Tropical Dry Forests

Under Threat & Under-Researched

Dry forests support the livelihoods of many of the world's poorest people – but these valuable ecosystems are disappearing fast, and research to inform policy is, in the large part, lacking.

"Hundreds of millions of people depend on dry forests. Destroy these forests and you destroy their well-being.

Dr. Phosiso Sola, CIFOR

Why are dry forests important?

Dry forests account for nearly half of the world's tropical and subtropical forests,[1] spanning large areas of Africa, Latin America and the Asia Pacific. The timber and non-timber products they provide are essential to the livelihoods and well-being of millions of the world's poorest people.[2] Dry forests also provide invaluable ecosystem services that support the agricultural systems upon which millions of subsistence farmers depend.[3]

Yet tropical dry forests are at even greater risk of disappearing than humid forests, primarily due to higher population densities and the associated demand for energy and land.

Dry forests differ from humid forests in the goods and services they supply and their management needs,[4] yet receive relatively little research attention – which means the data required for site-specific, evidence-based policy are often incomplete.

Dry forest quick facts

Fuelwood demand may be the second largest cause of deforestation in developing countries.[11] Asia is thought to account for almost half of the world's fuelwood consumption.[12]

Dry forests comprise almost half of the world's subtropical and tropical forests.[1]

Despite the clear and urgent need for policy to support dry forests, much of the data required is absent or incomplete.

For more information on Tropical Dry Forests:

http://www.cifor.org/publications/pdf_files/WPapers/DPBlackie1401.pdf

Why tropical dry forests matter to people

Food: Tropical dry forests contribute to local diets with wild fruits, vegetables, nuts, edible insects and bushmeat. These forest products are extremely important for food security, especially in times of scarcity. In addition, wild foods provide essential nutrients to the diets of people who live in or near forested areas.[14]

Fuel: Wood is the main source of energy for households in dry forest areas. Some 2.4 billion people – about 40 percent of the population of less developed countries – cook with fuelwood. Of these, 764 million people may use wood to boil water for drinking.[15]

Livelihoods: Dry forests supply products that can be gathered and sold, such as beeswax, honey, plants, insects or wood for charcoal making. These freely accessible products provide even the very poor with enterprise opportunities, which, with support, can become a means of economic development and poverty alleviation.[16]

Carbon storage for climate change mitigation: By storing carbon, dry forests help mitigate climate change. It is known that dry forests store less carbon than humid forests, but very little is known about the actual amounts of carbon stored, as measuring carbon stocks requires a different approach from humid forests, and dry forest inventories tend to be incomplete, missing or out of date.[17]

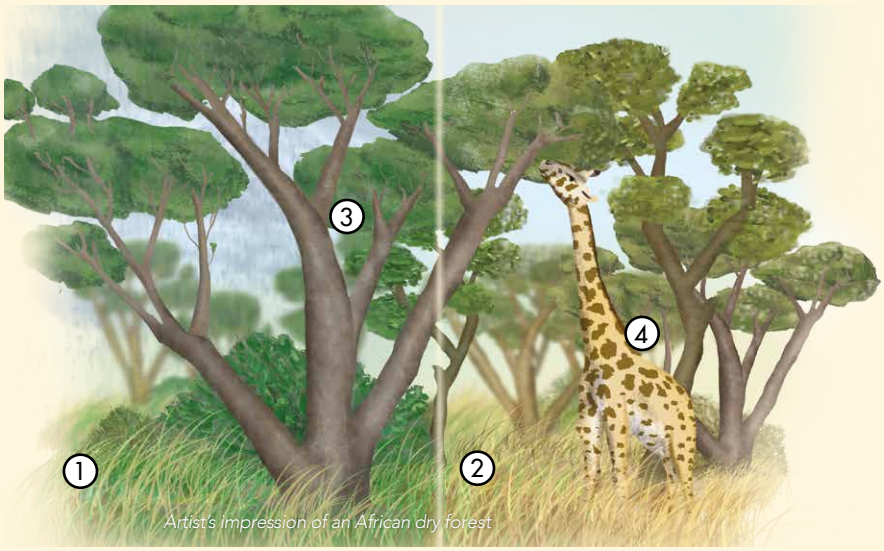
Climate change adaptation: The food and livelihoods provided by dry forests may play a critical role in building communities' resilience to climate change and variability.[18]

Support of agriculture: Dry forests provide a wide range of ecosystem services, such as water management, livestock provisioning, pollination services, nutrient cycling and soil improvement. Through these services, dry forests play an important, complex – yet not fully understood – role in supporting the agricultural systems upon which millions of subsistence farmers depend.[3]

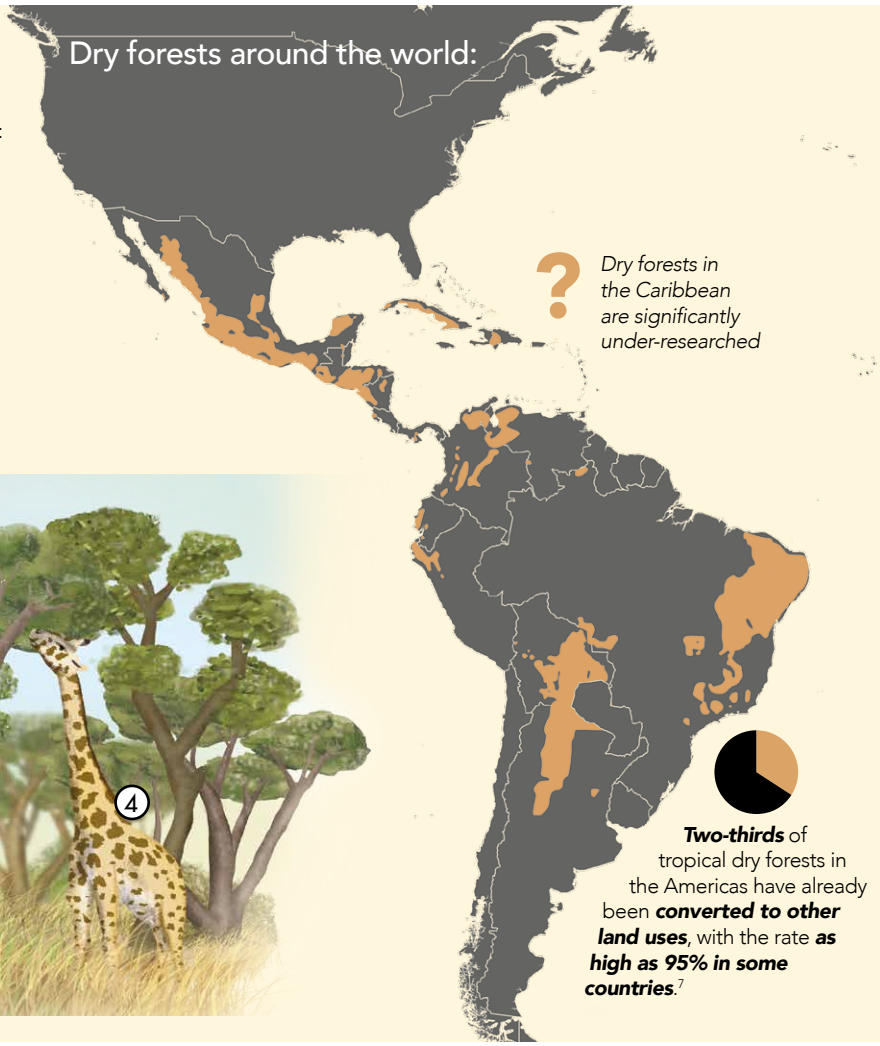
What is a "tropical dry forest"?

There are many types of dry forest around the world. One definition[5] identifies the following characteristics:

1. Tropical climate, with summer rain bringing 500–1500 mm annually
2. A dry season of 5–8 months
3. Dry forest canopies are typically more open than the dense, closed canopy of a tropical rainforest.
4. Dry forests are also an important habitat for endangered species, eg: Giraffe, Komodo Dragon, Sloth Bear, Kingfishers.



Artist's impression of an African dry forest



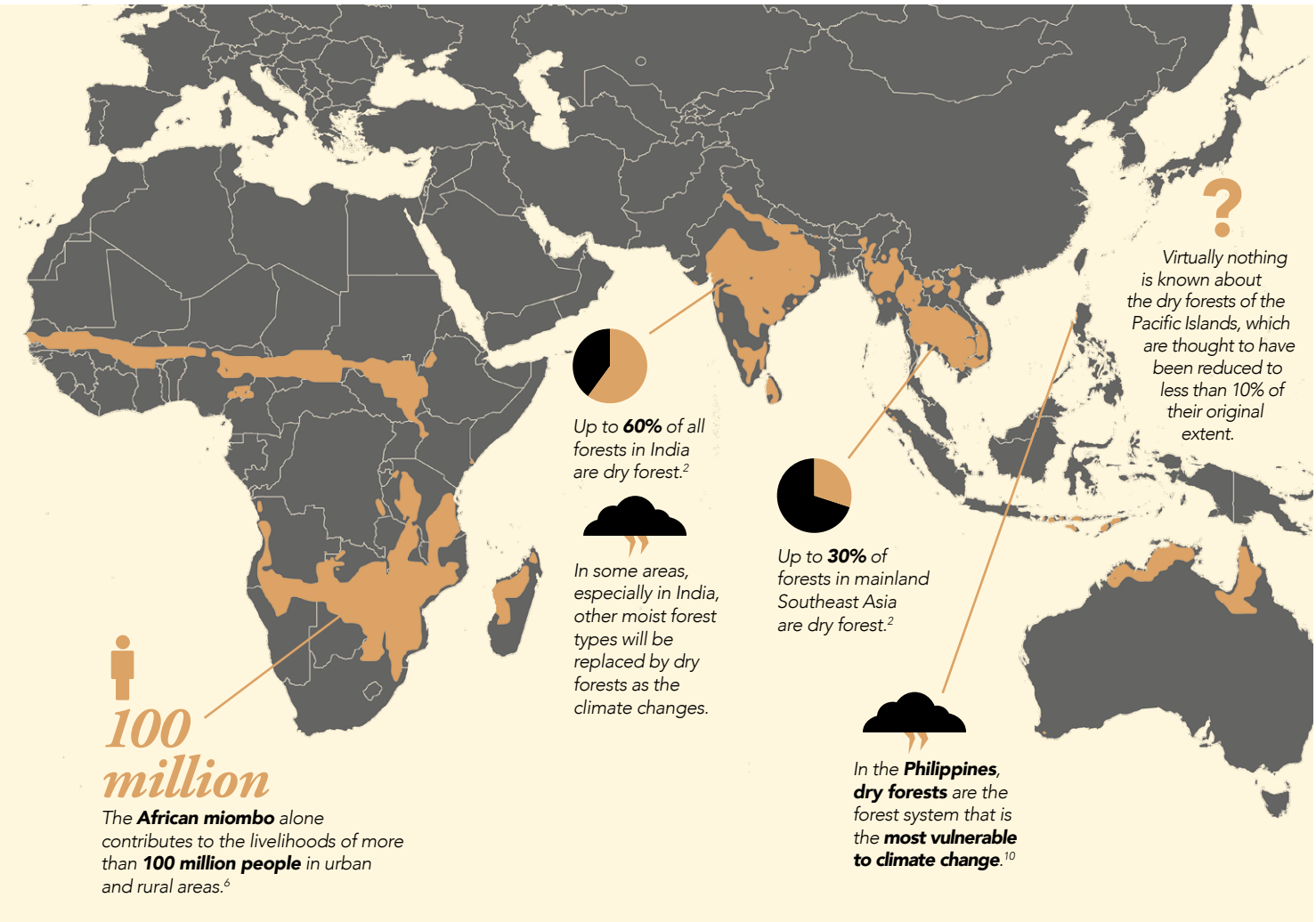
Two-thirds of tropical dry forests in the Americas have already been ***converted to other land uses***, with the rate ***as high as 95% in some countries***.[7]

Priority areas for research on tropical dry forests

An analysis of the state of knowledge on tropical dry forests revealed the following research priorities for building knowledge to inform policy:[19]

- Establish a globally agreed definition of tropical dry forests. The FAO definition (see diagram)[5] is one possible option.
- Establish national and global dry forest inventories.
- Improve knowledge of the biophysical aspects of dry forests, their ecosystem services and opportunities for sustainable intensification of agriculture in Africa, Asia, the Caribbean and the Pacific.
- Investigate human–forest interactions in Latin America, Asia, the Caribbean and the Pacific.
- Facilitate information sharing on research methodologies across regions.
- Assess the impacts of cross-border and internal trade and investment, the potential for carbon sequestration, and environment–development trade-offs in all regions.
- Examine how the needs and demands of humans and forestry management systems change as societies change.
- Update information on deforestation in African dry forests
- Research the contribution of dry forests to livelihoods across Latin America
- Research all aspects of dry forests in Asia, the Pacific and the Caribbean
- In all regions, increase research on sustainable management of dry forests, as well as analysis of forestry policy and policy in other sectors that affect dry forests.

For detailed recommendations for research in dry forests, see Blackie et al. 2014. Tropical Dry Forests: The State of Global Knowledge and Recommendations for Future Research. CIFOR discussion paper. Bogor, Indonesia: Center for International Forestry Research.



References

1 Murphy P and Lugo A. 1986. Ecology of tropical dry forest. *Annual Review of Ecology and Systematics* 17:67–88.

2 Waeber P, Ramesh B, Parthasarathy N, Pulla S and Garcia C. 2012. *Seasonally Dry Tropical Forests in South Asia: A Research Agenda*. Prepared for "Key Issues for the Global Dry Forests" workshop organized by CIFOR/ ForDev, Zurich, 28–30 October.

3 Chidumayo E and Gumbo D, eds. 2010. *The Dry Forests and Woodlands of Africa: Managing for Products and Services*. London: Earthscan.

4 Wunder S. 2001. Poverty alleviation and tropical forests: What scope for synergies? *World Development* 29:1817–33.

5 Food and Agriculture Organization of the UN. 2001. *Global Ecological Zoning for the Global Forest Resources Assessment 2000: Final Report*. Rome: FAO.

6 Campbell BM, Angelsen A, Cunningham A, Katerere Y, Sitoe A and Wunder S. 2007. Miombo woodlands: Opportunities and barriers to sustainable forest management. Unpublished internal paper, Center for International Forestry Research; Syampungani S, Chirwa PW, Akinnifesi FK, Sileshi G and Ajayi OC. 2009. The miombo woodlands at the cross roads: Potential threats, sustainable livelihoods, policy gaps and challenges. *Natural Resources Forum* 33:150–59.

7 Portillo-Quintero C. and Sánchez-Azofeifa G. 2010. Extent and conservation of tropical dry forests in the Americas. *Biological Conservation* 143:144–55.

8 Poffenberger M. 2006. People in the forest: Community forestry experiences from Southeast Asia. *International Journal of Environment and Sustainable Development* 5:57–69.

9 Gillespie T, Lipkin B, Sullivan L, Benowitz D, Pau S and Keppel G. 2012. The rarest and least protected forests in biodiversity hotspots. *Biodiversity and Conservation* 21:3597–611.

10 Lasco RD, Pulhin FB, Sanchez PAJ, Villamor GB and Villegas KAL. 2008. Climate change and forest ecosystems in the Philippines: Vulnerability, adaptation and mitigation. *Journal of Environmental Science and Management* 11:1–14.

11 Makonda F and Gillah P. 2007. *Balancing Wood and Non-Wood Products in Miombo Woodlands*. Working Papers of the Finnish Forest Research Institute 50:64–70.

12 Arnold M, Köhlin G, Persson R and Shepherd G. 2003. *Fuelwood Revisited: What has Changed in the Last Decade?* CIFOR Occasional Paper No. 39. Bogor, Indonesia: Center for International Forestry Research.

13 Chidumayo E and Kwibisa L. 2003. Effects of deforestation on grass biomass and soil nutrient status in miombo woodland, Zambia. *Agriculture, Ecosystems and Environment* 96:97–105.

14 Ickowitz A, Powell B, Salim MA and Sunderland T. 2014. Dietary quality and tree cover in Africa. *Global Environmental Change* 24:287–94.

15 Food and Agriculture Organization of the UN. *2014 State of the World's Forests*. Rome: FAO.

16 Jumbe CB, Bwalya SM and Husselman M. 2008. *Contribution of Dry Forests to Rural Livelihoods and the National Economy in Zambia*. Bogor, Indonesia: Center for International Forestry Research.

17 Skutsch MM and Ba L. 2010. Crediting carbon in dry forests: The potential for community forest management in West Africa. *Forest Policy and Economics* 12:264–70.

18 Dewees P, Campbell B, Katerere Y, Sitoe A, Cunningham A, Angelsen A and Wunder S. 2011. *Managing the Miombo Woodlands of Southern Africa: Policies, Incentives, and Options for the Rural Poor*. Washington, DC: Program on Forests (PROFOR).

19 Blackie R, Baldauf C, Gautier D, Gumbo D, Kassa H, Parthasarathy N, Paumgarten F, Sola P, Pulla S, Waeber P and Sunderland T. 2014. *Tropical Dry Forests: The State Of Global Knowledge And Recommendations For Future Research*. Discussion Paper. Bogor, Indonesia: Center for International Forestry Research.

Photo credits
Daniel Tiveau (cover), Jeff Walker, Ollivier Girard

Illustration
Jim O'Neill

Produced as part of

RESEARCH PROGRAM ON Forests, Trees and Agroforestry | CGIAR

UKaid from the British people

USAID FROM THE AMERICAN PEOPLE

CGIAR Fund

July 2014

cifor.org | blog.cifor.org