

Global Forest Bioresources: Present Challenges and Opportunities.

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Forests currently cover approximately 30% of the terrestrial Earth—from the tropics to high latitudes. They contain different species and variations in diversities. They are bioresources that provide current and potential values at many levels—the molecular, chemical, organismic, and community levels—both as intact ecosystems and as harvested pieces. The intact ecosystems provide a diversity of species that enables the Earth's life to exist; without this natural diversity, people would need to expend much money to maintain it artificially. The intact forest also provides species habitats, water flow values, and aesthetics. The molecular uses are only just being appreciated, with nanofibers, cellulose-engineered compounds, and lignin derivatives. Some chemicals have been long used, such as rubber, chicklet, turpentine, and others. The organismic level provides wood for lumber and fuel and other plants such as orchids, mushrooms, ginseng, and floral leaves. The greatest threats to this bioresource are deforestation for agriculture and “simplification” of the standing forest. The need for more agriculture land could be reduced by avoiding biofuel production from farmlands and grain-fed meat. Grassland grazing could provide meat and better wood use could probably save as much fossil fuel and greenhouse gases as biofuel production. Forest simplification could be avoided by proper management of landscapes in a “triad” approach. Probably the greatest additional near-term benefit of the forest bioresource is for new building technologies such as cross laminated timber to substitute for steel and concrete in mid-rise apartments and bridges, thus saving very much fossil fuel and greenhouse gases.

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most forests being in the tropics.

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