



The market for conservation and other hostages

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Abstract

A “conservation good” (such as a tropical forest) is owned by a seller who is tempted to consume (or cut), but a buyer benefits more from conservation. The seller prefers to conserve if the buyer is expected to buy, but the buyer is unwilling to pay as long as the seller conserves. This contradiction implies that the market for conservation cannot be efficient and conservation is likely to fail. A leasing market is inefficient for similar reasons and dominates the sales market if and only if the consumption value and the buyer’s protection cost are large. The theory thus explains why optimal conservation often fails and why conservation abroad is leased, while domestic conservation is bought.

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1. Introduction

This paper introduces the notion of “conservation goods” and shows how they differ fundamentally from traditional goods in dynamic settings. Traditional goods are purchased by buyers who intend to consume the good: trade is typically predicted to take place immediately if the buyer’s consumption value is larger than the seller’s. For conservation goods, in contrast, the buyer is satisfied with the status quo: he does not desire to consume the good, but buys only if he fears that the seller will consume. This feature implies that the market for conservation goods tends to be inefficient. I find that the inefficiencies arise in rental markets as well as in sales markets; a comparison between the two generates new insight for when leasing is preferred to sales.

Tropical forests are conservation goods—in the framework of this paper. On the one hand, the South benefits from selling the timber and clearing the land for agriculture or oil extraction. On the other hand, the North prefers to have conservation in the South because tropical forests are among the most biodiverse areas in the world, they are inhabited by indigenous people, and deforestation contributes to 10–20 percent of the world’s carbon dioxide emissions, which cause global warming.² Negative externalities from forest loss and degradation cost between \$2 trillion and \$4.5 trillion a year according to *The Economist*.³ However, deforestation could be halved at a cost of \$21–35 billion per year (Edenhofer et al., 2014), or reduced by 20–50 percent at a price of \$5–10/tCO₂.³ (Stern, 2008; Busch et al., 2012). Given these estimates, it is puzzling why the North is not buying conservation on a large scale—despite having established the UN program REDD (Reducing Emissions from Deforestation and Forest Degradation), and that it continues to allow about 13 million hectares of forest to disappear every year (FAO, 2010).

Even unextracted coal and oil can be conservation goods when there are environmental benefits from keeping the resources in the ground. In fact, I have elsewhere argued that a climate coalition may prefer to “buy coal” to ensure it is left in the ground (Harstad, 2012). Framstad and Harstad (2016) study the optimal contracts and Harstad and Mideksa (2016) show how they depend on the political regime. The present paper can explain why we have not seen such a solution in reality.⁴

There are many other examples of “payments for environmental/ecosystem services” (PES; Engel et al., 2008). In the United States, The Nature Conservancy frequently uses land acquisition as a tool of its conservation effort. But the outcome is often inefficient. On the Solomon Islands, for example, villagers had agreed with the Earth Island Institute to protect bottlenose dolphins in return for \$2.4 million SBD (Solomon Island Dollars). When the pay was delayed, the villagers retaliated by slaughtering as many as 900 dolphins.⁵ The seller’s desire to conserve only because she hopes to receive payments in the future makes the good reminiscent to a “hostage.”⁶

² The estimates have varied within this interval since IPCC (2007, see also 2013).

³ September 23, 2010, where *The Economist* cites a UN-backed effort, The Economics of Ecosystems and Biodiversity (TEEB).

⁴ Nevertheless, some proposals in this direction have been made. In 2007, President Rafael Correa of Ecuador launched an initiative to raise \$3.6b to protect Yasuni National Park, one of the most biodiverse spots on earth. In 2013 the plan was scrapped and the Park opened to oil drilling, after less than a tenth of the requested amount had been pledged and less than half a percent received (*Reuters*, Aug. 16, 2013).

⁵ The Epoch Times, January 24th, 2013. Webpage: <http://www.theepochtimes.com/n2/world/solomon-island-villagers-kill-900-dolphins-in-retaliation-339833.html>. I thank Atle Guttormsen for the story.

⁶ Theoretically, the conservation good could indeed be real captives or hostages, but there are important differences. First, I assume that the buyer is satisfied with the status quo, i.e., as long as the good is conserved, even though it is

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