



STATEMENT

Forests and Water: managing our connected natural capital



Sustainable development is dependent on the forest-water nexus.

To achieve SDG 15, water and food security should be at the heart of forest management and the restoration of multi-functional landscapes. Similarly, water management should incorporate appropriate forest management as a natural infrastructure solution to achieve SDG 6.

Landscape restoration and forest activities should extend priorities beyond the conventional forest product, biodiversity and carbon storage focus, and more centrally include water impacts and opportunities to better contribute to a range of the sustainable development goals.

Only by recognizing the interlinkages of forests and water, and how the management of these resources influences productive multi-functional landscapes can appropriate agricultural, environmental, and carbon-reducing actions be designed for long-term benefits.

There are trade-offs; understanding and managing for these are paramount.

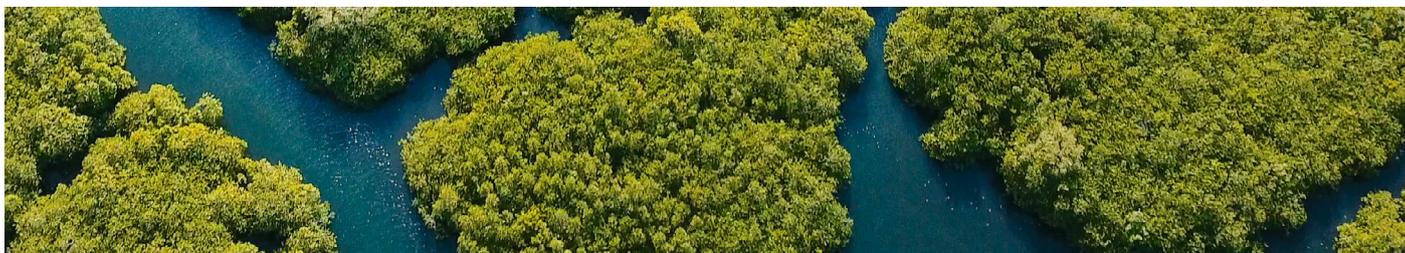
The relationships between forests and water are complex and context-specific.

Research and knowledge exist that can help to prioritize how forests should be managed within our landscapes in symbiotic relationships with water-related ecosystem services, such as soil erosion control, flood reduction and groundwater recharge. The same research can help us to identify trade-offs where forests may be counter-productive to water needs.

There is general agreement on the physical processes that are influenced by forests that change the water cycle, but less agreement on the effects of their interactions, and their impacts.

One key challenge is the range of forest-water interactions, and how different processes and effects occur at different spatial and temporal scales. For example, forests may cause a net loss in downstream water availability in some river basins, but may contribute to precipitation in other river basins due to the recycling of evapotranspired¹ water. Effects and impacts may therefore require further understanding across a range of scales.

¹ Evapotranspiration (ET) - evaporation from soil and plant surfaces and transpiration of water by plants.



Changing the landscape changes water: forest and landscape restoration *will* affect water supply.

Where forest and landscape restoration activities are planned, care must be taken to ensure that any impacts on water under current and future climate predictions are taken into account. Equally, the length of time it takes for forests to restore landscape functions needs to be recognized, as hydrological processes in forests change over time.

We urge caution with generalized assumptions due to the highly contextual nature of forest-water relationships. What is true for one geography, altitude, forest type, management regime, scale and season, may not be true for another. More research and monitoring on forest-water interactions in multi-functional landscapes is therefore required, and should be a requirement of restoration and landscape initiatives.

To achieve the SDGs, the forest-water nexus needs to be included in management, supported in policies and effectively monitored.²

Simply recognizing the forest-water nexus is not enough. We must improve our ability to design, implement, and learn from landscape approaches that both rely on the relationships between forests and water, and impact them.

This is necessary if we are to achieve the Sustainable Development Goals, including those related to hunger (SDG 2), poverty (SDG 1), water (SDG 6), climate (SDG 13), energy (SDG 7), economic growth (SDG 8), sustainable cities (SDG 11) and life on land (SDG 15); the Aichi targets on biodiversity; as well as store the carbon needed to achieve the temperature targets in the Paris Agreement.

² Although the connection between forests and water are acknowledged in SDG targets 6.6 and 15.1, there is currently no methodology to monitor how changes in the landscape, including forest loss and/or gain, relate to changes in water and vice-versa, and therefore no data to inform management and policy decisions.

This statement is the result of a meeting with forest and water experts co-organized by FAO, IUCN and SIWI with contributions from Elaine Springgay, FAO; James Dalton, IUCN; Lotta Samuelson, SIWI Swedish Water House; Angela Bernard, FAO; Alexander Buck, IUFRO; Jan Cassin, Forest Trends; Nathaniel Matthews, Global Resilience Partnership; John Matthews, Alliance for Global Water Adaptation; Anna Tengberg, SIWI Swedish Water House; Jacob Bourgeois, First Climate Markets AG; Mike Acreman, IUCN; Ingrid Öborn, ICRAF; and James Reed, CIFOR.

Access this statement and the workshop report online at: www.siwi.org/publications/forest-water-nexus

Further reading:

Dalton, J., Ellison, D., McCartney, M., Pittock, J., Smith, B., 2016. *Can't see the water for the trees?* Global Water Forum Article. 3 October 2017. Web: <http://www.globalwaterforum.org/2016/10/03/cant-see-the-water-for-the-trees/>

Ellison, D., C.E. Morris, B. Locatelli, D. Sheil, J. Cohen, D. Muriyaro, V. Gutierrez, M. van Noordwijk, I.F. Creed, J. Pokorny, D. Gaveau, D. Spracklen, A.B. Tobella, U. Ilstedt, R. Teuling, S.G. Gebrehiwot, D.C. Sands, B. Muys, B. Verbist, E. Springgay, Y. Sugandi, C.A. and Sullivan. 2017. *Trees, forests and water: cool insights for a hot world*. Global Environmental Change, 43: 51–61.

FAO. 2013. *Forests and Water: International Momentum and Action*. FAO, Rome, Italy.

FAO. 2016. *Forests and Water – A five-year action plan*. FAO, Rome, Italy.

FAO. 2018. *Forest and Water Programme*. FAO, Rome, Italy. Web: <http://www.fao.org/2/ForestsAndWater>

Filoso, S., M.O. Bezerra, K.C.B. Weiss and M.A. Palmer MA. 2017. *Impacts of forest restoration on water yield: A systematic review*. PLoS ONE, 12(8): e0183210.

Samuelson, L., Bengtsson, K., Celander, T., Johansson, O., Jägrud, L., Malmer, A., Mattsson, E., Schaaf, N., Svending, O., Tengberg, A. 2015. *Water, forests, people – building resilient landscapes*. Report Nr. 36. SIWI, Stockholm

Springgay, E., Dalton, J., Samuelson, L., Bernard, A., Buck, A., Cassin, J., Matthews, N., Matthews, J., Tengberg, A., Bourgeois, J., Öborn, I., Reed, J. 2018. *Championing the Forest-Water Nexus – Report on the Meeting of Key Forest and Water Stakeholders*. SIWI, Stockholm. Web: <http://www.siwi.org/publications/forest-water-nexus>