

A light at the end of the tunnel or a will-o'-the-wisp? Best practices in forest and water management in Germany beyond sector fragmentation

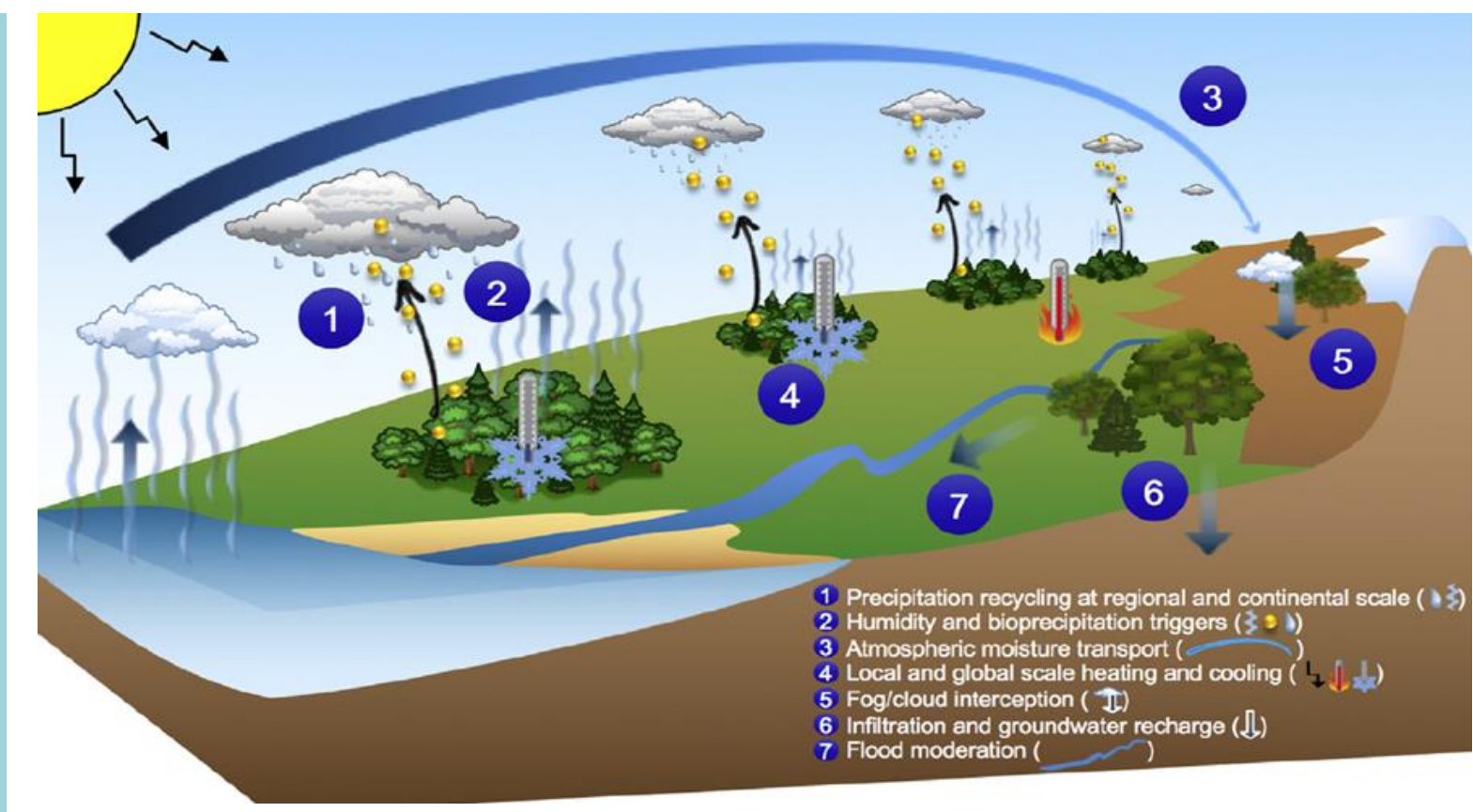
Tanja Granzow / Sabeth Häublein / Andy Selter

Toward increased cross-sectoral integration

The effects of the drought years in Germany since 2018 have highlighted the interdependencies of forest and water resources. However, the two sectors remain fragmented. To adapt to changing circumstances, both cross-sectoral cooperation as well as integrated management practices need to be advanced.

Based on expert interviews and focus group discussions, we identified:

- (1) current best practices in forest and water management and
- (2) bottom-up steps toward more cooperation between the sectors on a local level as well as perceived needs to lay a foundation for increased cross-sectoral integration.



Changing forest-water interactions

Ellison, D. et al. (2017).

Trees, forests and water: Cool insights for a hot world. *Global Environmental Change* 43, 51–61.

Best Practices in forest and water management

as stated by experts from both the forest and water sector in hotspot areas in Germany

Reduction in water consumption

- Reduction in withdrawal quantities
- Increased water price
- Recording of water extraction
- Rainwater utilization

Preservation of water quality

- Protection zones around water extraction points
- Preservation/improvement of drinking water purification in forest soil

Soil management

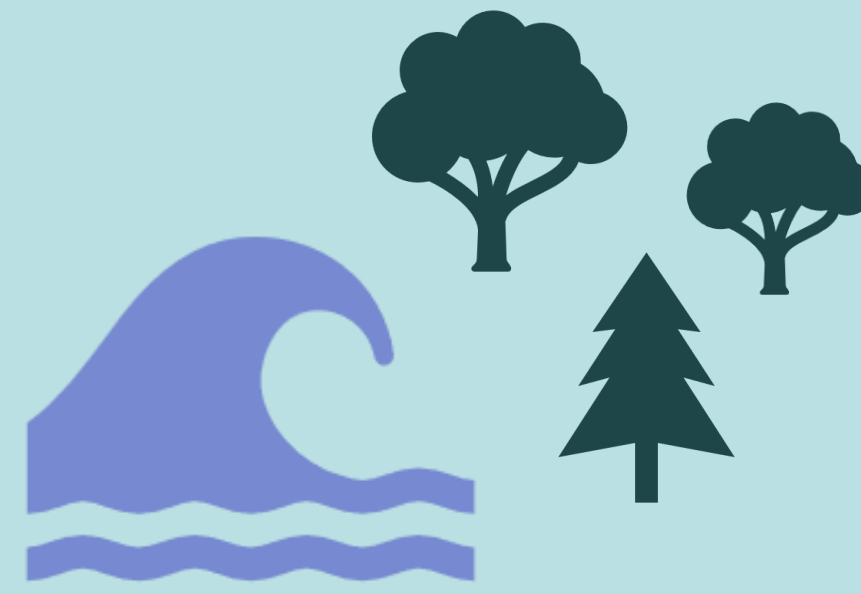
- Avoidance of further compaction, e.g. by not using heavy machinery
- Renaturation of skid trails
- Unsealing
- Humus management
- Promotion of soil life and deep rooting

Increase in forest area

- Preservation of forest area
- Reforestation, especially rapid reforestation after calamities

Water recirculation & retention

- Optimized drainage of path water, targeted infiltration
- Creation of retention areas
- Closing or renaturation of drainage ditches
- Renaturation of drained wetlands, e.g. wet forests, moors
- Trenches in keyline design, water cuts in North-South direction
- Beaver management



Silviculture / Forest conversion

- Avoidance of clear-cutting, small-scale timber extraction only
- Increased proportion of deciduous trees
- Promotion of rejuvenation
- Drought-adapted tree species
- Increase share of deadwood
- Restriction of invasive species
- Horizontal and vertical structuring of crown space
- Differently deep-rooted tree species

Forest fire prevention

- Controlled fires
- Establishment of extinguishing water ponds
- Forest fire patrols

Risk maps

- Continuous risk mapping
- Creation of flood risk maps
- Bark beetle and forest fire monitoring
- Dissemination of risk maps

Simulations

- Continuous measurements
- Creation of simulations
- Dissemination of scenarios

Cooperation

- Integrated forest and water management
- Networking via dialogue processes
- Establishment of cross-sectoral round tables
- Solidarity-based water communities
- Connection with education for sustainable development (ESD) activities and actors

Data

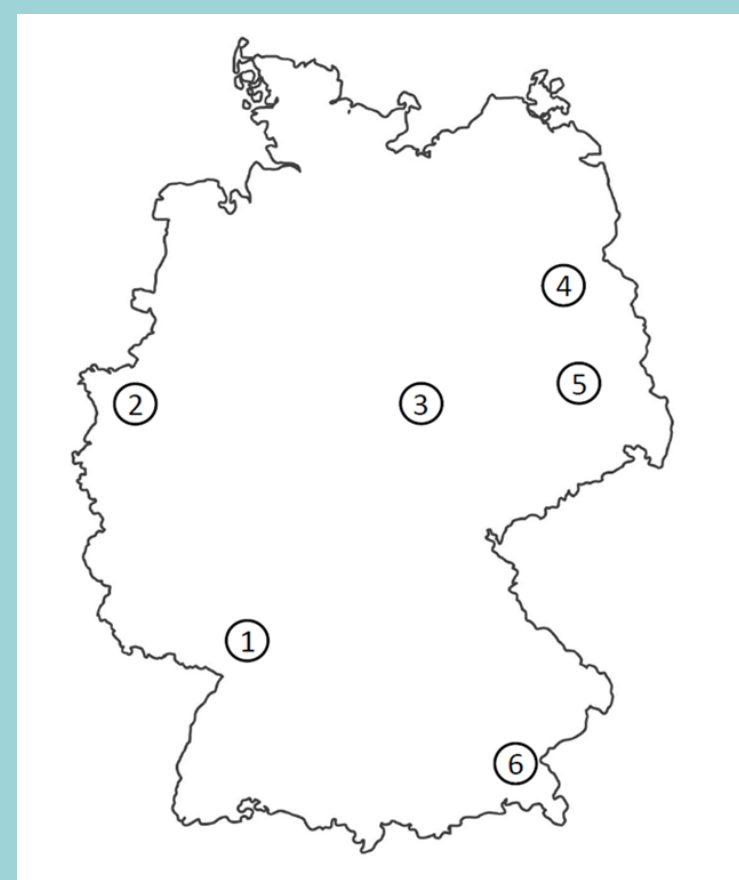
Best practices were extracted from:

- Expert **interviews** (n=18) and
- **Focus group discussions** (n=53)

in case study regions (maximum range sampling):

1. Upper Rhine Valley
2. Lower Rhine Valley
3. Harz
4. East Brandenburg Plateau
5. Spree Forest
6. Pre-Alpine Hills and Moorland

- **Survey** among forest-water nexus conference participants (n=27)



Recommendations

- ✓ Institutionalize regular **round tables** on local level with all relevant stakeholders (forest, water & beyond)
- ✓ Designate **responsible contact point/coordinator** to facilitate exchange
- ✓ Provide **educational opportunities** for both sectors to foster an understanding of the relevance of cross-sectoral cooperation and professional responsibility
- ✓ Remove barriers to cooperation by making existing **data easily accessible** for other sectors
- ✓ Include **private forest owners** in all activities and structures
- ✓ Anchor **courses** on the forest-water nexus in the relevant degree and training programs

University of Freiburg

Tanja Granzow / Sabeth Häublein / Andy Selter
Chair of Forest and Environmental Policy
Tennenbacher Str. 4 • 79106 Freiburg
Germany

universität freiburg

E-mail: intew2@ifp.uni-freiburg.de
Web: www.intew2.de

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