Restoring degraded riparian ecosystems: Context matters

Technical

Shalom Addo-Danso¹ , *Ernest Foli¹*

¹ Forests and Climate Change Division, CSIR-Forestry Research Institute of Ghana, Ghana

Session description

Forests, especially those in riparian zones influence water resources in multiple ways. It is estimated that forested watersheds provide over 75 percent of the world's freshwater resources, and more than half of the global population depend on water resources for various purposes. In addition, forests within riparian zones are integral components of the water cycle – regulating stream flow, fostering groundwater recharge and contributing to atmospheric water cycling. Riparian forests are also crucial for the long-term maintenance of downstream water quality by acting as natural filters, reducing soil erosion and water sedimentation (FAO, 2021).

Riparian forests are however, threatened by various human activities such as small-scale and industrial mining, hydroelectric projects, logging, small-scale agricultural expansion and large-scale agricultural projects. The loss of vegetation cover due to these disturbances can cause changes in the canopy with consequences for wildlife habitat, biodiversity, water flux and water quality (Sweeny et al. 2004; Wei et al. 2018; FAO, 2021) – ultimately affecting provision of water ecosystem services and water security.

Across the world, there are policy frameworks that support the maintenance and restoration of degraded riparian areas. Indeed, forest and landscape restoration approaches are regarded as promising tools to reverse the continual loss of riparian forests and other vegetation in riparian zones. Generally, it is estimated that restoration activities could lead to a reduction of 10 percent or more sediments and nutrients in watersheds (Abell et al. 2017). However, restoration and tree planting interventions may have variable impacts on watershed processes depending on which model is applied (Jones et al. 2020). For instance, agroforestry practices are known to significantly improve water filtration, soil organic matter and nutrient status. On the other hand, tree planting along degraded riparian areas could reduce steamflow and decrease water yield (Filoso et al. 2017).

These complex responses imply that outcomes of restoration efforts in riparian areas may be dependent on several factors including management regimes and tree species, and other governance related issues (du Plessis et al. 2022). Therefore, achieving success with restoration of degraded riparian ecosystems will require consideration of complex-mix of drivers, social actors and context.

This session, therefore, seeks to understand the key issues to consider when implementing restoration programs in riparian areas. The session will run as a side event to the proposed technical session "Transforming and restoring forest landscapes – showcases for a better future". The session will be held under Congress themes 1.2 and 1.3.