

Larger conservation mechanism for better natural and economic outcomes

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Economic progress results in many benefits for various aspects of humankind, but it also tradeoffs with [environmental degradation, leading to climate change and biodiversity loss](#) [1,2]. Impact mitigation mechanisms have been endorsed by scientists and implemented by policymakers to halt economic development's negative impacts on the environment. Those mechanisms aim to reduce the environmental externalities and compensate for residual impacts to maintain healthy ecosystems and biodiversity while keeping the economies growing [3,4].



Figure: A bullfrog on the wall of a nature-based resort in Hoa Binh, Vietnam. ©2022 Q.H. Vuong

The impact mitigation approach has been implemented in several places on an *ad hoc* project-by-project basis. Still, it [fails to consider cumulative and indirect effects at the landscape scale and larger-scale processes](#) influencing economic activity, biodiversity, and ecosystem service provision, leading to limited ecological benefits but imposing significant monitoring burdens on the regulatory community [5-7]. As a result, adopting regional-scale (like watershed- or landscape-scale), mitigation planning is receiving remarkable attention from researchers and governments (e.g., the United States, Colombia, and Peru).

To evaluate the effectiveness of landscape-scale and smaller-scale (e.g., property-level) mitigation planning, Kennedy et al. [8] conducted a case study on the commercial sugarcane expansion in the Brazilian Cerrado – a global biodiversity hot spot. They found that the Brazilian Forest Code – the *de facto* environmental law that mandates a certain percentage of natural vegetation be preserved on privately held lands – has [significant positive long-term effects on biodiversity and ecosystems](#).

In particular, compliance with the Forest Code can help sustain 32 (± 37) additional species, store around 593,000 and 2,280,000 additional tons of carbon, and increase surface water quality marginally. Still, it also entails small costs to business activities. Suppose the compliance is based on landscape-level scenarios. In that case, the total business costs induced by the Forest Code will be reduced by \$19 million to \$35 million per 6-year sugarcane growing cycle, compared to the property-level (or smaller-level) compliance scenario. The landscape-level compliance scenario also aids biodiversity conservation and carbon sequestration more.

Given the higher advantages attributed to larger mitigation scenarios, expecting better natural conservation outcomes and economic returns from national- and global-scale impact mitigation mechanisms seems reasonable. However, such scenarios can hardly happen [if the current eco-deficit cultures remain prevailing](#) [9]. If we can build eco-surplus mindsets among a majority of populations on Earth, especially private sectors, not only impact mitigation mechanisms at a global scale but also the [semi-conducting principle of monetary and environmental values exchange will be successfully adopted](#) and implemented [10].

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