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## **Linking biodiversity, ecosystem services and human wellbeing: towards a new framework**

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Human wellbeing depends on nature, but in spite of much work by and since the Millennium Ecosystem Assessment, it is not clear whether existing frameworks adequately analyze this relationship given our increasing market based societies. We report on a reassessment of this situation, developed at the recent workshop “Quantification of Ecosystem Services: concepts and measurement”, co-organized by the World Agroforestry Centre, the Centre for International Forestry Research, Bioversity International and Tropical Agricultural Research and Higher Education Centre. We assessed the need for a new framework, and sought consensus on the meaning of the term “ecosystem services” (ES), on approaches to their measurement and valuation along the full gradient of human modification of landscapes and on how to capture this vital knowledge in green accounting in a way that speaks to policy makers.

A new framework is presented that combines both the ES and the livelihood capitals approaches. The ES concept emphasizes the benefits obtained by people from ecosystems and their economic value. In contrast, the multiple-capital livelihood framework has reframed debates on poverty by focusing on assets and resource access, not just on income. However, to maintain ES we need investment in natural capital. New standards for green accounting require clarity on “stocks”, “stock change” and “flows”. The agro-ecosystems managed to maximize “provisioning services” are both recipients and providers of ES – understanding and managing these dual roles require a framework that can apply to all phases of “forest and rural transitions”, as well as the processes of change, so that strategic interventions can be planned.

The proposed framework includes direct and indirect ES where benefits are derived from presence of natural capital respectively without and with the involvement of market economy. Thus human, social, cultural and political capitals (human wellbeing) are directly affected by natural capital, and indirectly affected through built and financial capitals

(market economy). The benefits derived from ecosystem services must somehow lead to incentives to maintain and restore the natural capital that provides such services. By integrating the livelihood capitals approach, including a revised definition of natural capital, this new framework is applicable across the forest transition curve, and appropriate for assessing changes in importance and interactions of different capitals as societies pass from subsistence to market-based economies. It will also provide insight regarding interactions between people, nature and economy under different scenarios, including payment for ecosystem services schemes, green accounting and others.

