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## The effects of cocoa production and consumption on biodiversity loss and ecosystem services

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### Abstract

The economy of many countries depends heavily on cocoa production and trade. According to the Netherlands Ministry of Foreign Affairs, Europe is the largest importer of cocoa beans in the world and Germans are the largest chocolate consumers in the world with a per capita consumption of 11 kg per year. Switzerland is ranked as the second largest with 9.7 kg per capita, followed by Estonia with 8.8 kg. Over the years, West Africa has been the main supplier of cocoa beans to Europe. Unfortunately, however, in recent times, there has been an assault on forest reserves for cocoa plantations. There has also been a shift from ‘shade cocoa’ to ‘sun cocoa’. These practices are putting additional stress on biodiversity conservation and ecosystem services. This study reveals a pronounced trade-off between short-term cocoa productivity and ecosystem health as well as biodiversity, and shows that the higher yielding short cycle hybrid cocoa varieties grown under full sun or minimal shade exhaust soil nutrients and degrade the ecosystem so that it becomes unsuitable for further cocoa farming or other productive agriculture and biodiversity conservation. While consumers are growing more conscious of the importance of biodiversity, most of them are still uninformed of the connection between their consumption habits and the factors causing the loss of biodiversity and ecosystem services. This study bridges this knowledge gap. The study uses Ghana as a case study to answer the following questions: (i) What do sustainable cocoa production look like from a natural resource perspective? (ii) How can resource efficiency in cocoa production be improved to enhance food security? (iii) How can the transition to sustainable cocoa production be managed? The study provides findings on cocoa farming in the context of sustainable production and consumption. Strategies and best practices for cocoa production are discussed.

**Keywords:** Biodiversity loss and ecosystem services, cocoa production, consumption