Main Report

European Forest Risk Facility:
Report of Workshop on Storm Damage to Forests

Summary

This report summarises a workshop held between 24 – 25 June in St. Oswald, Bavarian National Forest, Germany. The workshop was attended by 24 people from 13 countries. The purpose of the workshop was to determine the potential future role of a European Forest Risk Facility and how it might provide support and services to people managing the risk of storm damage and its impacts. There were a series of presentations outlining the proposed nature of the risk facility, its potential liaison role, reviewing previous workshops and outlining the services already provided by the European Joint Research Centre. In addition there were a set of talks illustrating the impact of storm damage at European level, the impact of major storms in different countries, and the ecological consequences of storms. To demonstrate these impacts the attendees made a field visit to the Bavarian National forest to see long-term monitoring following wind damage in 1983. The final part of the workshop was discussion of responses to a questionnaire sent out before the workshop (see Appendices), which formed the basis for discussion and debate about the role of the risk facility and is summarised at the end of this report. The discussion clearly pointed to the benefits of a facility to act as a way to link, couple and add value to existing initiatives, to provide a way for connecting experts and people and organisations seeking assistance, and to act as a repository for data, information, knowledge and sources of expertise.

Meeting Details

Date: 24-25 June 2014, St. Oswald, Germany

Venue: Aktivhotel Crystal

Attendees:

Kristina Blennow	SLU, Sweden
Susan Davies	University of Edinburgh, UK
Anton Fischer	Technical University Munich, Germany
Barry Gardiner	INRA, France
Christoph Hartebrodt	FVA, Germany
Alexander Held	EFICENT, Germany
Jan Holecy	Technical University of Zvolen, Slovakia
Kana Kamimura	INRA, France
Michael Köhl	University of Hamburg, Germany
Daniel Kraus	EFICENT, Germany
Bruce Nicoll	Forest Research Scotland
Christophe Orazio	EFIAtlantic, France
Jean-Luc Peyron	GIP-Ecofor, France
Verena Quadt	EFICENT, Germany
Leena Rinta-Runsala	Trainee EFICENT/ University of Oulu
Jesus San-Miguel-Ayanz	EC JRC, Italy
Mart-Jan Schelhaas	Alterra, Netherlands
Andreas Schuck	EFICENT, Germany
Christoph Suter	GEOTEST, Switzerland
Nina Ulanova	Moscow State University, Russia
Tom Wohlgemuth	WSL, Switzerland
Johannes Wurm	EUSTAFOR, Belgium

Attending for afternoon of 25th June only:

Rupert Seidl	Boku University, Austria
Eric Zenner	PSU, USA

Completed questionnaire but did not attend:

Rob Gazzard	Forestry Commission England
Miroslav Svoboda	Czech University of Life Science, Czech Republic
Erik Valinger	SLU, Sweden

Purpose of Meeting

The workshop was designed to collect experts' recommendations on the future role of a European Forest Risk Facility and how it might provide support and services to people managing the risk of storm damage or dealing with its consequences. It was designed to consider the point of view of all potential users and partners: practitioners, scientists and policy makers. The key purpose of the workshop was to help define the direction and focus of the European Forest Risk Facility and is an important output of the FRISK-GO project.

Agenda and Presentations

Agenda and presentations available online on pdf format at: http://www.friskgo.org/events/past-events.html. The agenda is also available in Appendix 1.

A video has been made of interviews with a number of the attendees at the different workshops. Susan Davies, Mart-Jan Schelhaas and Barry Gardiner from the Storms Workshop were interviewed and the video may be viewed at www.friskgo.org.

Welcome address

Prof. Dr. Anton Fischer welcomed participants to the conference and provided a brief history of forestry in the region and a background to some of the previous important disturbance affecting the forest.

Introduction to the project and workshop

Alexander Held provided a background to the FRISK-GO project, progress to date and outlined the purpose of the storms workshop. In particular he emphasised that the Storms Workshop was a part of a larger program of work to develop a potential structure and business model for a European risk network. He also discussed a number of projects already initiated to help different countries because of the presence of the risk network (e.g. ice storm in Slovenia, large forest fires in Norway and forest flooding in the Balkans).

Report from the Forest Fire Workshop

Daniel Kraus presented a summary of the fire workshop that was carried out in Barcelona, Spain from 7-9 May 2014. This helped to set the context for the workshop and to inform participants about what had worked in this previous workshop and to enable the participants to benefit from that experience.

Video presentation of the workshop concept: defining the why, how and what

Videos of Johann Goldammer of the Global Fire Monitoring Center in the Max Planck Institute and Cristina Parraga of the German Aerospace Center were shown in which they expressed their views and expectations for a European Forest Risk Facility. The videos served as examples, to promote discussion and to share different views. The videos are available on the www.friskgo.org website.

RiskPLATFORM

Christoph Suter presented a system that has been developed within the Swiss company GEOTEST that uses social media to help with risk assessment and hazard monitoring. This allows different stakeholders to engage with the experts at GEOTECH and for the experts at GEOTECH to make decisions informed by stakeholders who are often much closer to an event and in a better position to provide information. Such systems can be very effective for direct response to damaging events and relatively cheap to set up (~€50-70,000).

Positioning of Participants

Frank Krumm led an exercise so that people could identify where their expertise fitted on a risk management matrix (Table 1). This was helpful in informing people of what areas of expertise were covered in the workshop and in what areas we were missing expertise. It was particularly clear that the meeting was dominated by researchers who covered all parts of the risk management cycle. Also well covered was 'Management' and to a lesser extent 'Risk Assessment', but much less well covered was 'Communication and Policy'.

Table 1: Positioning Matrix (with positions of participants at workshop).

	Risk Management Cycle				
Expertise	Preparation	Response	Recovery	Lessons Learned	Mitigation
Research					
Monitoring					
Risk assessment					
Management					
Communication					
Policy					

Case studies and presentations on storms

> ***Storms in Europe - history and future***: Mart-Jan Schelhaas presented a review of storms and storm damage in Europe. He reminded us that storm damage to forests has always been a feature of European forestry and there have been famous storms in the past causing extensive damage. However, in the 20th Century the level of damage to forests has increased with the largest percentage of damage (>5-%) due to storms. The increase in storm damage has been particularly large in the last 50 years and the trend appears to be for even higher levels of damage with predictions of a doubling of the median damage by 2030. The evidence is that this increase has been due to a combination of forest management practices (e.g. forest planting, and more uniform forests) and the changing climate. The most important factors influencing damage are tree age, the presence of conifers and the peak wind speed during storms. However, the impact of storms is not evenly spread across Europe and the largest increases are in Northern, Central and Eastern Europe but with no impact in Mediterranean areas.

> ***Storm ´Gudrun***: Kristina Blennow discussed the impact of the severe storm that affected forest in Southern Sweden on 8 January 2005 resulting in ~75 Mm³ of damage in an area of >6 Mha and led overall to 18 deaths. Overall damage was typically found in well stocked mature stands dominated by Norway spruce, and in recently thinned stands. The probability of damage increased with stand height proportion of Norway spruce and was lower when there was an admixture of Scots pine and even lower with admixture of deciduous trees. The storm also affected subsequent growth of the remaining trees and had a huge impact on the ecosystem services offered by the forests in the region. Following the wind damage there was a large outbreak of spruce bark beetle that caused a substantial amount of damage. The storm was the most severe "natural disaster" in modern time in Sweden and it almost brought civil contingency services to a standstill. The cost to the forestry sector was 1580 MEuros and was mainly born by private forest owners. It is a risk to their forests that they are prepared to invest the most money and/or time to reduce. This talk emphasised the human-side of the issue of storm damage including the response to risk of forest owners and the impact on society as a whole.

> ***Klaus Storm in Aquitaine: damages and recovery:*** Christophe Orazio discussed the 2 major storms that caused substantial damage to forests in Aquitaine, south-west France in December 1999 (Martin) and January 2009 (Klaus). The Klaus storm alone resulted in 40Mm^3 of damage (37.1 Mm^3 of pine) representing almost 5 years of pine harvest and affected 600,000ha of forest. Due to the experience gained from the Martin storm the crisis management after the storm was effective with emergency crews positioned before the storm, quick damage assessment, quick response to reopen roads, quick set up of crisis group, a good lead from the key actors during the crisis, few causalities, good cooperation between civil security and foresters, prompt discussion and quick implantation of grants. Less rapid was the authorisation of emergency measures from the EU. There was also strong support from public bodies including grants for road opening, forest cleaning, timber storage, wood transport and bark-beetle damage. There was support from the EU solidarity fund and there were specific loans for transport and storage. Overall 40% of potentially harvested wood was collected in 2009, a total of 80% of damaged wood harvested, 9.5Mm^3 of wood stored, and 14 Mt of wood allowed to be transported out of France (mainly Spain, Portugal and Germany). In addition many monitoring systems were set up

so that officials could keep track of how quickly the forest recovery was happening and how public money was being spent. The talk demonstrated the benefits of previous experience in order to have an effective response to a major storm.

> **Effect of Storms on Forest Ecosystems**: Prof. Nina Ulanova discussed the recovery of Russian Taiga forests after wind disturbance and compared wind disturbance to insect outbreaks and clear felling. She compared the 3 different disturbances by comparing their impact on soil, on the forest overstorey and on the forest understorey. In addition she compared differences in forest recovery following wind damage for forests that were left to recover naturally against those that had subsequent sanitation felling. In particular these two options showed a quite large difference in species composition as the forest recovered. She also showed the differences in forest composition depending on intervention (e.g. weeding) following replanting with spruce. Dr Ulanova then showed results from long term monitoring of forest recovery after a catastrophic wind damage event in 1996. These data showed the importance of wind damage in the dynamics of the forest and how different species exploit the new conditions to flourish (e.g. birch and willows in soil pits from uprooting) and how the composition and structure of the forest and the type of forest habitats can change dramatically (light levels increase; moisture and acidity increase; humus supply decreases). The talk showed the importance of considering wind disturbance in any attempt to understand the ecology of European forests and to include this understanding in any response following wind damage.

Report on responses to questionnaire and discussion of key requirements of a Forest Risk Network to reduce the impact of storms.

Barry Gardiner presented a background to the issue of storm damage in Europe and our ability to predict the risk to forests. Specifically he covered the following topics:

- A historical perspective on storm damage to European forests including a reminder that storms are responsible for more than 50% of all forest damage, that damage is increasing and storm damage has major economic, environmental and societal impacts
- A discussion of the state of the art, both what we know and what we don't know. This highlighted some of the continuing uncertainties in our scientific knowledge
- Example Knowledge and Tools for Managing Storm Risk. This included an example of a critical wind speed map for Europe based on EFISCEN data (from national inventories) and the wind risk model ForestGALES

There was then a list of recommendations on what needs to be done at a European level to improve our preparedness, response and mitigation efforts to reduce the impact of storms. This included outlining how a European Forest Risk Network could provide a focus for this effort. These points are discussed in more detail in the chapter on storm damage within the scoping study report prepared on all forest risks (see Appendix 5).

The second part of the presentation presented the results of a questionnaire sent to all participants (and some people unable to make the workshop) prior to the meeting. The questionnaire can be

found in Appendix 2 and a modified version of the questionnaire that resulting from discussions at the workshop can be found in Appendix 3. Altogether there were 15 respondents to the questionnaire and these responses are summarised in the graphs shown in Appendix 4.

Liaison Function of a Forest Risk Facility (WP3)

Christoph Hartebrodt presented a vision of how a European Forest Risk Facility might help the liaison between different member states and between different stakeholders in Europe. He made clear that the role of a facility would be as honest broker to help reduce barriers that might exist because of issues such as gaps in knowledge, lack of confidence, language barriers, barriers between scientist and practitioners, and the lack of time for individuals and organisations to develop networks with other experts within Europe. The liaison role of the risk facility would be to make it easier for people to make connections with expertise in Europe, to obtain information on different forest risks, and to obtain best practice guidance. This could be carried out through the provision of data-bases of experts, expertise and data, publication of best practice guidelines in different languages, the organisation of exchanges of practitioners and risk experts, the establishment and maintenance of demonstration projects/plots and the organisation of meetings (real and virtual). A European Forest Risk Facility would be flexible in order to be able to provide advice and help to a wide range of organisations and stakeholders from local to national organisations.

Field visit to the National Forest

Prof. Dr. Anton Fischer led the workshop attendees on a visit to the Bavarian Forest National Park. This included a visit to a long-term disturbance study-site. The site consists of 25 year old permanent plots monitoring regeneration following a wind storm in 1983. The study site contrasts forest development following wind damage for plots that were left alone with no intervention and sites which were initially cleared and then left. These represent some of the very few experiments showing forest recovery following wind disturbance and are a valuable resource for ecologists and forest managers. Such demonstration/experimental sites can be very useful in helping managers to make decisions following catastrophic wind damage when it can be difficult to know what is best to do.

European Commission Joint Research Centre

Jesus San-Miguel-Ayanz who is a senior researcher at the Institute for Environment and Sustainability of the EC Joint Research Centre presented an overview of the facilities and expertise that are offered by the JRC in support of the forestry sector. A major focus is on the development of forest models and information systems (accessible through the European Forest Data Centre: EFDAC). Forest data, information and models are being developed in accordance with the guidelines of the Infrastructure for Spatial Information in Europe (INSPIRE) and in synergy with other initiatives such as the ClimateAdapt portal and the Open Data Portal of the EC. Current activities are focussed in the following areas:

- Forest Mapping
- Forest Pattern and Fragmentation
- Forest Fires
- Forest and Climate Change
- Forest Ecosystem Services
- Land Use, Land Use Change and Forestry (LULUCF)

The work on forest fires has resulted in the European Forest Fire Information System (EFFIS) which provides EU countries, the European Commission services and the European Parliament with updated and reliable information on wildland fires in Europe. Such a system can be seen as a template for the mapping of other forest disturbances, for example, as already happens for major storms.

The JRC works in support of the European Union Forest Strategy and actively collaborates with European Commission Directorates, other European Union Agencies and member state forestry and forest fire services. Potentially a European Forest Risk Facility could work very closely with the JRC to make risk model predictions and maps easily available through JRC facilities.

Workshop Plenary Discussion

The final part of the workshop was a plenary discussion in which participants attempted to synthesise their opinions of what form a European Forest Risk Facility should take and what role it might play. Much of the discussion was based around the responses to the questionnaire discussed above (see Appendices 2, 3 and 4). From these discussions it was clear that the risk facility is seen as a way to add value to what work is already happening, to act as a way of helping connect organisations and individuals, and to help make information and data easy available. Specifically it should:

- provide databases of existing knowledge on storm damage in Europe
- provide evidence and support as requested by local, regional or national bodies
- provide a register of case studies and good practice
- simulate communication between different stakeholders
- support authorities in the development of emergency measures, the dissemination of information and access to expertise following storm damage
- help co-ordinate development of storm risk models and risk maps
- help make existing knowledge and information readily available
- help co-ordinate and harmonise assessments of the effects of different hazards on forest ecosystem services
- provide databases of expertise, develop network, and help with expert exchange as requested
- improve understanding of storm risk perception and response amongst forest stakeholders
- identify gaps in knowledge
- provide guidance, continued professional development, and technical knowledge for risk management in forests