

## Report for EFINORD-SNS Networks

Submit the report to [sns@slu.se](mailto:sns@slu.se) and [efinord@efi.int](mailto:efinord@efi.int) by 24:00 CET, 1<sup>st</sup> of March the year after the activities.  
 The report should not exceed 1500 words (including words in the template).

Please adjust the box size according to the length of your answer.

1. Network title:	Natural Disturbance Dynamics for Ecosystem Based Management (FORDISMAN)
2. Network number:	N2018-07

3. Network coordinator:	Kalev Jõgiste
Email:	kalev.jogiste@emu.ee
Address:	Kreutzwaldi 5, Tartu, 51006 Estonia

### Activities during the reporting year:

4. Place of the activity:	Estonia, Tartu and Finland, Hyytiälä
Duration of the activity (start date, end date):	01.01.2018 – 31.12.2018

5. Provide a short network summary, including:	
a) A background to the network b) The main activities of the network	
<p>a) FORDISMAN is a network of professionals from forest ecology. The activity started in 2002 with an initiating conference at Hiiumaa under the topic <i>Natural disturbances dynamics as component of ecosystem management planning</i>. Since then, a network event was organized annually, with participants from different partner organisations and countries.</p> <p>The main aim is to gain new knowledge in the area of natural disturbance regimes and forest ecosystem processes. An ecosystem understanding integrates physical and chemical processes with an understanding of the adaptations of individual organisms. An understanding of these ecosystem processes in a social and economic context requires both a multidisciplinary and an interdisciplinary approach. The challenge is to bring a wide range of subject matter experts together to develop a shared understanding of the ecosystem processes. The resulting understanding will lead to improved forest resource utilization and planning.</p> <p>b) The network FORDISMAN workshop <i>Disturbance legacy and forest soil carbon</i> took place on November 7.–9. 2018 in Hyytiälä, Finland. Meeting brought together specialist on forest soil carbon studies and ecosystem legacy concept. The soil carbon dynamics in connection to disturbance regime was discussed during the meeting. Prof. Jukka Pumpanen from University of Eastern Finland was presenting the ARTICFIRE project main results Dr. Kajar Köster (University of Helsinki) keynote presentation was «GHG emissions and C turnover in subarctic boreal forests», and Prof Kalev Jõgiste (Estonian University of Life Sciences) had speech «Carbon sequestration and disturbance legacy of forest ecosystems». Two sessions offered research communications on different topics: ecosystem legacy conceptual models, forest fires, GHG emission. The discussion on ecosystem resilience was initiated by Ahto Kangur with study results on carbon dynamics in connection to ecological memory. Poster session provided a good complementation to main presentations. Field excursion was organized to SMEAR II station. On site explanations on measurement technique were lively and fruitful.</p> <p>The meeting concluded with profound analysis of published papers and planning of further publications. The special issue of "Forests" will be dedicated to FORDISMAN activity during 17 years. Prof Jõgiste is appointed as a guest editor.</p> <p><a href="https://www.mdpi.com/journal/forests/special_issues/Forest_Management_Disturbance">https://www.mdpi.com/journal/forests/special_issues/Forest_Management_Disturbance</a></p>	

FORDISMAN colleagues were involved in arranging the M.Sc course «Forest disturbances and ecosystem services: data and modelling» Oct 15 – 19, 2018, Tartu.

Several sessions on the concept paper took place in Estonian University of Life Sciences and Latvian Forest Research Institute Silava. Long-time FORDISMAN partner Dr. John Stanturf was engaged in the activity of Estonian University of Life Sciences (affiliated now to Estonian University of Life Sciences). The visit to Latvian Academy of Sciences by Prof Kalev Jõgiste widened the cooperation contacts within Nordic-Baltic area.

The FORDISMAN colleagues were involved in organizing study trip of Lakehead University (Canada) master students. The involvement of international students was providing inspiring environment for PhD projects connected to FORDISMAN activity (completion of structure and writing of «Recovery of fire disturbed areas» by Kristi Parro, defense by the end of 2019).

6. List the outputs of the network (peer-reviewed articles, other publications, websites, policy recommendations, conferences, scientific meetings, large-scale project applications, research training etc.)

Peer-reviewed publications:

Jõgiste, K., Frelich, L.E., Laarmann, D., Vodde, F., Baders, E., Donis, J., Jansons, A., Kangur, A., Korjus, H., Köster, K., Kusmin, J., Kuuluvainen, T., Marozas, V., Metslaid, M., Metslaid, S., Polyachenko, O., Poska, A., Rebane, S., Stanturf, J.A. (2018). Imprints of management history on hemiboreal forest ecosystems in the Baltic States. *Ecosphere*, 9 (11), Article e02503. 10.1002/ecs2.2503.

Frelich, L.E., Jõgiste, K., Stanturf, J.A., Parro, K., Baders, E. (2018). Natural Disturbances and Forest Management: Interacting Patterns on the Landscape. In: Perera, A.H., Peterson, U., Martinez Pastur, G., Iverson, L.R. (Editors). *Ecosystem Services from Forest Landscapes* (221–248). Springer. 10.1007/978-3-319-74515-2\_8.

Jõgiste, K., Korjus, H., Stanturf, J. A., Frelich, L.E., Baders, E., Donis, J., Jansons, A., Kangur, A., Köster, K., Laarmann, D., Maaten, T., Marozas, V., Metslaid, M., Nigul, K., Polyachenko, O., Randveer, T., Vodde, F. (2017). Hemiboreal forest: natural disturbances and the importance of ecosystem legacies to management. *Ecosphere*, 8(2), e01706. 10.1002/ecs2.1706.

7. How and within which areas was the network beneficial for the Nordic countries?

Forest ecosystems within and throughout the Nordic states and Baltic Sea region share similar characteristics, but can also differ considerably, due to management decisions, variety in habitat and climatic conditions. Often, a forest landscape consists of pure, planted stands, alternated with mixed stands of spontaneous regeneration. Sharing experience with management in the light of disturbance events is crucial, since management actions that are effective in one country will not necessarily work in another. Superimposed with expected changes in climate and management policy, the complexity of forest dynamics requires an integral research approach and analysis frame on the road to sustainability.

The work organised under the project title is a common effort of colleagues from different countries. The research topic (forest disturbance studies and carbon management) requires a common protocol to carry out measurements and analysis. The opportunity to unify the research protocols is delivered with the current project. Knowledge exchange for research methodology is essential presumption for successful scientific endeavour.

Past events have shown that, fortunately, the representatives from different countries come also with rather contrasting methods for forest disturbance ecology studies. The knowledge ensued from interdisciplinary approach produces better prediction capacity in the face of climate change.

When developing the joint publication (manuscript preparation) the most urgent requirements with the research methodology become visible. This enhances the questions for research synergy expected from co-operation between different countries.

8. Provide a short popular science piece of the project (maximum 500 characters) for publication by SNS in various channels

Dependence of society on the natural resources acquires new context under changing environment and climate. Sustainable forest management requires evidence-based research as a basis for decision making. Critical components for our ability to react to projected climate change with anticipatory management actions are the understanding of the role and functions of ecosystem legacies in shaping mechanism of ecological resilience.

## Participation

9. Number of participants

Country	Young researchers / PhD students	Senior researchers	Stakeholders	Others (specify)	Gender			Total
					Women	Men	Other	
Denmark								
Finland	4	4			4	4		8
Iceland								
Norway								
Sweden		1				1		1
Estonia	5	5	2		5	7		12
Latvia	4	2			3	3		6
Lithuania		1				1		1
USA		1				1		1
...								
...								
<b>Total</b>	<b>13</b>	<b>14</b>	<b>2</b>		<b>11</b>	<b>18</b>		<b>29</b>

## Economic report

10. Received grant from SNS and EFINORD (SEK):

70.000

11. Transfer of SNS funds to network partners

Country	Partner organization	Sum (SEK)
Denmark		
Finland		
Sweden		
Norway		
Iceland		
Other countries (specify)		
<b>Total SUM</b>		

12. Costs

	SNS funding	External funds	Total
Travel and hotel	39200	15500	
Meeting costs	17900	9600	
Salary	Not allowed	16000	
Communication	13100	1900	
Other costs (specify)		23810	
<b>Total SUM (SEK)</b>	<b>70200</b>	<b>66810</b>	

Optional: Comments to the economic overview:

The cost for Master course "Forest disturbances and ecosystem services: data and modelling" were covered from university sources.

I hereby declare that the above statements are true to the best of my knowledge

Main applicant's signature, place and date

  
 (Signature)

Institute of Forestry and Rural Engineering  
 (Institution)

28.02.2019  
 (Day / Month / Year)

Signature of the head of the main applicant's research institution

  
 (Signature)

Institute of Forestry and Rural Engineering  
 (Institution)

28.02.2019  
 (Day / Month / Year)

Toomas Timmusk, Director of the Institute of Forestry and Rural Engineering  
 (Printed name, function)