

Citation:

Ellis, Erle C. 2022. Spotlight: Human agency can help restore biodiversity: The case of forest transitions. Pages 130-131 in United Nations Development Programme, editor. Human Development Report 2021/2022: Uncertain Times, Unsettled Lives: Shaping our Future in a Transforming World. United Nations Development Programme, New York.

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HUMAN DEVELOPMENT

REPORT 2021/2022



**Uncertain Times,
Unsettled Lives:
Shaping our Future
in a
Transforming World**

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Sales no.: E.22.III.B.4
ISBN: 9789211264517
eISBN: 9789210016407
Print ISSN: 0969-4501
Online ISSN: 2412-3129

A catalogue record for this book is available from the British Library and Library of Congress

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Printed in the USA, by AGS, an RR Donnelley Company, on Forest Stewardship Council certified and elemental chlorine-free papers. Printed using vegetable-based ink.



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The cover aims to project the sense of uncertainty that is unsettling lives around the world.

Human agency can help restore biodiversity: The case of forest transitions

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Biodiversity losses are increasingly recognized as a global crisis demanding transformative changes in human societies to halt further losses and to better conserve and restore biodiversity.¹ Forest habitats generally sustain more species than other terrestrial biomes, and moist tropical forests are among the most biodiverse ecosystems on Earth.² As a result, the conversion, degradation and fragmentation of forests and other biodiverse wild habitats by agriculture and other intensive land uses are currently the leading cause of biodiversity losses across the terrestrial biosphere.³

For more than a century, human demands for food, fibre and other land use products have soared to sustain the growth of increasingly well-off populations and their choice of richer diets, including animal products and other land-demanding commodities.⁴ To meet these demands, land use for crops and pastures have replaced forests and other habitats across more than 35 percent of Earth's ice-free land area.⁵ Yet despite this alarming long-term trend, the global area of agricultural land has not increased significantly since the 1990s, even while the amount of food produced per capita has risen faster than population for more than half a century.⁶

Biodiversity losses remain a serious concern as the global area used for intensive crops continues to grow, both within existing agricultural areas and through deforestation, especially in less developed tropical regions, where biodiversity losses from land conversion are greatest.⁷ Nevertheless, tropical deforestation appears to be slowing, and forests and other wild habitats are regenerating in the more developed temperate regions of the world where less suitable agricultural land is being abandoned.⁸ Though it remains unlikely that global forest area in 2030 could increase by 3 percent relative to 2015 to meet target 1.1 of the United Nations Strategic Plan for Forests, annual net loss of forests has been nearly halved since the 1990s, to about 0.1 percent a year, as a result of declining deforestation rates and increasing forest regeneration

rates.⁹ Clearly, some forest trends are going in the right direction, especially in the more developed regions of the world.

The large-scale regeneration of forests following the abandonment of agricultural land was first identified as a general pattern of forest recovery in developed regions of Europe starting in the late 1800s.¹⁰ In recent decades these so-called forest transitions, defined as sustained regional shifts from net deforestation to net reforestation, are increasingly being observed in contemporary temperate and tropical regions around the world.¹¹ The early forest transitions of Europe, the United States and elsewhere were first explained by an economic development pathway in which urbanization and industrialization drove labour scarcity in agriculture, leading to agricultural intensification to increase total production using the most suitable lands, enabling profits to be maximized and leading to the abandonment of less productive agricultural lands, where forests then regenerated spontaneously.¹²

More recently, "economic" forest transitions have also been explained, to some degree, through "land use displacement pathways," in which forests recover in one region while potentially being lost in another, when agricultural demands are outsourced through globalized supply chains, often to developing regions of the tropics.¹³ In land use displacement pathways the biodiversity benefits of forest regeneration may be reversed many times over, unless the receiving agricultural region has very high yields (and therefore lower net land area requirements), owing to the higher biodiversity of most tropical regions and the potential for land use conversions through deforestation.¹⁴ Additional pathways towards forest transitions have emerged in recent decades, including state and non-governmental organization-supported tree planting programmes and through land use policies and regulatory pathways supporting forest conservation and restoration to meet international targets for carbon and biodiversity.¹⁵

Global supply chain transparency initiatives and voluntary certification of sustainable production are helping reduce losses of tropical forests produced through land use displacement.¹⁶ But there is still a long way to go.¹⁷ Even though forest transitions are increasingly evident around the world, including in many developing tropical regions,¹⁸ at the global scale, biodiversity losses remain inevitable whenever land use is simply exported to other regions,¹⁹ unless their productivity is substantially higher or their biodiversity is substantially lower.

The ultimate prospects for a global forest transition to halt losses of biodiversity will depend on the

degree to which commodity demands can be met by increasingly intensive land use practices that shrink land demand overall—the classic “economic” pathway of urban and industrial development—combined with efforts to prioritize the conservation and restoration of the most biodiverse regions on Earth.²⁰ The pace of this development, including urbanization and agricultural intensification, and the governance of global commodity supply chains²¹ will ultimately determine not only the fate of Earth’s remaining biodiversity but also the future of human opportunities with respect to food, housing, employment, recreation and other essential conditions.

NOTES

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- 1 Díaz and others 2019; IPBES 2019b; Pereira, Navarro and Martins 2012; WWF 2020.
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- 2 Barlow and others 2018; FAO and UNEP 2020.
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- 3 Díaz and others 2019; IPBES 2019b; WWF 2020.
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- 4 Alexander and others 2015; Ellis 2019; Sanderson, Walston and Robinson 2018.
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- 5 Ramankutty and others 2018.
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- 6 Ellis 2019; FAO 2017.
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- 7 Barlow and others 2018; Curtis and others 2018; Ramankutty and others 2018.
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- 8 FAO and UNEP 2020; Keenan and others 2015.
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- 9 FAO and UNEP 2020.
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- 10 Mather 1992; Rudel and others 2020.

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- 11 Ellis 2021; Meyfroidt and others 2018; Rudel and others 2020.
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- 12 Meyfroidt and others 2018; Rudel and others 2020.
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- 13 Meyfroidt and Lambin 2011; Meyfroidt and others 2018; Rudel and others 2020.
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- 14 Schwarzmüller and Kastner 2022.
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- 15 Meyfroidt and others 2018; Rudel and others 2020; Wolff and others 2018.
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- 16 Lambin and others 2018.
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- 17 Curtis and others 2018.
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- 18 Hosonuma and others 2012.
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- 19 Meyfroidt and Lambin 2011.
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- 20 Curtis and others 2018; Ferreira and others 2018; Meyfroidt and Lambin 2011; Strassburg and others 2020.
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- 21 Chung and Liu 2022; Lambin and others 2018; Pimm 2022.

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