

Pathways for Sustainable Economic Benefits and Green Economies in Light of the State of World Forests 2022

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When it comes to the forest's capacity to withstand the changing climate, there is a widespread decline which is mostly due to the issues in land-based mitigation and adaptation plans (Forzieri et al. 2022). About 30%—41 million km² of the land surface is covered by Forests, which play a major role in the global carbon cycle (Friedlingstein et al. 2022). Both managed and intact forests, due to large-scale climate signals in recent decades, have faced significant variations in their resilience relative to the increase in water limitations and climate variability, particularly tropical, temperate and arid forests, with about 23% of undisturbed forests reaching their critical threshold (Forzieri et al. 2022). Concerns are raised over the rise in environmental thresholds, thereby ecosystems reaching their tipping points Dakos et al. (2019). In the changing environment, the State of the World's Forests (SOFO) by FAO (2022) holds significance as it presents data and analysis on the interaction between forests and people every 2 years. Each report also discusses some pertinent issues and the importance of forests in the global economy.

The report reiterates the need for investing more in sustainable forestry to combat the impending crisis and how the three mutually reinforcing pathways involving forests and trees could help increase the resilience and transformation of economies. It also recognizes the need for a shift in policies and the crucial role of local communities, smallholders and indigenous people. As the world is deliberating more on the development of circular economies, companies involved in forestry-based value chains need to be recognized and valued as essential partners.

1 Forests as a Source for Resilient, Inclusive and Sustainable Economies

It is estimated that about 1.6 billion people directly depend on forests for their subsistence and livelihoods. In the formal sector of forest activities, 13 million people are employed (Campos Arce 2019, UN General Assembly). The interlinkages between social and economic functions are recognized, and 2030 agenda targets and SDGs depend on the policies on forests for inclusive and sustainable growth (FAO 2018). Forested watersheds are the source of 75% of the world's accessible freshwater (FAO 2018). Community-based forestry has been devised as a strategy to reduce poverty in many countries, also to achieve rural development through forest strategies and plans (UNFFS 2021). Forests can support and meet the rising demands for food, fiber, biofuel, shelter, and other bio-products as the population increases to 9 billion people by 2050, and they are one of the most mis-managed resources in many countries (World Bank 2013).

Three pathways (Fig. 1) have been outlined in the State of the World's Forests (FAO 2022), which, when trailed concurrently, can have sustainable economic benefits and help face the planetary crisis. Restoration, halting deforestation, and sustainable use of forests are three reciprocally interacting pathways that can reinforce and provide high climate and environmental returns. The report iterates the need for maximizing synergies between these three pathways as this can support attaining global goals and create a resilient and adaptive society. The threats to human health and drivers of climate change can be reversed only through halting forest degradation and impeding deforestation. This, in turn, through the restoration of degraded landscapes and improvement of natural assets through planting more trees, could act as a cost-effective way for economic security and other environmental and social benefits. The green value chains so developed and ecosystem services provided by the forests could help in realizing circular economies, which can be treated as green economies.

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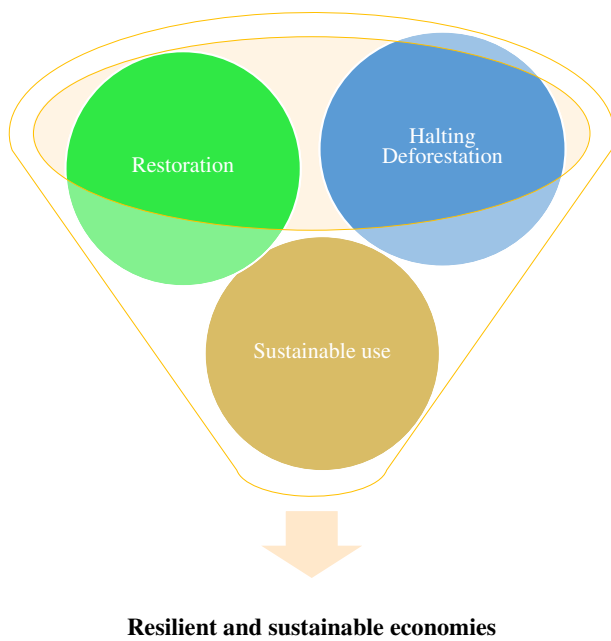


Fig. 1 Pathways that can contribute to resilient and sustainable economies and tackling local and global challenges

Seventy-five percent of the zoonotic diseases emerging now are due to the destruction of the natural landscapes, and inversely, 25% of the medicinal drugs in developed countries and 85% of developing countries are plant-based. Forests/trees can enhance one's immune system. Forest ecosystems absorb about 2 million tons of CO₂ per year, acting as the largest terrestrial carbon sink and hence need to be protected to achieve SDG 13. Seventy-six million tons of food come from the forests and 95% of which are plant-based which

also contribute to a livelihood for about 1.2 million people. Eighty percent of the known terrestrial species are found in the forests, and these forests also form the source of 75% of the world's accessible freshwater sources. It is estimated that around 70–130 billion US \$ is required per year to sustainably manage the forests globally, but the services provided by them will account for more than this and is a worthy investment (AGF 2012). The world is still coping with COVID-19, and it is argued that the resilient recovery from this pandemic and steps to halt the climate and biodiversity crises should be embedded in the sustainable management of the world's forests (UNFFS 2021).

Those statistics discussed in the previous section about forests underline the colossal significance of these ecosystems in the survival of humanity. The monetary contributions of the forests to the developing economies, even though its only formally recognized, are expected to exceed 250 billion US\$ (Agrawal et al. 2013). There has been a decline in the area under forest converted to other land uses between 1990 and 2020; however, it is still estimated to tune 10 million hectares per year during the period 2015–2020 (FAO 2020) (Fig. 2). In line with this, an 8% decrease in per capita forest wealth between 1995 and 2018 (World Bank 2021) (Fig. 3). FAO estimates that almost 50% more food, livestock fodder and biofuel need to be produced by 2050, compared with 2012 to cater the global demand and to achieve the global goal of “zero hunger” by 2030 (FAO 2021). This projected increase will increase the pressure on forests.

It has been noted based on the global land use history that the current biodiversity loss is not only the result of the recent actions but the land use changes that happened in prior societies at least for the past 12,000 years (Ellis et al. 2021), and hence the three pathways hold significance to

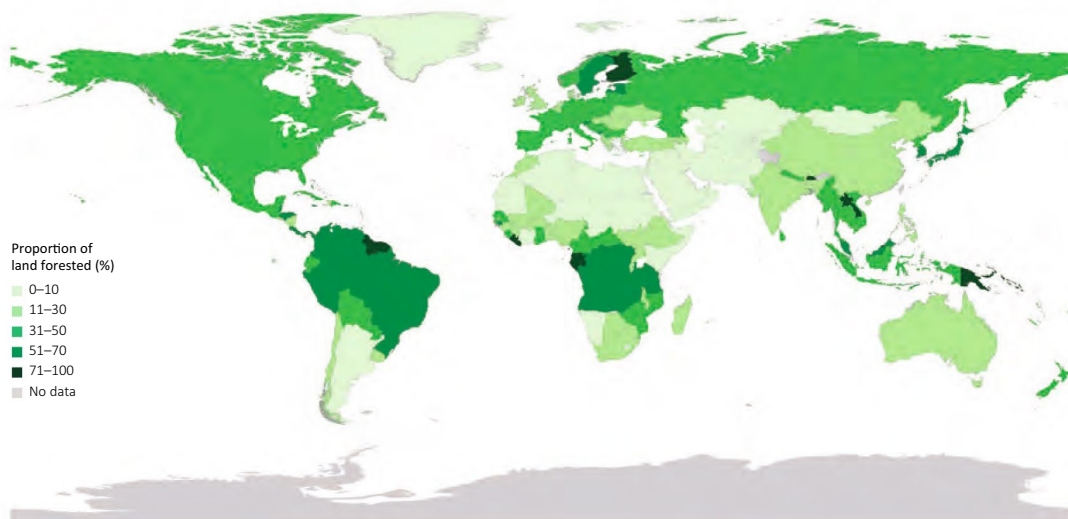
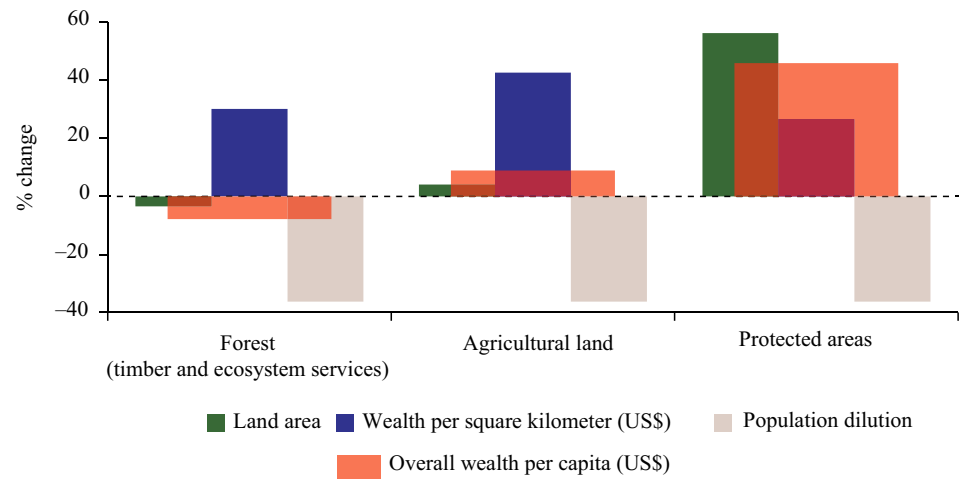


Fig. 2 Forest area as a percentage of total land area, 2020 (Source FAO 2020)

Fig. 3 Forests, agricultural land, and protected areas: change in land area, wealth per square kilometer, population dilution effect, and overall wealth per capita in low- and middle-income countries, 1995–2018 (Source World Bank 2021)



undue the payoffs of past actions. Since the 1970s, owing to the demands of rising populations and the rise in per capita income, the impact of humans on nature has increased sharply (Diaz et al. 2019). More than one-fifth of total wealth in land assets is through forest ecosystem services. There has been an increase in the wealth from certain forest ecosystem services other than timber and carbon sequestration like recreation and hunting, NTFPs, water, and habitat between 1995 and 2018 (5 trillion US\$ to 7.5 trillion US\$), representing about 21% of the total wealth from all the land assets combined (World Bank 2021). Studies on ecosystem services provided by the forests rarely appraise the effect of forest degradation on the values of these services, even though it is well acclaimed that this leads to the reduction of the capacity of forests. The valuation which does not consider the state of the forest is expected to overestimate the edge forests and patch forests. Climate change driven by deforestation has higher positive-carbon feedback than fossil fuel emissions, and this contributes to the reduction of carbon storage in tropical forests (Li et al. 2022). The SOFO 2022 (FAO 2022) recognizes the importance of adopting the System of Environmental-Economic Accounting (SEEA) as Ecosystem Accounting (EA) provides a method for better tracking of the value of nature and provides estimates which are comparable (Fig. 4).

2 Green Recovery Through Interrelated Forest Pathways

With the evolution of high-resolution datasets and the availability of social, economic, and environmental data and tools, the picture of the drivers of land-use change globally is improving. Considerable variation is known to exist in the importance of drivers of deforestation across the globe and different periods. Commodity-driven deforestation is considered a cause for the disturbance of forests globally

over the period 2001–2015, accounting for ca. 27% (Curtis et al. 2018). The recent Global Forest Resources Assessment –Remote sensing survey by FAO concluded that about 90% of deforestation from 2000 to 2018 was associated with agriculture, 52.3% through cropland expansion and 37.5% with livestock grazing (FAO 2022).

Forest restoration can help in the recovery of the ecosystem services provided by these ecosystems in the form of services such as water purification, recharging the groundwater table, enhanced pollination, reducing soil erosion etc., which are significant in supporting health and reduction of social inequalities. The projects on restoration can help in the creation of green jobs, which in turn would stimulate the economy. It should enhance the ecological integrity to restore the site's biological and ecological attributes close to its natural state. However, it should be made sure that it sustains and scalable. For a forest restoration effort to be successful, it should focus on multiple benefits and their quality and quantity. For this, the right way of process needs to be considered, which includes the right place, the right species, right stakeholders. In the changing economic and ecologic setup, the restoration efforts should be people-centric by engaging, enabling and empowering multiple stakeholders at different scales, i.e., restoration should be done with and for the local people to make it equitable and effective (Satyal 2021) (Fig. 5).

The recent COVID-19 pandemic has long-lasting repercussions and is multiway connected with the current global environmental crisis. As it is a major public health crisis, it has a long-lasting impact on the economy as well as the environmental outcomes around the world. Several economic stimulus packages have been designed by the governments. However, green and inclusive plans which address long-term environmental goals and have the potential for economic resilience with strong feedback loops that have people at the center can attain sustainable well-being (OECD 2020). The pandemic has provided us with a window of

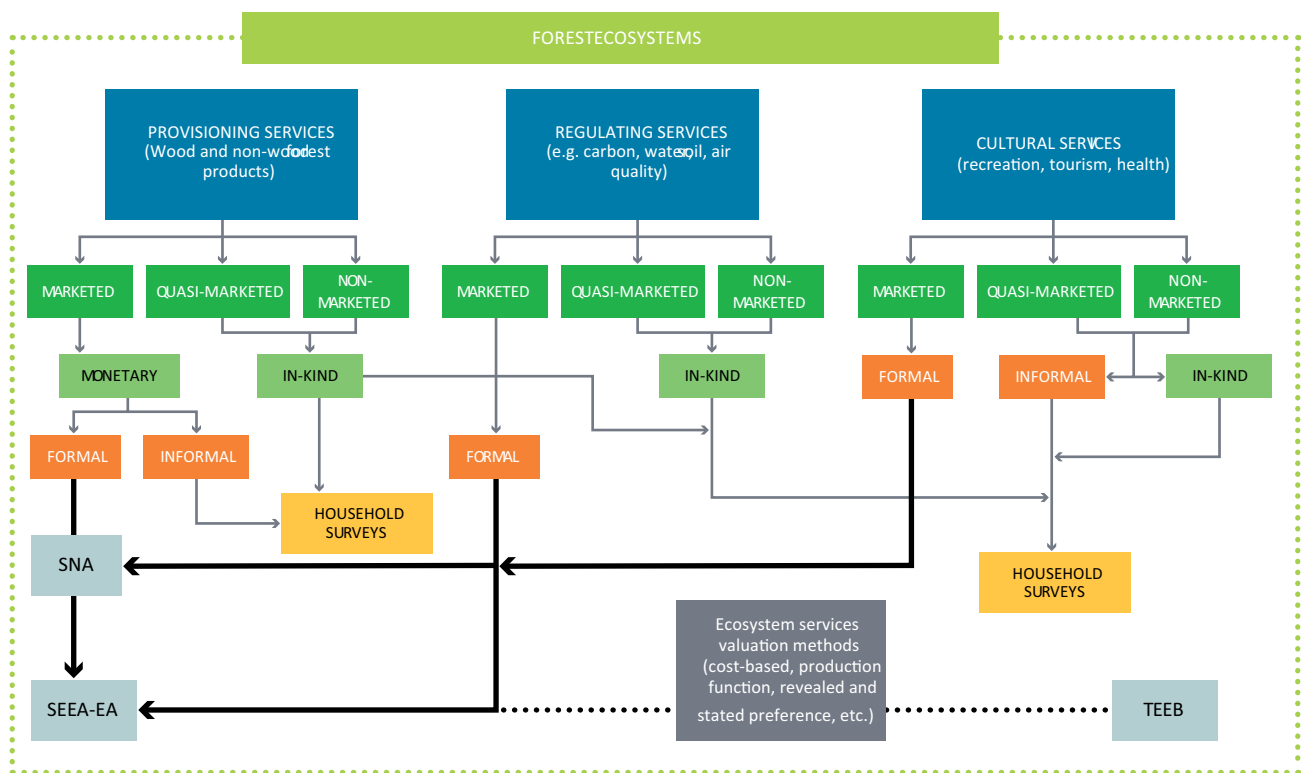


Fig. 4 The relationship between the System of National Accounts and the System of Environmental-Economic Accounting – Ecosystem Accounting in the valuing of Forest Ecosystem Services (Source FAO 2022) [NWFPs non-wood forest products, SEEA-EA System of Envi-

ronmental-Economic Accounting – Ecosystem Accounting, SNA System of National Accounts, TEEB The Economics of Ecosystems and Biodiversity]

opportunity for a green recovery, and without halting and reversing deforestation, global goals cannot be met. Some of the recent strategies and actions like the Bonn Challenge, REDD+, NDCs, the New York Declaration on Forests, the UN Decade on Ecosystem Restoration (2021–2030), the UN Decade of Family Farming (2019–2028), the concept of circular economy etc. have set the momentum and increased the visibility of forest restoration, protection of the environment and sustainable development; however, socially just conservation outcomes also require a pluralistic eye view on biodiversity (Pascual et al. 2021). Multiple key actions can be adopted for national and subnational jurisdictions and international financing and processes for upscaling three pathways (Fig. 6).

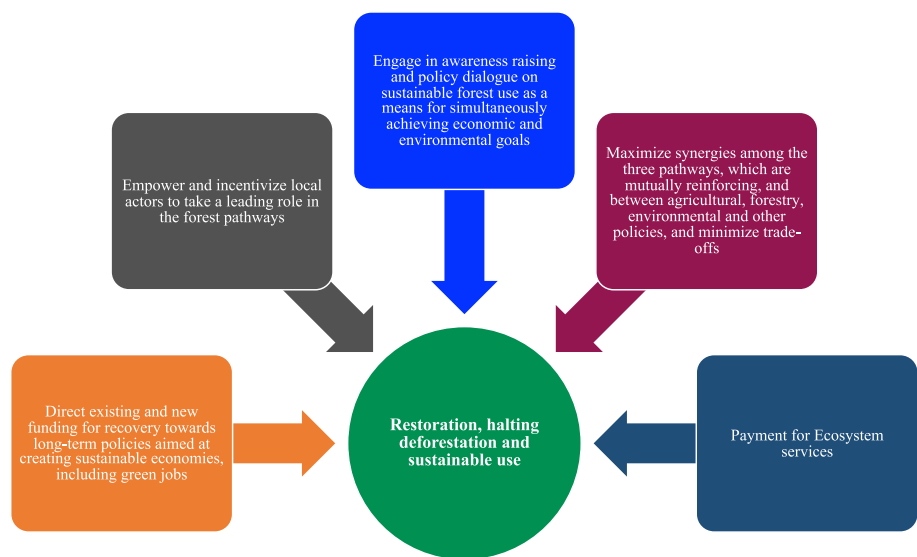
The global consumption of natural resources is projected to increase to 190 billion by 2060, double the value in 2017, because of the increase in the global population (Herrick et al. 2019). As most of these consumed natural resources are sourced from forests, i.e., biomass, fossil fuels, etc., there needs a parallel increase in the availability of these resources from forests, which can only be met through the increase in forest cover and resource efficiency, and a transition to more circular economies. Ever since the CBD was ratified in 1992, about 25%

of the tropical forests have been lost (Dasgupta 2021). Annually the forests are estimated to capture 430 million tonnes of carbon but lose around 602 million tonnes due to deforestation (Baccini et al. 2017), contributing to planetary emergencies. A quarter of studies project a need for a fourfold increase in financing for the forest pathways to meet the global targets of climate, biodiversity, and land degradation (UNEP 2021). Nature protection inherits great benefits to people where their greatest needs coincide with the highest contributions of nature (Chaplin-Kramer et al. 2019). The deforestation-induced decline in ‘forest fitness’ will have a similar effect as that of climate-induced decline; in fact, it is the primal one that is contributing to the latter. As SOFO 2022 states, ‘a better life and sustainable agri-food systems can be achieved only by restoring, conserving, and sustainably managing forests’. We could also remind on the observation in the Dasgupta review that the amount to be spent over the next 10 years to make half the deforestation rate is only 2% of what was globally spent for the COVID-19 pandemic, but it is worth it, considering the ecosystem services provided by the forests and the number of green jobs it would provide and the indirect boost to the economy. As pointed out in the IPBES Global Assessment



Fig. 5 Restoration for green recovery: principles for effective and equitable nature restoration (adopted from Satyal 2021)

Fig. 6 Key actions for national and subnational jurisdictions and international financing and processes for upscaling three pathways (modified and adopted from FAO 2022)



(IPBES 2019), following the current way in which we are approaching the problems and causes of degradation of nature and ecosystems, our goals for sustainably using them and conserving them cannot be achieved, and

transformative changes are needed to achieve the 2030 goals and beyond.

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Declarations

Conflict of Interest The author does not have any conflict of interest.

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