



Concept of Forest Fire Protection in the Russian Federation

Approved by the Federal Forestry Agency of Russia (2004)

1. The State of Forest Fire Protection

According to the Concept of National Forestry Development for 2003-2010, approved by the order of the Government of the Russian Federation (# 69-r as of 18 January 2003), fire protection of forests should become the highest policy priority to ensure ecological security of this country and conservation of forest resources potential

By the scope and nature of its impact on forests, fire is the dominant factor driving the structure and patterns of the forest stock in the Russian Federation (the Forest Stock). Forest fires have a lethal impact on forest vegetation, fauna and upper soil. They destroy or damage the affected physical and cultural assets, disrupt the integrity and hydrological regime of landscapes, pollute the atmosphere and water bodies with fire products. Damaging and disrupting forest ecosystems causes deterioration of the environment protection and formation role of the ecosystems, and reduces biodiversity of forests. At the same time, fire as the natural element of forest ecosystems could be managed to support the natural processes in the forest, to control undesirable vegetation, to promote natural reforestation processes, to manage forest fuels and to address other economic issues.

The national forest fire protection policy aims to fight fires across the entire forested area which is accessible. Forest protection is based on the combination of the various approaches to fire prevention and activities to promptly detect and put out emerging fires with due consideration to local natural and economic conditions and intensity of forest management operations. Historically, the acceptable level of fire protection was based on the ongoing budget allocation increases for fire fighting activities and capacity building of forest fire services, which were quite successful in the periods of small and medium fire danger, but could not make it from time to time in catastrophic conditions.

What is specific about fire protection of forests is that here fire loads are unstable and overall outcome depends on the efficiency at peak fire loads. Some 3 to 4 regions of this country account for 75% to 95% of forested area affected by fire. These are regions with extreme weather conditions where fires would turn into natural disasters. Generally, an overall forested area with extreme fire occurrence is less than 15 to 20 percent of the protected forest stock. In this context, fire loads are hundredfold higher than in the context of average fire occurrence. This is clearly beyond the capacity of the fire services of these regions that are equipped and manned to fight fires in the context of average fire occurrence.

The current regulatory framework of forest fire management provides for uniform operations by the aerial and ground forest fire services across the entire protected areas irrespective of forest value and fire occurrence, levels of economic development of the area and the extent of fire related damage. As a rule, forest fire services suffer from the shortage of physical and financial resources – halved at what they really need to meet the established objectives. As such, this does not make it possible for the services to be really effective.

The current procedure for financing forest fire protection does not provide for the timely allocation of funds to address fires in the context of dramatic fire occurrence variations and scope of fire fighting activities. One big weakness of the current financing systems is that the limits of budget obligations as established for the respective financial year are based on an average fire fighting expenditures and very often ignore the real forest fire situation. This is particularly visible when regional and local authorities would issue an emergency resolution to mobilize all available resources to address the situation. This causes a one-off increase in financing, which, upon the completion of the forest fire season generates accounts payable situation causing social stress in the services, delays in payments

to those who participated in the fire fighting, drain of qualified personnel, and failure to properly carry out preparation activities for next season.

In the context of dramatic variations in fire occurrence and fire seasons, manoeuvring with fire fighting means and resources to provide for effective response to fires involves, as a rule, aerial fire fighting activities. These are often inadequate and late. Local capacities in the forest rich areas with weak infrastructure are quite limited and their mobilization rate often lags behind the fire fighting needs.

2. Rationale for Development of Forest Fire Protection Concept and New Forest Fire Management Policy

- Failure of the current forest fire protection system to meet modern environmental and socio-economic standards; recognizing the fact that it is impossible and inadvisable to exclude fire from the forest life; considerable forest fire related damage and enormous financial burden of forest fire fighting;
- An opportunity to use fire as a forest management tool (regulating forest fuel stock, controlling undesirable vegetation, promoting natural reforestation, rejuvenation of pastures and hayfields, etc.);
- The need to maintain the role of fire as a natural element of sustainable forest ecosystems to improve their conditions, to support the natural processes in the protected areas in accordance with their goals and biodiversity conservation objectives.

3. Goals and Objective of Forest Fire Management Policy of the Russian Federation

The main goals of the Forest Fire Management Policy of the Russian Federation are:

- To protect human life, communities and business facilities;
- To reduce the destructive impact of fires on forests and the related environmental and socio-economic damage;
- To support sustainability and improve the state of forest ecosystems by managing fire in the natural contexts;
- To improve the use of financial and physical resources allocated for forest fire fighting.

These would be achieved by meeting the following objectives:

- Preventing the growth of forest fires caused by man-made sources through the development of fire prevention initiatives, strengthened state forest fire supervision and ground-based fire fighting developments in the respective service area;
- Increasing fire detection capacity of emerging fire spots through the development of an integrated system of forest fire monitoring based on modern ground, aerial and satellite means and modes of observation, telecommunication networks and GIS;
- Increasing response time to fighting forest fires by improving the institutional and operational structure of the forest fire services, strengthening their fire fighting capacity, providing them with modern fire fighting means, communications and transport;
- Improving efficiency of fire fighting with respect to major forest fires of a catastrophic magnitude by promptly mobilizing resources, improving fire fighting management, expanding the use of tankers and helicopter water dischargers to provide for aerial fire fighting;
- Carrying out prescribed fires in the forest ecosystems that are fire adapted and in the forested areas with extensive forest fuel stock;
- Integrating forest fire protection and targeted use of fire as a natural environmental element of forest ecosystems into one forest fire management policy;
- Strengthening the role of regional and local authorities in the implementation of the forest fire management policy;
- Making sure that the programs and plans for forest fire protection and forest fire management are scientifically and economically sound;
- Integrating and coordinating the effort in the area of forest fire protection and forest fire management at the international, national, interagency, regional and local levels;

- Ensuring the required development of forest fire fighters and management staff involved in forest fire protection and forest fire management;
- Zoning the forested area by types and levels of forest fire protection;
- Providing the aerial and ground forest fire services with human and material resources based on scientific standards and forest fire protection plans;
- Developing and improving the institutional and operational structures of the forest fire protection system and tools to allow adaptation to the ongoing changes in the forest fire situation;
- Ensuring sustainable and timely financing of forest fire protection in response to the nature and scope of forest fire activities and forest fire management;
- Increasing fire fighting advocacy and strengthening the state fire supervision in forests;
- Improving fire fighting response time of the forest fire services and manoeuvring the resources and means of fire fighting;
- Improving procedures for resource mobilization in the context of extreme forest fire occurrence and fire fighting management regarding major forest fires;
- Regulating prescribed fires and providing legal and economic framework for regular prescribed fires;
- Improving planning and management of forest fire protection; incorporating fire fighting activities in the forest management and land management plans at the federal, regional and local levels;
- Restoring natural fire cycles in forest ecosystems by refusing in part or completely to put out individual natural forest fires under certain circumstances;
- Developing and implementing special fire management plans for state nature preserves and national parks through a differentiated approach to the issue of forest fire management based on a multifaceted analysis of the natural, economic and social context of a specific territory;
- Intensifying the state control over timely response to fire fighting and mitigation management, burned areas accounting and assessment of the related damage, adequacy of the decisions to carry out prescribed burning, refusal to partially or completely put out forest fires.

4. Main Directives for Development and Improvement of Forest Fire Protection System

4.1. Forest Zoning by Types and Levels of Fire Protection

The current division of the forested territory by aerial and ground fire protection will be further developed through its zoning by the level of fire protection based on the value of forest resources, fire occurrence and fire caused damage, as well as by the effective and expected budget allocations for forest fire protection.

The forest fire protection levels will be determined by a probability of a timely liquidation of forest fires in the context of average fire occurrence and will be differentiated by the types of protection. Frequency of aerial patrolling and adequacy of airborne fire fighting teams will be the main parameter to determine the level of aerial fire protection of forests. Correspondingly, the level of ground based fire protection of forests will be determined by the coverage of ground based observation points and fire chemical stations, as well as by the adequacy of fire fighting team composition.

Forest zoning by the level of protection involves:

- Developing a classifier of the aerial and ground fire protection levels and establishing the parameters and operational patterns of forest fire services in response to each of these levels – low, middle and high;
- Assessing the current levels of the aerial and ground fire protection in each region (constituent entities of the Russian Federation) of this country that meet the actual parameters and operational patterns of the forest fire services;
- Assessing expected costs and damage caused by fires by the corresponding levels of forest fire protection by the regions (constituent entities of the Russian Federation);
- Differentiating the levels of the aerial and ground fire protection by the regions (constituent entities of the Russian Federation);
- Determining allocations, which correspond to the established levels of forest fire protection and identify the needs in human and physical resources.

Within the regions, the levels of forest fire protection will be differentiated during the development of general plans and draft forest fire protection arrangements focusing on the areas and facilities in need of enhanced protection.

4.2. Forest Fire Protection Arrangements

Forest fire protection arrangements will serve as the basis for the required set of fire fighting activities to prevent, detect, put out forest fires and to carry out prescribed burnings. The system of pre-project and project documents for forest fire protection arrangements includes (a) substantiation of the main directives for forest fire protection of major regions (federal *okrugs*) and the entire country; (b) general plans of forest fire protection arrangements by constituent entities of the Russian Federation; (c) projects of forest fire protection arrangements within *leskhoz*es and other economic entities that operate in forests.

The General Plans of forest fire protection arrangements provide the pattern of consolidated characteristics of the aerial and ground forest fire protection for 10 to 15 years, while the forest fire protection arrangements plans include specific description and scope of fire fighting activities.

Forest fire protection arrangements plans are based on forest resources management targets, value of the assets subject to protection, expenditures to finance forest protection and fire management, amount of expected fire related damage and actual constraints to finance fire fighting activities.

Priorities of forest fire protection arrangements are (a) improved quality of the substantiation for the main directives for forest fire protection, general plans and projects; (b) updating of the current main directives for forest fire protection, general plans and projects; (c) planned coverage with fire protection arrangements of the entire forested area; (d) supervision over the activities under the forest fire protection arrangements.

The quality of the main directives for forest fire protection, general plans and projects will be improved through the enhancement of the regulatory framework and approaches to the substantiation of fire fighting activities by matching the expected cost of forest fire protection and expected fire related damage.

Updating of the current substantiations for main directives for forest fire protection, general plans and projects and ensuring gradual fire protection arrangements coverage of the entire forested area will involve incorporation of these activities into the overall system of forest management design, federal and regional program and plans for the development of forest management.

On the areas polluted with radionuclides, the system of forest fire protection arrangements will require tough requirements to the radiation safety of forest fire services and communities. The system intends to prevent forest fires and put out fire spots at as minimal area as possible.

As for forests with peatlands, the system of forest fire protection arrangements intends to radically reduce the natural fire capacity of the peatlands and probability of fire occurrence as well as to provide forest fire services with the relevant fire fighting hardware.

4.3. Development of Fire Prevention

Improved effectiveness of forest fire prevention will be based on a combination of traditional and innovative approaches to fire prevention awareness, intensification of fire and environmental education of the public at large. Advocacy of forest fire safety rules (requirements) through the use of outdoor means such as (billboards, photos, placards, leaflets, etc.) will be combined with a public awareness campaign in mass media such as regular forest fire related broadcasts and warning of the public on the forest fire situation.

As for intensification of fire prevention and environmental education, the focus will be on children and the youth as well as on nongovernmental organizations whose activities involve visits to forests. The environmental and ecological programs for the entire range of public educational establishments including the vocational ones will incorporate forest-related fire safety rules and prevention advice. The effort to intensify forest fire public awareness and education will be undertaken together with nongovernmental environmental organizations.

Establishing seasonal road check points in the areas with intensive traffic and movement of people along with the toughening of the state forest fire supervision is recognized as an important effort to reduce fires in the context of deteriorated fire situation.

Forest fuels that promote destructive fires are commonly reduced through mechanical or chemical treatment or prescribed burnings. This requires development of legal requirements and documents to regulate the procedures, timing and conditions of prescribed burning.

4.4 Improved Response to Forest Fire Detection and Fighting

Improved Response to Forest Fire Detection and Fighting is recognized as the highest priority in the development and improvement of the fire protection of forests.

Fire detection will be improved by developing an integrated monitoring system, as well as means and methods for the registration of lightning charges that are the main natural source of forest fires.

Fire response will be improved by expanding the network of the aerial and ground fire services, improving the preparedness and mobile capacity of the forest fire services, establishing task forces of rapid deployment to help the constituent entities of the Russian Federation in fighting fires in the context of high and extreme fire occurrence.

The priorities in the improvement of ground-based fire detection will include (a) gradually expansion of the network of observation points and ground patrols to attain full coverage of the respective areas; (b) aerial patrols over the areas that are not covered by the ground patrols and observation points. The priorities in the improvement of aerial fire detection will include (a) increased frequency of aerial patrols and optimization of flight schedules; (b) incorporation of modern satellite-based means and methods of observation into the system of forest fire monitoring; (c) expansion of the network of meteorological radars in the protected forested area to detect thunderstorms.

The priorities in the improvement of ground-based forest fire response will include (a) expansion of the fire and chemical stations (FCS) network to fully cover the territory of the respective zones; (b) completing the existing and new FCS with fire fighting teams, fire fighting hardware, telecommunications and transport in consistency with the current standards; (c) regular standby duties of fire fighting teams at the stations during middle, high and extreme forest fire situations depending on the weather conditions.

The priorities in the improvement of aerial forest fire response will include (a) increased number of aircraft and staff of the aerial fire teams in accordance with the standards; (b) providing the aerial fire service with tankers and helicopter water dischargers to provide for aerial fire fighting.

To ensure the timely detection and fighting of emerging fires, operational management responsibilities regarding the activities of the aerial and ground forest fire service will be delegated to the regional forest fire coordination centers to be established at the control points of the aerial forest fire service. These regional centers will be provided with the required meteorological information, satellite images and lightning detection data.

4.5 Improved Emergency Preparedness Associated with Forest Fires

The improved emergency preparedness of the forest fire protection will be by streamlining the operations of the forest fire services through the improvement of the current operational procedures to meet the required level of the forest fire protection, the current and forecasted fire danger with due regard to the weather conditions and actual fire situation, as well as by establishing task forces of rapid deployment (inter-regional forest fire centers with mobile fire teams).

Routine-preventive and operational manoeuvring with the resources of the forest fire services will be based on the fire forecasts and occurrence recognizing short-, mid- and long-term weather forecasts.

One of the operational regimes of the aerial and ground forest fire services may be established within one fire season (a) a daily operation; (b) a regime of increased preparedness; (c) an emergency regime.

In case of fire threat to the communities, located in the fire emergency zone, the respective emergency management authority will take over the operational management of fire protection as per the existing legislation of the Russian Federation.

The timely mobilization of the resources of the Emergency Management Services to assist in fighting fires in the context of high and extreme forest fire occurrence will be ensured through clear mobilization procedures, sound fire fighting management, guaranteed compensation of the individuals and legal entities involved in forest fire fighting. This will involve training and assessment of leaders that manage major forest fires, as well as safety instructions and fire fighting training of people who will be sent to fight fires.

The higher educational establishments will train engineers in the "Prevention and Fighting of Forest Fire" discipline, with the similar specialization to be taught at forest colleges.

4.6. Using Fire as a Natural Element of Forest Ecosystems

Using fire as a targeted tool of forest management will be based on the knowledge of the nature of forest fires, impact on forest vegetation and fauna, biodiversity and sustainability of forest ecosystems, global carbon cycle. The intrinsic relations between forest vegetation, fires, climate change and other natural (insects, diseases) and human-made (logging) factors dictate a careful application of fire in the forest context.

Potentially, fire could be used (a) to reduce forest fuels; (b) to reintroduce low ground fires in the forest ecosystems that are adapted to them; (c) to restore historical fire cycles; (d) to promote natural reforestation; (e) to control forest pests and diseases; and (f) to improve the natural habitat of wild life.

One mandatory condition of successful integration of forest fire into forest management will be scientifically based recommendations for prescribed burning and reliable information on the current state of forest ecosystems. This integration will be an ongoing and long-term process to be matched with other goals such as human safety, air quality and other specific requirements. The targeted use of fire in forests should be preconditioned by the removal of legal barriers as a legacy of the historical policy to actively suppress any forest fires.

The targeted use of fires as a natural element of forest ecosystems will be under dedicated programs to maintain the long-term sustainability of forest resources and minimize detrimental consequences of fires. This will only be allowed within those territorial and economic units that developed and adopted approved fire management plans. In the absence of such plans, the policy of active suppression of all the emerging forest fires will be pursued.

Allocation of forest areas that require periodic prescribed burnings will be in accordance with the scientifically substantiated recommendations and criteria developed under the fire fighting arrangements of forests. Prior to the development of such criteria and allocation the territories that require prescribed burning, these will be planned and carried out as strip burnings to establish fire barriers, as well as continuous burning of vegetation in the areas with excess forest fuels that are located in the plains and are limited in size.

5. Implementation Tools of Forest Fire Policy

The main areas in the development and improvement of the legal framework for forest fire policy will be:

- Developing and adopting legal acts to determine the mandate of the constituent entities of the Russian Federation and municipalities, their responsibility in the area of forest fire protection and forest fire management and to identify the sources and procedures of financing;
- Developing and adopting legal and regulatory acts to regulate planning and the carrying out of prescribed burnings, as well as a targeted use of fires to maintain sustainability of forest ecosystems, to divide the responsibilities in the area of forest fire protection and forest fire

management, to regulate the procedures and timing for the mobilization of resources and funds of the National Emergency Service with the aim of fighting fires if there is a threat of forest fire-related emergency situation, to establish a safety net for the personnel involved in forest fire fighting and to carry out prescribed burnings;

- Financing forest fire protection and forest fire management will be through the state budget and from other legal sources such as the budgets of the constituent entities of the Russian Federation and local authorities, various funds, own resources of forest users and other sources;
- Financial and material resources of the constituent entities of the Russian Federation and local authorities will be used to fight fires in case of an emergency risk;
- A special research program in the area of forest fires must serve as the basis to develop scientific principles of integrating fires into the nature management;
- Improving inter-agency and inter-regional coordination by establishing inter-agency coordination teams, local and federal level coordination teams;
- This inter-agency cooperation will be through multilateral and bilateral agreements that describe the goals and main areas of cooperation, mutual obligations of the parties, procedures for cooperation and dispute settlement;
- Interaction of the federal agencies with the constituent entities of the Russian Federation and municipalities will be through the joint development and implementation of regional programs and plans of forest fire protection and forest fire management. This will include joint effort to fight fires in the context of high and extreme forest fire occurrence;
- International cooperation in forest fire protection and forest fire management will be under international agreements of federal and regional level and detailed within the corresponding international inter-agency programs, agreements and projects/plans.