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ECOSYSTEM SERVICES BASED ADAPTATION TO CLIMATE CHANGE: WHY AND HOW?

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Ecosystem services (ES) are the benefits community receive from ecosystems. The necessity of ES for community well-being and sustainable development is universally accepted. ES have already been negatively impacted by climate change and will only deteriorate further during this century, if adequate adaptation measures are not taken. Noting ES are a relatively new dimension in the context of climate change, globally scientists and policy makers are busy searching for suitable adaptation options and ensuring an uninterrupted flow of ES. In this study, we have used climate change models, and synthesized the scholarly findings to answer two research questions (i) Why are ES based adaptations required? and (ii) What types of suitable adaptation options are available to ensure an uninterrupted supply (and flow) of ES? The study has been conducted in the Wet Tropics, Australia considering its outstanding national and global ecological significance. Our study has revealed that apart from the temporal and spatial variation, the magnitude of climate change impacts will be different for each ES. Therefore ES-based adaptations will ensure a sustainable supply and flow of ES, generating multiple ecological and community co-benefits. We have found a number of available adaptation options for different ES with substantial scientific evidence in the scholarly findings which can be implemented quite readily in the face of climate change. Some of these are: climate regulation- natural forests protection, agroforestry, planting higher wood density trees; water provision and regulation- upland forests protection, riparian restoration; coastal protection and erosion control- mangrove protection and landward facilitation, restoration of littoral forests, coastal plantation, green engineering; habitat provision-ecological connectivity, agroforestry; timber provision-planting tropical cyclone resistant trees. This study shall be useful for decision makers to incorporate suitable ES based adaptation options into their climate change related decisions, and for practitioners to select suitable adaptation options for interested ES.

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