

OPINION ARTICLE

Stimulating post-COVID-19 green recovery by investing in ecological restoration

Nicolas Mansuy 

In the face of the global COVID-19 recession, countries are looking at stimulus packages to kick-start their stalled economies. The recovery from the COVID-19 crisis also coincides with a critical opportunity to fight against ecosystem degradation and climate change. In this opinion article, I put in perspective that by investing in ecological restoration, governments do not have to choose between economic priorities and environmental concerns. First, I describe the restoration economy and give real-world examples of how investing in restoration activities can simultaneously ease pressure on the environment and create immediate jobs and revenues. Then I suggest that to obtain political attraction, a successful restoration strategy will require a triple-bottom-line approach to ensure that in addition to environmental objectives, stakeholders integrate socioeconomic outcomes in decision-making. Finally, I conclude that a new economic approach that prioritizes investment in our ecological capital will necessitate transdisciplinary policies to build bridges across the different silos of the economy and the environment.

Key words: ecological economics, green economy, nature-based solutions, oil and gas, reclamation

Implications for Practice

- Investing in restoration is an opportunity to transform degraded landscapes into functional landscapes and to deliver co-benefits, including livelihoods and business opportunities.
- By developing innovative funding strategies that take into account natural capital, governments can shift unsustainable land uses toward healthy and resilient landscapes.
- To get political attraction, a successful restoration strategy will require a triple-bottom-line approach to ensure that, in addition to environmental objectives, stakeholders integrate socioeconomic outcomes in the decision-making.

Introduction

Land degradation—defined as a persistent loss of ecosystem services and ecological integrity—has recently gained prominent attention in national and international agendas. Globally, land degradation caused by anthropogenic activities is undermining the well-being of 3.2 billion people, driving biodiversity loss, and exacerbating climate change. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Service estimated the economic cost of biodiversity and ecosystem services loss because of land degradation is more than 10% of the annual gross world product (Brondizio et al. 2019). The World Economic Forum now ranks biodiversity loss as a top-five risk to the global economy. Land degradation is also a major contributor to climate change, with deforestation alone contributing

about 10% of all human-induced greenhouse gas emissions (Brondizio et al. 2019).

The COVID-19 pandemic represents the largest economic and sanitarian crisis the world has experienced in decades. While the COVID-19 lockdowns around the globe have temporarily decreased the pervasive ecological and carbon-based impacts on global ecosystems (Bates et al. 2020; Le Quéré et al. 2020), this “Anthropause” will not last long (Rutz et al. 2020). However, the return to “business as usual” is not inevitable—if we invest massively in restoring degraded ecosystems immediately. The recovery from the COVID-19 crisis coincides with a critical opportunity to fight ecosystem degradation and climate change. The United Nations has declared 2021–2030 the “Decade on Ecosystem Restoration” with the aim to transform degraded landscapes into functional landscapes that can support livelihoods, fight the climate crisis, and enhance biodiversity. In times of crisis, when both environment and economy resiliency are much needed, restoring healthy ecosystems can benefit land and people, enhancing biodiversity and spurring economic growth—now and after the pandemic.

In the face of the COVID-19 recovery, governments do not have to choose between economic priorities and environmental concerns. In this article, I put in perspective how governments can address both priorities at the same time through investments in ecosystem restoration. First, I outline the concept and

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¹Natural Resources Canada, Canadian Forest Service Northern Forestry Centre, 5320 122 Street, Edmonton, AB T6H 3S5, Canada

²Address correspondence to N. Mansuy, email nicolas.mansuy@canada.ca

environmental benefits of restoration in the context of global land degradation. Then, I explain how the restoration economy can create jobs and revenues by giving concrete examples from Canada and the United States. Third, I give some insights on how to mobilize investment in restoration by valuing the natural capital of the ecosystem and getting the necessary political attraction.

Defining Restoration

In an era of rapid land degradation, the concept of forest and landscape restoration is gaining momentum in attempts to conserve and restore healthy ecosystems (Suding et al. 2015). Restoration is a relatively young discipline but is in constant evolution like its terminology. The Society of Ecological Restoration defines restoration as “an intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity and sustainability” but also as the process to “enhance human well-being in deforested or degraded landscapes” (Society for Ecological Restoration 2004, p. 2). The terminology encompasses several disciplines and can change from one region to another. For example, when dealing with the land disturbances caused by anthropogenic activities, the terms remediation, reclamation, restoration, and rehabilitation are used interchangeably, where the outcome of these activities is an alternative state or partial recovery of an original state (Lima et al. 2016). Given the overlapping ecological and socioeconomic activities, and often conflicting values in the landscapes, the socioeconomic and human dimensions are now central in the restoration continuum (Gann et al. 2019).

The goals of restoration are also evolving rapidly. Restoration efforts are now part of the nature-based solutions to address global societal challenges such as climate change, natural disasters, food, and water security (Cohen-Shacham et al. 2016), but also to develop resilient landscapes able to respond to shifting conditions. Restoring degraded landscapes is, therefore, an urgent policy priority inscribed into many international commitments and global initiatives such as the Sustainable Development Goals, the Convention on Biological Diversity, or the Bonn Challenge (a global effort to restore 350 million hectares by 2030). The World Economic Forum has launched the *1t.org* (<https://www.1t.org/>) initiative to connect these global efforts in a unifying platform and provide financial and political support. Adding restoration to the land use agenda as part of the post-COVID-19 recovery can not only offer a clear pathway to transform degraded landscapes into functional landscapes but also deliver co-benefits, including livelihoods and business opportunities. In this respect, restoration can be directly integrated into the development and management of urban, forested agricultural, and industrial landscapes.

Sizing the Restoration Economy

Although rarely accounted for, the economy of restoration goes well beyond tree planting and can offer multiple jobs and business opportunities (Mansuy & MacAfee 2019). BenDor et al. (2015) defined the restoration economy as “the set of

economic activities that contribute to restoration, from project planning, engineering and legal services, to intermediate suppliers of inputs, to on-the-ground earthmoving, forestry, landscaping work, and ecological monitoring.” Based on this definition, the U.S. domestic restoration market supported directly approximately 126,000 workers and generated approximately US\$9.5 billion in economic impacts annually. In addition, the restoration activities generated 95,000 jobs and US\$15 billion in economic output through business-to-business services. As a comparison, the restoration sector in the U.S. employs more people than either the coal mining, logging, or steel production industries (BenDor et al. 2015). Another study analyzed the benefits and costs of restoring forests and landscapes from many projects around the world and estimated that every US\$1 invested in restoration activities could yield between US\$7 and US\$30 (Ding et al. 2017). However, it is likely that the restoration economy is largely underestimated because it is difficult to get accurate numbers given the many off-shoots for this broad domain. Indeed, the expertise needed along the supply chains requires various skillsets, such as environmental science, hydrology, landscape planning, monitoring, seed production, tree planting, habitat enhancement (terrestrial or aquatic), and offers, therefore, multiple career paths (Mansuy & MacAfee 2019). As an example, approximately 379,000 employees performed activities related to site assessment and restoration in Canada, representing about 21% of Canada’s 1.8 million environmental workers (Eco Canada 2014).

While human-made disturbances are surging and stressing sustainable land use (Arneith et al. 2019), there is no doubt that accelerating restoration efforts can rapidly increase job opportunities and improve the environmental performance of many sectors. For example, the restoration economy can benefit the oil and gas sector, particularly impacted by the COVID-19 pandemic. Following the lockdown across the world, the oil and gas labor market is among the world’s most severely hit by the downturn. Direct employment in Canada’s oil and gas sector has already fallen by more than 14,000 jobs since March 2020 (Petrol Labor Market Information 2020). Similar petroleum-based job losses are estimated to exceed 100,000 for 2020 in the United States (Oilprice 2020). For the oil sands of Alberta, the third proven global reserve of oil enclaved in the pristine landscapes of the boreal forest, the environmental shift is much needed as the region has suffered decades of poor environmental reputation given the excessive environmental cost and ecological footprint in extracting the bitumen (Schindler 2010). A recent study indicates that post-oil and gas extraction activities, like decommissioning and reclaiming sites such as orphaned wells and pipelines, could create 6,100 shovel-ready jobs in the province of Alberta (Kaddoura et al. 2020).

Investing in Restoration

In the face of the COVID-19 recovery, governments have an opportunity to combine economic growth with easing pressures on ecosystems and climate by investing in restoration. Nevertheless, investing in environmental restoration is not cheap, and the payback time is very uncertain. For example, the official price

tag is currently estimated at US\$43 billion for the eventual decommissioning and reclamation of all oil and gas infrastructure in Alberta (Alberta Energy Regulator 2018). The enormous cost of restoration can raise serious concerns about funding as the global economy faces its largest contraction. However, many studies have demonstrated that natural capital, and the ecological services derived from it, have significant and measurable economic value. For example, watershed restoration (in the state of Oregon) can provide economic and social benefits, and save the US\$6–8 billion that would have been required for a new water filtration plant (Kellon & Hesselgrave 2014). Indeed, the economic benefits that flow from restoration can be several times higher than the costs, as nature provides ecosystem services (like erosion control, water filtration, and carbon mitigation) at a lower price than anthropogenic solutions (Waldron et al. 2020).

By investing in new economic strategies that take into account natural capital, governments can shift unsustainable land uses toward healthy and resilient landscapes. There is a strong economic rationale for making this shift, as studies show evidence that the nature conservation sector drives economic growth, delivers key non-monetary benefits and is a net contributor to a resilient global economy (Waldron et al. 2020). For example, the European Green Deal is a massive and ambitious (US\$1.1 trillion) decade-long investment to reach a prosperous society, with a resource-efficient and competitive economy, including biodiversity and decarbonization actions to protect and conserve natural capital (European Commission 2020). The action plan includes the restoration of degraded forests to increase carbon sequestration while improving the resilience of forests. The government of Canada has also recently announced an investment of US \$1.75 billion to clean up orphan wells in western Canada with concurrent intentions to keep people working during the COVID-19 pandemic while helping oil and gas companies reduce their environmental liabilities.

Investment in restoration must be sustained now and after the pandemic. The restorative continuum includes many connected activities and interventions that can improve environmental conditions and reverse ecosystem degradation over the long term, from implementation to monitoring (Gann et al. 2019). This requires long-term investment horizon to foster capacity, innovation, and collaboration among partners to generate quantifiable social, environmental, and economic benefits. Combining public and private capital is also essential in achieving the multiple goals of restoration over the long term (Löfqvist & Ghazoul 2019). Governments can spur private investment through risk mitigation mechanisms such as loan guarantees or tax incentives. As more studies show that investing in the green economy creates more jobs per million dollars than spending on fossil fuels economy (International Labour Organization 2018), governments and private industries can turn their attention to reduce environmental pressures and boost the economy at the same time. A timely example of public–private investment is the new collaboration between 20 U.S. cities and corporate giants to restore damaged ecosystems and protect urban forests as part of a global effort to tackle climate change, improve health, and

boost job creation (<https://www.americanforests.org/about-us/mission/>).

Most importantly redirecting investment toward local communities is critical as restoration jobs are most likely located in rural areas (Kellon & Hesselgrave 2014; Ding et al. 2017). Governments must connect and coordinate with local or regional agencies to identify priorities and establish action plans to allocate funding. Besides, unlike in other economic sectors, restoration jobs cannot be outsourced to distant locations, so these dollars will stay in the local economy, helping the communities hard hit by the economic downturn.

The discipline of restoration is evolving rapidly to adapt to a changing landscape with different needs and values. In addition to pooling financial resources, investing in scientific and technical capacity, as well as local knowledge (including Indigenous knowledge), will be key to kick-start the restoration economy (Baker 2005). Investing in education and training is also necessary not only to support countries' efforts to achieve economic recovery now, but also to ensure that healthy ecosystems continue to provide the services needed by the society for the next generations.

Getting Political Attraction

Despite the numerous initiatives at the international level (such as the Bonn Challenge), implementation of effective restoration on the ground remains difficult as public-facing commitments do not necessarily reflect actual practices (Fagan et al. 2020). Recent research suggests restoration implementation is challenged at the national level for reasons that include access to adequate resources, including financial capacities, inadequate governance, community opposition, existing land use entitlements, and the lack of meaningful legal accountability for compliance (Cliquet & Decler 2019; Mansourian et al. 2019). Moreover, like many other environmental regulations, restoration suffers from the simplistic view that environment policy kills jobs (Moosa & Ramiah 2014).

To get political attraction, a successful restoration strategy will require a triple-bottom-line approach to ensure that in addition to environmental objectives, stakeholders acknowledge and integrate socioeconomic outcomes in the decision-making (Mansuy et al. 2020). To do that, restoration practitioners should be able to quantify the socioeconomic impacts of restoration projects (failure and success, costs and benefits) in order to communicate the contribution of these activities to local and national stakeholders. Socioeconomic contribution is useful for local planning and economic development agencies as well as for the national decision makers. Socioeconomic contribution is also necessary to develop or adjust policy as well as to monitor restoration achievements in regards to national and international commitments.

Additionally, new economic approaches that prioritize investment in our ecological capital will require transdisciplinary policies to bridge the silos across different sectors of the economy and environmental issues. In this sense, restoration, like any other nature-based solutions, will only be effective if implemented in conjunction with other efforts to transform the

land-use sector including forestry, agriculture, energy, and the mining industry, but also the finance sector. The integration of knowledge and science from diverse sectors could also stimulate new perspectives for research, collaboration, and funding to scale up restoration efforts.

Given competing uses in the landscape as well as the different land ownership, a governance phase is also required to facilitate and agree on inclusive decision-making processes (Mansourian et al. 2016). Establishing governance and building capacity among all stakeholders and land users, private industries and the different level governments will be key for planning and executing restoration efforts at a larger scale.

Finally, in an era of social media, mainstreaming the multiple benefits of restoration can be crucial to unlocking the full potential of the restoration economy as part of the green recovery. Mainstreaming can serve many purposes, from facilitating communication and awareness between practitioners, stakeholders, and private companies, to connecting the various dimensions of restoration be it social, environmental, and economic.

Conclusion

The environmental responses following the global lockdowns have highlighted in the first place the damaging and ubiquitous impacts of human activities on their ecosystems. If there is one lesson from COVID-19, it is that we can no longer manage environmental and economic priorities separately. Building back the economy should not be simply about returning to growth, but on growing smarter and cleaner to support a more resilient ecosystem and society. Kick-starting post-COVID-19 recovery by investing in restoration is part of the nature-based solution to build that future, among others. However, as the race for recovery is global, and the drivers of the market will remain the same, every country will have to build on their existing and emerging strengths to innovate and remain competitive. If the global economy agrees to protect and value nature to build resilient societies, then all the sectors of the economy need to coordinate their actions toward that goal.

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