



# Adaptive measures- a view on global regions

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*Thünen Institute of Forest Ecosystems, Eberswalde (Germany)*

International Conference on  
Forest Landscape Restoration  
under Global Change



San Juan, Puerto Rico (U.S.A.)  
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Photo: Andreas Bolte

# Outline

- **Global Change Challenges**
- **Adaptive Measures**
- **IUFRO TF on Forest Adaptation and Restoration under Global Change**
- **Outlook**

# Global Change Challenges

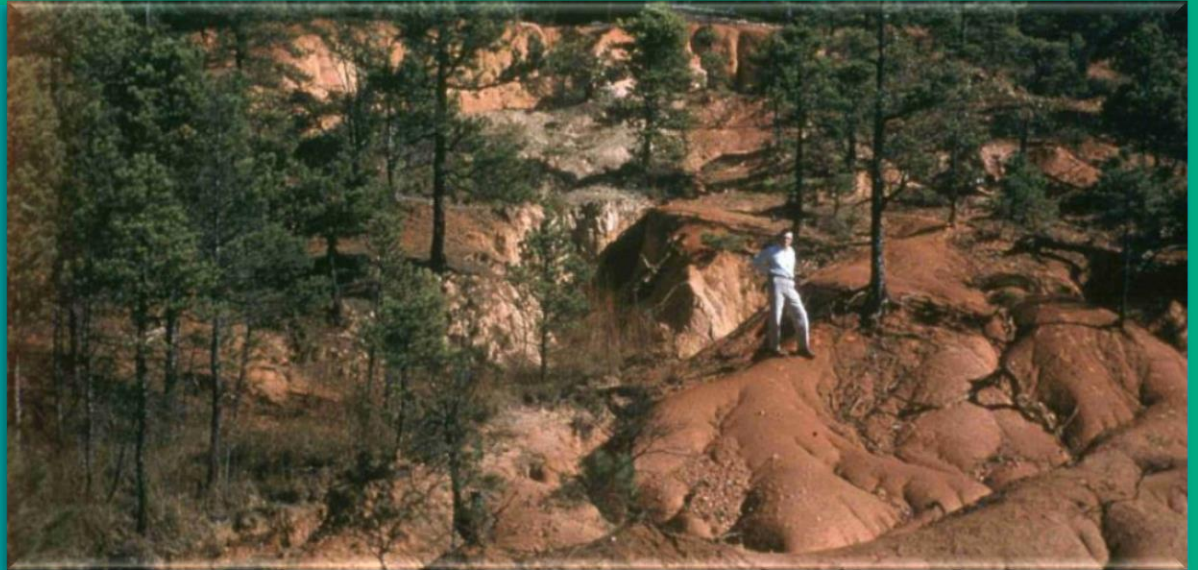
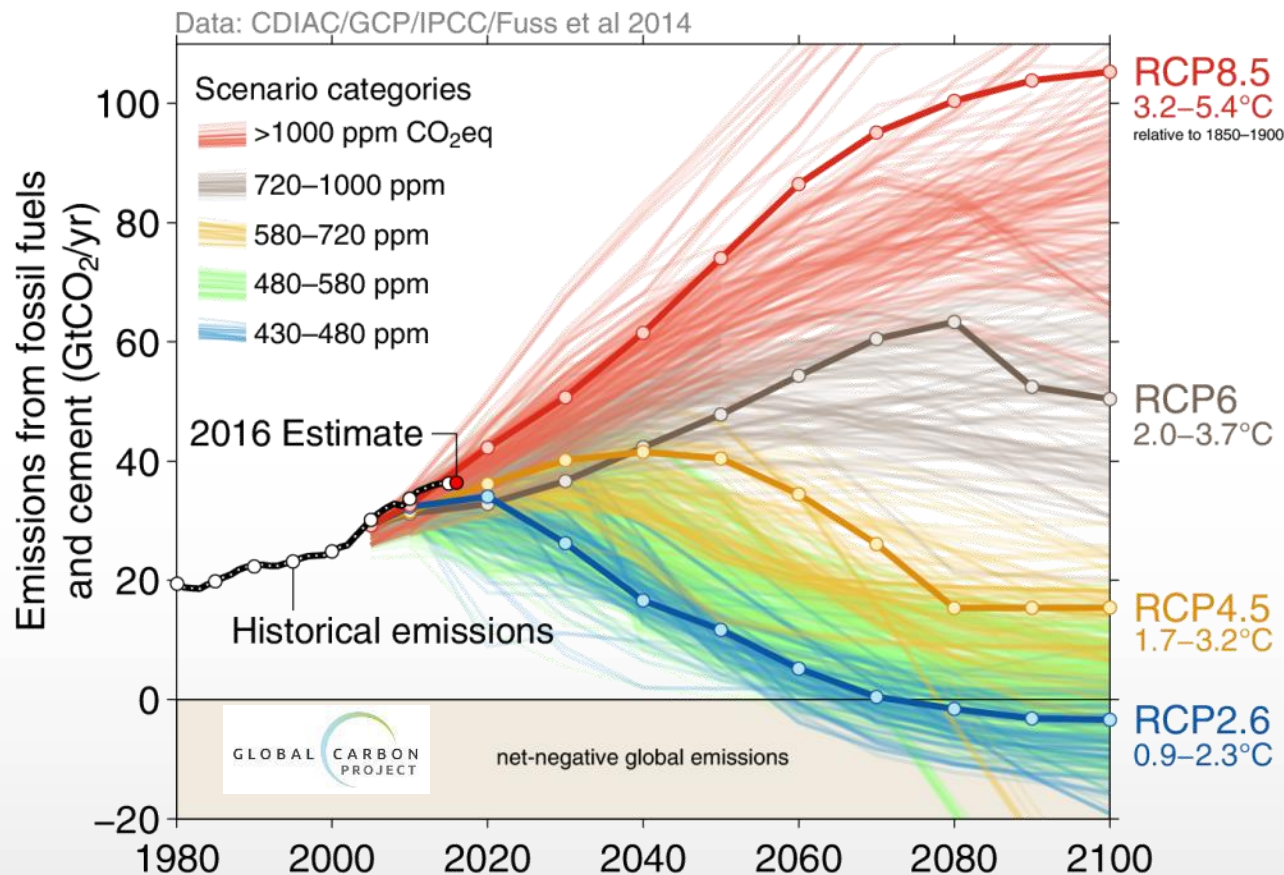


Photo: John Stanturf

# Global Warming – a highway to hell?

**most likely: +3°C until 2100**



## Forest damages



Source: [Fuss et al 2014](#); [CDIAC](#); [IIASA AR5 Scenario Database](#); [Global Carbon Budget 2016](#)



# Global Change challenges

## Global Change due to:

- **Climate Change** - extreme weather events (disturbances) and pathogens (current, novel).
  - **Changing social demands** for forestry and land use – meat and dairy, bioenergy, and environmental services.
- **Need for adapted/adaptive forest ecosystems and forest landscapes**



Photo: Magnus Löff



Photo: Andreas Bolte



Photo: Andreas Bolte



Photo: Robert Jandl



Photo: Achim Dohrenbusch



Photo: John Stanturf

Boreal

Temperate

Tropical

# Adaptive Measures



Photo: Andreas Bolte

# Forest Landscape Restoration and Forest Adaptation

## Global Change:

- Climate change and change of forest (landscape) use



## Forest Landscape Restoration (FLR):

- restoring forest structure and landscape function

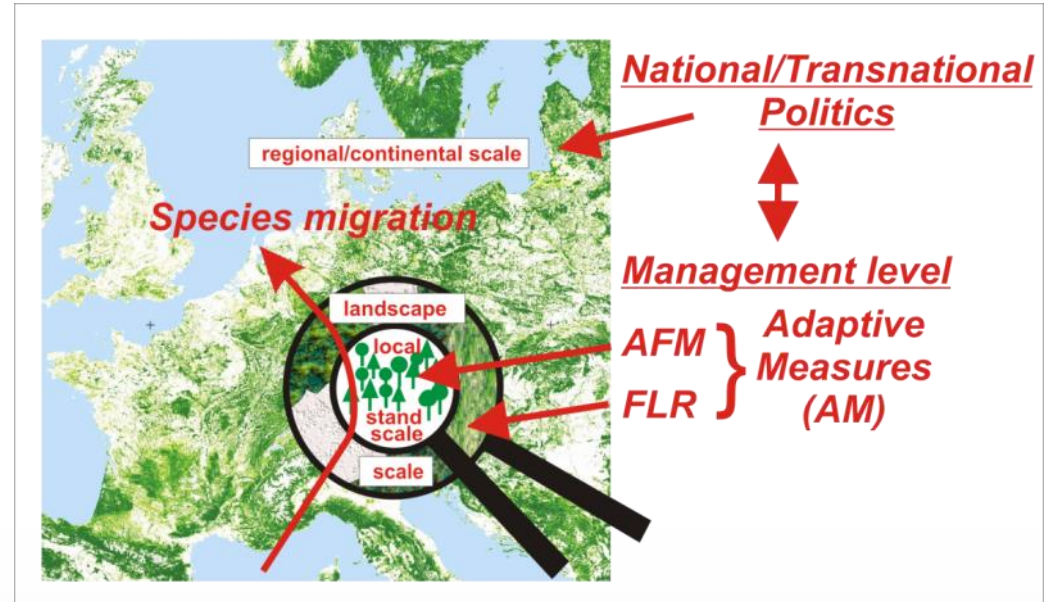
## Forest Adaptation (FA) :

- keeping/increasing resistance and resilience towards change of growing conditions

# Adaptive Measures = Forest Adaptation + Restoration

## Adaptive Measures (AM):

- actions that **increase adaptive capacity of forests/forest land**
- combining **Adaptive Forest Management (AFM)** on stand-scale with **Forest Landscape Restoration (FLR)** on landscape scale
- Linked to **national/transnational politics**
- **Continental/global expertise needed** in Silviculture, Forest Restoration, Physiology, Genetics, Social Sciences, Politics



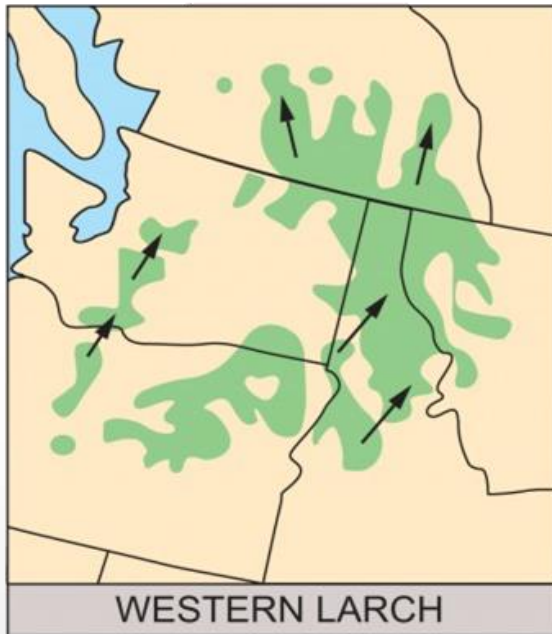
Map: Kunia et al. (2015) Forest map of Europe, EFI ([http://www.efi.int/portal/virtual\\_library/information\\_services/mapping\\_services/forest\\_map\\_of\\_europe/](http://www.efi.int/portal/virtual_library/information_services/mapping_services/forest_map_of_europe/))



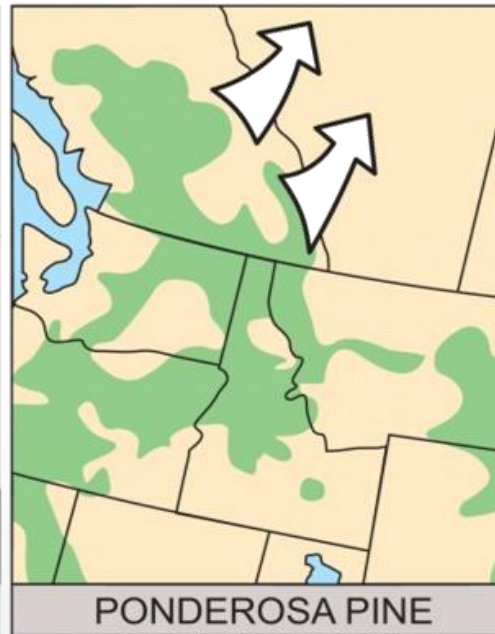
# Adaptive Measures – assisted migration

*Increasing effect on existing in-situ tree species combination* →

Transfer of provenances  
(within species range)



Extension of  
species range



Introduction of  
tree species



Source: Williams & Dumroese, 2014

- Managing moving species ranges instead of stands or landscapes!?

# IUFRO TF Forest Adaptation and Restoration



# What is a IUFRO Task Force?

## IUFRO (International Union of Forest Research Organizations)



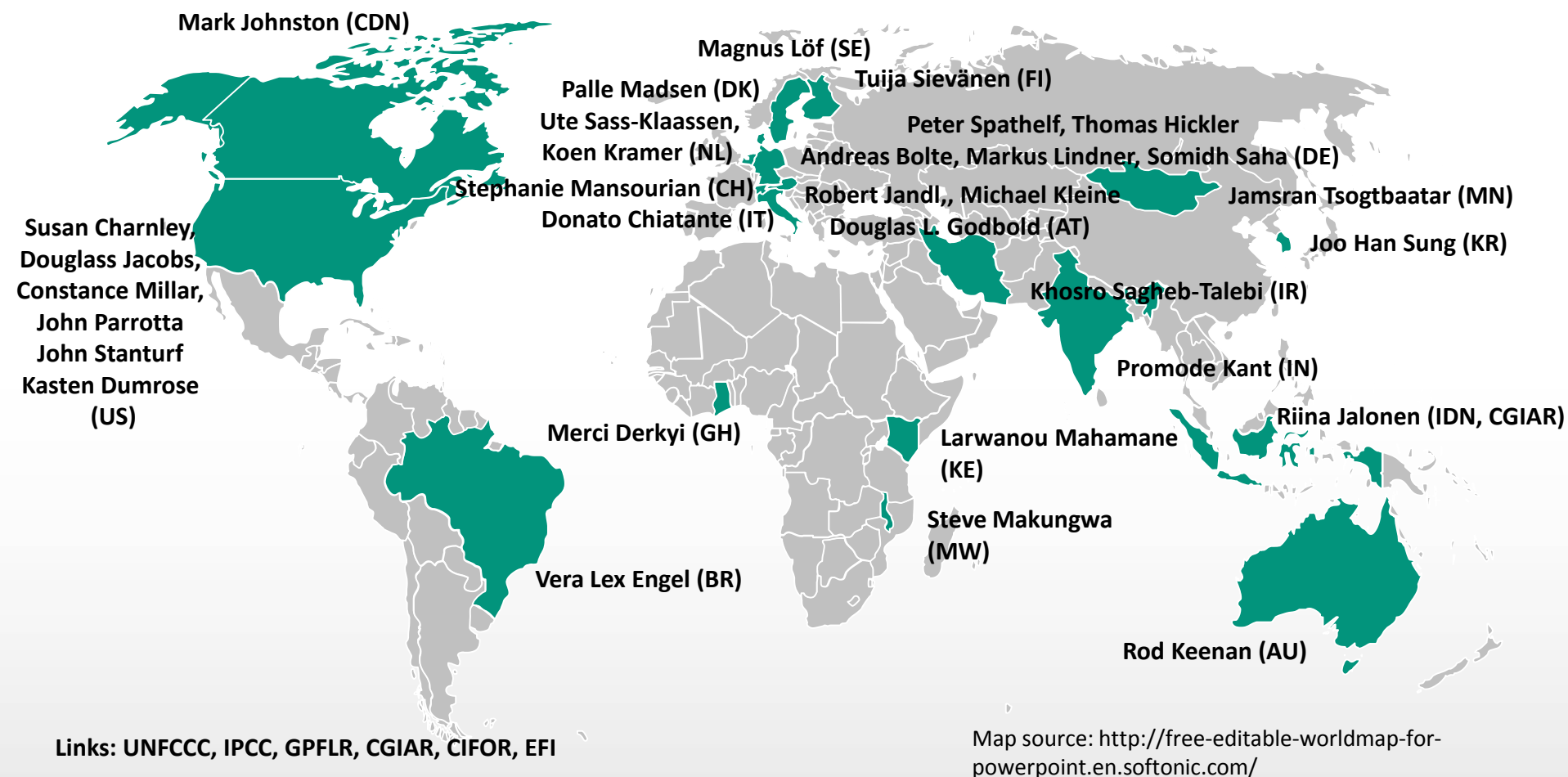
- Non-profit, non-governmental **global network for forest science**
- Aims at enhancing the understanding of the **ecological, economic and social aspects of forests, trees and forest landscapes**
- 15,000 scientists in almost 700 member organizations in over 110 countries
- Founded in 1892 in Eberswalde (Germany), headquarter in Vienna (Austria)

## IUFRO Task Forces:

- Try to advance **inter-disciplinary cooperation** in forest research fields
- focus is on **emerging key issues** that are of great interest to **policy makers and groups inside and outside the forest sector**, and contribute to **international processes and activities**

# Where are the TF members from?

**Already 30 TF members from five continents!**





# What are the aims and activities?

- **TF conceptual ‘pathway’:**  
*Identifying knowledge gaps - Comparing existing activities and techniques - Elaborating best practice approaches*
- **TF activities:**
  - (1) Retrospective knowledge (gap) analyses**  
Continental/regional workshops - state of the knowledge reviews
  - (2) Collaborative data compilation and analyses**  
Data compilation and meta-analyses, storage in central open database
  - (3) Conception and implementation of research and monitoring networks on AM**  
Joint research needs and concepts, methods and activities
  - (4) Elaboration of best practice approaches**  
Compiling results and experiences, elaborating best practice examples



Photo: Andreas Bolte



Photo: John Stanturf

# Gap analyses and training workshops

Date	Workshop/conference activity
26-27 July 2016	AFRICA: International Knowledge-Sharing Workshop “Forest Landscape Restoration and Global Change: From Policy to Practice”, Kigali, Rwanda; Michael Kleine
29 August- 1 September 2016	IUFRO Joint Communicators Meeting, Portland, Oregon USA; John Stanturf to present spotlight tool
3 September 2016	World Conservation Congress, Hawaii, Side event on “Governance and Forest Landscape Restoration; Stephanie Mansourian
20-21 September 2016	CENTRAL AMERICA: Knowledge-Sharing Workshop on FLR Implementation, El Salvador Bastiaan Louman, CATIE
3-7 October 2016	Mountains 2016, Bragança, Portugal; Donato Chiatante “Symposium 05: Forest adaptation and restoration under global change – the role of mountainous forests”
20-23 October 2016	IUFRO SPDC Science Policy Interfacing training and FLR, Pre-congress training (IUFRO Regional Congress for Asia and Oceania) Beijing; Michael Kleine
24-27 October 2016	ASIA: IUFRO Asia Oceania conference, Beijing; Andreas Bolte
19-22 April 2017	Sustainable Restoration of Mediterranean Forests: Analysis and Perspective within the Context of Green Economy Development Under Global Changes, Palermo, Italy; Donato Chiatante
6-8 June 2017	GLOBAL: Knowledge-sharing Workshop “Translating global FLR policy into local action, Puerto Rico; John Stanturf
12-14 September 2017	3 <sup>rd</sup> International Forest Restoration Conference, Lund, Sweden; Magnus Löf and Palle Madsen
19-22 September 2017	IUFRO 125 <sup>th</sup> Anniversary Conference, Freiburg; Andreas Bolte

# Online survey for forest practitioners (since January 2017)

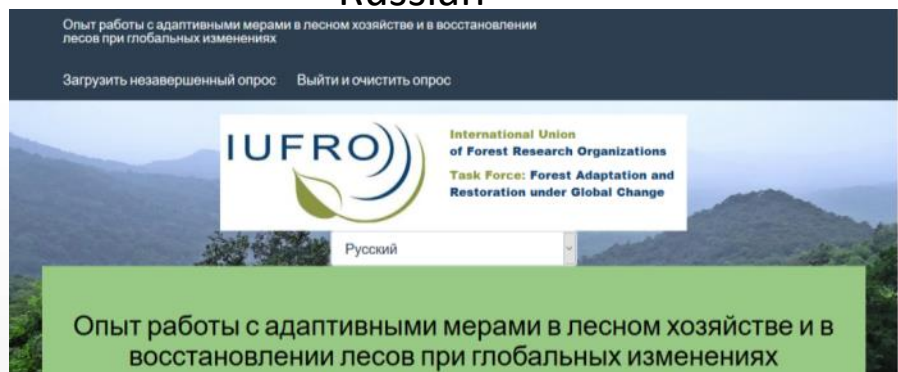
English



Italian



Russian

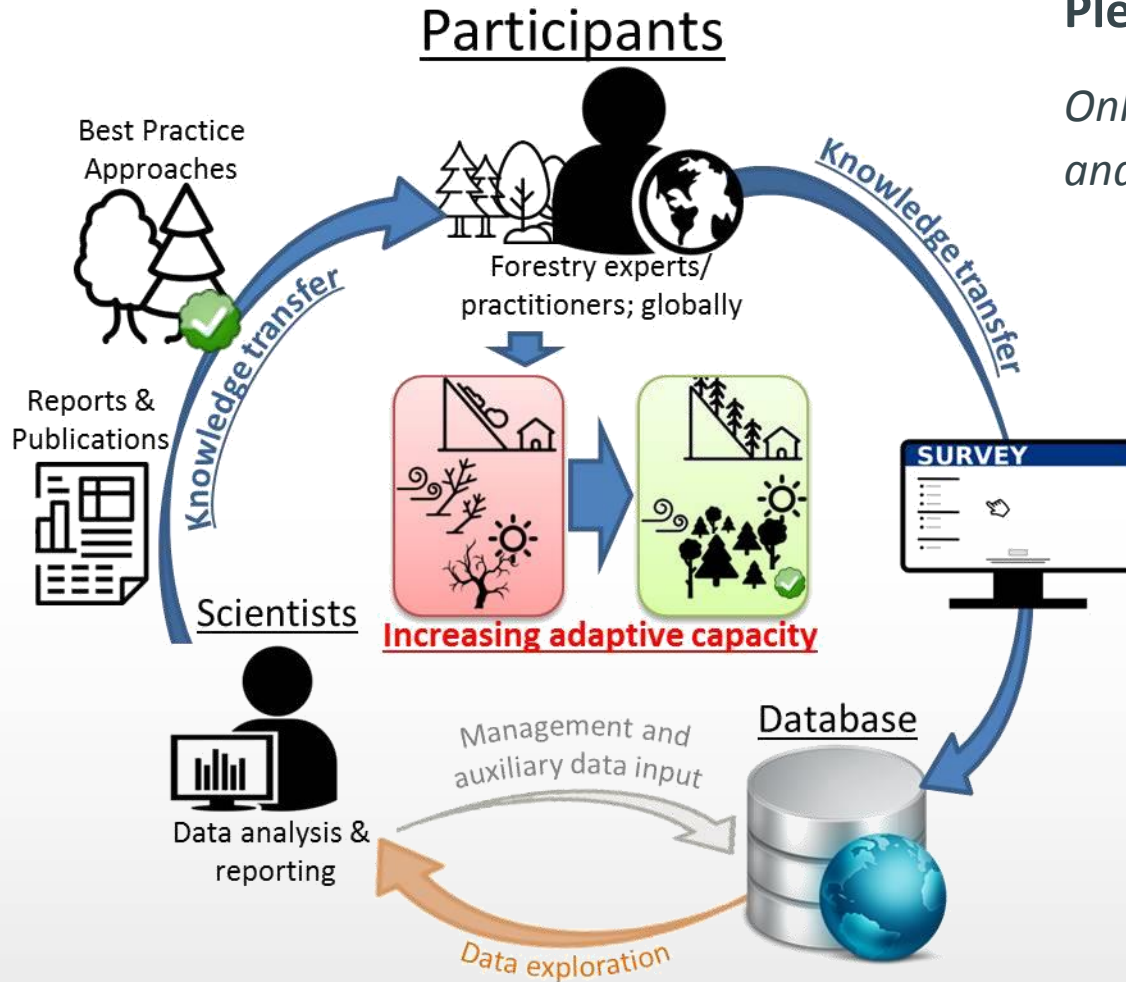


Chinese



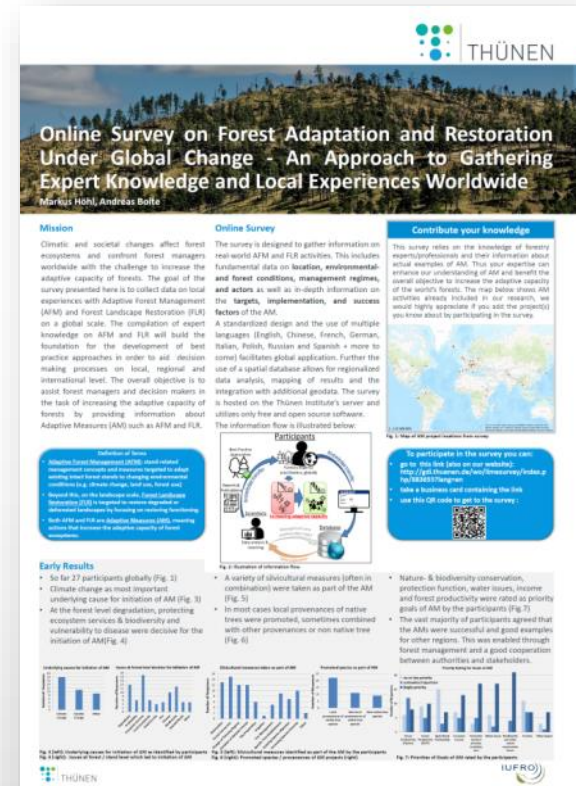
+ Spanish, French, Polish ... (Bengali, Portuguese, Japanese, Turkish, Swedish...);  
Aim until the end of 2017: 300 complete data sets

# Concept of the knowledge transfer



Please look at our poster:

*Online Survey on Forest Adaptation and Restoration under Global Change*





# Online survey - outline

## Section I. Information about the local forest (-landscape)

## Section II. Structured Questions

- priority targets of Adaptive Measures (AM)
- regarding the success/failure (-factors) of the AM

## Section III - Information about participant

Internet survey link:

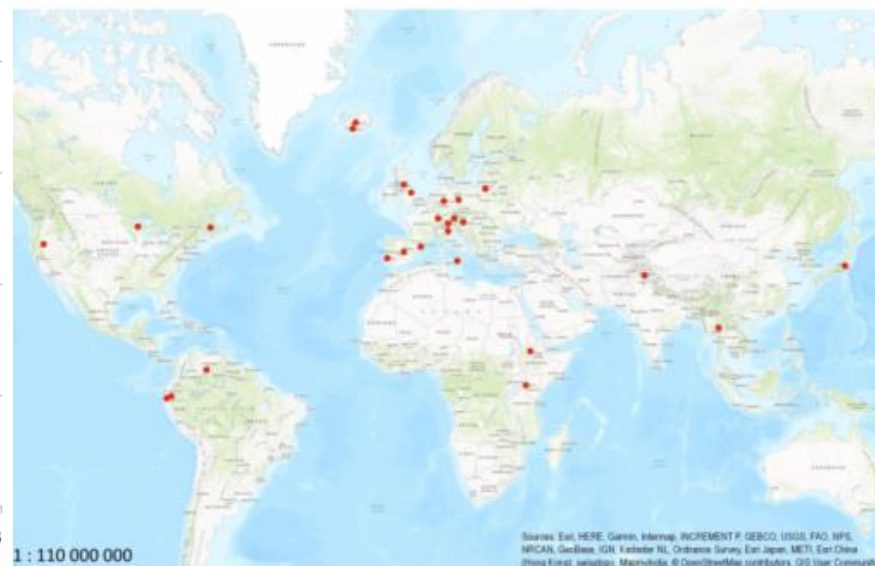
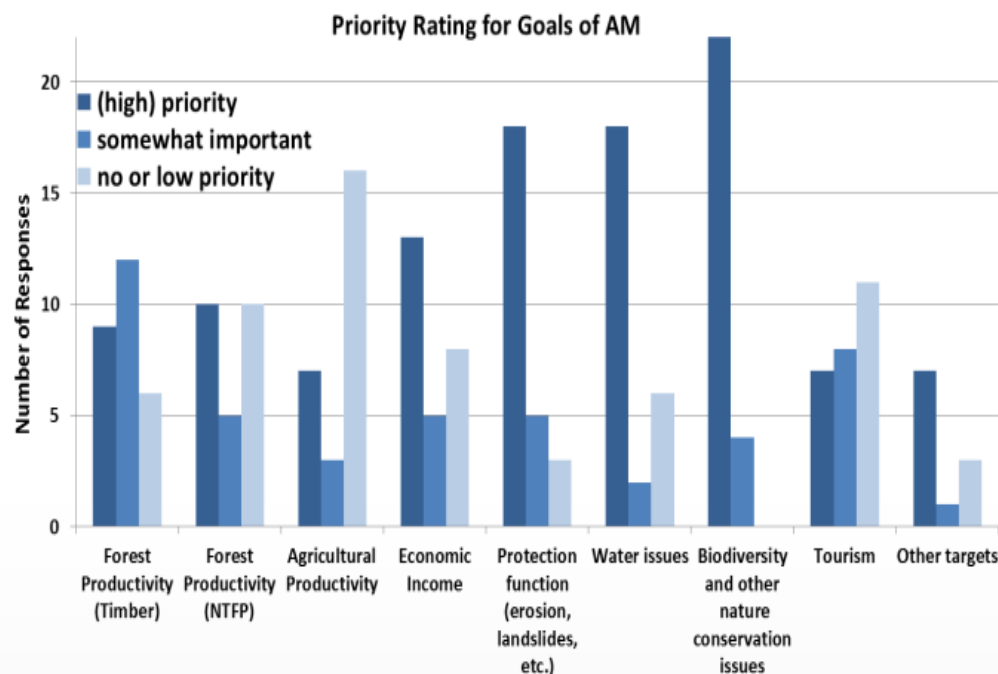
<http://gdi.thuenen.de/wo/limesurvey/index.php/883655?lang=en>

To participate in the survey you can:

- go to this link (also on our website):  
<http://gdi.thuenen.de/wo/limesurvey/index.php/883655?lang=en>
- take a business card containing the link
- use this QR code to get to the survey :

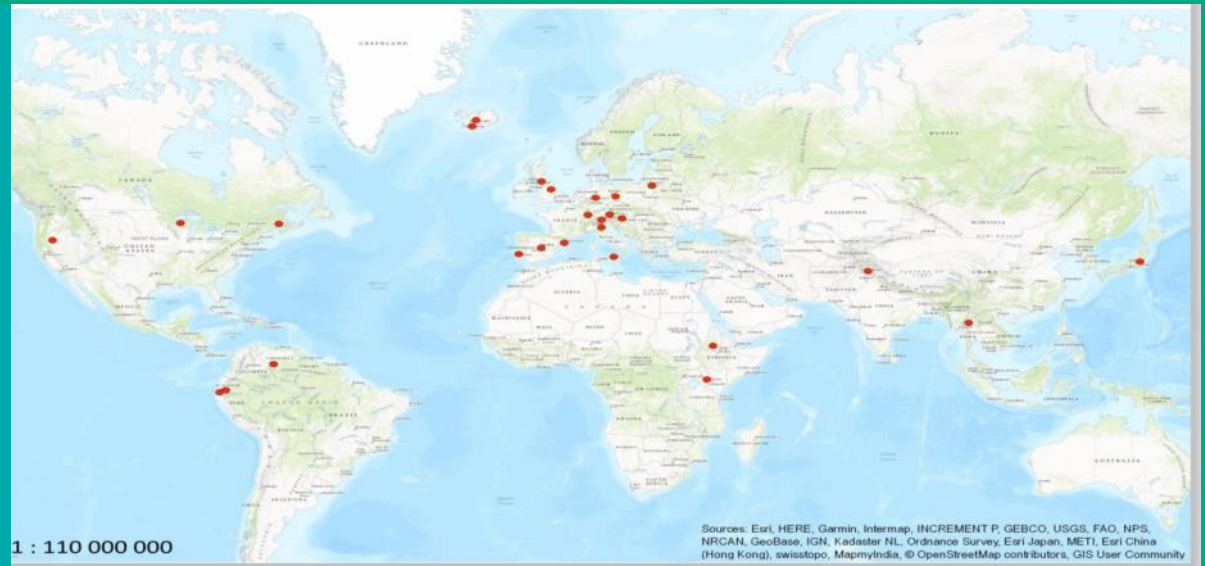


# Selected first results



- **Climate change** as the most important underlying cause for AM.
- Major goals are **nature & biodiversity conservation, water issue, protection functions, but also forest productivity/income**

# Outlook



# Next steps and outlook for the TF

- Raising more awareness of (1) the **challenges and opportunities of Adaptive Measures** (Forest Adaptation, Forest Landscape Restoration).
- **Getting use of the local knowledge about Adaptive Measures on the global scale** → at least 1000 participants in the online survey.
- Making **expert knowledge available to everyone** → **Open Access publications and communication/training workshops in different languages.**
- Developing and publishing **best practise approaches for solutions on regional scale** (e.g. for the Mediterranean regions).
- Forming a **global network of local AM practitioners and experts.**
- **Raising attention in the scientific community** with high-ranked scientific papers.



# Key points

- Forest restoration and adaptation is a global issue, but the successful implementation of Adaptive Measures (AM) needs extensive participation on regional and local scale.
- Assisted migration as an AM requires a management of moving species ranges on international/continental scale.
- The IUFRO TF on “Forest Adaptation and Restoration under Global Change” provides both a network and a information system to get use of the local knowledge about AM on the global scale.
- The information system bases on an worldwide online survey and resulting open access database that includes local information about priority targets and success/failure (factors) for adaptive measures.

# Thank you for your attention!

Please support our TF and participate in the online survey!

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