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Managing forests for adaptation to climate change
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Summary

There is now an overwhelming body of evidence indicating that our climate is changing at an alarming rate. This will have profound implications on our entire lives. It will also force us to re-visit how we manage our natural resources, and forests are no exception. Forests have received a lot of attention in the climate change discussions, primarily as potential providers of renewable, carbon-neutral energy, and as carbon sinks. Forestry measures (afforestation and improved management) are often presented as efficient means of removing carbon from the atmosphere, thus mitigating climate change.

There are effective policy frameworks (most notably the Kyoto Protocol) that bind countries to reduce net greenhouse gas emissions, and there are financial mechanisms that make such efforts worth-while. This encourages investment into renewable energy and carbon sinks. Unfortunately, much less attention has been given to (and money invested into) the ability of forests to withstand the predicted changes in climate, although it fundamentally affects their long-term potential as carbon sinks, or as sources of biomass (not to mention their other, more important functions).

The various climate scenarios predict an average temperature rise of several °C over the 21st century, and changes of similar magnitude can be expected in other climatic variables, like

precipitation or humidity. Such a drastic change in climate will be very hard to tolerate for any ecosystem. Forests are in a particularly difficult situation, as they are dominated by long-lived organisms, which have a very limited capacity to react. It is also predicted that the frequency of extreme weather events (like storms, droughts or extreme precipitation) will increase, which is also likely to adversely impact on forests.

Because of these concerns, we have to do everything to increase the ability of our forests to adapt to the changing climate. It is particularly important to keep these concerns in mind during regeneration and afforestation activities. The implementation of the following recommendations is likely to enhance the ability of forests to adapt to the changing climate:

- Nature reserves (reference areas) should include a full range of forest types
- Avoid fragmentation and/or establish connectivity, minimise road network
- Protect climatic refugia and migration corridors (areas which were instrumental in the survival of species/communities over past changes in climate)
- Protect primary forests
- Provide buffer zones
- Practice low-intensity forestry and avoid plantations
- Maintain genetic diversity
- Monitor changes

There should be adequate financial/policy instruments to encourage/enforce these measures.

Key words: resilience, diversity, connectivity, precautionary principle, reference areas, monitoring
