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The First Baltic Conference on Forest Fires (Poland 1998): Rationale and Results

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Preface

This report contains an updated version of the paper presented by the author at the opening and introduction to the First Baltic Conference on Forest Fires, which was hosted by the Government of Poland, 5-9 May 1998. At the end of the paper the recommendations of the conference are given (ANNEX 1).

Rationale

Forest fires in the region of the Baltic Basin are closely linked to modern human activities, e.g. industrialization, socio-economics (land-use change), military installations and activities, problems arising at the forest/residential interface, and tourism. The wildfires severely threaten the limited but very valuable forest resources of the region. Some fire events cause new problems, such as fires in industrially polluted forests (e.g., in Poland) or in radioactively contaminated vegetation (e.g., in Leningrad province).

On the other hand, recognizing the role of historic natural and human-caused fires and other land-use tools in the formation of the cultural landscapes of the Baltic Basin, new concepts are arising to include fire as management tool in those landscapes, including nature conservation areas, which require periodic disturbances in order to maintain or restore biodiversity (e.g., heathlands, sub-climax forest formations).

The nations bordering the Baltic Basin are now showing increasing interest to promote fire management systems in forests and open landscapes which need to be based on advanced fire science and technology development. The need has been recognized to create a forum in the Central-Northern European region in which the fire problems are

entirely different from the Mediterranean region. The "First Baltic Conference on Forest Fire" intended to bring together scientists, managers and representatives from administrations of the host country (Poland), the Baltic States (Estonia, Latvia, Lithuania), Russia, the Nordic countries (Denmark, Finland, Norway, Sweden), and Germany.

The FAO/ECE Team of Specialists on Forest Fire is promoting a cooperative approach of the nations bordering the Baltic Basin to share fire management expertise and resources. It is proposed to set up pan-Baltic programs and exchange mechanisms encompassing fire research, fire management training, the use of prescribed fire (in forestry, nature conservation, and landscape management), and mutual fire emergency assistance.

1. Introduction: Forest Fires and Fire Management in the Baltic Basin Region

Forests play a significant role as a vast renewable natural resource in the region around the Baltic Sea. The forest sector is of a big importance for the national economies providing different kinds of ecological, economic, social and cultural functions. Timber production is the base for forest industries, which in some of the Baltic Sea region countries constitutes main part of export and is very important factor for the general economic development. The national economic situation differs from countries with economies in transition (Estonia, Latvia, Lithuania, Poland, and Russia) to the countries with open market economies. In the northern part of the region forests constitute a major renewable natural resource of great economic value. Towards the southern part, the economic value of forests becomes less important.

The sustainability of forests in the Baltic Region are potentially threatened by several natural and human-induced disturbances, e.g. fire, insects, wind and industrial pollution. The magnitude of the area regularly affected by forest fires in the countries bordering the Baltic Sea (in the following referred to as Baltic countries) is relatively small as compared to other regions in the world (ECE/FAO 1998; Tab.1); in this context the situation of the Russian Federation has to be considered as a special case because only a small part of the forests of Russia belongs to the Baltic Basin, and the natural and socio-economic fire environment East of the European part of the country is considerably different.

Wildfires are predominantly caused by human activities. Lightning fires play a significant role only the hemi-boreal and boreal North of the region, e.g. in Finland and Sweden, and the Russian Federation (Tab.1).

However, the impacts of fires involve higher economic losses per area unit as compared to other regions of the world. The social values affected by fire are also high due to increasing demands on a functioning and well preserved forest environment. Multiple stresses on forests damaged by industrial pollution and fire leads to severe site damages. Forests contaminated by radionuclides bear the risk of uncontrolled redistribution of radioactive materials by fire.

The traditional use of fire which has contributed to shape European forest and non-forest landscapes over many centuries has been abandoned largely due to changed land-use practices and environmental regulations. However, the use of prescribed burning in nature conservation and landscape management is currently investigated in several countries of the region (Goldammer et al. 1997a, b).

Disregarding the Russian Federation as a special case, forest fire protection is organized in a similar way throughout the region. In most countries the forest services are responsible for fire prevention, and the rural and urban fire brigades, usually under the ministries of the interior, are responsible for fire control. Furthermore, in most countries these responsibilities are with the states (or provinces), and intervention in fire control at the national (federal) level is usually restricted to situations in which a national disaster is declared.

Until the end of the Cold War fire research and fire technology development in the Baltic Region suffered from two facts. First, in the Western Baltic countries the fire problem did not receive adequate attention. Second, while in Eastern Europe, (particularly in Poland) and in the Soviet Union the research and development in fire management was supported by the governments, the separation between the East and the West did not allow any scientific exchange and sharing of technologies. Although the first of the series of fire conferences conducted under the joint auspices of FAO/ECE/ILO was held in Poland in 1981 (ECE/FAO 1982), a cooperation between Eastern and Western Europe did not materialize after that conference.

However, one of the ideas arising in the early 1980s was the creation of an information platform for the ECE member countries in which advances in fire research, technology and policy development should be shared. In 1988 the first issue of "International Forest Fire News" (IFFN) published by the ECE/FAO Agriculture and Timber Division (Geneva). Starting with the distribution of not more than ca. 250 copies, the IFFN is now subscribed by ca. 1000 agencies, research laboratories and individuals all over the world.

The seminars conducted by the FAO/ECE/ILO Team of Specialists on Forest Fire were devoted to fire suppression technologies (Poland 1981), fire prevention (Spain 1986), the socio-economic environment of fire (Greece 1991), on fire issues related to global change (Russian Federation 1996), and the First Baltic Conference on Forest Fires in 1998 with the first Northern European Focus.

Until 1998 there was no initiative for international programmes or agreements in border-crossing fire management exchange. The fire science community, however, began to realize in the early 1990s that joint East-West fire research programmes were necessary. Planned in 1991 and implemented in its field phases starting in 1993 the Fire Research Campaign Asia-North (FIRESCAN) for the first time brought together scientific institutions from all boreal nations in fire research. In its first phase the programme focused on the boreal forest of the Russian Federation (Goldammer and Furyaev 1996, FIRESCAN Science Team 1996). From the Baltic region participants came from Finland, Germany, Norway, Russia and Sweden. New

strategies on joint research in the post-Cold War era were formulated in 1993 under the umbrella of a NATO Advanced Study Institute (Goldammer and Furyaev 1995).

North-South cooperation in fire research in the Baltic region started in the second half of the 1970s. It was at a time when new ideas on the use of prescribed burning in forestry, nature conservation and landscape management were brought up in Europe (Forstzoologisches Institut 1978, Goldammer 1983, Goldammer and Jenkins 1990). Finnish and German scientists collaborated in FIRESCAN. In 1997 German scientists joined a fire experiment in Finland which was devoted to test airborne fire suppression technologies. German-Swedish fire ecology and fire history research began in 1995 (Page et al. 1997a,b).

Expertise in fire intelligence and fire suppression technology has been shared between Finland and its neighbouring countries Estonia, Latvia, Russian Karelia, Sweden and Norway.

Despite these occasional initiatives it is felt that cooperation in the field of fire science, management, and policy development should be strengthened in the Baltic region. Like the Southern Europe which has created its own fire platform in the frame of FAO *Silva Mediterranea*, the Northern European region correspondingly needs its own regional network. The overall framework of such a fire platform for the Baltic Region, however, will be wide and should take into account other international binding and non-binding programmes which serve the overall goal of protecting forest and other vegetation resources of the region. This is explained in the following.

2. The Baltic 21 Action Programme

The Baltic 21 Action Programme is an initiative for the application of the Agenda 21 in the Baltic Sea Region. In a recently developed Baltic 21 Action Programme on Forests it has been stated:

The international framework for the "Baltic 21 on Forests" is wide: It is related to several ongoing activities, previous political commitments or legally binding agreements, such as decisions made at the

- UN Conference on Environment and Development UNCED (Rio 1992): Forest Principles and the Agenda 21, Chapter 11 on "Combating Deforestation and other";
- Intergovernmental Panel on Forest (IPF, 1995-1997); and
- Ministerial Conferences on the Protection of Forests in Europe (Strasbourg 1990, Helsinki 1993, Lisbon 1998).

The management of forests and the concept of sustainable forest management have a long history in the region, although there have been, and still are, significant differences in management cultures between the countries. Particularly in the 1990s, after UNCED, many changes in forest policy have occurred. Forest and related legislation as well as silvicultural and other guidelines for forest management practices

are being revised to better comply with the changing needs of society, and in particular with the conservation of biodiversity. Besides the new forest legislation and other above mentioned measures, one desirable issue in sustainable forest management is a more intensive cooperation between the forestry and environmental organisations. Importance of implementation and funding of conservation programmes, further development of policy steering mechanisms wherever they are not sufficient, and development of multi-objective forest management planning can also be stressed.

It could be concluded that, at political level, both internationally and nationally, sustainable forest management has been advanced. However, implementation of sustainable forest management in everyday forestry operations still calls for further actions.

2.1 Goals for sustainable forest development

Within the Baltic 21 the overall goal and definition for sustainable forest management is:

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

This definition was agreed at the pan-European level in the second Ministerial Conference on the Protection of Forests in Europe already in 1993. It provides a general policy direction and a long-term goal for sustainable forest management at many levels, from global to local, being thus feasible as a general policy goal also for the Baltic Sea region.

In the follow-up process of the above mentioned conference, special emphasis was given to the further definition of the essential elements of sustainable forest management and to the elaboration of an instrument for evaluating progress towards it. For this purpose the pan-European national level criteria and indicators for sustainable forest management were developed in 1994.

The six criteria for sustainable forest management are:

- Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles;
- Maintenance of forest ecosystem health and vitality;
- Maintenance and encouragement for productive functions of forests (wood and non-wood)
- Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems;
- Maintenance and appropriate enhancement of protective functions in forest management (notably soil and water); and
- Maintenance of other socio-economic functions and conditions.

2.2 Scenario for sustainable forest development within the Baltic Sea Region

Within the Baltic 21 process, the scenario for sustainable forest development aims to describe:

- current situation of sustainable forest development;
- target situation in the year 2030; and
- existing gaps between current and target situations.

Current situations of sustainable forest development within the Baltic Sea Region is shortly described above. Target situation in the year 2030 is based on the overall goal and sub-goals for sustainable forest development which are the definition for sustainable forest management and the six pan-European criteria for sustainable forest management.

2.3 An Action Programme

Successful sustainable forestry development in the Baltic Sea region until the year 2030 can be reached by implementing the measures that are proposed in the Action Programme aiming to cover the recognised gaps. Six of the proposed actions have been identified by the sector as priority action for regional cooperation within the next five years.

The following key areas of interest were identified as a framework for the development of the Baltic 21 Action Programme on Forests. They indicate the areas where most gaps and problems of the sustainable forest development were found:

- Legal and policy frameworks, and the voluntary means that support sustainable forest management.
- Institutional frameworks
- Education, extension and training
- Criteria and indicators for sustainable forest management
- Environmental aspects of sustainable forest management
 - Maintenance and enhancement of biological diversity in sustainable forest management
 - Protected forest areas
 - Water quality in forests
 - Prevention damages to forests (pollution and other)
 - Forest management and landscape planning
- Research
- Forest and environment inventories and statistics
- Usage of wood-based energy
- Socio-economic and cultural issues
- Sustainably produced wood and forest products, and sustainable consumption patterns

This conference provides an opportunity to design a contribution to a comprehensive

Baltic Action Programme in protecting forest from destructive fires and utilize the potential of prescribed burning in maintaining long-term stability in forested and non-forested ecosystems. With such an action programme a contribution would be made to most of the problems mentioned in the list.

3. Linking with the United Nations International Strategy for Disaster Reduction (ISDR)

On 11 December 1987 at its 42nd session, the General Assembly of the United Nations designated the 1990's as the International Decade for Natural Disaster Reduction (IDNDR)(Resolution 44/236 of 22 December 1989). The basic idea behind this proclamation of the Decade was and still remains to be the unacceptable and rising levels of losses which disasters continue to incur on the one hand, and the existence, on the other hand, of a wealth of scientific and engineering know-how which could be effectively used to reduce losses resulting from disasters. The IDNDR was terminated at the end of 1999. The general objectives of the IDNDR were

- to reduce through concerted international actions, especially in developing countries, loss of life, property damage and economic disruption caused by natural disasters such as earthquakes, windstorms, tsunamis, floods, landslides, volcanic eruptions, wildfires and other calamities of natural origin such as grasshopper and locust infestations.

The following four goals represent the desired destinations which Decade efforts should lead to:

- improve the capacity of each country to mitigate the effects of natural disasters expeditiously and effectively, paying special attention to assisting developing countries in the assessment of disaster damage potential and in the establishment of early warning systems and disaster-resistant structures when and where needed;
- devise appropriate guidelines and strategies for applying existing scientific and technical knowledge, taking into account the cultural and economic diversity among nations;
- foster scientific and engineering endeavours aimed at closing critical gaps in knowledge in order to reduce loss of life and property;
- develop measures for the assessment, prediction, prevention and mitigation of natural disasters through programmes of technical assistance and technology transfer, demonstration projects, and education and training, tailored to specific disasters and locations, and to evaluate the effectiveness of those programmes.

Based on the above broadly defined goals, it was found necessary to focus on a number of specific areas of activities which would mark progress to be achieved at the end of the Decade period.

By the year 2000, all countries, as part of their plan to achieve sustainable development, should have in place:

- comprehensive national assessments of risks from natural hazards, with these assessments taken into account in development plans;
- mitigation plans at national and/or local levels, involving long-term prevention and preparedness and community awareness, and
- ready access to global, regional, national and local warning systems and broad dissemination of warnings.

From the beginning of the IDNDR and particularly at and after the World Conference on Natural Disaster Reduction (Yokohama, Japan, 23-27 May 1994) and the closing event of the IDNDR, the Geneva Forum (June 1999) the international community of fire scientists and managers formulated their programmatic visions to cope with disaster fires at national, regional and international scales. These shall be implemented in the IDNDR successor arrangement, the International Strategy on Disaster Reduction (ISDR) under the UN Interagency Task Force for Disaster Reduction.

4. Priorities

A catalogue of activities for a Regional Baltic Cooperation in (Forest) Fire Research, Management and Policy Development must embrace:

- Development of joint or standardized
 - Fire prevention programmes
 - Fire management training programmes
 - Early warning systems
 - Spaceborne detection systems
 - Border-crossing mutual fire disaster response agreements
- Fire research in
 - Fire intelligence systems (early warning and detection)
 - Advanced fire suppression technologies
 - Fire history and use of fire in nature conservation, forestry, and landscape management
 - Cross-links to other programmes of relevance, e.g. to
 - biodiversity research, and
 - use of plant biomass (wood)-based energy.

5. Conclusions

The First International Baltic Conference on Forest Fires was the first and important step for an open discussion and the formulation of the necessities to jointly address fire management and fire protection in forest and other vegetation resources in the Baltic region.

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ANNEX I

Results and Recommendations of the First Baltic Conference on Forest Fire, 5-8 May 1998, Radom - Katowice, Poland

A. General Recommendation

1. Forest fires constitute one of the main threats for sustainability of forest ecosystems and the continuity of their multifunctional role.
2. Countries neighbouring the Baltic Sea (Denmark, Estonia, Finland, Germany, Lithuania, Latvia, Norway, Poland, Russia and Sweden) hereinafter referred to as Baltic States, are one of the regions in Europe with high fire risk and significant level of environmental contamination. Forests of that region are very valuable for the nature as well as in economic and social terms. Great majority of forest fires break out as a result of direct or indirect human activities. Due to global environmental changes and ever increasing pressure imposed on the forest by the societies we should expect further increase of fire risk in that region.
3. To solve current and future problems regarding forest fire protection it is necessary to constantly enhance and standardise forecasting, detection and extinguishing activities and improve legal regulations.
4. The prerequisite for the effectiveness of those activities is development of comprehensive cooperation in the field of science, technology and organisational aspects with the contribution from the public on international, national and local level.
5. The Conference recognises that forests in the Baltic States should be managed in compliance with biodiversity principles. Considering the above factors, we find it necessary to create an international programme for fire protection in the Baltic states. Protection of woodlands against elemental disasters should be included in cooperation agreements especially in transboundary areas.
6. The Conference recommends that problem of forest fires should be handled in compliance with the Action Plan Baltic 21, regional activities of the International Decade for Natural Disasters Reduction (IDNDR), as well as other programmes.

B. Specific Recommendations

I. Prevention activities

1. Forest management should encompass to need to strengthen natural resistance of forests to damaging forces, including fires. The tasks to be undertaken in this field are in particular: adaptation of tree stands composition to habitat conditions, protection of biodiversity, improvement of water retaining capacity in woodlands and enhancement of infrastructure.
2. Prevention activities should be particularly intensified in highly contaminated areas, especially with radioactive substances, where, besides economic losses, fires cause reoccurrence of contamination.
3. Fire protection problems should always be considered with regard to drafting spatial management plans which include among others increase of afforestation rate, spatial order in woodlands and development of infrastructure.
4. It is necessary to develop cooperation to enhance training programs for forest and fire control services.
5. It is recommended to further expand informational and promotional activities to raise social awareness, in particular on the local level.

II. Forecasting, detection and extinguishing activities

1. Fire protection in woodlands should constitute an integral part of national rescue programs.
2. With regard to exchange of information and resources among the Baltic States we recommend to develop Baltic programs and exchange mechanisms which would include scientific research connected with fires, impact of global environmental changes and use prescribed fire (in forestry, nature conservation and landscape management), training on fire protection and mutual assistance.
3. It is necessary to undertake steps to improve legal regulations which refer to the establishment of forest rescue systems and financing methods as well as oblige businesses imposing fire risk for woodlands to protect them and remove damages.
4. We should aim at enhancing transboundary cooperation in the field of early warning, monitoring, detection, fire suppression, exchange of information and undertaking joint initiatives.
5. For the purpose of fire control all forests should receive the same treatment regardless of their ownership structure, in particular in those countries in which forests are reprivatized.
6. We should improve telecommunication systems and ensure their compatibility and reliability, especially in transboundary areas.
7. We should undertake initiatives to remove barriers among Baltic States with custom relieves and subsidies which enable transfer of technical resources used in forest protection.

III. Post-fire activities

1. Recultivation of burned forests should be treated as a separate problem in science and in forest practice and subject of international exchange in this field.
2. Baltic states should render mutual assistance in the area of availing technical resources and consultancy.
3. It is recommended to develop an advanced system of collecting fire statistic at international level, particularly including damages of forest stands affected by fire.

IV. Within further development of international cooperation in the field of fire control among the Baltic States we recommend to

1. We find it useful to initiate a tradition to hold biannual working meetings of representatives from Baltic States.
2. It is necessary to unify systematic legal solutions regarding fire prevention in Baltic States.

Tab.1. Forest fire statistics of countries bordering the Baltic Sea (1991-97)

Country	Average Area Burned (ha/year)	Average Number of Fires (no/year)	Causes of Fire***** (%)			
			Negligence	Arson	Natural	Unknown
Denmark	38	8	35.7	14.3	3.6	46.4
Estonia	694	243	66.4	13.2	1.5	18.9
Finland	867	846	55.8 [*]	5.7 [*]	25.7 [*]	12.8 [*]
Germany	1,313	1657	36.3	20.9	3.7	39.1
Latvia	2,064	994	82.7	16.7	0.6	-
Lithuania	342	669	83.3	11.2	0.6	4.9
Norway	516	504	36.2 ^{**}	3.1 ^{**}	13.5 ^{**}	47.2 ^{**}
Sweden	2,397	3,280 ^{***}	44.3 ^{***}	5.3 ^{***}	10.6 ^{***}	39.8 ^{***}
Poland	7,265	4,886	46.2	26.1	1.1	26.6
Russian Federation ^{****}	1,135,859	24,649	*****	*****	11.2	52.2

* = time period 1991-1992

*** = time period 1994-1997

***** = no further specifications

** = time period 1991-1995

**** = all fires (including all fires outside of the Baltic Region)

***** = 1991-1996