IUFRO Meeting Report Form for

Forests Landscapes in Times of Changing Climate and Water Resources

1) IUFRO focal person/meeting organizer:

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2) Meeting report

Key issues discussed/latest findings in the field:

a) Forest Landscape Restoration (FLR) is one of the major challenges of the 21st century to combat climate change and adapt forest landscapes to global change. Bonn Challenge and New York Declaration targets to restore 350 mill. ha of forest landscapes have already resulted in pledges of 150 mill. ha focusing primarily on Africa, Asia and South America. Adaptive Forest Management (AFM) is a core element of adapting forests to climate change. The concept of Adaptive Measures (AM) summarizes both FLR and AFM as actions that increase the adaptive capacity of forests and forest landscapes to changing environmental conditions (Spathelf et al. 2018).

b) The results of a global survey on Adaptive Measures (AM) have confirmed that FLR and AFM are often joint actions. In temperate and boreal zones with a lower amount of forest loss and degradation, AFM is prioritized whereas in tropical and subtropical zones FLR together with AFM elements are often applied.

c) Forest management (e.g. thinning, harvesting, reforestation) and FLR can significantly influence water budget, hydrological cycling, carbon and water coupling (water use efficiency), and many other water-related ecosystem functions and services. Implementation of FLR and AFM needs to consider their possible effects on water.

d) In many countries of Africa and Asia increased FLR activities have resulted in a positive development of forest cover and the accompanying ecosystem services of forest landscapes. However, there are also negative examples where FLR can critically decrease seepage from forest land and regional water supply, e.g. in semi-arid zones. Such examples suggest that various flow regime components (e.g. magnitude, timing, frequency duration) must be considered when assessing how FLR and AFM may affect hydrology.

d) There are still critical uncertainties that have to be addressed about the effective and efficient implementation of AM activities in order prevent failures and negative effects on landscape water budget, ecological integrity and biodiversity, economic values, and social benefits.

e) The expertise of IUFRO and the outcomes of these two TF can provide important information for further AM implementation. Thus, continuation of activities to restore and to adapt forest landscapes is highly needed to provide important scientific input to the global political processes on AM.

Conclusions

The activities and outcomes of both TFs are highly needed for solving the global challenge of an adequate implementation of Adaptive Measures (AM). There is still a critical lack of information and expertise for the successful implementation including (1) technical aspects of site and plant material selection, restoration processing, stand tending, (2) ecological aspects of forest landscape transformation and its consequences for ecosystem services, as well as (3) socio-economic aspects of good governance, local population participation and inclusion of AM outcomes in local and regional economic and social processes. Without adequately addressing these challenges the risks of failure are high in this important element of climate protection and loss of public and political support for FLR.

Thank you very much for your kind cooperation!
and AFM on local, regional and even global scale. Thus, both TF members are interested in a new TF activity named Transforming Forest Landscapes for Future Climates and Human Well-Being by changing and widening the perspective from a measure- and object- driven view to an outcome-oriented perspective. With this new TF, the mitigation element of climate protection will be more included, as well as social science and landscape management will be strongly integrated with links to other landscape uses in addition to forestry. Modelling and projections with regards to different scenarios of climate, management and ecosystem services will be central elements in order to provide decision support on different spatial scales. A strong link shall be also established to the “green job” initiative of IFSA and EFI to use the TF activity for educational purposes and career development of young scientists. The broad TF scope will enable inclusion of research and networks from all existing IUFRO divisions.

**Outlook to future activities**

Major outcomes of the TF activities will be presented in the sub-plenary session Forest Adaptation and Restoration under Global Change at the IUFRO World Congress 2019 in Curitiba (Brasil). Moreover, a topical collection titled Forest Adaptation and Restoration under Global Change (website: https://link.springer.com/journal/13595/topicalCollection/AC_439db748d724c61f9bdaaf709c4d5040/page/1) in Annals of Forest Science (IF 2017: 2.357) has been launched. Up to now, two articles are published, and seven papers are in review. This collection will include major outcomes of the TF work. The results of a multilingual online survey on forest adaptation and restoration will be further expanded, analyzed and published (Weblink still open: http://gdi.thuenen.de/wo/limesurvey/index.php/883655?lang=en, 13 languages available to date: English, German, Italian, Spanish, Portuguese, French, Polish, Russian, Serbian, Turkish, Chinese, Japanese, Bahasa Indonesia). Currently more than 100 complete data sets from five continents are included in the survey data base. Before the next IUFRO Board meeting in Curitiba (Brasil) we will apply for plan to propose a new IUFRO TF named Transforming Forest Landscapes for Future Climates and Human Well-Being.

**Background information**

Forests provide a wealth of direct and indirect benefits by way of a range of important ecosystem services. These societal demands on forest goods and services are on a sharp upswing on account of rising populations, improved incomes and changing preferences. Increased demands for meat and dairy products are leading to forest degradation and deforestation in several parts of the world. Global demand for bioenergy to limit fossil fuel use requires increased production of wood and biomass. The global aspiration to bring into restoration of 350 million hectares of the world’s deforested and degraded lands by 2030 (Bonn Challenge, NY Declaration) remains at the heart of most restoration efforts today. This global activity is assisted by regional FLR activities like the African Forest Landscape Restoration Initiative (AFR 100). The increasing dynamics of climate change will overwhelm the spontaneous adaptive potential of many forests worldwide. Adaptive Forest Management (AFM) with a continuous monitoring of environmental change and variation of ecosystem service demands is aimed at adjusting management to these changing growing conditions and service demands.

3) Other information:

**Meeting data:**

*Full title of the meeting:* Forests landscapes in times of changing climate and water resources - Joint IUFRO TF Workshop of TF Forest Adaptation and Restoration under Global Change and TF Forests, Soil and Water Interactions

*Date and venue:* 13 to 14 September 2018, Corvallis, U.S.A.

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Meeting website: https://www.iufro.org/science/task-forces/forest-adaptation-restoration/.

Number of participants: 14 persons

Countries represented: (with contributions): India, Nepal, Ghana, Austria, U.S.A., Canada, China, Italy, Germany

Organization of the meeting:

All IUFRO Units involved:
(1) IUFRO Task Force – Forest Adaptation and Restoration under Global Change
(2) IUFRO Task Force – Forests, Water and Soil Interactions
(3) IUFRO unit 1.06.00 Restoration of degraded sites

Host organization(s): Oregon State University (OSU), Corvallis, Thünen Institute of Forest Ecosystems, Germany; financial support by Korea Forest Service (NIFoS), Thünen Institute via IUFRO SPDC program

Study tour(s) to: McDonald Forest (University Forest of Oregon State University, OSU)

Communication activities (dissemination of information about the meeting; promotion of IUFRO):

IUFRO News 10/2018

Related publications /websites:


TF websites:
https://www.iufro.org/science/task-forces/forest-adaptation-restoration/
https://www.iufro.org/science/task-forces/forests-soil-water/

4) Photos

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Legend: Meeting participants at Oregon State University, Corvallis (OR, U.S.A)

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Legend: Excursion to the “Oldgrowth” stand at McDonald Forest, Corvallis (OR, U.S.A)

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