

Electronic Supplementary Material 3:

Convention on Biological Diversity Guidelines for safeguards in Biodiversity Financing Mechanisms: contributions from a case study on the coffee rust epidemic in the Chiapas Sierra Madre region of Mexico

Table adapted from case study by Libert-Amico, A. in Ituarte-Lima, C., Schultz, M., Hahn, T., McDermott, C., Martinez-Peña, R., and Cornell, S. (2018). *CBD voluntary guidelines for safeguards: implementation pathways*, Information Document for the 14th Conference of the Parties for the Convention on Biological Diversity, Sharm El-Sheikh, Egypt.

As of 2011 in Central America, and 2012 in Mexico, arabica coffee production has been devastated by a series of atypical outbreaks of coffee rust, in an epidemic which has been associated with global environmental change. Agricultural institutes and coffee companies have sought to avoid further losses in coffee production by promoting rust-tolerant coffee varieties through aggressive plantation renovation campaigns.

Coffee renovation initiatives have been accompanied with recommendations for producers to reduce shade cover, since many official campaigns favoured varieties which are vulnerable to other diseases when grown under shade at high altitudes. This response has encouraged the region's mountain coffee producing systems to undergo a transition, from rustic diverse crops mixed with endemic species of old growth and secondary forest as shade, to commercial sun-grown monocultures rust-tolerant coffee varieties that have constrained the diversity of shade cover.

The latter type of coffee plantations has fostered a transition from low intensity organic management to a high intensity management that is increasingly dependent on agro-chemical inputs. In this region, the overall outcome has been land-use change, forest degradation, biodiversity loss, fragmentation in the continuum of certain species, and deepening of producers' dependency on external inputs. At the same time, new rust-resistant varieties have been questioned by the coffee industry for their limited storage capacity and lower cup quality.

This change represents a setback for the fulfilment of international commitments in light of global environmental change. This includes the CBD's Aichi Biodiversity Targets, which discuss enhancing biodiversity and ecosystems services through sustainable management of agricultural areas, while recognizing the role of agricultural biodiversity in addressing pests and diseases (c.f. Targets 7, 13 and 14).

Table. Instruments for implementing the CBD guidelines for safeguards, and lessons learned, from coffee plantations affected by coffee rust

CBD Guidelines for safeguards in Biodiversity Financing Mechanisms	a) Biodiversity values and ecosystem functions	b) Rights and responsibilities of actors and/or stakeholders	c) Local and country-driven/specific processes linked to the international level	d) Governance, enforcement and accountability
Instruments	Mexico's official climate change documents and Vision of REDD+ mention the value of agroforestry systems in climate change mitigation and adaptation.	Participation forums, general assemblies, and stakeholder meetings have sought wide participation and input in this interdisciplinary participatory action-research project.	Focus on Chiapas Sierra Madre, allows for regional particularities to be included in state and national level planning. It also provides key input to negotiations with international donors such as the World Bank and GEF.	Public system for access to information are in place. ¹ Legal regulations mandate for participatory spaces in agriculture secretary, and environmental and forestry commissions.
Lessons of the case	High conservation values, compatible with local livelihoods, in tension with agricultural intensification and the demand from global markets. Within the coffee sector, conflict between high quality coffee beans (with a necessarily higher price) and less quality but high quantity monoculture production in response to rising demand.	The region's form of production must be taken into account: smallholders, both private and communal (<i>ejido</i>) landholders, with limited access to information, credits, markets and innovation.	Particular regional dynamics in this eco-region marked by indigenous and non-indigenous smallholders, in which coffee forests insure biological connectivity and ecosystem services.	Challenges in measuring DD. Information gaps (official statistics are not updated or with limited comparability due to diverse methodologies) Need for regulations to guide interventions by diverse actors (from different government institutes to distinct corporations).

¹ Federal Institute for Access to Public Information and Data Protection (IFAI in Spanish)