

# Impacts of Afforestation, Deforestation, and Reforestation on Forest Cover in China from 1949 to 2003

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China's forest cover increased from 8.6% in 1949 to 18.21% in 2003. The change of forest cover in China can be characterized in three stages: (1) transition stage (1949-1981), (2) slow increase stage (1982-1993), and (3) rapid increase stage (1994-2003). Afforestation is the primary factor increasing forest cover in China. Cumulative areas of afforestation in China from 1949 to 2003 were 241 million ha, of which 90 million ha eventually established as plantation forests, i.e., about 37% of the afforested area reach forest status. Harvesting consumed 13 billion m<sup>3</sup> in timber volume from 1949 to 2003. Natural forests were the major source of timber production during the early years, and plantation forests became a major source of timber supply as they matured. Of the 90 million ha plantation forests, 53 million ha remained in 2003, the rest were harvested. The remaining plantations in 2003 contributed 5.0 of the 6.4 percentage points of increase in China's overall forest cover from 1949 to 2003. Large areas of afforestation, intensive timber harvesting, and reforestation have made forest ecosystems in China become dominated by young stands, which has profound implications in their ecological functions in the terrestrial ecosystems.

Forests play a critical role in the global terrestrial ecosystems, including, but not limited to, providing a temporary carbon sink in the global carbon cycle (Wofsy et al. 1993, Dixon et al. 1994, Goodale et al. 2002), preservation of biodiversity (Dobson et al. 1997), and conservation of soil and water resources (Lal 1997, Woo et al. 1997). Therefore, it is extremely important to know the extent of land areas covered by forests to understand the functions of terrestrial ecosystems. The Food and Agriculture Organization (FAO) of the United Nations provided four Forest Resources Assessments (FRA) for 1980, 1990, 2000, and 2005 by country, respectively (FAO 2001, 2005). However, little is known regarding what factors are changing the forest cover in a country and how these

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