydrocarbons, electricity and gas (arts. 21–25).

Reporting requirements are also quite common: anyone who becomes aware of a forest fire must, without delay, inform the nearest fire reporting office thereof (Austria's Fire Authority Act, 1998, art. 27(1)), unless the fire reporting office has manifestly been informed already.

In addition, forest laws should provide for **incentive measures** for those involved in fire fighting and compensation for damage suffered by them (FAO case studies: Bulgaria). Pursuant to the Italian law, for example, regions may offer rewards to staff in relation to reduction of the number of fires (Framework Law on Forest Fires, art. 7(6)).

3.6 Fire use

One of the key lessons in FAO projects in member countries is that blanket prohibitions on the use of fire are often ineffective, if not even counterproductive. Conversely, an appropriate legal system to control the planned use of fire has proven more useful in preventing forest fires and satisfying other land use objectives.

By way of illustration, the 2006 global overview reported that a complete prohibition on the use of fire came into effect within the Association of Southeast Asian Nations in 1999, but proved ineffective in reducing fires in the region, because fire use was a fundamental need in the livelihoods of rural people (FAO, 2007). So now legislation is turning to **regulating prescribed burning**, as a tool for reducing fuel load thereby preventing

uncontrolled fires, or as a tool for restoration and maintenance of ecosystems. As seen in the previous chapter (Ch. 2.3.6 above), also the American wildland fire policy gradually recognized the ecological importance of fire and the fire-dependence of some areas, adapting policy and legislation accordingly.

Similarly, in Bulgaria a 2000 amendment to the agricultural law (Law on Preservation of Agricultural Land, 1996, art. 6(1)(2)) prohibited all fires but had later to be repealed, because there had been a serious increase of forest fires caused by agricultural burning since the amendment enactment. At the same time, as recommended by the project's final workshop, regulation of burning of agricultural residues (possibly under the Implementing Regulations of the Forest Law) was called for in order to subject it to a permit system (possibly issued by the competent local forest officers). It was also noted that "pastoral burning" was not explicitly mentioned in legislation, whereas significant burning actually occurred in pasture land for regeneration purposes. As a result of the lack of a legal definition for "agricultural land" and since "agricultural" could not be implicitly interpreted to include "pastoral", pastoral burning did not seem to be covered by existing legislation (FAO case studies: Bulgaria).

The *Fire Management Voluntary Guidelines* stress the need to develop guidelines for planned burning that fit within the legal framework and policies (Principle 8). They also establish the principle that the traditional use of fire on lands of indigenous people and traditional rural communities should remain a practice for those communities and be adapted to the current environment, provided that any potential negative impacts on communities and resources are prevented or mitigated (Principle 3).

"Planned fire" or "prescribed burning" refer to the deliberate use of fire to meet specific management objectives (to remove unwanted vegetation, for agriculture or forestry purposes, animal husbandry or land clearing or for maintaining healthy fire-dependending ecosystems.) When planned fire is used to maintain or restore sustainable ecosystems, a programme to allow burning for restoration and rehabilitation should be part of the overall fire management regime. In all events, planned fires should be undertaken only when plans have been developed that consider operational procedures for safe work practices, predicted environmental effects and expected fire behaviour (FAO Guidelines). As a result, it must be ensured that application of fire to vegetation in either natural or modified state under specified

environmental conditions is controlled so the fire is confined to a predetermined area and at the same time produces the intensity of heat and rate of spread required to attain planned resource management objectives (FAO Guidelines).

Legislation can, therefore, first of all clarify that planned burnings are not prohibited in times and under circumstances that overtly exclude any purpose of propagation, as has been the case since as early as 1987 in Chile (Chilean Penal Code of 1874; Bourrinet, 1992). In addition, legislation can specify **definitions, procedures and minimum cautions**. In the previous chapter, it has already been highlighted that in South Carolina (USA), authorized fire use requires the elaboration of a plan and the supervision of a certified fire manager (Ch. 2.3.6 above).

The Italian regional law of Basilicata allows exemptions from general prohibitions for controlled or prescribed fires or "suppression fires" used during a fire to prevent its further propagation as well as to clear firebreaks, provided that such activities are carried out by specialized staff. The regional fire plan must set out regulatory details on these practices (art. 7(2)(c)). The regional law of Lazio on management of forest resources allows grazing in forests, if in accordance with sustainable utilization principles and envisaged in the forest management plan (art. 56(1) and (3)). The Bushfires Act of Australia's Northern Territory allows some exemptions from general prohibitions applicable in fire protection zones and fire danger zones for specified cases, such as lighting of small fires, mustering cattle and burning of firebreaks, subject to certain conditions (secs. 38 and 39). The Austrian Forest Law allows prescribed burning or other forms of large-scale burning of remainders of plants to the extent that it does not threaten the forest, affect the quality of the soil or raise the risk, upon prior notification to the Commune and under constant supervision (art. 41(4) and (5)).

The Forest and Prairie Protection Act of Alberta allows forest officers to start fires for the purpose of protecting timber, reducing fire hazards or managing wildlife habitat or for any other purpose relating to the administration of the Act (sec. 29).

In some instances, although legislation provides in principle for prescribed burnings, it fails to detail the **authorization procedure**, thus creating a critical vacuum that severely undermines the legal certainty of the system and results in difficulties in implementation and enforcement. In Cape Verde, for

instance, the forest law specifies that lighting fires at a certain distance from the forest is subject to a permit (Law No. 48/V/98, art. 58), but because the implementing regulations for the forest law were never developed, the procedure for obtaining the permit has not been detailed. Similarly, in Nicaragua, the environmental criminal law (Law No. 559, *Ley Especial de Delitos Contra El Medio Ambiente y los Recursos Naturales*) excluded from environmental offences the authorized use of agricultural fires. No piece of primary or subsidiary legislation, however, determined the authority and the process for obtaining the authorization. This resulted in the penalization of all agricultural fires, including those linked to ancestral traditions of indigenous people (FAO case studies: Nicaragua).

In Chile, the authorization for the use of fire for clearing agricultural land requires a **written permit** to be issued by the governor on the basis of a report by an agronomist of the Ministry of Agriculture (*Decreto Supremo* No. 733, art. 17). In addition, the President of the Republic may prohibit by supreme decree issued by the Ministry of Agriculture the use of such fire in certain areas for a certain time period (*Decreto Supremo* No. 100 of 1990, for instance, prohibits the use of fire for land clearing in the metropolitan region and province of Cachapoal during the period 1 May–31 August). Usually, such authorizations imply the obligation to monitor the site in which fire is used until its extinction, or even 48 hours after the end of the fires (Comoros, Decree No. 66-398, art. 1). In Comoros, a specific form for requesting an authorization to use fire needs to specify the concerned area and time period. Different forms are available for different types of fire use. Authorizations can concern an individual or a community; in the latter case all able men in the community will be required to participate in fire fighting if necessary (Decree No. 66-398, art. 9).

In Brazil, the authorization to use fire is subject to an **inspection** by the public authorities if the areas surrounding that in which the use of fire is planned is subject to special protective measures, or if vegetal material from forest exploitation is present in the area where the fire is to be used (Decree No. 2959 of 1999, art. 7). In Portugal, a **prescribed burning plan** should be elaborated by the forest fire user with a view to informing the authorities of its application of fire over a period of five years, after the approval of which the user is to provide a 24-hour notice of specific fire use to local fire brigades (Order No. 1061/2004, Annex, paras. 4(a) and (d)). A municipal committee for forest protection may suspend the implementation

of approved plans when contingent circumstances limit the availability of firefighting resources (Order No. 1061/2004, Annex, para. 5(c)).

In some instances, legislation (usually subsidiary acts) details the conditions for specific permitted uses of fire. The creation of fire breaks may be requested (for example for fires used in dwellings situated inside of or no less than 200 metres distance from public forests – Morocco, Royal Decree on the Conservation and Exploitation of Forests, 1917, art. 46 and Decree on the Measures to be Taken to Prevent Forest Fires, 1918, arts. 1 and 2). Other obligations arising from the fire use authorization may include reforestation as well as the maintenance of a certain portion of forested land on the land on which fire will be used (Comoros, Decree No. 66/398, art. 1).

Authorizations may also be limited to certain types of fire use, as is the case in Benin with preventive fires (*feux précoces*) before the dry season and with fire used for the creation of grazing areas and for forest management. In these instances, fire use is only allowed during daytime and with good weather conditions and is coupled with the requirement to inform local communities of the fire and of safety measures. Such authorizations may be obtained upon informing a forest officer of the intended use of fire (Benin, Decree No. 96-271 establishing rules of implementation of the Forestry Law, arts. 76–790). In Burundi (Forestry Code, art. 89), a prior authorization to be exclusively issued by the forest authority is needed for agricultural and pastoral fires, upon a request to be addressed to the competent authority within the period fixed by each province. In Cameroon, camp fires (in recreational forests and other specific sites) and pastoral fires may be authorized by the local administration on the basis of a decree issued by the prefect in accordance with technical specifications provided by local technical experts. Those so authorized are to remain on the site of the burning until the complete extinction of the fire and to take all measures to avoid the fire propagation (Decree No. 95-531 establishing rules of implementation of the forestry regime).

Simplified authorization systems may be envisaged. For example, fire users may be requested to make a "declaration" with a certain advance notice to the representative of the local authority who will transmit it to the chief of the forestry district (Morocco, Decree on the Measures to be Taken to Prevent Forest Fires, 1918, art. 4(4) and (5)). A special "request" may instead be necessary for burning any form of woody or herbaceous vegetation in areas located at a distance less than 4 km from forest boundaries. The

request will include information about the residence of the applicant, the site for incineration, its extent, the nature of the vegetation to be incinerated and the chosen date for the incineration. The authorization may indicate the number of workers and all other necessary precautions, or impose new precautions during the operation and may even be suspended in case the wind becomes too strong and could lead to fire spread (Morocco, Decree on the Measures to be Taken to Prevent Forest Fires, 1918, art. 4). In Senegal, fire use is not subject to a permit, but only to **supervision**. Decree No. 98-164 permits the use of prescribed fires when these are lit in areas where the vegetation permits to do so (art. R. 58), on advice and under the supervision of the Waters and Forests Agency (art. R. 58) and during a period set by the president of the regional council (art. R. 57). Finally, specific conditions apply to the traditional use of fire (Ch. 2.3.1 above).

In Cuba, the authorization system for the use of fire is quite sophisticated, depending on a categorization based on the various purposes for fire use (fuel management, preparation of agricultural lands, control of pests and diseases, land clearing for road and railway construction, pasture management, wildlife management, control of noxious species, forest management, etc.). In addition, a simplified system applies to fire use in areas smaller than one hectare: the permit can be requested orally to the nearest forestguards station and fire will be applied under the guidance of forest guards (Instructions of the Chief Forest Guard Regarding Rules and Administrative Procedures for the Utilization of Fire in Forests and Neighbouring Areas of 2003). For larger areas, a written request must be submitted, according to forms annexed to the legislation, which should be submitted at least 30 days before the scheduled date for its implementation. The provincial chief of the forest guards is to grant the permission, upon inspection if necessary, within a period of no less than ten days before the date indicated for the use of fire. The permit may be refused if conditions for the use of fire are not deemed appropriate due to climatic factors or other circumstances favourable for the occurrence of an uncontrolled fire. Once the permission is granted, the authorized use of fire will be carried out between 17:00 and 10:00 the following day. The permit holder must notify the timing of the authorized burning to individuals or legal entities responsible for neighbouring areas (Decree No. 268, Violations of Forestry Regulations, arts. 144 and 145).

Overall, legislation may require prior notice, the issuance of a permit, prior inspection, concomitant supervision, the elaboration of plans, or a

combination of any of these tools to allow controlled burnings. Additionally, prescribed burning may have to be integrated in broader fire management or forest management plans. Finally, there are cases in which legislation simply requires fire users to adopt due diligence. In Tonga, for instance, it is an offence to destroy the property of any other person by negligently setting fire to any standing trees, saplings or shrubs whether indigenous or cultivated (Fire Services Act 1979).

3.7 Rehabilitation

Rehabilitation – those activities necessary to repair damage or disturbance caused by wildfire or the wildfire suppression activity (FAO Guidelines) – is another key component of fire management, not only as a restoration measure but also with a preventive function *vis-à-vis* future fires. **Rehabilitation plans** should take into account whether natural processes are not expected to provide adequate regeneration, should pay attention to the issue of invasive species and should avoid unexpected negative consequences (FAO Guidelines).

Legislation can support the rehabilitation process, by allocating responsibilities in this regard, such as the obligation to prepare a rehabilitation plan after extensive fires and to ensure consistency between various rehabilitation operations including restoration of the uses of the area and prevention of new fires. The law should also ensure that rehabilitation plans be prepared by concerned authorities with stakeholder participation and in light of ecological characteristics of the area (natural regeneration), to ensure that correct species and techniques are chosen (Bourrinet, 1992). Technical requirements that depend on local, natural and man-made conditions should not be detailed in legislation though: rather, a flexible system that leaves precise determinations on a case-by-case should be envisaged (Bourrinet, 1992). Possibly, subsidiary legislation could expressly prohibit the substitution of certain species with others for certain environmental purposes (Bourrinet, 1992).

The Regional Law of Basilicata in Italy requires the regional forest fire plan to address regeneration of areas hit by fires in a specific chapter, which must include guidelines referring to the different types of forests. Post-fire treatments must take into account ecosystems' natural regeneration mechanisms (art. 11). As was noted in the previous chapter, in Argentina, the Chubut Forest Law requires the restoration of forest areas affected by

fire (arts. 35–38), in accordance with a specific plan for this purpose (Ch. 2.3.3 above).

Legislation may also create specific **tree-planting obligations** to ensure rehabilitation of forest areas after a fire. In Portugal and Bulgaria, the owner of burnt forests is obliged to replant trees within two years (Portugal's Decree-Law No. 139/88; Bulgaria's Forest Law, 1997, art. 42(2)). This may, however, be unlikely to be implemented by small-scale owners, unless funding is available. This is the case of the European Union financing mechanisms (Ch. 2.3.2 above), as well as one of the possible uses of the reforestation fund in Indonesia (Ch. 2.3.4 above). An alternative could be an **obligation not to use the burnt plot** for a specified period of time to allow its natural regeneration. Provision could also be made for receiving free planting material from government nurseries as an incentive for reforestation (FAO case studies: Bulgaria).

Cuban legislation contains detailed provisions on rehabilitation after forest fires. The definition of "reforestation" explicitly includes tree planting in areas that were previously covered with forest and were affected by fire. In addition, it is clearly specified that the **post-forest fire evaluation**, to be undertaken by the forest manager or owner, together with the forestguards, should determine rehabilitation measures, which may include: sanitary cutting, natural regeneration, reconstruction, reforestation, or clear-cutting in accordance with forest classification, tree age, tree species, type of damage, time period and type of forest fire (Forestry Regulations 1999, arts. 139–142).

Legislation may also distinguish responsibilities for rehabilitation when affected lands and resources are included in protected areas. In Portugal, if burnt private forests are situated in protected areas, the owner could be called upon to produce a replanting plan to be approved by the protected area authority and for areas of more than 100 hectares, an environmental impact study could also be required (as in the case of Portugal's Decree-Law 139/88).

3.8 Law enforcement

The FAO Global Overview noted that few countries have the ability to enforce forest fire legislation and that it is usually not easy to apprehend arsonists (FAO, 2007). Interestingly, the global overview also considered law enforcement as part of fire prevention measures, as a tool that may result in the avoidance of outbreaks of fires or in the reduction of fire severity and

spread. Legal drafters should always be informed about current and foreseeable enforcement capacities and take this into account when preparing relevant provisions.

Both routine powers of officers to check compliance with applicable provisions (e.g. powers of inspection, arrest, seizure) and exceptional powers of officers when fighting fires need to be clearly identified – whether in specific forest fire legislation or other easily identifiable legislation. As regards fire fighting, many countries foresee strengthened powers in order to better protect people and properties. The New Zealand Forest and Rural Fires Act, for example, sets out powers which officers may exercise in case of fires and for the case of routine inspections requires 24-hour notice to access building to check compliance with fire-related requirements (secs. 36 and 58). Under the Forest Act, the purpose of eradicating or preventing fire that may seriously damage forest or forest produce justifies exemptions from certain limitations of the powers of officers (sec. 71(2)(b)).

Other issues that are related to law enforcement include: offences and sanctions; incentives; compensation and insurance; and financing, training and awareness raising.

3.8.1 Offences and sanctions

Although offences and penalties are not the only available enforcement tool, they do play an essential role in ensuring compliance with the law. These enforcement provisions comprise a list of offences as well as the penalties associated with each violation and the procedures applicable once an offence has been committed. The first task will be to establish the offences under the law, which should include actions not only by the general public, but also by persons acting officially on behalf of competent authorities. After identifying the offences, the next task will be to decide which activities will be criminal offences and which will be administrative ones. In some countries, the answer may already be provided for in the constitution (or in other countries, the criminal code). In other jurisdictions, it may be possible to define some offences as administrative violations, meaning that the power to find violations is vested in the administrative agency, not a judicial body. Because administrative penalties are imposed outside the judicial process, the evidentiary standards are lower and criminal court procedures do not apply. In some circumstances, where permitted, they can be a viable alternative

enforcement mechanism that can be more cost-effective, timely and practical than judicially imposed sanctions.¹⁹

Most countries list a number of offences for violations of their forest fire legislation. The most commonly found are the following:

- intentional setting of fire to forest or neighbouring areas (arson);
- setting of fire to forest or neighbouring areas by negligence;
- unauthorized access into forest or neighbouring areas;
- violation of prohibitions to light fires or to leave them unattended (e.g. in prohibited areas or seasons, or without required permits);
- violation of prohibitions to smoke, or drop, throw or use lighted objects or any fire hazards;
- violation of other prohibitions set out with a view to preventing fires (e.g. to set up certain establishments such as brickyards or cement ovens within forests or near them);
- violation of provisions requiring to take certain precautions (e.g. creation of firebreaks, clearing of debris, clearing of areas along railways, roads, etc.);
- violation of conditions relating to certain operations in forests or neighbouring areas (e.g. conditions for the use of machinery, such as power saws or engines, or for certain operations, such as pipelines, incinerators, etc.);
- violation of prohibitions relating to post-fire periods (e.g. prohibition to graze, build, hunt, utilize public funds to replant, replant species which are inappropriate from an environmental point of view);
- refusal to provide assistance or equipment to fight a fire upon a legitimate request from an authorized officer;
- removal or damaging of signs or equipment placed by the administration for the purpose of preventing or fighting fires;
- obstruction of officers in the course of inspection or other enforcement activities; and
- obstruction of activities required to be allowed on one's property (e.g. implementation of preventive measures by the forest/fire administration).

¹⁹ Inspired by Chapter 3 of FAO LS 87.

Having defined the offences and categorized them as criminal or administrative, the legislation must then outline the applicable consequences, which may take different forms. The most common ones are fines and/or imprisonment, but the law may also require forfeiture of products or other items used in the commission of an offence, compensation of damage caused (e.g. payment of cost of clean-up, disposal or other necessary measures to mitigate the damage), suspension or termination of permits. Imposition of a term of imprisonment is permissible for criminal offences but not for administrative ones. Different penalties may be assigned to different offences according to the severity of the offence or its consequences. Aggravating factors, which would increase a penalty, could apply in certain circumstances, such as where the offence caused irrevocable damage, permanent disability or death of an individual.²⁰

Generally, sanctions should be severe enough to act as a deterrent (a major increase in the cost of doing business as law breakers), but not too severe or out of proportion to the nature of the offence so that courts and other enforcement bodies may be reluctant to apply the penalty at all and the crime will go unpunished. The law may also trigger the amount of sanctions to the gravity of the violation and the severity of the damage caused (thus possibly including compensation for damage to public good and confiscation of illegal produce and equipment). Furthermore, sanctions should always be consistent with relevant legislation. In order to ensure the continued relevance of sanctions in time, the law may provide for flexibility in setting the amount of sanctions, for example by defining classes of sanctions in the law while leaving amounts to be defined by subsidiary legislation. As forest fire-related legal provisions may be scattered around different legal instruments, it is also critical to ensure that the same act is not punished twice, or that different sanctions are provided for the same violation (see FAO case studies: Nicaragua).

Sanctions may be higher in years when forest fires are more frequent. Higher fines may also be provided for damage in protected areas, or for those who knowingly caused a fire, did not intervene immediately to stop it, did not take immediate action or did not immediately inform the authorities.

One problem that has been identified is that sometimes laws do not pair prohibitions with sanctions. For example, in the case of Bulgaria, building a

²⁰ Inspired by Chapter 3 of FAO LS 87.

fire outside the defined places in protected areas was prohibited, but no penalties were envisaged for this offence (Bulgaria, Law on Protected Areas, 1998, art. 31; FAO case studies). On the other hand, it is equally important for legislation to specify which violations amount to offences, so as to avoid excessive discretion in law enforcement and provide more legal certainty to users. In addition, this may be useful to single out those legal provisions of a promotional character whose violation is not to be punished.

One common shortcoming in national legislation is the habit not to list relevant offences and related penalties in any sectoral legislation and instead refer to other applicable legislation, which is usually a criminal code, for the determination of penalties. This may make it difficult to actually identify punishable behaviours and related foreseeable penalties.

The law finally needs to set out the procedures applicable once an offence has been committed, unless this is governed by a criminal or administrative procedure code, with a view to guaranteeing constitutional or other basic legal rights. Lack of specific procedures for enforcement of the law on forest fires was indeed recognized as a factor that made it difficult to ensure the respect of the law (FAO, 2007). Coordination among inspectors and clear procedures in this regard are important elements of legislation. In Croatia, for instance, fire-related inspections were the responsibility of five different agencies: the Fire Protection Inspectorate, the inspectors of the Directorate for the Protection of Nature (Law on Environmental Protection, art. 173; and the Act on Amendments to the Act on Fire Protection, 2005, on supervision of implementation of fire prevention measures in national parks, art. 10); Forestry Directorate surveillance systems for state-owned forests, inspectors of the police department for supervising implementation of fire protection measures (Act on Fire Protection, art. 30) and agriculture inspectors if the fire started in agricultural land (Fire Protection Act, art. 30(3) and Law on Agricultural Land, art. 58). The different laws left unclear the boundaries between different inspection activities, did not define procedures and provided no coordination measures among them (FAO case studies: Croatia).

3.8.2 Disincentives

Another tool for law enforcement is for the law to devise disincentives, which will serve to dissuade potential arsonists by eliminating possible causes for the illegal use of fire. In the case of forests, very often fires are used to clear the land with a view to changing forest land classification in favour of

other land uses. In these cases, the law may prohibit replacing forests with agricultural land in burnt areas (Bourrinet, 1992). Legislation can also prevent the illegal use of fire to clear grazing areas in forests, by prohibiting grazing of livestock on lands that have been subject to fires for a period of 10–20 years (Bourrinet, 1992). The latter may also contribute to rehabilitation (Ch. 3.7 above)

In addition, the law may prohibit the division of burnt forest plots for urban construction, housing, industrial or tourist development or introduction of changes to morphology or plant cover for a certain period of time after the occurrence of the fire (20 years in the case of Bulgaria: Forest Law, 1997, art. 14(2)). Once again, it is important to ensure that these measures be accompanied by a sanction (FAO case studies: Bulgaria).

In its Forest Fire Law of 2000, Italy has also introduced a number of provisions aiming at preventing forest fires by eliminating the possible causes behind intentionally lighting them. It establishes, for instance, that areas hit by fires may not be used for purposes other than those for which they were used prior to the fire for a period of fifteen years. Any building is prohibited for a period of ten years. The utilization of public funding for replanting or any other activities is prohibited for five years, unless authorized by regions for watershed protection. Grazing and hunting are also prohibited for ten years (art. 10(1)). Communal administrations are called upon to keep a register ("*catasto*") of areas hit by fires, to publish it and take into account observations received and to update it yearly (art. 10(2)).

Along the same lines, the Region of Lazio, in its Law on Forest Resource Management, establishes that projects which aim at the prevention of forest fires are to be given priority for funding, subject however to the condition that the concerned communal administration must have complied with the obligation to keep a register of areas hit by fires (art. 66).

3.8.3 Compensation and insurance

The *Fire Management Voluntary Guidelines* recommend that agreements be concluded with utilities, transportation, agencies and other sectors that may be damaged by fire or fire suppression. Indeed, the question of ensuring **compensation** for damage caused by forest fires or by the activities to suppress them is an important legal issue.

The law may establish that the individual responsible for starting forest fires should be held liable and subject to obligations to rehabilitate the burnt area (Bourrinet, 1992). In other cases, there may be the presumption that the land owner is responsible for violations of the prohibitions to use fire on his land, so he will be liable for damage (Bourrinet, 1992). Forest managers' responsibility for the spread of fire may be limited, without extending to third parties' damage unless it can be proved (and the onus of proof would be on the victim) that the fire can be attributed to the manager's or one of his team's fault. In some cases, public authorities may be called upon to compensate losses due to wildfire because of their negligence in fighting the fire (for example, in the United States or France; see Bourrinet, 1992).

As was highlighted in the previous chapter, Indonesian legislation subjects numerous activities leading to environmental degradation and pollution related to forest and or land wildfire to compensation and/or specific remedial actions (Ch. 2.3.4 above). Pursuant to the Forest and Rural Fires Act of New Zealand, the cost of control or extinction of a fire may be recovered from the person that caused it by the Fire Authority or the Fire Service Commission or the eligible holder of the forest area affected (sec. 43). Every Fire Authority must periodically estimate future expenditures (sec. 44) and may impose a levy on landholders in its district, subject to specified conditions (sec. 45).

Under the Austrian Forestry Act, forest owners must allow preventive measures to be carried out on their property and are entitled to appropriate compensation for this purpose (art. 41(4)). In line with the Forestry Act, the Tyrol Forestry Ordinance entitles owners to be reimbursed for all damage caused to their property for forest fire management purposes (art. 51(3)).

In the Russian Federation, subsidiary legislation sets out the method of calculation of compensation for damage caused to forest. In the case of damage derived from fire, damage must be calculated taking into account the need for soil improvement and the cost of extinguishing the fire (Ch. 2.3.5 above).

In the Canadian Province of Alberta, the fire fighting costs and expenses incurred by the minister because of a municipality's failure to take satisfactory actions to control or extinguish a fire that might damage public land may be reimbursed entirely or in part by the municipality (Forest and Prairie Protection Act, sec. 9(2)). The person responsible for a fire must on

demand reimburse the minister or the municipality for the costs of fighting the fire (sec. 9(3)). The Crown is under no obligation to pay compensation for any property destroyed or damaged by a fire or as a result of fighting a fire (sec. 5(b)).

The Algerian Forest Law requires owners to take all necessary measures to protect their forestry lands from fires, but grants them state assistance where this requirement involves the use of particular processes or means (art. 61). Pursuant to the Decree on Forest Fire Fighting, volunteers and persons requested to participate in forest fire fighting activities are assimilated to a public entity as regards damage suffered or caused to third parties (art. 31).

When prevention fails, forest owners should be quickly compensated to rehabilitate the burnt area and **insurance** can be the most effective way to do this. The law could possibly require insurance companies to offer owners a compensation against forest fires and encouraging insurance cover through various measures such as fiscal incentives (deductibility of premium) and partial payment of the base premium (Bourrinet, 1992). Legislation may also call for establishing compensation for victims of wildfires (for example, to be determined on a yearly basis by decree, Bourrinet, 1992).

In the Northern Territory of Australia, persons causing damage while exercising a power conferred by the Bushfires Act are not liable in respect of that damage and for insurance purposes such damage, if caused to property in need of protection from a bushfire, must be considered as damage arising out of a bushfire (sec. 53).

The law of China determines details regarding compensation of medical expenses and pension in the case of damage suffered by persons involved in forest fire fighting, charging them to the state (in the case of a state employee), to the entity responsible for the fire if there is one, or to the local government (Forest Law, art. 21(4)).

In Austria, companies offering insurance against forest fires are subsidised by federal funds in order to allow reduction of premiums on insurance purchased by private forest owners (Forestry Act, 1975, art. 147). In Algeria, the major risk prevention plan required to be adopted by Law No. 03-10 must provide for a systematic recourse to the national insurance system (art. 48).

3.8.4 Funding, research, training and awareness raising

Legislation can also serve to address funding issues related to forest fires. The European Union used its legislative functions to provide several financing schemes supporting Member States in their efforts to prevent and combat forest fires and mitigate their consequences. Legislation specified how funding could be allocated and targeted it towards studies, monitoring, capacity building, public awareness, specifically referring to forest fires (Ch. 2.3.2 above). In the United States, annual appropriation bills at the federal as well as state level frequently include allocations for fire fighting expenses, which are usually covered by a specific emergency fund, separately from other fire-related expenses, which are normally foreseen in the agencies' regular budgets. Federal legislation also specified how funding could be obtained for hazardous fuel reduction projects, giving priority to communities that have adopted a community wildfire protection plan or have taken proactive measures to encourage willing property owners to reduce fire risk on private property (Ch. 2.3.6 above). In the specific case of the State of Washington, legal provisions allow the charging of assessments on forest land to finance fire prevention activities undertaken by public authorities (Ch. 2.3.6 above).

Other legal provisions may clarify that national or local forest funds may be used for forest fire-related activities. In Chubut, Argentina, legislation created a specific local fund for fire management, clarifying that financial resources could be used for prevention, suppression and rehabilitation (Ch. 2.3.3 above). In Cuba, for instance, the National Fund for Forest Development is clearly mandated to support measures for the protection of forests against fire (Joint Resolution of the Ministry of Economy and Planning and the Ministry of Finance, 2000, art. 2(e)). In several other instances, however, legislation on forest funds does not specify whether financial resources can be used for fire-related activities, as was highlighted in the case of Senegal (Ch. 2.3.1 above).

Finally, legislation may be useful in addressing **research, training and awareness-raising** needs related to forest fires. In both instances, legislation can allocate specific tasks to institutions, call for the development of policies and plans and/or allocate funding, possibly having particular regard to community-based approaches. It has already been highlighted that awareness raising is included in forest fire plans in Algeria, Brazil and Portugal (Ch. 3.3 above). In the previous chapter, it has also been noted that Indonesian

legislation specifically promotes research, education and training, placing specific obligations upon private and public entities (Ch. 2.3.4 above). According to European Union legislation, specific funding may target research and awareness raising, while research is further supported by the creation of expert groups and information-sharing systems (Ch. 2.3.2 above). In Peru, furthermore, the law expressly mandates the Ministry of Education to include within the general education program subjects related to the prevention and control of forest fires (Forestry and Wildlife Law, 2000, art. 19). Training and awareness raising may also be part and parcel of the overall fire management planning process.

Legislation may also call for an evaluation of implementation of existing forest fire rules with a view to their periodic improvement in light of experience. According to Cuban subsidiary legislation, for instance, chiefs of forestguards at the provincial level are called upon to review lessons learnt in implementation one year after the entry into force of the rules and procedures (Instructions of the Chief Forest Guard Regarding Rules and Administrative Procedures for the Utilization of Fire in Forests and Neighbouring Areas, 2003).

In light of the thematic elements of legislation analysed in this chapter, the following section will formulate recommendations as to priority issues and approaches to fire management on which national legislators concerned with forest fires should focus.

4. KEY RECOMMENDATIONS FOR DRAFTERS OF NATIONAL LEGISLATION ON FOREST FIRES

In light of the comparative analysis of national legislation and of the suggestions provided by the FAO Guidelines, some general recommendations may be formulated for the review of existing legislation and for the formulation of new or amended forest fire-related legislation. Recommendations may apply whether the legislation on forest fires is enacted separately, or whether applicable provisions are part of forest legislation or one or more pieces of other legislation.

In light of the specific – and often complex – structure of the legal framework on forest fires in a given country, it is critical to ensure the consistency and coherence of the legal discipline emerging from the multiplicity of legal instruments applicable. Thus, before proposing any reform, it is essential that legislators analyse carefully the existing legal framework related to fire management and forest fires. The following areas of law should be examined:

- forest legislation;
- civil protection/disaster management legislation;
- (central and local) government structure legislation;
- land use planning legislation;
- environmental legislation;
- wildlife/hunting legislation;
- agricultural legislation;
- protected area legislation; and
- criminal law and civil law (sanctions and compensation).

Such analysis should aim at identifying:

- **gaps** (no rules exist on forest fires, or if they exist they are insufficient or outdated);
- **inconsistencies** within the forest fire-specific legal framework, or between that and other connected laws and possibly between different institutional mandates; or
- **the lack of implementation or enforcement.**

Carrying out an initial analysis of the existing framework serves, therefore, to map the scope of legal reforms needed: the preparation of a new legal instrument, or in other cases, only amendments to existing legal instruments, for example to add a few specific obligations or to enhance coordination.

In addition, national drafters should adopt:

- an **inter-disciplinary** approach, which would require drafters to work closely with technical experts and build upon their knowledge of the actual causes of forest fires in the country, the relation of specific ecosystems with fire (fire-adapted or fire-sensitive), the economic and social circumstances related to forest fires and to the use of fire – including traditional practices and the available resources for implementation and law enforcement. Thus, legislators should become familiar with fire negative, as well as its positive, impacts in a given country; and
- a **participatory** approach, in which different stakeholders have an opportunity to be informed of the legal issues related to forest fires and contribute to identify the most appropriate legal solutions, on the basis of their knowledge, interests and concerns.

On these bases, legislators should avoid an excessively restrictive approach, while at the same time preventing excessive fire application in land use systems and land use change and its transboundary effects. Proposed legal provisions should not exceed what is necessary to achieve reasonable and legitimate objectives or what is socially acceptable, taking into account the capacity of public authorities and other stakeholders.

In the formulation of new legislation on forest fires, or in drafting amendments to existing forest fire legislation, the following recommendations, grouped according to the thematic elements identified in Chapter 3 above, can be formulated.

4.1 Definitions

The definitions examined in the legislation analysed in Chapters 2 and 3 are not particularly problematic. It is nonetheless worthwhile formulating the following basic recommendations:

- Definition of basic terms, such as "forest fires" "wildland fires" "rural fires" or similar ones, should clearly relate to the scope of application of the law (i.e. the law will normally apply to all "forest fires" as defined, unless otherwise stated).
- Definitions should be included only if necessary to interpret the law. For example, terms or expressions which have a range of possible meanings require a definition to select a single valid meaning; definitions of expressions which encompass a complex concept are useful to avoid repetition of identical phrases in the text; otherwise, technical terms or expressions do not need to be defined only because they are generally relevant to forest fires, if their meaning is widely agreed upon and unambiguous.
- The most appropriate choices for definitions have to be made in any single country and may take into account the most frequent causes of forest fires, the types of vegetation, the size of forest areas and any other element which may help to make the law an effective instrument for the particular circumstances in which it is going to be applied.

4.2 Institutional set-up and inter-institutional coordination

Provisions on responsibilities of institutions in forest fire management, whether incorporated in a specific law on forest fires or in other legislation, are not necessarily coherent, as frequently more than one authority is involved in forest fire management and more than one piece of legislation applies. This may be inevitable, but does not contribute to institutional coordination. In countries that have a decentralized structure (for example federal or regional), authorities which are involved in forest fire management frequently act at different territorial levels, with further need for coordination. Some countries have experimented interesting innovative approaches, such as the creation of advisory bodies to assist the minister, of mediators to settle disputes and of local fire management bodies including public and private stakeholders. The following may be recommended:

- The delineation of the respective functions of all institutions/bodies which are in any ways involved in forest fire management must be as clear as possible (addressing at least basic functions such as prevention and suppression). Where appropriate, this should be coupled with cross-references to other applicable legislation, as it may be from time to time amended.

- Clear provisions on sharing of responsibilities among different territorial levels (e.g. central and regional) are equally important and should preferably be set out in a single piece of legislation.
- Where a piece of legislation addresses responsibilities of some, but not all institutions/bodies which are involved in forest fire management, express legal requirements for coordination with other responsible authorities (established by other pieces of legislation) may be useful. Such requirements should be as specific as possible, calling for example for the conclusion of agreements for coordination of activities, or for exchange of information.
- Legal provisions for the creation of an advisory body including representatives of the various concerned institutions, as well as other stakeholders, are also useful to promote coordination. Legislation (possibly subsidiary legislation) should specify the body's composition, functions and basic rules of operation.
- The law should provide some guidance to the exercise of discretionary powers of public authorities, in order to increase their legitimacy and accountability.

4.3 Planning, monitoring and assessment

Forest fire management plans may be described as instruments that include, as a minimum, monitoring requirements and consequent statement of objectives and required measures. The FAO guidelines include several references to planning, monitoring and assessment, thus specifying recommended contents of the plans, such as ecological considerations on the impact of suppression actions, interaction with climate change and cultural practices.

The analysis of legislation shows a positive trend towards the adoption of requirements for forest fire management plans, although in some cases some of the desirable requirements for contents of the plans tend to be overlooked. Another aspect that needs to be strengthened is the procedure for adoption of the plans, which, as for other management plans related to natural resources, should encompass public participation. The following may be recommended:

- Legislation should require the adoption and periodic review of forest fire management plans and set out their minimum contents; or at least should require the integration of forest fires concerns in broader forest management plans.

- Legislation should set out the process for adoption of the plans, requiring information and involvement of the public and more specifically concerned stakeholders.
- Legislation should also clarify the legal consequences of the plans, such as limits to the property rights over forest areas and adjacent areas in light of the provisions of the plans, as well as the obligation for sectoral planning exercises to integrate certain provisions of the fire management plan concerning the same areas.

4.4 Prevention and preparedness, detection and early warning and suppression

Fire seasons during which the lighting of fires or other activities are prohibited or regulated are set out in most countries and there is a variety of ways in which these seasons are determined – whether permanently or by order of the authorities. Common provisions are also those which set out requirements for pre-fire season activities or fuel management or prohibit specified hazardous actions. However, legislation examined in Chapters 2 and 3 does not seem to have taken up many of the innovative approaches indicated in the FAO guidelines, such as the determination of pre-fire season measures in inter-institutional arrangements or agreements between public authorities and land owners, which could result in improved effectiveness in risk management. Most of the current provisions tend to remain traditional, consisting of obligations to comply with certain rules or prohibitions set out by the authorities. Similar considerations apply to fire risk rating, which is increasingly required by legislation but not associated with the desirable active involvement of local communities to collect information and disseminate warnings. The following may be recommended:

- Legislation should clearly set out the obligations related to prevention, detection and suppression, possibly providing for rewards or incentives to encourage positive behaviour.
- Legislation should also clearly identify the legal consequences of fire seasons, fire danger rating and early warning, ensuring that appropriate communication procedures are in place.
- Provisions for the prevention and fighting of fires could support cooperative approaches, requiring for example the adoption of relevant measures in agreement with concerned stakeholders and incentives, rather than simply consist of obligations and prohibitions.

4.5 Participatory and community-based approaches to fire management

The integration of local resources and knowledge into fire management by involving local communities is widely recommended, including in the FAO Guidelines. Various laws have provided for some participatory aspects, in a positive trend towards increased adoption of participatory and community-based approaches to fire management. Legislation should provide a clear basis for this kind of approach. For example, the law could:

- require responsible authorities to adequately inform the public on monitoring activities and other forest fire management aspects;
- envisage the creation of local committees/groups which could undertake certain forest management responsibilities on the basis of specific agreements, following the provision of adequate information and training;
- envisage agreements with concerned land/forest owners setting out respective rights and obligations regarding measures to prevent fires or other forest management aspects;
- require consultation of local communities and concerned land/forest owners in the process for the adoption or revision of forest fire management plans and of forest fire legislation;
- require the public to inform the authorities on relevant facts; and
- foresee rewards or other incentives for persons or teams who have successfully completed certain activities, e.g. fire suppression.

4.6 Fire use

Although traditionally legislation tended to foresee blanket prohibitions to use fire, various laws have now started to allow certain planned uses of fire, as there is general awareness that fire may be a useful land/forest management tool and may be appropriately used in certain agricultural practices or as "suppression fire". The following recommendations must therefore be made:

- Legislation should regulate possible fire uses, for example by:
 - clarifying the conditions and procedures for the authorized use of fire. To this end, legislation may require prior notification, prior inspections, the issuance of a permit,

concomitant supervision, the conclusion of agreements, the submission of plans, or a combination of any of these tools to allow controlled burnings, as well as detailing more specific applicable precautionary measures and post-fire arrangements;

- the authorization system for the use of fire should not necessarily be complex, but rather be adapted to the specific circumstances of a country, its administration capacities and the specific conditions of forest users. In addition, legislation should take into account traditional practices related to the use of fire and devise culturally appropriate methods for their control; and
- limiting the possibility of requesting authorizations for planned fires to certain seasons and areas, in accordance with management plans or other applicable requirements.

4.7 Rehabilitation

Provisions regarding post-fire rehabilitation are still rare in the legislation examined. The role of legislation in ensuring appropriate rehabilitation should, however, not be underestimated. The following may be recommended:

- Legislation could allocate clear responsibilities for the administration or concerned land owners to rehabilitate burnt forest areas, possibly ensuring that funds, technical advice and/or free planting materials are provided to this end.
- Legislation could ensure that rehabilitation is included in the overall fire management planning and possibly require specific rehabilitation plans subject to general environmental/forestry requirements.
- Legislation could also set out specific requirements for rehabilitation in protected areas, or other ecologically sensitive areas.

4.8 Law enforcement

Law enforcement is an essential element to ensure effective legislation and may also be considered part of fire prevention measures, as a tool that may result in the avoidance of outbreaks of fires or in the reduction of fire severity and spread.

Since certain requirements and prohibitions relating to forest fires are similar in many countries, many of the same offences are commonly set out. Some shortcomings of the provisions on offences and penalties are also common – for example, penalties applicable to certain prohibitions or for violations of certain requirements are sometimes not foreseen or not easily identifiable. Although general criminal and administrative law and procedures for their application, as well as rules applicable to compensation of damage, vary widely from one country to another, some recommendations regarding legislative provisions on forest fires may be made. These provisions should:

- list **offences** and related **penalties**, i.e. clearly indicate which actions or omissions constitute a violation of the law and what consequences (whether penal sanctions or administrative or others) are applicable to it;
- specify additional consequences of violations, such as obligations to compensate and their extent, forfeiture, suspension or cancellation of permits;
- indicate whether and how actions/violations committed by persons officially acting on behalf of an authority may be sanctioned (e.g. by an authority to issue plans within a time period; damage to premises by officials fighting a fire);
- take into account general criminal law and adjust forest fire-related provisions in light of it or where possible and appropriate modify it (e.g. by addressing the crime of arson, modifying penalties, provisions on second offences etc.);
- specify which authorities and officers are in charge of checking compliance with forest fire-related legislation;
- specify what powers **enforcement officers** may routinely exercise (inspection, arrest, seizure, etc.); if some officers' powers to check compliance with the forest fire-related legislation are already addressed in other legislation, the relevant provisions should be taken into account and reference should be made to them if they are appropriate; otherwise, those powers should be adjusted accordingly;
- specify what powers enforcement officers may exercise during fire fighting operations and strengthen such powers or exempt them from normal limitations as considered appropriate to guarantee people's safety;
- aim at improving the effectiveness and fairness of existing criminal or administrative procedures for enforcement of legislation, for

example by allowing, where possible and appropriate, compounding of offences or appeals to administrative authorities and/or courts;

- devise **disincentives** to the intentional setting of fires (e.g. prohibition to use burnt land for purposes other than those for which it was used prior to the fire, or to build, graze, hunt, for a certain number of years after the occurrence of a fire);
- devise appropriate mechanisms for the allocation of **cost of damage** caused by fires, including cost of fighting fires. In addition to the general obligation to compensate damage caused intentionally or by negligence which usually exists, more specific provisions need to be devised, specifying the extent of responsibility of land owners or managers and of authorities in fighting fires in case of negligence. Solutions which may be experimented include the possibility of making prior agreements between the administration and entities which may suffer wide damage from fires (e.g. utilities, transportation) or between various levels of government, the possibility of charging levies on landholders, or of requiring compulsory insurance, which may be partly subsidized;
- support the allocation of **funding** for forest fire-related activities, taking into account research, training and awareness-raising needs and giving priority to community-based activities where possible; and
- promote **research, training and awareness-raising**, allocating specific obligations in this respect or providing for their inclusion in forest management planning exercises.

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Resolution of the Council of Ministers No. 58/2005.

Order of the Ministry of Agriculture, Rural Development and Fisheries No. 1061/2004 of 21 August 2004.

RUSSIAN FEDERATION

Forest Code of the Russian Federation of 8 November 2006.

Federal Law No. 201-FZ of 4 December 2006 implementing the Forest Code.

Federal Law No. 69-FZ on Fire Prevention of 21 December 1994, as amended by Federal Law No. 38-FZ of 10 May 2004.

Ministerial Decree No. 417 of 30 June 2007 validating the Regulation on forest fire safety arrangements.

Ministerial Decree No. 273 of 8 May 2007 regarding calculation of damage caused to forest by the infringement of forest legislation, as amended by Decree No. 806 of 26 November 2007.

Ministerial Decree No. 385 of 19 June 2007 validating the Regulation on aerial protection of forests.

Instruction of the Federal Forest Service of 17 November 1997 on prevention of forests fires and regulation of activity of forest fire emergency service.

Order No. 68 of the Federal Forest Service of 24 March 1999 regarding validation of the recommendations on setting up protective fire-prevention zones within forest areas by means of controlled burning out of dry grass.

Ministerial Decree No. 35 of 10 January 1999 regarding the validation of the Federal Special Program "Forest-fire Prevention for the Period 1999–2005".

Order No. 100 of the Federal Forest Service of 17 November 1997 validating the Regulation on detection and extinguishing of forest fires of 30 June 1995.

Order No. 290 of the Federal Forest Service of 29 October 1993 validating rates of provision with fire prevention equipment and means for combating forest fires.

SENEGAL

Law on agro-sylvo-pastoral orientation of 2004 (*Loi d'orientation agro-sylvo-pastorale*).

Forestry Code, Law No. 98-03 (*Loi n° 98-03 portant le Code Forestier*).

Forestry Regulations, Decree No. 98-164 (*Décret n° 98-164 portant le Code Forestier – partie réglementaire*).

Forestry Regulations, Decree No. 95-357 (*Décret n° 95-357 portant le Code Forestier – partie réglementaire*).

Decree No. 96-1134 implementing the law on transfer of functions to regions, communes and rural communities regarding environment and management of natural resources (*Décret n° 96-1134 portant application de la loi portant transfert de compétences aux régions, aux communes et aux communautés rurales, en matière d'environnement et de gestion des ressources naturelles*).

SOUTH AFRICA

National Veld and Forest Fire Act No. 101 of 19 November 1998.

Fire Protection Association Regulations No. R. 665 of 16 May 2003.

SUDAN

Forests and Renewable Natural Resources Act No. 11 of 2002.

Forests Act No. 14 of 10 May 1989 (repealed).

Forests' National Corporation Act No. 13 of 10 May 1989 (repealed).

TONGA

Fire Services Act 1979.

Forests Act 1961.

UNITED STATES

Sundry Civil Expenses Appropriations Act for FY 1898 of June 4, 1897.

Forest Fires Emergency Act, 1908 (repealed).

Healthy Forests Restoration Act, December 3, 2003 (Pub. L. 108-148, 117 Stat. 1887, 16 USC 6501-6516).

Michigan

State Forest Fire Law of Michigan (Part 515, 451 PA 1994).

South Carolina

South Carolina Prescribed Fire Act (South Carolina Code of Laws Title 48 Chapter 34).

Washington

Forest Protection Assessment, Revised Code of Washington 76.04.610.

UZBEKISTAN

Law on Forests of 15 April 1999.

Resolution No. 506 of the Cabinet of Ministers of 22 November 1999.

Case Studies

Part of this study is based on FAO practical experience in providing technical and legal assistance to Member States in the review of their national legislation on forest fires. The following list includes the recent projects which provided lessons learnt that have been taken into account in the preparation of this study. Where available, the list includes reference to consultants' reports, which are unpublished and on file with LEGN.

SYRIA (GCP/SYR/010/30451/ITA) - *Participatory and Integrated Forest Fires Management Plan*

BULGARIA (TCP/BUL/2902) – *Strengthening capacity for forest fire prevention*

Report of the National Legal Consultant, Vladimir Traykov, Sofia, 2005.

CROATIA (TCP/CRO/3001) - *Capacity building for forest fire prevention*

Report of the National Legal Consultant, Jela Bilandžija, December 2007.

NICARAGUA (TCP/NIC/3102) - *Salubridad y vitalidad de los bosques de pino (pinus oocarpa) afectados por incendios forestales en el Departamento de Nueva Segovia*

Interim report of the National Legal Consultant, Martha Yadira Zeledón Hernández, March 2007.

Final report of the National Legal Consultant, Martha Yadira Zeledón Hernández, September 2007.

CAPE VERDE (TCP/CVI/3101) - *Renforcement des capacités dans le domaine de la sensibilisation, de la prévention, de l'aménagement de protection et de la lutte contre les feux de forêts*

Report of the National Legal Consultant, Januario Nascimento, February 2008.

Proposta do Sistema de Prevenção e Combate aos Incêndios Florestais em Cabo Verde - Report of the National and International Consultants, Gilberto Silva and Giselle Paes Gouveia, February 2008.

ANNEX

RESUME EXECUTIF ET RECOMMANDATIONS PRINCIPALES

Les incendies qui affectent la végétation, les forêts et les pâturages sont une menace majeure et continue à la vie humaine, la santé, la subsistance, le développement économique et l'environnement. Dans la plupart des cas, les causes de ces incendies sont induites par les humains : défrichement des terres (en particulier pour la culture de rotation, d'autres activités agricoles, ou l'entretien des prairies pour la gestion du bétail), extraction de produits forestiers non ligneux, développement industriel, réinstallation, chasse, négligence et l'incendie criminel.

« *Les recommandations volontaires pour la gestion des feux – principes directeurs et actions stratégiques* », élaborées sous l'égide de la FAO, apportent un ensemble de principes prioritaires sur la gestion des feux et constituent un élément essentiel dans l'aménagement durable des forêts. La gestion des feux permet d'utiliser le feu pour réaliser les objectifs d'aménagement du territoire et de son usage traditionnel, tout en sauvegardant la vie, la propriété, et les ressources à travers la prévention, la protection, la détection, le contrôle, la mitigation, et la suppression des incendies dans la forêt et autre végétation des zones rurales. Cette méthode comprend la prévention, la préparation préalable, l'alerte précoce, la détection et la mobilisation, l'extinction et la restauration (y compris la recherche et le transfert de technologie), aussi bien que l'usage approprié du feu naturel ou causés par les humains pour maintenir les valeurs écologiques et de l'intégrité de certains écosystèmes, et finalement, l'usage du feu pour réduire l'accumulation des combustibles naturels et les résidus des activités commerciales et non commerciales.

« *Les recommandations volontaires pour la gestion des feux* » favorisent la formulation d'un cadre légal et réglementaire en appui d'une approche holistique dans ce domaine. En particulier, le Principe 8 des recommandations reconnaît clairement le rôle de la législation pour appuyer et institutionnaliser la gestion des feux. En effet, des observations empiriques ont mené à la conclusion que la prévention et la répression des incendies sont souvent entravées par le manque de clarté des responsabilités institutionnelles et par des conflits entre politiques et législation. Néanmoins, une diversité d'approches dans l'élaboration de législations nationales peut être envisagée: prévention et répression, mesures incitatives, coordination et planification, méthodes participatives et communautaires.

Sur la base des « *Recommandations volontaires pour la gestion des feux* », cette étude identifie systématiquement les éléments d'une législation cohérente en matière de feux de forêt, sur la base de l'expérience acquise par la FAO en appuyant l'amélioration de la législation des pays membres en la matière. Des tendances émergentes et des nouvelles solutions juridiques sont identifiées dans les législations nationales et infranationales sur les feux des forêts d'un group représentatif de pays de différentes régions, ayant des écosystèmes et des traditions juridiques différents. Cette étude comparative a conduit à la formulation de recommandations systématiques pour l'analyse, l'examen et la rédaction de législation visant à assurer une approche holistique à la gestion des feux de forêt.

Dès le début, il faut clarifier que cette étude n'a pas l'intention de prévoir une « loi modèle » sur les feux de forêt : variant considérablement les problèmes techniques et les conditions écologiques et sociales d'un pays et d'une éco-région à l'autre, les solutions juridiques devraient aussi différer pour traiter efficacement la gestion des feux dans un contexte national spécifique. Il convient également de souligner que la gestion des feux de forêt peut influencer la réalisation des objectifs à atteindre dans le cadre des Principes sur les Forêts de 1992, l'Instrument non contraignant applicable à tous les types de forêts, la Convention sur la diversité biologique, la Convention-cadre sur les changements climatiques, et la Convention sur la lutte contre la désertification.

La législation nationale sur les feux de forêt se compose en général soit de textes qui traitent spécifiquement ou entièrement les feux de forêt, soit de textes qui traitent en partie certains aspects de la gestion des feux de forêts ainsi que d'autres aspects de la gestion des forêts. Par ailleurs, d'autres dispositions sont directement ou indirectement liées au sujet de la gestion des feux de forêt, comme par exemple la législation agricole, celle sur la protection environnementale et sur la gestion des catastrophes.

Une série d'éléments liés à la gestion des feux de forêt peut devenir l'objet de la législation nationale. Ceux-ci sont :

- **les définitions:** celles-ci devraient être expliquées clairement dans la législation, pour éviter toute confusion et ambiguïté et pour déterminer le champ d'application de la législation;
- **le cadre institutionnel:** les responsabilités ambiguës ou le chevauchement des responsabilités des différentes institutions sont

une des faiblesses les plus prévalentes des législations nationales sur les feux de forêt, provoquant souvent la duplication des efforts et la lourdeur des bureaucraties. La législation devrait donc éviter toute confusion des rôles et des fonctions entre institutions gouvernementales qui s'occupent de la gestion du feu, ainsi qu'entre les différents niveaux de gouvernement dans un système décentralisé;

- **la coordination** : la législation peut établir une coordination entre les diverses administrations publiques qui sont concernées directement ou indirectement par les feux de forêts. De plus, la législation peut clarifier comment et quand la coordination interinstitutionnelle devrait être assurée. Bien que la législation ne soit pas le seul moyen pour achever cette coordination, cela peut être un instrument très utile pour la faciliter;
- **la planification, surveillance, et évaluation** : la législation peut créer une obligation de préparer des plans de gestion des feux, avec l'indication du contenu minimal des plans et de la périodicité de leur rédaction, y compris les questions de la participation du public au processus décisionnel et l'intégration des plans de gestion des feux avec d'autres exercices de planification;
- **la prévention** : la législation peut fixer des saisons du feu; institutionnaliser certaines activités précédentes les saisons du feu; établir un système d'alerte précoce et ses conséquences juridiques; interdire certaines activités dangereuses; et prévoir certaines mesures préventives pour la gestion du combustible;
- **l'extinction** : la législation peut prévoir des mesures spécifiques pour l'organisation de l'attaque du feu par les entités responsables, en précisant les pouvoirs, les obligations de communication, les conditions de coordination, et éventuellement l'équipement ou pratiques qui (ne) devraient (pas) être utilisés;
- **l'utilisation du feu planifié**: les interdictions absolues d'usage du feu se sont souvent révélées inefficaces, et même contre-productives. Un système juridique qui permet l'utilisation contrôlée et planifiée du feu peut être plus utile pour la prévention des feux de forêt et pour satisfaire d'autres objectifs de gestion du territoire. La législation peut donc préciser que les feux planifiés et dirigés ne sont pas interdits dans des périodes et circonstances qui excluent ouvertement toute diffusion du feu. De plus, la législation peut

spécifier les définitions, procédures ou cautions minimales pour l'utilisation du feu planifié;

- **une approche participative et communautaire:** la législation peut appuyer ou institutionnaliser la participation des communautés locales ou d'autres parties prenantes dans la prévention et la suppression des incendies de forêt, en exigeant l'échange d'informations, en promouvant la création des groupes locaux d'action initiale ou des comités de surveillance, en requerrant d'autres mesures d'action initiale, et/ou en exigeant la collaboration ou l'initiative privée d'individus pour détecter, prévenir et éteindre des incendies;
- **réhabilitation:** la législation peut répartir les responsabilités dans ce domaine, telles que celle d'entreprendre la replantation des arbres ou de préparer un plan de réhabilitation après des vastes incendies, et ce en vue d'assurer la cohérence entre les différentes opérations de réhabilitation et de prévenir des nouveaux feux; et
- **l'application de la loi** peut être considérée comme une partie intégrante des mesures de prévention d'incendies, comme outil pour prévenir l'apparition ou la diffusion d'incendies et pour en réduire la gravité. À ces fins, la législation peut préciser les pouvoirs des forces de l'ordre; identifier clairement les infractions et les sanctions qui devraient être suffisamment dissuasives; créer des mesures pour dissuader les pyromanes potentiels en éliminant les causes possibles de l'usage illégal du feu; et traiter les questions d'indemnisation, d'assurance, de financement, de recherche, de formation et de sensibilisation.

Du fait de la structure spécifique et souvent complexe du cadre juridique sur les feux de forêt, il est essentiel d'assurer la cohérence des instruments applicables. Ainsi, avant de proposer des modifications, il est essentiel que les législateurs analysent avec soin le cadre juridique existant lié aux forêts et au feu. Les domaines juridiques suivants devraient être examinés:

- législation forestière;
- législation sur la gestion des catastrophes / protection civile;
- législation sur la structure du gouvernement (central et local);
- législation sur l'aménagement du territoire;
- législation environnementale;

- législation sur la faune et la chasse;
- législation agricole;
- législation sur les zones protégées;
- droit pénal et droit civil (sanctions et compensations).

Une telle analyse vise à identifier:

- **lacunes** (absence de règles sur les feux de forêt ; ou si ces règles existent, elles sont insuffisantes ou dépassées);
- **incohérences** dans le cadre juridique spécifique aux feux de forêt, ou entre ce cadre et d'autres législations connectées, ou conflits entre les différents mandats institutionnels; ou
- **manque d'application ou d'exécution.**

Effectuer une analyse initiale du cadre actuel sert à identifier les réformes juridiques nécessaires : préparation de nouveaux instruments juridiques ou amendements aux instruments juridiques existants, par exemple en ajoutant quelques obligations spécifiques ou en renforçant la coordination.

En outre, les législateurs devraient adopter:

- Une **approche interdisciplinaire**, qui s'appuierait sur les connaissances d'experts non juristes des causes réelles des feux de forêt dans le pays concerné, la relation des écosystèmes spécifiques avec le feu (soit dépendants du feu ou sensibles au feu), les ressources disponibles pour la mise en œuvre de la loi, la situation économique et sociale liée aux incendies et à l'usage du feu, en particulier dans le cadre de pratiques traditionnelles. Les législateurs devraient donc se familiariser avec les impacts positifs et négatifs du feu.
- Une **approche participative**, dans laquelle les différentes parties prenantes peuvent être informées des questions juridiques liées aux feux de forêt et contribuer à l'identification de solutions juridiques appropriées, sur la base de leurs connaissances, intérêts et préoccupations.

Sur ces bases, le législateur devrait éviter une approche trop restrictive, et en même temps l'application excessive du feu pour la gestion du territoire et ses effets transfrontaliers. Les dispositions juridiques prévues ne doivent pas dépasser ce qui est socialement acceptable et nécessaire pour atteindre des

objectifs raisonnables et légitimes, en tenant compte de la capacité des pouvoirs publics et des autres parties prenantes.

Recommandations pour la formulation de nouvelle législation ou d'amendements en matière des feux de forêt

1. Définitions

Les définitions examinées dans les législations analysées ne sont pas particulièrement problématiques. Il est néanmoins utile de donner les recommandations de base suivantes.

- Les définitions des notions de base, telles que « feu de forêt », « feu rural » ou similaires, devraient clairement porter sur le champ d'application de la loi (c'est-à-dire, la loi s'applique normalement à tous les « feux de forêt », tels que définis, sauf si indiqué autrement).
- Les définitions ne devraient être incluses que si nécessaire (par exemple, les termes ou expressions qui ont une gamme de significations possibles ont besoin d'une définition pour sélectionner un seul sens valide ; les définitions des expressions qui englobent un concept complexe sont utiles pour éviter la répétition des phrases identiques dans le texte ; autrement, les termes ou expressions techniques n'ont pas besoin d'être définis, si leur sens est largement convenu et sans ambiguïté).
- La sélection des définitions devrait être faite dans chaque pays en vue d'adapter la législation aux circonstances particulières de son application, en considérant, entre autres, des éléments tels que les causes les plus fréquentes d'incendie, le climat, le type de végétation, le potentiel d'expansion des incendies, la taille des zones forestières et d'autres facteurs de risque.

2. Organisation institutionnelle et coordination interinstitutionnelle

Les dispositions sur la responsabilité des institutions dans la gestion des feux de forêt, incorporées soit dans une loi spécifique sur les feux de forêt, soit dans d'autres lois, sont fréquemment incohérentes. Souvent, plus d'une loi s'applique et plus d'une autorité est impliquée dans la gestion des feux de forêt. Ceci peut être inévitable, mais ne contribue pas à la coordination institutionnelle. Dans les pays décentralisés (par exemple, à structure fédéral

ou régional), les autorités qui sont impliquées dans la gestion des feux de forêt agissent souvent à différents niveaux, ce qui exige plus de coordination.

Certains pays ont expérimenté des approches novatrices intéressantes, telles que la création d'organes consultatifs pour guider le ministre, des médiateurs pour résoudre des conflits, et des organes locaux pour l'action initiale contre les incendies, regroupant acteurs publics et privés.

Les recommandations suivantes peuvent être formulées:

- La délimitation des fonctions respectives de tous les organismes/institutions qui sont impliqués dans la gestion des feux de forêt doit être aussi claire que possible (et détailler au moins les fonctions de base, telles que la prévention et l'extinction).
- Des dispositions claires sur le partage des responsabilités entre les différents niveaux territoriaux (par exemple, central et régional) sont aussi importantes et devraient de préférence faire l'objet d'un texte de loi unique.
- Si un texte de loi traite la responsabilité de certains, mais pas de tous les organismes/institutions qui sont impliqués dans la gestion des feux de forêt, des dispositions juridiques pour la coordination avec les autres autorités responsables peuvent être utiles. Ces dispositions doivent être aussi précises que possible, exigeant par exemple des accords précédents la saison des incendies ou d'autres accords pour la coordination des activités, ou pour l'échange d'informations.
- Les dispositions légales pour la création d'un organe consultatif - comprenant des représentants des différentes institutions concernées, ainsi que d'autres parties prenantes - sont également utiles pour promouvoir la coordination. La loi devrait spécifier la composition de ce type d'organe, les fonctions et les règles de base de fonctionnement.
- La loi devrait fournir des indications pour l'exercice d'un pouvoir discrétionnaire des autorités publiques, en vue d'accroître leur légitimité et leur responsabilité.

3. Planification, suivi et évaluation

Les plans de gestion des feux de forêt devraient comprendre au moins des indications en matière de surveillance et une déclaration des objectifs et des mesures requises. Le chapitre 3.3 sur la planification, le suivi et l'évaluation

fait des références à diverses recommandations volontaires de la FAO comprenant des contenus recommandés plus spécifiques, tels que des considérations écologiques sur l'impact des activités d'extinction, l'interaction avec les changements climatiques, et les pratiques traditionnelles. L'analyse de la législation montre une tendance positive vers l'adoption des obligations relatives aux plans de gestion des feux de forêt bien que, dans certains cas, certaines exigences souhaitables aient été ignorées.

Un autre aspect qui doit être renforcé est la procédure pour l'adoption des plans qui, comme pour les autres plans de gestion liés aux ressources naturelles, doit englober la participation du public. Les recommandations suivantes peuvent être formulées :

- La législation devrait exiger l'adoption d'un plan de gestion des feux de forêt et détailler son contenu minimal; ou devrait au moins exiger l'intégration des questions des feux de forêt dans les plans d'aménagement forestier.
- La législation devrait définir le processus d'adoption de ces plans, et exiger la diffusion d'information et la participation du public, et plus particulièrement des parties prenantes concernées.
- La législation devrait également clarifier les conséquences juridiques de ces plans, telles que les limites sur les droits de propriété des zones forestières et des zones adjacentes, et l'obligation d'intégrer les plans de gestion des feux dans d'autres types de planification sectorielle.

4. Prévention et préparation, détection et alerte précoce, et répression

Des saisons d'incendies, au cours desquelles l'éclairage des feux ou autres activités sont interdits ou réglementés, sont définies dans la plupart des pays, et il y a une variété de moyens par lesquels ces saisons sont déterminées – soit de manière permanente ou par ordre des autorités. D'autres dispositions communes sont celles qui exigent certaines activités précédant la saison des incendies ou la gestion du combustible ou qui interdisent des actes hasardeux. Cependant, les législations qui ont été examinées dans les chapitres 2-3 ne semblent pas intégrer un grand nombre des approches novatrices indiquées dans les recommandations volontaires de la FAO, telles que la détermination des mesures spécifiques précédant la saison des incendies à travers des accords de coopération interinstitutionnelle ou des accords avec les propriétaires fonciers. La plupart des dispositions actuelles ont tendance à rester traditionnelles, comprenant des obligations de se conformer à certaines règles ou des interdictions édictées par les autorités.

Des considérations analogues s'appliquent aux systèmes d'évaluation du risque d'incendie, qui sont de plus en plus souvent requises par les législations, mais qui ne sont pas associés à la participation active des communautés locales pour la collection d'informations et la diffusion d'avis de risque. Les recommandations suivantes peuvent être formulées:

- La législation devrait exposer en détail les obligations concernant la prévention, détection et répression des incendies de forêt, en adoptant éventuellement des mesures incitatives visant à encourager une conduite responsable.
- La législation devrait identifier clairement les conséquences juridiques des saisons des incendies, des systèmes d'évaluation du risque d'incendie et d'alerte précoce, mettant en place de procédures de communication appropriées.
- Les dispositions pour la prévention de et la lutte contre les incendies pourraient appuyer des approches de coopération, exigeant, par exemple, l'adoption de mesures pertinentes en accord avec les parties prenantes concernées et des mesures d'incitation, au lieu de seulement formuler des obligations et des interdictions.

5. Approches participatives et communautaires

L'intégration des ressources et des connaissances locales dans la gestion des feux de forêt en impliquant les communautés locales est largement recommandée, y compris dans les recommandations volontaires de la FAO, en vue d'améliorer l'efficacité de la gestion des feux de forêt. Diverses lois analysées dans cette étude ont intégré certains aspects participatifs, ce qui démontre une évolution positive vers une participation du public plus importante dans la gestion des feux. La législation en effet devrait stipuler une base pour l'intervention des communautés ou des parties prenantes. Par exemple, la loi pourrait:

- exiger 'des autorités responsables d'informer le public de manière adéquate sur les activités de surveillance et d'autres aspects de la gestion des feux de forêt;
- envisager la création de comités/groupes locaux qui pourrait avoir des responsabilités définies en matière de gestion des feux de forêt sur la base d'accords spécifiques, après avoir informé le public adéquatement et lui avoir fourni la formation appropriée;

- envisager des accords avec les propriétaires forestiers/fonciers fixant les droits et obligations respectifs concernant les mesures visant à prévenir les feux de forêt ou d'autres aspects de la gestion des feux;
- exiger la consultation des communautés locales et des propriétaires forestiers/fonciers concernés dans le processus d'adoption ou de révision des plans de gestion des feux de forêt et de la législation sur cette matière;
- exiger du public d'informer les autorités sur les faits pertinents;
- prévoir des récompenses ou d'autres mesures incitatives pour les personnes ou équipes qui ont achevé avec succès certaines activités (par exemple de suppression des incendies).

6. Feu Planifié

Bien que la législation ait traditionnellement tendance à prévoir une interdiction intégrale de l'usage du feu, des plusieurs lois ont maintenant commencé à autoriser certaines utilisations du feu planifié. Il y a une conscience générale que le feu peut être un outil nécessaire pour la gestion des forêts ou du territoire, et que le feu peut être utilisé de manière appropriée dans certaines pratiques agricoles ou dans des activités de suppression d'incendies. Les recommandations ci-après peuvent donc être formulées:

- La législation devrait réglementer l'usage du feu planifié, par exemple en:
 - clarifiant les conditions et les procédures pour le feu planifié. À cette fin, la législation peut exiger la notification préalable, l'émission d'un permis, la supervision, des inspections préalables, des accords, l'élaboration des plans, ou une combinaison de ces outils pour permettre des brûlures dirigées, et détailler les mesures spécifiques de précaution applicables ainsi que des arrangements de post-feu;
 - le système d'autorisation pour le feu planifié ne devrait pas être nécessairement complexe mais plutôt être adapté aux circonstances particulières de chaque pays, comme les capacités d'administration pour l'application de la loi et les conditions spécifiques des utilisateurs des forêts. En outre, la législation doit prendre en compte les pratiques traditionnelles liées à l'usage du feu;

- limitant la possibilité de l'usage du feu à certaines saisons et régions, conformément à des plans de gestion ou d'autres dispositions applicables.

7. Réhabilitation

Les dispositions en matière de réhabilitation sont encore rares dans les législations examinées. Les recommandations ci-après peuvent être formulées :

- La législation devrait assigner des responsabilités claires aux pouvoirs publics ou aux propriétaires fonciers/forestiers concernés par la réhabilitation des zones forestières brûlées, en assurant éventuellement que des ressources financières, des avis techniques et/ou des semences seront mis à la disposition des propriétaires.
- La législation pourrait comporter des dispositions visant à assurer que la réhabilitation soit incluse dans le processus de planification de la gestion des feux, en requérant éventuellement l'élaboration des plans spécifiques pour la réhabilitation sous réserve des exigences environnementales et forestières.
- La législation pourrait aussi établir des obligations spécifiques en matière de réhabilitation des zones protégées ou d'autres zones écologiquement fragiles.

8. Application de la loi

L'application de la loi est un élément essentiel pour assurer l'effectivité de la législation, et peut également être considérée comme un outil de prévention ou de réduction de la gravité et/ou de la diffusion des incendies. Étant donné que certaines dispositions et interdictions relatives aux feux de forêt sont similaires dans des nombreux pays, un bon nombre d'infractions similaires ont été également établies dans ces pays. Certaines insuffisances des dispositions sur les infractions et les sanctions sont également communes – par exemple, des sanctions applicables à certaines interdictions ou en cas de violation de certaines dispositions ne sont pas prévues ou pas facilement identifiables. Bien que le droit général pénal et administratif et les procédures prévues pour leur application, ainsi que les règles générales applicables à la compensation des dommages varient considérablement d'un pays à l'autre, quelques recommandations concernant les dispositions législatives sur

l'application de la loi peuvent être effectués. Des dispositions juridiques devraient :

- énumérer les infractions et les sanctions, c'est-à-dire, indiquer clairement quelles actions ou omissions constituent une violation de la loi et quelles sont les conséquences qui suivront (sanctions pénales ou administratives ou autres);
- spécifier d'autres conséquences des violations, telles que les obligations d'indemnisation et leurs étendues (par exemple la confiscation, la suspension ou l'annulation d'un permis);
- indiquer si et comment les actions / les violations commises par des personnes agissant officiellement au nom d'une autorité, peuvent être sanctionnées (non-respect par une autorité de l'obligation de publier les plans dans un certain délai; dommages causés aux locaux par des agents d'extinction);
- assurer la cohérence entre le droit pénal général et les dispositions punitives relatives aux feux de forêt;
- préciser quelles autorités et quels agents sont chargés du contrôle du respect de la législation relative aux feux de forêt ;
- préciser les pouvoirs réguliers des agents d'exécution (inspection, arrestation, saisie etc.); si certains pouvoirs des officiers sont déjà traités dans d'autres lois, les dispositions pertinentes doivent être prises en compte et il convient d'y faire une référence spécifique;
- préciser les pouvoirs des agents d'exécution au cours de l'exercice des opérations de suppression, et renforcer leurs pouvoirs ou les exempter des limites normales pour garantir la sécurité des personnes;
- viser à améliorer l'efficacité et l'équité des procédures pénales ou administratives pour l'application de la loi;
- prévoir des mesures de découragement aux départs intentionnels d'incendies (par exemple, l'interdiction d'utiliser la terre brûlée pour des fins autres que celles pour lesquelles elle a été utilisée avant l'incendie, ou l'interdiction de la construction, de la pâture et de la chasse pour un certain nombre d'années);
- concevoir des mécanismes appropriés pour la répartition des coûts des dommages causés par les incendies, y compris le coût de la lutte contre les incendies. En plus des dispositions qui obligent l'indemnisation des dommages causés intentionnellement ou par négligence et qui existent habituellement, d'autres dispositions

spécifiques pourraient être élaborées, précisant l'étendue de la responsabilité des propriétaires fonciers ou des gestionnaires et des autorités dans la lutte contre les incendies en cas de négligence. Des solutions peuvent être: i. des accords préalables entre l'administration et des entités qui peuvent souffrir de larges dommages causés par les incendies (par exemple, les services publics, transports), ou entre les différents niveaux de gouvernement, ii. des prélèvements sur les propriétaires fonciers; ou iii. une assurance obligatoire, qui peut être en partie subventionnée;

- assurer l'allocation de fonds/financement aux activités connexes aux feux de forêt, en tenant compte des nécessités de recherche, éducation et sensibilisation en matière de feux de forêt et en privilégiant les activités communautaires;
- promouvoir la recherche, l'éducation et la sensibilisation, en attribuant des obligations spécifiques ou en requerrant leur inclusion dans la planification de la gestion des feux.

RESUMEN EJECUTIVO Y PRINCIPALES RECOMENDACIONES

Los incendios que afectan la vegetación, bosques y pastizales, son una grave y continua amenaza a la vida humana, salud y vida silvestre, al desarrollo económico y al medioambiente. Las causas más comunes de los incendios son las inducidas por el ser humano, es decir: uso del fuego para la preparación de tierra (especialmente para la rotación de cultivos, para otras actividades agrícolas, y para el mantenimiento de pasturas para la explotación de ganado), la extracción de productos forestales no madereros, el desarrollo industrial, la caza, la negligencia y el dolo.

Las *Directrices de carácter voluntario sobre el Manejo del Fuego – Principios y acciones estratégicas*, elaboradas bajo los auspicios de la FAO, proveen un conjunto de principios prioritarios para el manejo del fuego, el cual es un componente esencial para una gestión sostenible de los bosques. El manejo del fuego es un método de uso el fuego para lograr objetivos de manejo de la tierra y de usos tradicionales, junto con la salvaguardia de la vida, la propiedad, y de los recursos mediante la prevención, detención, control, restricción, y supresión de incendios en los bosques y en otra vegetación en áreas rurales. Este método abarca prevención, preparación, alerta temprana, detección y movilización, supresión y restauración (incluyendo investigación y transferencia de tecnología), así como el uso apropiado del fuego por causas naturales o humanas en el mantenimiento de valores ecológicos y la integridad de ciertos ecosistemas, y el uso del fuego para reducir la acumulación de combustible natural y residuos provenientes de actividades comerciales y no comerciales.

Las *Directrices de carácter voluntario sobre el Manejo del Fuego* respaldan la formulación de condiciones legales y reglamentarias para un enfoque integral al manejo del fuego. Específicamente, el Principio 8 de las Directrices claramente reconoce el rol de la legislación en el apoyo y la institucionalización del manejo del fuego. Esto es porque la observación empírica lleva a la conclusión que la prevención y la supresión de incendios se encuentran frecuentemente dificultadas por líneas poco claras de responsabilidades institucionales y por conflictos de políticas y de legislación. Una variedad de orientaciones en la formulación de la legislación nacional, puede, sin embargo, prever la prevención y represión, incentivos, coordinación y planeamiento, enfoques participativos y comunitarios.

Sobre la base de *La Directrices de carácter voluntario*, el presente estudio trata de identificar sistemáticamente los elementos de una legislación coherente sobre incendios forestales, capitalizando la experiencia adquirida por la FAO en asesorar a los Estados Miembros con respecto a la mejora de la legislación relativa al manejo del fuego. Las tendencias emergentes, mejores prácticas y soluciones legales innovadoras son identificadas a nivel de la legislación nacional y sub-nacional en un grupo representativo de países de diferentes regiones, que poseen diferentes ecosistemas y diferentes tradiciones legales. Este análisis comparativo lleva a la formulación de recomendaciones sistemáticas para el análisis, la revisión y la redacción de legislación que asegure medidas legales apropiadas que sirvan de apoyo al manejo integral del fuego.

Desde un primer momento se debe precisar que este estudio no pretende establecer una ley modelo en materia de incendios forestales, puesto que los elementos técnicos y las condiciones sociales y ecológicas varían enormemente de un país a otro y de una eco-región a otra. Por lo tanto, las soluciones legales también difieren en el tratamiento efectivo de las cuestiones vinculadas a los incendios en un contexto nacional específico. También debe subrayarse que los incendios forestales pueden influir en el alcance de los Principios sobre los Bosques de Todo Tipo (1992), el Instrumento no jurídicamente vinculantes sobre todos los tipos de bosques, el Convenio de las Naciones Unidas sobre la Diversidad Biológica, el Convenio Marco de las Naciones Unidas sobre el Cambio Climático, y la Convención de las Naciones Unidas de Lucha contra la Desertificación.

La legislación nacional en materia de incendios forestales generalmente consiste en textos que tratan específica o enteramente de incendios forestales, o en textos que tratan parcialmente ciertos aspectos del manejo del fuego junto con otros asuntos forestales. Adicionalmente, otras disposiciones están directa o indirectamente relacionadas con el ámbito de la legislación forestal en materia de incendios, tales como la legislación sobre agricultura, protección del medioambiente, y gestión de desastres.

Una serie de elementos relativos al manejo del fuego y a los incendios forestales pueden resultar objeto de la legislación nacional. Éstos son:

- **definiciones:** éstas deben ser claramente especificadas en la legislación, para prevenir confusiones y ambigüedad y delimitar el ámbito de aplicación de la normativa;

- **estructura institucional:** entre las debilidades más frecuentes que se pueden encontrar en la legislación nacional sobre incendios forestales, se puede indicar responsabilidades poco claras o superpuestas, lo cual ocasiona falta de coordinación y duplicación de esfuerzos más que una puesta en común de recursos, y onerosas burocracias. La legislación debería prevenir la confusión de roles y funciones entre las instituciones gubernamentales, así como asignar claramente competencias entre los distintos niveles de gobierno en un sistema descentralizado;
- **coordinación:** la legislación puede institucionalizar la coordinación con diferentes organismos públicos directa e indirectamente vinculados con los incendios forestales, y aclarar cuándo y cómo debe lograrse la coordinación interinstitucional. Aún cuando la legislación no sea el único medio para lograr la coordinación, puede ser un medio útil para facilitarla.
- **planeamiento, control y valoración:** la legislación puede garantizar que la obligación relativa a la preparación de planes de manejo del fuego se encuentre claramente asignada, junto con una indicación de los contenidos mínimos de los planes y de la periodicidad de su elaboración, incluyendo cuestiones como participación del público en el proceso de toma de decisiones y de otras partes interesadas y la integración con otros ejercicios relevantes de planificación;
- **prevención:** la legislación puede establecer temporadas de incendio, institucionalizar ciertas actividades previas a dichas temporadas, establecer un sistema de alerta temprana y sus consecuencias legales, prohibir ciertas actividades peligrosas, y proveer ciertas reglas de prevención relativamente al tratamiento de combustible;
- **extinción:** la legislación puede establecer procedimientos sobre cómo la lucha contra los incendios forestales debe ser organizada por las entidades responsables, especificando los poderes, los requisitos de coordinación y comunicación, y a veces el equipo y prácticas que deben o no deben usarse;
- **uso controlado del fuego:** las prohibiciones "en blanco" sobre el uso del fuego suelen ser ineficaces, cuando no contraproducentes, por ello un apropiado sistema legal para asegurar el uso planificado del fuego puede resultar más útil en la prevención de los incendios forestales y satisfacer otros objetivos relacionados con el uso de la tierra. La legislación puede, por tanto, aclarar que los incendios planificados no se encuentran prohibidos en ciertos periodos y bajo circunstancias que excluyan claramente todo propósito de

propagación. Además, la legislación puede especificar definiciones, procedimientos y precauciones mínimas para un adecuado uso del fuego;

- **enfoques participativos y basados en las comunidades:** la legislación puede apoyar o institucionalizar la participación de comunidades locales o de individuos en la prevención y extinción de incendios, requiriendo la provisión de información, apoyando la creación de grupos locales o de comités para el control o la acción temprana, y requiriendo a individuos que tomen acciones para detectar, prevenir o extinguir los incendios forestales;
- **rehabilitación:** la legislación puede establecer responsabilidades a este respecto, tal como la obligación de disponer la planta o re plantar árboles o preparar un plan de rehabilitación después de incendios extensivos, con vistas a asegurar la consistencia entre las diferentes operaciones de rehabilitación y la prevención de nuevos incendios; y
- **aplicación del derecho:** puede ser considerada parte integrante de medidas de prevención de incendios, como una herramienta que puede resultar en la prevención de brotes de incendios o en la reducción de la gravedad de los incendios y su propagación. Para estos fines, la legislación puede aclarar las competencias de los agentes del orden público, identificando claramente los delitos y las sanciones que deberían ser suficientemente disuasorias; asignar incentivos para disuadir a posibles pirómanos, eliminando las posibles causas de uso ilegal del fuego; y abordar las cuestiones de la indemnización y de aseguración, la financiación, la investigación, la formación y la sensibilización.

A la luz de la específica – y frecuentemente compleja – estructura del marco legal en materia de incendios forestales a nivel nacional, es necesario asegurar la consistencia y coherencia de la disciplina legal emergente de la multiplicidad de instrumentos legales aplicables. En consecuencia, antes de proponer una reforma, es esencial que los legisladores analicen cuidadosamente el marco legal existente relativo a la gestión del fuego y a los incendios forestales. Las siguientes áreas de la ley deben ser examinadas:

- legislación forestal;
- legislación sobre la protección civil/ gestión de desastres;
- estructura de gobierno local y central;

- legislación y otros instrumentos sobre el planificación del uso de la tierra;
- legislación medioambiental;
- legislación sobre vida silvestre/caza;
- legislación agrícola;
- legislación sobre áreas protegidas;
- derecho civil y penal (sanciones, compensación, etc.).

Este análisis tendrá por objetivo identificar:

- **lagunas** (no existen normas en materia de incendios forestales, o si existen son insuficientes o anticuadas);
- **inconsistencias** dentro del la legislación sobre incendios forestales, o entre éste y otras leyes conexas, y posiblemente entre diferentes mandatos institucionales; o,
- **falta de aplicación o de ejecución.**

Llevar a cabo un análisis del marco existente sirve, por lo tanto, para determinar el objetivo de las reformas legales necesarias, es decir para aclarar si se necesite la preparación de un nuevo instrumento legal, o en otros casos, sólo introducir modificaciones a los instrumentos legales existentes, por ejemplo para añadir algunas obligaciones específicas o promover la coordinación interinstitucional.

Adicionalmente, los legisladores nacionales deberían adoptar:

- Una **metodología interdisciplinaria**, que se construiría sobre el conocimiento por parte de expertos no juristas de las actuales causas de incendios en el país, la relación de ecosistemas específicos con el incendios (dependientes del fuego o sensibles al fuego), las circunstancias económicas y sociales relacionadas al uso del fuego, en particular en caso de uso tradicional. Los legisladores deberían entonces conocer los impactos, positivos y negativos, del fuego.
- Una **metodología participativa** en la cual los actores interesados tengan la oportunidad de estar informados de los asuntos legales relativos a los incendios y contribuir a identificar las soluciones legales más apropiadas, sobre la base de su conocimiento, intereses y preocupaciones.

Sobre estas bases, los legisladores deberían evitar una orientación excesivamente restrictiva, y al mismo tiempo prevenir la excesiva aplicación del fuego en los sistemas de uso de la tierra, y sus efectos transfronterizos. Las disposiciones legales propuestas no deben exceder lo que es necesario para alcanzar objetivos razonables y legítimos para que no se exceda lo que es socialmente aceptable, tomando en cuenta la capacidad de las autoridades y de otras partes interesadas.

Recomendaciones para la formulación de una nueva ley o reforma de la legislación existente en materia de incendios forestales

1. Definiciones

Las definiciones en la legislación analizada no son particularmente problemáticas. No obstante, es conveniente formular las siguientes recomendaciones básicas:

- Definición de términos básicos, tales como "incendios", "incendios silvestres", "incendios rurales" o similares deben claramente estar relacionados con el ámbito de aplicación de la ley (p.e. la ley normalmente se aplica a todos los incendios forestales como han sido definidos, salvo indicación en contrario).
- Las definiciones deben incluirse sólo si es necesario (por ejemplo, términos o expresiones que tienen una gama de posibles significados requieren una definición para seleccionar un único significado válido; las definiciones de las expresiones que abarcan un concepto complejo son útiles para evitar la repetición de frases idénticas en el texto; de lo contrario, los términos técnicos no tienen que ser definidas sólo porque son relativos a los incendios forestales si su significado está ampliamente aceptado o no es ambiguo).
- La elección de las definiciones más apropiadas tiene que ser hecha en cada uno de los países considerando las circunstancias particulares en las que va a ser aplicada la legislación, tomando en cuenta, entre otros elementos, las causas más frecuentes de incendios forestales, los tipos de vegetación, la dimensión de las áreas forestales y cualquier otro elemento que pueda ayudar a hacer de la ley un instrumento efectivo en el contexto específico de un país.

2. Estructura institucional y coordinación inter-institucional

Las disposiciones sobre las responsabilidades de las instituciones involucradas en el manejo del fuego, ya sean incorporadas en una ley específica sobre incendios forestales o en otro tipo de legislación, deben necesariamente ser coherentes, sobre todo en casos en que más de una autoridad tiene competencias en materia de incendios forestales y más de una norma resulta de aplicación. En países de estructura descentralizada (federal o regional) las autoridades involucradas en el manejo del fuego frecuentemente actúan en diferentes niveles territoriales, lo que implica mayores necesidades de coordinación. Algunos países han puesto en marcha soluciones innovadoras, como la creación de órganos consultivos para asesorar al Ministro pertinente, mediar y resolver controversias, y la creación de órganos locales para coordinar el manejo del fuego incluyendo actores públicos y privados. En materia institucional, entonces, puede recomendarse lo siguiente:

- La delimitación de las respectivas funciones de todas las instituciones/órganos que se encuentran de alguna manera involucrados en el manejo del fuego y los incendios forestales debe ser lo más clara posible (especificando al menos las funciones básicas tales como la prevención y la extinción), cuando sea apropiado con referencias cruzadas a otras legislaciones aplicables, y modificaciones periódicas.
- Disposiciones claras sobre las responsabilidades de diferentes niveles territoriales (p.e., central y regional) son igualmente importantes y deben preferentemente ser establecidas en un único instrumento legislativo.
- Cuando un instrumento legislativo regula las competencias de alguna, pero no de todas las instituciones/órganos que se hallan involucrados en el manejo de los incendios forestales, expresos requisitos legales para la coordinación con otras autoridades responsables (preferiblemente incluidas en una lista) pueden ser útiles. Tales requisitos deben ser tan específicos como sea posible, requiriendo por ejemplo la toma de medidas preventivas anteriormente a las temporadas de incendio u la conclusión de acuerdos para asegurar la coordinación de actividades o el intercambio de información.
- Disposiciones legales para la creación de un órgano de consulta incluyendo los representantes de varias instituciones involucradas en

el tema, así como otras partes interesadas son también útiles para promover la coordinación. La legislación debería especificar la composición del órgano, las funciones y las reglas básicas de su funcionamiento.

- La ley debe ofrecer alguna guía para el ejercicio de poderes discrecionales de autoridades públicas, para incrementar su legitimidad y responsabilidad.

3. Planificación, control y evaluación

Los planes de manejo de los incendios forestales deben ser descritos como instrumentos que incluyen, como mínimo, los requisitos de control y la consecuente declaración de objetivos y medidas requeridas. La sección anterior sobre planificación, control y evaluación hace referencia a varias Directrices de la FAO que incluyen contenidos de los planes más específicos, como consideraciones ecológicas sobre el impacto de las acciones de supresión, interacción con el cambio climático, prácticas culturales.

El análisis de la legislación muestra una tendencia positiva hacia la adopción de requisitos para los planes de manejo de incendios forestales, aún cuando en algunos casos alguno de los requisitos deseables para el contenido de los planes tiende a ser pasado por alto. Otro aspecto que necesita ser reforzado es el procedimiento para la adopción de los planes, el que, respecto del manejo de otros planes relativos a los recursos naturales, deben abarcar la participación pública. Pueden formularse las siguientes recomendaciones:

- La legislación debe requerir la adopción de planes de manejo de incendios forestales y el establecimiento de sus contenidos mínimos, o al menos debe requerir la integración de la planificación en materia de manejo del fuego en planes forestales más amplios.
- La legislación debe establecer el proceso para la adopción de tales planes, requiriendo acceso a la información y la participación del público y de las partes más específicamente afectadas.
- La legislación debe también aclarar las consecuencias legales de estos planes, como las limitaciones a los derechos de los propietarios sobre las áreas forestales y las áreas adyacentes a la luz de las disposiciones de los planes, así como la obligación de integrar en el ejercicio de planificación sectorial ciertas disposiciones del manejo del fuego correspondientes a las mismas áreas geográficas.

4. Prevención y preparación, detección y alerta temprana, y supresión

Las temporadas de incendios en las cuales el encendido de fuegos u otras actividades se encuentran prohibidas o reguladas están establecidos en muchos países, y existe una variedad de medios en los que estos periodos se encuentran determinados – sea permanentemente o por orden de las autoridades.

Disposiciones comunes son también aquellas que establecen los requisitos para las actividades previas a los periodos de incendios o manejo de combustibles o prohíben determinadas actividades peligrosas. Sin embargo, la legislación que ha sido examinada no parece haber tenido en cuenta muchas de las indicaciones innovadoras contenidas en las Directrices de la FAO, tales como la determinación de las medidas previas a los períodos de incendios en acuerdos de cooperación o acuerdos con los propietarios de las tierras, los cuales pueden tener como resultado la mejora de la efectividad en el manejo de riesgos. Muchas de las actuales disposiciones tienden a mantenerse en las líneas tradicionales, incluyendo obligaciones de cumplir determinadas normas o prohibiciones establecidas por las autoridades. Consideraciones similares se aplican a la calificación de riesgo de incendio, que es cada vez más exigida por la legislación, pero no asociada a participación activa de las comunidades locales para recopilar información y difundir las advertencias. Puede recomendarse lo siguiente:

- La ley debe detallar las obligaciones relativas a la prevención, detección y extinción de los incendios forestales. Resulta recomendable que se incluyan incentivos para premiar conductas responsables.
- La ley debería identificar claramente las normas aplicables durante las temporadas de incendios, y en consecuencia del sistema de cálculo del peligro de incendios y de alerta temprana, estableciendo procedimientos de comunicación.
- Las disposiciones jurídicas para la prevención y extinción de los incendios forestales pueden apoyar un enfoque participativo, requiriendo por ejemplo la adopción de medidas relevantes de acuerdo con las partes interesadas, más que simplemente consistir en obligaciones y prohibiciones.

5. Participación de comunidades y de otros actores interesados

La integración de los recursos locales y del conocimiento en el manejo de los incendios forestales a través de la inclusión de las comunidades locales se recomienda ampliamente, incluido en las Directrices de la FAO, con vistas a mejorar la efectividad del manejo del fuego y incendios forestales. Varias leyes han previsto algunos aspectos participativos, en una tendencia positiva hacia una mayor responsabilización del público. La legislación debe proporcionar una base para la participación de comunidades o de otros actores privados interesados. Por ejemplo, la ley podría:

- exigir a las autoridades responsables que informen adecuadamente al público sobre las actividades de monitoreo y otros aspectos del manejo de los incendios forestales;
- prever la creación de comités locales/grupos que puedan llevar a cabo algunas responsabilidades específicas sobre la base de acuerdos específicos, siempre sobre la base de una información adecuada del público;
- prever acuerdos con los propietarios afectados estableciendo derechos y obligaciones relativos a las medidas de prevención de incendios forestales u otros aspectos de gestión del fuego;
- requerir la consulta de las comunidades locales y de los propietarios de las tierras/bosques afectados en el proceso de adopción y de revisión de los planes de manejo del fuego o de legislación sobre incendios forestales;
- exigir al público que informe a las autoridades sobre hechos relevantes;
- prever recompensas u otros incentivos para personas o grupos que hayan realizado exitosamente ciertas actividades, p. e. supresión de incendios.

6. Uso del fuego

Aunque la legislación tradicionalmente ha tendido a prever prohibiciones en blanco para el uso del fuego, varias leyes han comenzado a aceptar ciertos usos planificados del fuego, ya que existe una conciencia general de que el fuego puede ser una herramienta útil para la gestión de la tierra o del bosque, y que puede ser utilizada apropiadamente en ciertas prácticas agrícolas o como "fuego de supresión" para la extinción de incendios. Las siguientes recomendaciones, en consecuencia, pueden formularse:

- La legislación debería regular los posibles usos del fuego, por ejemplo:
 - aclarando las condiciones y los procedimientos para el uso autorizado del fuego. Para este fin, la legislación puede requerir notificación previa, un permiso, supervisión, inspección, acuerdos, planes o una combinación de estas herramientas para permitir quemas controladas, así como detallar medidas precautorias más específicas y acuerdos posteriores a los incendios;
 - el sistema para autorizar el uso del fuego no debe necesariamente ser complejo, sino más bien adaptarse a las circunstancias específicas de un país, a las capacidades de su administración y a las condiciones específicas de los usuarios forestales. Además, la legislación debe tener en cuenta las prácticas tradicionales relacionadas con el uso del fuego y la elaboración de métodos culturalmente apropiados para su control;
 - limitar la posibilidad de solicitar autorizaciones para fuegos planificados a determinados periodos y áreas, de acuerdo con los planes de manejo u otros requisitos aplicables.

7. Rehabilitación

Las disposiciones relativas a la rehabilitación posterior a los incendios son aún raras en la legislación examinada. Se podría recomendar lo siguiente:

- La legislación debe establecer de manera clara la responsabilidad de las diferentes autoridades y de los propietarios de las tierras/bosques de rehabilitar áreas forestales quemadas, incluyendo sistemas de compensación para los propietarios a través de ayudas financieras, asesoría técnica o material reproductivo.
- La legislación debe prever la inclusión de procedimientos dirigidos a la rehabilitación en la elaboración de planes de gestión del fuego, e incluso la preparación de planes de rehabilitación específicos sujetos a los requisitos ambientales/forestales.
- La legislación debe incluir obligaciones específicas relativas a incendios forestales en áreas protegidas u otras áreas ecológicamente frágiles.

8. Aplicación del Derecho

La aplicación del Derecho es un elemento esencial para asegurar una legislación efectiva, y puede ser considerada parte de las medidas de prevención de incendios forestales, como una herramienta que pudiera tener como resultado la prevención de los brotes de incendios o la reducción de la severidad de los incendios o de su extensión.

Desde que ciertos requisitos y prohibiciones relativos a los incendios forestales son similares en varios países, muchos de los mismos delitos son comúnmente establecidos. Algunas deficiencias de las disposiciones sobre los delitos y las penas son también comunes – p. e. penas aplicables a ciertas prohibiciones o violaciones de ciertos requisitos no previstos o no fácilmente identificables. Aunque el derecho penal general y el derecho administrativo establezcan requisitos y procedimientos para su aplicación, así como también reglas aplicables para la compensación de daños, varían ampliamente de un país a otro, algunas recomendaciones relativas a las disposiciones sobre incendios forestales pueden efectuarse. Estas disposiciones deberían:

- establecer una lista de delitos y de penas relacionadas, p.e, claramente indicar qué acciones u omisiones constituyen una violación de la ley y qué consecuencias (sean penales o administrativas u otras) son aplicables a ellos;
- especificar las consecuencias adicionales de violaciones, tales como la obligación de compensar y su alcance, la pérdida, suspensión o cancelación de permisos;
- indicar si y en qué medida las acciones / violaciones cometidas por personas que actúen oficialmente en nombre de una autoridad puedan ser sancionadas (por ejemplo, la falta de una autoridad para emitir planes dentro de un período de tiempo; daños a los locales por parte de los funcionarios que llevan a cabo operaciones de extinción de un incendio);
- tener en cuenta el Derecho penal general y ajustar las disposiciones legales relacionadas con los incendios forestales con otras disposiciones penales más generales, y considerar si sea conveniente modificarlas (por ejemplo, abordar el delito de incendio, modificar algunas sanciones, crear disposiciones sobre delitos secundarios, etc.);
- especificar qué autoridades y funcionarios públicos se encargan de verificar el cumplimiento de la legislación sobre los incendios forestales;

- especificar qué facultades (inspección, detención, secuestro, etc.) tienen rutinariamente los funcionarios encargados de hacer cumplir la legislación sobre incendios forestales; si algunas facultades ya están tratadas en otras leyes, las disposiciones pertinentes debería tenerse en cuenta y debería hacerse referencia a ellas en caso de que se proceda, de lo contrario, los poderes deben ajustarse según el caso;
- especificar qué facultades tienen los funcionarios durante las operaciones de lucha contra incendios, y fortalecer dichas facultades o eximir dichos funcionarios de las limitaciones normales, según se considere oportuno para garantizar la seguridad de las personas;
- mejorar la eficacia de los procedimientos penales o administrativos para la aplicación de la legislación, por ejemplo, permitiendo, cuando sea posible y apropiado, composición de los delitos o de llamamientos a las autoridades administrativas y/o tribunales;
- elaborar mecanismos apropiados para la asignación de costes de los daños causados por los incendios, incluyendo el costo de la extinción del fuego, además de la obligación general de indemnizar los daños causados intencionadamente o por la negligencia que usualmente existe. Disposiciones más específicas necesitan ser elaboradas concretando la responsabilidad de los propietarios de tierras o administradores, y de las autoridades en la lucha contra incendios en caso de negligencia. Las soluciones que pueden ser experimentadas deben incluir la posibilidad de hacer acuerdos previos entre la administración y entidades que pueden sufrir gran daño de los incendios (por ejemplo, los servicios públicos, transporte) o entre distintos niveles de gobierno, la posibilidad de cobrar impuestos sobre los propietarios de tierras, o de exigir seguro obligatorio, que podrá ser parcialmente subvencionado;
- a apoyar la financiación para actividades relacionadas con los incendios forestales, tomando en cuenta las necesidades de investigación, formación y sensibilización, y dando prioridad a las actividades basadas en la comunidad;
- promover la investigación, formación y sensibilización, asignando responsabilidades específicas a estos fines o requiriendo la inclusión de estos elementos en la planificación del uso del fuego.

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"Fire management" is the discipline of using fire to achieve land management and traditional use objectives, while safeguarding life, property, and resources such as forests and other vegetation in rural areas. It encompasses prevention, preparedness, early warning, detection and mobilization, suppression, and restoration (including research and technology transfer). It entails the appropriate use of natural or human-caused fire in maintaining ecological values and the integrity of certain ecosystems, and the use of fire to reduce the accumulation of natural fuel and residues from commercial and non-commercial activities.

Starting in 2003, FAO coordinated a multi-stakeholder process to develop the Fire Management Voluntary Guidelines as part of a global strategy for international cooperation in fire management. The Guidelines set out principles and internationally accepted strategic actions to address the cultural, social, environmental and economic dimensions of fire management at all levels. The Fire Management Voluntary Guidelines are the lenses through which the present study has systematically identified the elements of a coherent national legal framework on forest fires, identifying emerging trends and singling out best practices and innovative legal solutions. The study ultimately distils key recommendations to ensure that national legal measures on forest fires are supportive of a holistic approach to fire management.



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