# RECOGNIZING FOREST ECOSYSTEM SERVICES AND BENEFITS

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Forest ecosystems provide a multitude of services and their valuation can be complex. The Total Economic Value (TEV) framework provides meaningful ways to embrace use and non-use values, which are classified as direct or indirect values, willingness to pay for conservation, knowledge of preservation of ecosystems for the future, and its utility value.

This paper examined examples of valuation of Forest Ecosystem Services (FES) from different settings in Asia, to understand the forest ecosystem flows, purpose of valuation, cost-effectiveness of investments in conservation, impact of natural disasters, trade-offs between management options of multiple ecosystem services, influence on policies that have shaped and encouraged wise-use of forest services for human well-being, effectiveness of awareness building and communication of ecosystem concepts for preservation.

The forest ecosystems studied were located in diverse settings, and spread over different climatic zones. The valuation depended on the characterization, degree of ecosystem flows into the landscape for supporting human well-being and availability and access to suitable data. While the market-based services dominated the valuation assessments, there was a gradual increase in the use of non-market services using indirect methods. In Nepal, a protected forest cover of 6,038 $km^2$ (Districts of Taplejung, Panchthar and Ilam) was valued at USD 125 million/yr with a significant contribution to agricultural production making a positive impact on human well-being. The baseline value for nine types of forest ecosystem services was estimated at USD 7.3 billion (2012) in Myanmar, with a projected valuation for 2031. In Indonesia, total economic value of mangrove forests (Indragiri estuary) was estimated at USD 11,823,848/yr, and USD 485,896/ha/yr. In the Uttarakhand (Himalayas), India, the average total value for ecosystem services (2,352,700 ha of forest cover) were estimated at USD 1150/ha/yr and USD 2.4 billion/yr. While the reasons for valuation were diverse, a noteworthy action was the implementation of an 'ecological cess', for environmental governance in Uttarakhand.