



Restoration and the Green Economy

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What do we mean by 'Green Economy?'

- A 'green' economy is one that reduces environmental risks and ecological scarcities and aims for development without degrading the environment
- Recognizes the value of natural capital and its associated ecosystem goods and services, which helps to
- Internalize environmental externalities and allocate economic benefits and costs more fairly to achieve a more just and equitable society
- Creating jobs/livelihoods, ecosystem goods and services, improved environmental conditions, and sustainable resource management



Restoration and the Green Economy

- Restoring the functionality of degraded and deforested land makes several contributions to the Green Economy movement
- Improves the stock of natural capital and the flow of ecosystem goods and services associated with it (more efficient land use allocation)
- Creates local jobs through restoration activities and also
- Gives rise to ‘restoration economies’ that create additional economic opportunities in local communities



Types of values achieved through restoration



One ecosystem, many different services and benefits



- A water purification plant
- A flood control mechanism
- Habitat for biodiversity
- Food
- Beauty
- A place of worship
- A cure
- A way of life
- A paradise for tourism



Types of values achieved through restoration



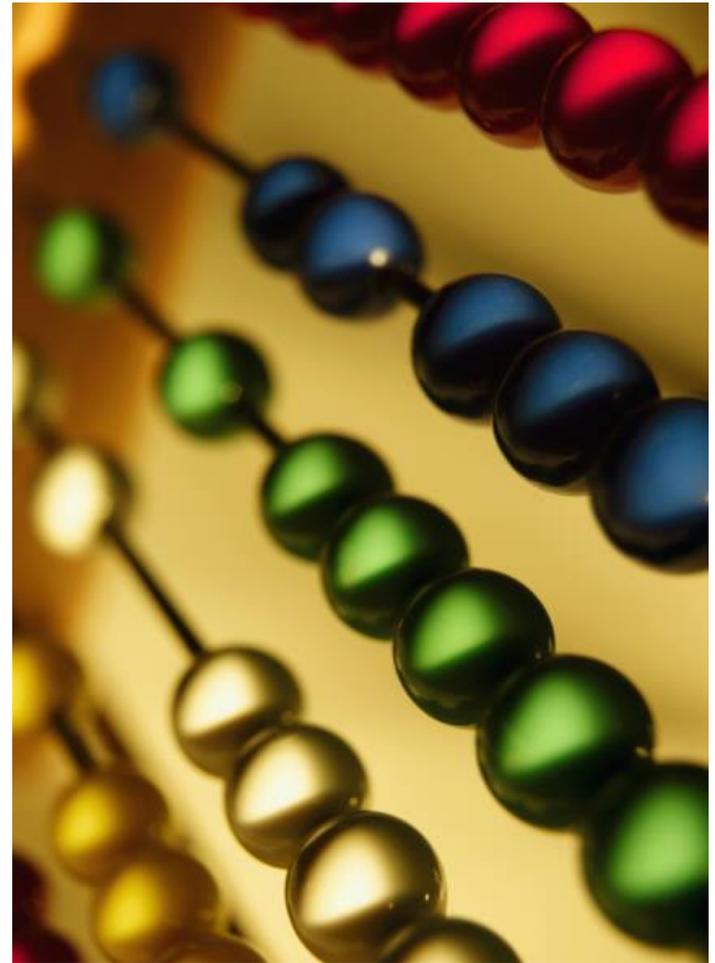
Restoration can also

- Increase food security and reduce poverty of poorest and most vulnerable groups (Lamb, 2006)
- Contribute directly to job creation (Calmon et al., 2011)
- Increase ecosystem resilience (Niskanen, 1998)
- Increase species richness (Goldstein et al., 2008)



Accounting for restoration's value

- Valuing natural capital puts nature on a level playing field with other economic goods and services and helps internalize externalities
- Creating markets based on those values can help make restoration financially attractive compared to competing land uses (not always possible)
- Accounting for non-environmental impacts of restoration like job creation and induced economic activity makes the case for restoration stronger



Restoration and markets for ecosystem services

- Payment for Ecosystem Service (PES) schemes for restoration are increasing and are largest category of PES projects in terms of investment and total area impacted (Yin and Zhao, 2012; Wunder et al., 2008)
- Based on the premise that price mechanisms can internalize external effects, creating an incentive to restore land (Engel, Pagiola, & Wunder, 2008)
- Schemes have been proposed to incentivize
 - Ecosystem based adaptation
 - Carbon storage/climate regulation
 - Watershed services
 - Biodiversity conservation on agricultural land

Restoration and markets for watershed services

- In 2013, governments, companies, and NGOs invested \$12.3 billion in watersheds to regulate the supply and quality of water delivery
- More than 365 million Ha were protected or restored with these funds
- Several models exist and are being used for restoration
 - Collective action funds
 - Trading and offset mechanisms
 - Voluntary compensation



Restoration and markets for watershed services

- Following severe forest fires in a key watershed the city of Denver, Colorado, spent more than \$26 million to repair damage to water infrastructure
- State and federal agencies spent more than \$79 million suppressing the fires
- In 2011 the two groups formally joined forces to restore 38,000 acres of forested watersheds, financed in part by charging water costumers an additional \$27 over five years



Restoration and business models

- Ecotrust used New Market Tax Credits to raise \$4 million of capital to re-open a small diameter log mill in a low-income area of Oregon. The mill needed capital to update infrastructure to increase operating efficiency, but could not attract traditional investors
- Guayaki is a natural beverage business that partners with local communities to restore degraded land with shade-grown yerba mate that also creates a sustainable income stream for the community. Some of the revenue from beverage sales is returned to the community to restore additional land with native hardwood species
- Small-scale timber producers in Costa Rica work with FUNDECOR, a local NGO, to set up timber businesses that use bridge-financing to create a cash flow during the 15-year growing period of their timber

Restoration, jobs, and livelihoods

- In the Pacific Northwest the need for forest and watershed restoration has become apparent to support a transition to a green economy based on sustainable energy development (i.e. hydropower) and sustainable timber supply chains
- Various agencies and decision makers are interested in supporting restoration activities, but want to know the actual and expected impacts they will have on the local economy
- Public investment in restoration creates jobs directly by employing local people to restore landscapes and this money creates subsequent impacts in related sectors (e.g. recreation, tourism, manufacturing, raw material processing, etc...)

Restoration, jobs, and livelihoods

Figure 1. Average number of jobs per \$1 million of investment by select sector¹

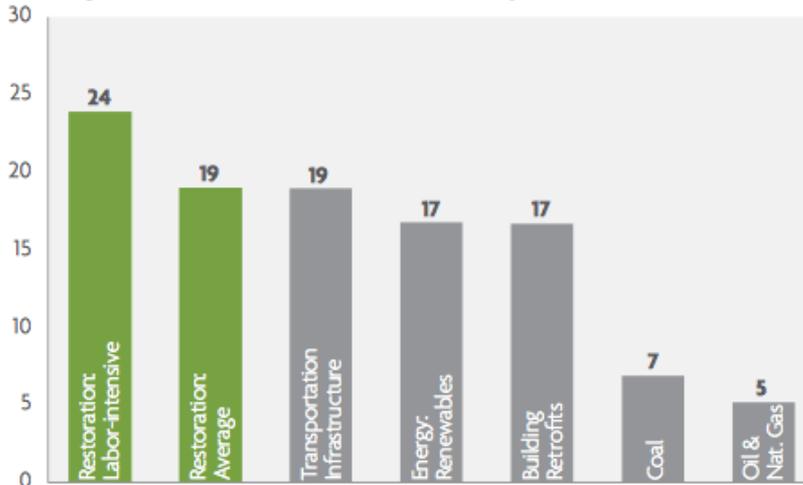


Figure 2. Restoration project funds stay local³



Source of jobs and economic impacts

- Direct Effects – Created by conducting restoration activities. Include jobs and wages of anyone directly involved with restoration efforts
- Indirect Effects - Created by demand for material, supplies, equipment, and other services needed to restore degraded land
- Induced Effects – Created when people employed in direct and indirect sectors spend their income on goods and services (e.g. food, housing, entertainment)

Challenges to incorporating restoration into the Green Economy

- Making restoration financially competitive in a capitalist marketplace remains a challenging goal
- Externalities, public good nature of ecosystem services, information asymmetry, and imperfect property rights make it difficult to 1. finance restoration activities and 2. maintain post-restoration landscapes (Engel et al., 2008; Tietenberg, 2006)
- High transaction costs and measurability issues (Benayas et al., 2009) would make it impossible to create markets for most environmental goods and services (Kroeger and Casey, 2007); (Kemkes, Farley, & Koliba, 2010); (Engel, Pagiola, & Wunder, 2008); (Ribaudó, Greene, Hansen, & Hellerstein, 2010)
- Payments could also create perverse incentives whereby the level of the service being paid for is increased, but at the expense of other goods and services (e.g. carbon forests, hostage taking)

How can restoration be integrated into the Green Economy

- Natural capital and ecosystem services need to be incorporated into national accounts in addition to being accounted for elsewhere
- Establish and support collaborative restoration efforts at a landscape level and use processes like ROAM to help communities understand trade-offs and possibilities
- Institutions and mechanisms are needed that internalize externalities (e.g. land tenure reform, environmental regulation, taxes, subsidies)
- Incentives and business models are needed for private finance to fund restoration activities (e.g. tax credits, eco-labeling, co-financing, etc...)