The Road to a Green Economy: Infrastructure for Ecotourism in Natural Protected Areas

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Abstract

This paper examines the definition of Green Economy and discusses the potential of the tourism sector to be a successful case study in implementing the principles of this development model. Our focus is on the regulatory framework governing tourism, principally regulations regarding tourism infrastructure. We provide policy recommendations to remove the perverse incentives present in current regulations that could threaten natural resources and the ecosystem services they provide.

Key words: Conservation, ecosystem service, green economy, natural protected area, tourism.

Acronyms

AAA	Administrative Water Authority (Autoridad Administrativa del Agua)
AACCH	Autonomous Authority of the Chancay-Lambayeque Watershed (Autoridad Autónoma de la Cuenca Hidrográfica Chancay-Lambayeque)
ADI	Area of direct influence (Área de influencia directa)
AII	Area of indirect influence (Área de influencia indirecta)

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ALA	Local Water Authority (Autoridad Local del Agua)
ANA	National Water Authority (Autoridad Nacional del Agua)
ATDR	Irrigation District Technical Association (Asociación técnica del distrito de riego)
BVN	Buenaventura Mining Company (Compañía de Minas Buenaventura)
CRHC	Watershed Water Resources Council (Consejo de Recursos Hídricos de Cuenca)
Epsel	Lambayeque Water and Sanitation Company (Empresa de Agua y Saneamiento Lambayeque)
EQS	Environmental quality standard (Estándar de calidad ambiental)
GWL	General Water Law (Ley general de aguas)
GWP	Global Water Partnership
IAD	Institutional Analysis and Development
IDB	Inter-American Development Bank
IFC	International Finance Corporation
IMAR	North Coast Institute for Water Management Support (Costa Norte Instituto de Apoyo al Manejo del Agua)
Ingemmet	Geological, Mining and Metallurgical Institute (Instituto Geológico Minero y Metalúrgico)
IWRM	Integrated Water Resources Management
JUDRCHL	Chancay River-Lambayeque Irrigation Users Board (Junta de Usuarios del Río Chancay-Lambayeque)
Minagri	Ministry of Agriculture and Irrigation (Ministerio de Agricultura y Riego)
MLZ	La Zanja Mining Company (Minera La Zanja)
Mm^3	Millions of cubic meters
NWRPS	National Water Resources Policy and Strategy (Política y Estrategia Nacional de Recursos Hídricos)
PEOT	Olmos-Tinajones Special Project (Proyecto Especial Olmos-Tinajones)
S.A.C.	Privately held limited liability company (Sociedad anónima cerrada)
SIDA	Swedish International Development Cooperation Agency
SNMPE	National Society of Mining, Petroleum and Energy (Sociedad Nacional de Minería, Petróleo y Energía)
UNDP	United Nations Development Program
UNPRG	Pedro Ruiz Gallo National University (Universidad Nacional Pedro

INTRODUCTION

Environmental sustainability presents a critical challenge for the ability of economic growth to improve well being. (UNEP 2011). Including sustainability considerations into economic calculations adds environmental costs, lowering expected profits and rendering fewer activities attractive for private initiatives. It is for this reason that governments and private companies are reluctant to include sustainability considerations in their projects—they fear that taking these costs into account will slow economic growth.

This is why it is important to think about and propose frameworks of economic analysis that lead to public policies that confront that fear and create a win-win situation by finding synergies and opportunities to include these costs and sustainability in general into economic activities. The so-called Green Economy (GE) is a concept along these lines of thinking. It maintains that it is good business to use the most efficient technologies, incorporate environmental costs, and orient policies for economic growth towards a low carbon economy (World Bank 2012).

Currently, various organizations such as the United Nations (UN), the World Bank(WB), the International Union for the Conservation of Nature(IUCN), and the Center for Community Innovation (CCI) accept GE as a new alternative for development. They emphasize the contribution that the United Nations Environmental Program (UNEP) has made to the discussion and consider that a GE seeks to improve human wellbeing and social equality, while significantly reducing environmental risks and ecological scarcity. The UNEP considers natural capital to be a fundamental economic asset that needs to be conserved, improved and restored. Doing so requires a low carbon, resource-efficient economy characterized by social inclusion. (UNEP 2011). Declarations made at the Rio + 20 conference defined a GE as the ideological manifestation of efforts to separate economic growth from its dependence on cheap natural resources. This is achieved by making the economy more efficient and productive in an attempt to increase social equality. (United Nations 2012)

Each of the above mentioned organizations defines a GE differently and prioritizes its components in different ways. But they all share the perception that the following elements are part of a GE:

- It is a way to achieve sustainable development– development that doesn't compromise the wellbeing of future generations.
- It maintains that the benefits derived from natural capital (i.e. environmental services and goods) are fundamental and in need of protection, conservation and restoration.

- It prioritizes using clean energy to reduce carbon emissions and its negative impacts on society.
- It requires more efficient organizations with greater productivity than those currently operating.
- It seeks to resolve institutional and market failures related to natural capital.
- It should be socially equitable, for current and future generations, emphasizing education and employment.

To implement a GE it is necessary to generate green policies (GP) that address national and international market and institutional failures, particularly those associated with the efficient use of natural capital. The goal of doing so should be to generate sustained and inclusive economic growth. It is a given that a GE should be compatible with international law and, at the same time, respect each country's sovereignty over its natural resources. In the national context, a GE requires efficient intuitions at every level of government, permitting the participation of all the interested actors in policy making. A GE adapts to the reality of each economic sector and to the rural environment, with an emphasis on watershed management, biodiversity conservation, and the distribution of mining revenue. (World Bank 2012).

Are GE and GP the avenues to follow for an economy like Peru's? What is clear is that the Ministry of the Environment (Ministerio de Ambiente, Minam) has already included the discussion of GE and GP in official documents (Minam 2012). It was precisely at the request of Minam that we undertook the research that gave rise to this article. Our assignment was to analyze the ecotourism sector. Minam chose this as its first case study because it is a sector that is well aligned with the principles of a GE: it is labor intensive; based on valuing natural capital that need not be transformed to be profitable, and increases the human capital of its consumers.[2]

Studies exist on ecotourism in Peru (Vásquez and Injoque 2003), but none use a GE focus. It is this focus that makes our study original. This study seeks to determine to what extent the existing ecotourism regulations—those pertaining to GP for the sector–are consistent with a GE. We focus on the infrastructure in Natural Protected Areas (NPA) because the permanent and embedded nature of the investment in this infrastructure could potentially reduce the quality of the natural assets that sustain the income generating activity–ecotourism. And herein lies the dilemma: ecotourism in and of itself should be consistent

2. Consultancy title: «Analysis of the Regulatory Framework for Tourism Infrastructure in Peru and Proposed Regulations for a Green Economy Focus in this Area».

with a GE, but if its development negatively affects the natural assets that support it, it is inconsistent with the principles of a GE.

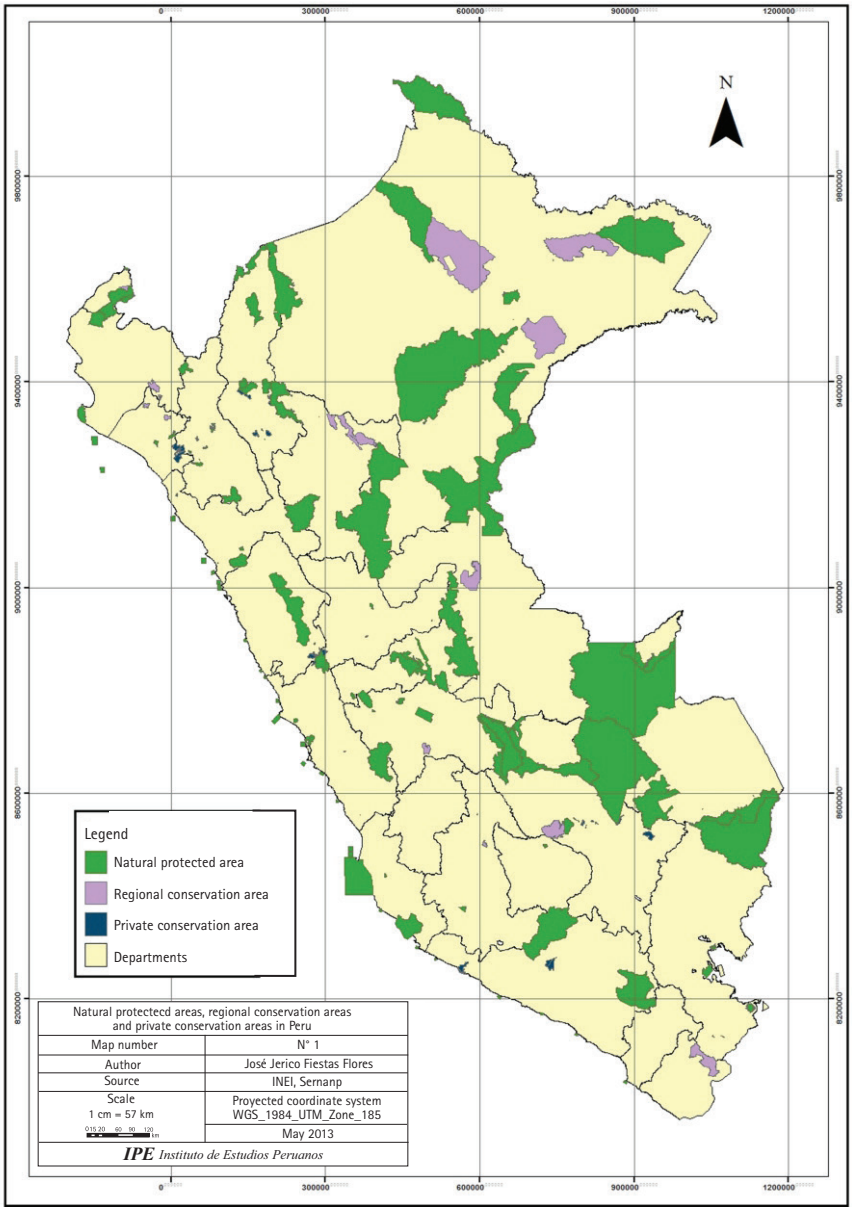
This study seeks to answer the following questions: Do current regulations provide incentives for the sustainable use of NPA in a manner that is efficient over the long term and consistent with a GE? If not, what changes should be made to them, that is to say, what GP should be proposed?

To answer these questions we analyzed the relevant regulations through a GE and GP lens and conducted interviews with actors in the public and private sectors. The reason we chose the NPA as the focus of the study are obvious: they are the ideal candidates for the development of ecotourism, which has the potential to generate income for the conservation of natural resources and ecosystem services. In Peru, the NPA account for approximately 17.22% of the country's territory and are administrated nationally, regionally (regional conservation areas, RCA), and privately (private conservation areas, PCA). The distribution of these areas appears in Map 1.

To ascertain whether the NPA ecotourism subsector is prepared to implement the principals of a GE, we first analyze the regulations that govern their use.[3] Our review revealed that regulations lack clear economic incentives aligned with GP. For instance, tourism activities are only regulated in nationally-managed NPA. This creates an opening for activities that are not aligned with a GE—or even for illegal activities like wildlife trafficking—within RCA and PCA. At the same time, the management plans that every protected area must have do not establish a single method for measuring the impact of infrastructure. This creates the danger that the impact could be underestimated and also makes it difficult to accurately compare different proposals. To answer the second research question, and in order to facilitate the sub-sector's transition to a GE, we propose some critical components to be included in the regulations governing tourism infrastructure in NPA.

3. General Tourism Law (Ley General de Turismo N° 29408) the Natural Protected Areas Law, (Ley de Áreas Protegidas. Law N° 26834), the Guide for NPA Site Plans (Guía para la Elaboración de Planes de Sitio de ANP. Resolución de Intendencia N° 059-2007-Inrena) the Regulations for Tourism within NPA (Reglamento de Uso Turístico en ANP. D.S.018-2009, Minam) and Lodging Regulations (Reglamento de Establecimientos de Hospedaje D.S. 029-2004-Mincetur).

Map 1
Natural Protected Areas



Source: Sernanp (2013).

The paper is organized as follows: First we present the theoretical framework for a GE and its connection to ecotourism. Second, we explore the current state of ecotourism in Peru and current regulations that reflect the policies of the subsector. We answer our research question in the third section, after analyzing the regulations through the lens of the demands of a GE and its respective GP. The final section closes with some reflections and recommendations.

1. THEORETICAL FRAMEWORK FOR A GREEN ECONOMY

The development model based on GP for a GE has the goal of correcting market failures involving natural capital. These failures, which cause perverse effects, include externalities, information asymmetry, monopolies, transaction costs, the absence of markets, and the insufficient provision of public goods (Kosoy *et al.* 2012). A GE's contribution to economic growth can be represented in analytical form with the Solow-Swan model (cited by Hallegatte *et al.* 2011), which Toman (2012) supplements with an adaptation of the Ramsey model. None of these models include the social dimension as a key component, which represents a significant limitation. The initial Solow-Swan model proposes that production (Y) is a function of technology and human capital (A), physical capital (K) and labor (L) (Formula 1). The relationship of each factor with Y is positive, so that population growth, improvements in health and education, and increased investment and technological advances allow this investment to grow. Nevertheless, it does not contemplate the environmental dimension.

In the absence of market failures—i.e. if all environmental

Formula 1
Solow-Swan Growth Model

$Y = f(A, K, L)$,
with $dY/dA > 0$; $dY/dK > 0$; and $dY/dL > 0$.

Source: Hallegatte *et al.* (2011: 4)

There are numerous examples that explain how natural stock and environmental quality influence production. A greater quantity of high quality soil and water allow for greater agricultural production. High quality water and air bring about better human health and, as a result, greater productivity. This is the case for including environmental capital (E) within Solow-Swan's production function (Formula 2).

In the framework of a GE, it is assumed that this capital has finite capacity for production and for absorption of waste, making its conservation essential. In the short term, technology can help replace environmental capital (*i.e.* fertilizers) but in the long term, these can have negative repercussions on ecosystems, increasing maintenance costs. (Hallegatte *et al.* 2011)

Formula 2
Solow-Swan growth model modified to include environmental capital

$Y = f(A, K, L, E)$
$dY/dA > 0$; $dY/dk > 0$; $dY/dL > 0$;
With $dY/dE > 0$

Source: Hallegatte *et al* (2011: 6)

Hallegatte *et al* (2011) explain that the most important aspect of this modification is to identify whether this factor is a substitute or a complement to the other factors. Even if it were a substitute, the destruction of the environment could be compensated for by investing in more physical and social capital up to the possible replacement limit— a limit that could also justify protecting the environment. In the case that it is a complement (or a weak substitute), protecting the environment is necessary to maintain economic production. Toman (2012) reinforces this conclusion by explaining that the natural capital equation is composed by its reduction $H(EX)$ and its rate of regeneration $R(E)$ and so to avoid environmental degradation and to promote growth it is necessary to control extraction (EX) of these goods and services.

Toman (2012) and Hallegatte *et al* (2011) agree that without the market flaws that affect environmental capital, it would be possible to identify the social costs in order to calculate a green GDP that takes into account environmental assets. Hallegatte et al (2011) suggests that to analyze a GP that seeks to resolve these flaws, first one must analyze a suboptimal economic scenario in which the production function is equivalent to the production possibilities frontier with all available resources, assuming maximum efficiency (ψ). This efficiency lies between values of 0 to 1, where at 1 the production is equal to the production frontier (Formula 3).

Formula 3
Production Frontier Function with Efficiency
$Y = \psi f(A, K, L, E)$

Source: Hallegatte *et al.* (2011: 8)

Second, we should include the effort (P_E) dedicated to GP. This will influence the efficiency and production factors. The efforts can be considered investments for innovation and knowledge creation. Toman (2012) uses this measure but, in contrast to Hallegatte *et al* (2011), Toman differentiates the efforts for each factor of production because each policy has a specific goal. To allow for spillovers between the components in the production frontier, it is necessary to propose that the effort in each factor depends on a generalized effort (X) to improve production efficiency (i-ψ), to promote innovation (i=Z), (i=E) and to reduce environmental damage. In the case of technology and labor force (i = A, L), we need to consider efforts for the promotion of green technology and green jobs (Bowen 2012). These last factors have to do with economic activities related to the environment and offer fair salaries, good working conditions, occupational safety, and a career path and rights for workers (Bowen 2012) The production frontier function detailed in Formula 3 and the incorporation of the efforts for factor of production (P_E) proposed by Toman appear in Formula 4.

Formula 4
Production Frontier Function with efficiency and green policies

$$Y = \psi(P_{E_\psi})\ f\ (P_{E_A}A,\ P_{E_K}K,\ P_{E_L}L,\ P_{E_E}E,\ P_{E_{EX}}EX)$$

$$\dot{E} = P_{E_H}H(EX) + R(E)$$

Where:

$$P_{E_i} = P_{E_i}(X) \qquad i = \psi, A, K, L, E, EX, R(E)$$

$$X = (X_\psi, X_A, X_K, X_L, X_E, X_{EX}, X_{R(E)})$$

Source: Formula based on Hallegatte *et al.* (2011:8) and Toman (2012:8)

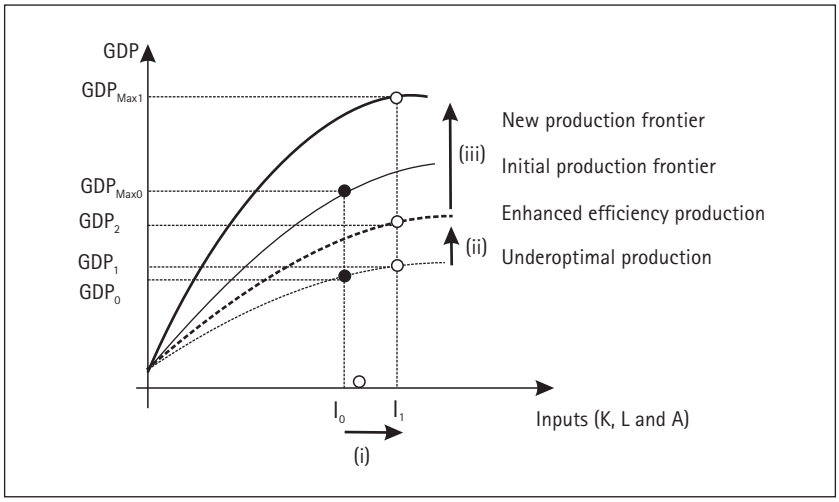
Hallegatte *et al.* (2011) specify that a growth in GDP is possible if the GP achieve the following:

A. Increase the number of production inputs (*K,L and A*) and a reduction in the impact of extraction (*R*) of environmental capital
B. Produce growth in productivity (ψ) to correct market flaws that affect the use of resources which reduces the costs of production and increases the competition.

C. Generate a shift in the production frontier by accelerating innovation (*A*) and with spillovers create new knowledge. This will result in an increase in the profitability of investment in technology with less environmental impact because of the reduction in production costs.

By increasing inputs, the GDP will have an initial increase (i) shifting from GDP_0 to GDP_1. This new GDP will be greater thanks to increased efficiency in production (ii), shifting to GDP_2. Finally the maximum GDP will increase when the production frontier shifts (iii) from GDP_{Max0} to GDP_{Max1}. These changes can be observed in graph 1.

Graph 1
Changes generated by green policies

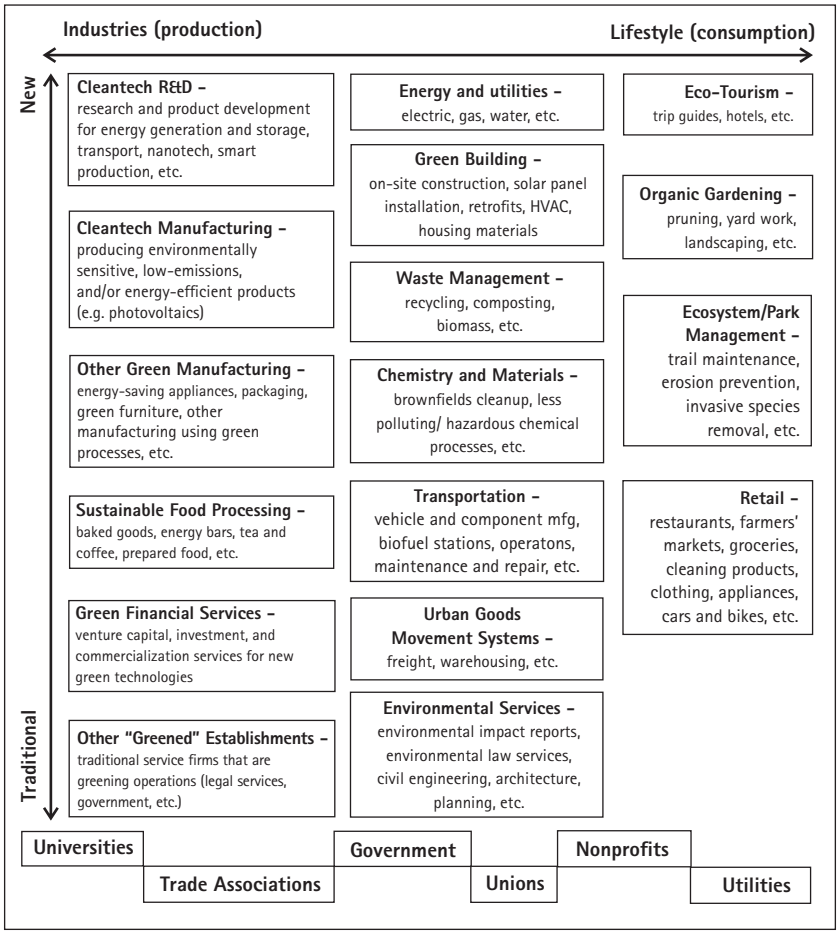


Source: Hallegatte *et al.* (2011: 10).

To make the transition it is necessary to have GP that reduce perverse subsidies that have negative environmental impacts. Among these are fossil fuel subsidies. These polices should also seek to fix market flaws with a regulatory framework that reduces information asymmetries, promotes public purchasing that is socially and environmentally responsible, and that stimulates investment in GE activities. For the latter, taxes can be reduced on strategic sectors (SELA 2012). Among the GP we can identify: the development of green technology, labeling of products to provide more information to consumers, and internalizing the externalities that are caused by certain extraction or production activities and which have negative effects on the environment.

To identify the sectors in which GP can be implemented, we consider the focus of CCI (2008) in which the GE is a group of various sectors, managed by public and private agents, that can be found in two different dimensions. In Graph 2, we classify the economic sectors according to how traditional they are (vertical axis) and according to their function in the GE (horizontal axis). In the vertical axis we identify economic activities that are in the process of internalizing measures consistent with a GE, from the most traditional (i.e. finance) to businesses in emerging industries, such as research in nanotechnology, solar panel production and ecotourism.

Graph 2
Green economy sectors



Source: CCI (2008: 2).

On the horizontal axis are the activities according to their end purpose in the GE: production or sale of green products. The former includes companies that manufacture and process food, while the second column includes local markets and national park operators. All these sectors interact and are influenced by different actors within society, such as governments, NGOs, universities and others.

Ecotourism is a new activity that is very much in line with a GE lifestyle because it is produced locally with a territorial base, it contributes to the revaluation of natural patrimony and traditional knowledge and, as a result, increases the human capital of its consumers.

Additionally, it is labor intensive, conserves scenic beauty and natural properties of the land where it occurs, and conserves the traditions of native communities, when they are present (TIIES 2006). As such it has a high potential for generating a GE-focused development. Its profitability depends on the quality of natural capital and the quantity and quality of complementary human capital. Nevertheless, as abovementioned, to achieve this potential fully, GP need to be consistent with the principles of GE so the sector can provide tourism operators with sufficient incentives to abstain from activities that damage society and the ecosystem. This will allow for a development in which the conservation of natural capital is the primary objective.

2. ECOTOURISM IN PERU

In Peru, the National Protected Areas System (Sinanpe) includes more than 69 areas, divided into different management categories throughout the country.

Table 1: Natural Protected Areas, by management category, Peru, 2013

Type	Quantity
National Park	13
National Sanctuary	9
National Reserve	15
Historic Sanctuary	4
Wildlife Sanctuary	3
Scenic or Landscape Reserve	2
Community Reserve	10
Protected Forest	6
Hunting Reserve	2
Reserved Area	13

Source: Sernanp (2013); compiled by authors.

NPA provide environmental services that conserve scenic attractions and plant and wildlife diversity, making ecotourism an activity that is consistent with the objective of these areas. The majority of the NPA that include forests provide a variety of environmental services that are broken down by category in Table 2.

Table 2: Ecosystem services provided by NPA that include forested areas

Classification	Description od service	Examples
Environmental Supply Services	Products obtained from the ecosystem	Genetic resources, water, food
Environmental Regulation Services	Benefits obtained from ecosystem process regulation	Climate regulation, water and air quality, pollination, and water purification
Cultural Environmental Services	Intangible benefits derived from spiritual enrichment, reflection and recreation	Scenic beauty, traditional knowledge, recreation
Environmental Support Services	Those necessary for the production of other environmental services	Biomass and oxygen production, soil retention, water and nutrient cycles, habitat

Source: Minam (2011: 31).

One way to ascertain the importance of NPA and ecotourism's contribution to the tourism sector is by looking at the number of visits to these areas as compared to the number of tourists who visit the country each year. As shown in Table 3, on average, 20 percent of the foreign visitors to Peru between 2007 and 2012 visited a NPA. This demonstrates the sector's potential as a generator of employment and as a development alternative.

Table 3: Foreign tourist arrivals to Peru and NPA between 2007–2012

Visit destination	Year					
	2007	2008	2009	2010	2011	2012
Foreign visitors to NPA	267,841	293,764	204,700	280,249	259,526	270,603
Foreign visitors to Peru	1,053,541	1,205,196	1,248,965	1,277,290	1,454,110	1,606,264
Percentage of foreign visitors who visit NPA	25%	24%	16%	22%	18%	17%

Source: Mincetur (2013); compiled by authors.

While the number of foreigners who visit NPA is significant, far more domestic tourists visit these areas. In Table 4 we can see that in 2011 and 2012, the most recent years analyzed, international visits have declined in relative terms as compared to national visits. This could mean a decline in income for local tourism operators, considering that foreign tourists tend to outspend nationals. But domestic tourists receive knowledge on their visits to NPA that enables them to value their natural heritage and so these visits contribute to the GDP by providing education and improving human capital.

Table 4: Foreign tourist arrivals to Peru and NPA between 2007–2012

Type of visitor	Year											
	2007		2008		2009		2010		2011		2012	
	N	%	N	%	N	%	N	%	N	%	N	%
Foreigners	267,841	44	293,764	48	204,700	44	280,249	48	259,526	41	270,603	38
Nationals	343,165	56	314,018	52	255,892	56	307,605	52	378,497	59	437,289	62
Total	611,006	100	607,782	100	460,592	100	587,854	100	638,023	100	707,892	100

Source Mincetur (2013), compiled by authors.

According to information from Mincetur (Ministry of Commerce and Tourism) (Mincetur 2013), the NPA which have had the most visitors during 2012 (1,000 per month, on average) are Huascaran and Tingo Maria national parks; the Lachay, Salinas, Aguada Blanca, Titicaca, Tambopata and Paracas national reserves; the National Sanctuary of Huayllay; and the Bosque de Pomac and Machu Picchu historical sanctuaries.

The Natural Protected Areas Law (Ley de Áreas Protegidas, Ley N° 26834) requires each NPA to have several management instruments. First, each must have a tourism management plan tailored to the NPA that aims to mitigate potential impacts of tourism on the area and includes adaptation actions to be taken in the area. This plan should be approved and monitored by the management committee of each NPA. Second, each area must have a site plan which complements the tourism and recreation plan and which should be drafted and implemented according to the approved zoning. This plan's purpose is to provide indications for the conservation and adaptation of the natural capital within the NPA by providing indications for the layout and design of all installations, the regulations for visitor activities, and for the methodology for measuring the impact of tourism. Both instruments constitute the analytical framework for the previous section—GP for conserving natural capital.

With D.S. No. 018-2009 Minam, the state approved the «Regulations for Tourism in NPA», which names the National Service for Natural Protected Areas, Sernanp as the authority

that grants permission to develop tourism services in NPA and as the authority that should develop the process for granting that permission. At the same time, the regulations establish the legal modality of a tourism concession as the only kind that permits adaptation of infrastructure of any kind within a NPA. However, to date, Sernanp has not yet approved the terms of reference for a project, which is why no concessions have been awarded since the approval of the regulations.

When it comes to lodging in the NPA, the «Regulations for Lodging» (Reglamento de Establecimientos de Hospedaje. D.S. N° 029-20040-Mincetur) is the relevant legislation. Its aim is to establish the regulations for the classification, categorization, operation and supervision of lodging. It classifies lodging into the following categories:

- Hotel: from one to five stars
- Apart-Hotel: three to five stars
- Hostal: one to three stars
- Resort: three to five stars
- Ecolodge
- Inn

The abovementioned regulations establish the infrastructure requirements for each category, as such it can be considered an indicator for monitoring the operator's efforts to develop the physical capital (K) necessary for tourism activity. Nevertheless, since it doesn't specify what criteria the lodging should follow if it is located within a NPA, it is possible that operators' efforts will fall short of what is required for the existing physical capital in these areas.

Mincetur has concluded a process of delegating to regional governments oversight that affects the development of tourism infrastructure.[4] The government offices have various competencies that affect infrastructure and they should assume their supervisory and monitoring roles. Some of the important responsibilities they now have are to inspect whether tourism operators in the region are meeting standards, to ascertain what efforts they made to meet these standards, and to sanction those operators who aren't meeting standards.

4. In accordance with provisions in the Organic Law for Regional Governments (Ley Orgánica de Gobiernos Regionales Ley N° 27867) and the «Basis for Decentralization Law» (Ley de Bases de la Descentralización Ley N° 27783).

The government needs to supervise private sector actors to make sure they are meeting requirements. The Regulations for Sanctions for Affecting Nationally Managed NPA (Reglamento del Procedimiento Administrativo Sancionador por Afectación de las ANP de Administración Nacional. D.S. N° 019-2010-Minam) includes a regulation that delineates the sanction process for infractions committed within NPA (Table 5). The regulations are very general, so much so that any activity that alters the ecosystem of a NPA in any way can be considered an infraction and can be sanctioned. As such, they cannot be considered a sufficient incentive for operators to increase their efforts to conserve and adapt the environmental capital (*A*). At the same time, these regulations are only applied in natural areas that are nationally managed which could generate perverse incentives for the exploitation of resources and environmental goods within regional and community protected areas.

Table 5: Foreign tourist arrivals to Peru and NPA between 2007–2012

N°	NPA Sanction Types
1	Warning
2	Fine
3	Seizure
4	Temporary or permanent closure of locale where the infraction occurred
5	Suspension of license, permit, concession or any other authorization that exists

Source: D.S. 019-2010-Minam; developed by the authors.

It is worth noting that the concession contracts for tourism between the operators and Sernanp should include causes for termination and should include a regulation that protects the natural patrimony of the NPA and makes clear that the right to a concession does not give the operator the right to degrade the area's existing habitat and ecosystem. These contracts should be in complete agreement with the abovementioned regulations on infractions and sanctions so that the contracts become an incentive for tourism operators to increase their efforts to conserve the natural capital of the area.

When it comes to environmental impact, the National System for the Evaluation of Environmental Impact (Sistema Nacional de Evaluación del Impacto Ambiental, SEIA) is a single coordinated system for the prevention, supervision control and early correction of negative impacts from human activity related to investment projects. For any activity taking place within an NPA or its buffer zone Sernanp must first approve the environmental management instruments. Once Sernanp has given a favorable opinion, the instruments must be approved by the corresponding sector, which, in this case, as per the General Tourism Law, is Mincetur.

3. ECONOMIC INCENTIVES IN THE REGULATIONS

The 1992 Convention on Biological Diversity, which has, to date, 193 signatories including Peru, includes in its framework the formulation and implementation of economic incentives for the protection of biodiversity and ecosystems (CBD 2013). We reviewed the regulatory framework for ecotourism as a case study for the implementation of GP and were able to identify only one incentive that is in line with a GE: tourism concessions in NPA. Unfortunately, the regulations do not include the critically important terms of reference needed to implement a project and, for this reason, to date, not a single concession has been awarded in an NPA. Just as it is feasible to create economic incentives, it is important to note how the lack of clarity in these regulations could create disincentives by generating uncertainly about the rules of the game, by attracting short-sighted entrepreneurs, or by creating perverse incentives that promote behavior inconsistent with environmental sustainability of the development of a GE. The absence of clear requirements poses a related risk: that without incentives to internalize environmental costs or to make long-term plans, the management of the area will be unsustainable. This could lead to the degradation of the environmental services the area provides. Our review of the regulatory framework allowed us to identify a series of gaps or vague requirements for tourism activities in NPA which we analyze below.

A. On tourism concessions in NPA

The modality of a concession, which is awarded for a period of 40 years, creates both direct and indirect economic incentives to conserve the biological diversity within the concession area so as to ensure long-term profitability (Kaimovitz and Angelsen 1999). For this incentive to function as expected—for the tour operator to be able to perceive long-term economic benefits from the area—he or she must be able to exclude others from using the area's resources. The concept of a concession is the only legal modality that allows for the implementation of infrastructure projects and economic use of public landscapes and Sernanp is the national authority that grants the right to develop tourism activities. But there are gaps in the regulations needed to implement a concession. For instance, the regulations don't include specifications for how to prepare or present projects.

B. On the regulations

The ability to earn money by developing tourism and recreation activities that promote conservation creates an economic incentive for private investors to undertake these activities. Their earnings will increase if the value of the visit also increases because visitors will be willing to pay more for their visit. One way to increase the value of the visit is to improve the quality of life of the local communities so that they get involved and committed to conserving the NPA and so they can offer guiding services and information to visitors. (Nycander 2010).

The only kind of tourism in protected areas that is regulated at a national level is tourism that occurs in nationally administrated areas, excluding from regulation PCA and RCA. The lack of regulation of these areas creates a perverse incentive that generates the risk that investors will externalize the costs of waste management and the materials used to build roads and lodging in a bid to reduce costs and maximize earnings. While the private and regionally managed protected areas represent only 2.07 percent of Peru's land mass (an area equivalent to the department of Libertad) it would be inconsistent with a GE to ignore the risks to conservation, natural resources and ecosystem services, and to the habitats of the most vulnerable populations of these remote locales. Indeed, operators could strategically choose to work in RPA and PPA instead of NPA for this reason. Furthermore, the master plan for each NPA establishes where tourism activities can be undertaken within the area and operators should respect these. Since Sernanp has the power to penalize those who do not comply with these master plans there is an economic disincentive for developing unauthorized tourism activities. This disincentive will only be effective when the threat of sanctions is credible and this depends on having resources available to area managers for supervision and inspection.

C. On the site plans for tourism

These plans require operators to use a methodology to measure the impact of tourism in the NPA and should be submitted to the leadership of Sernanp. The questions that operators must answer regarding infrastructure are very general and don't provide the needed incentive for tourism operators to comply with specific parameters that will keep their impact to a minimum in NPA and their buffer zones[5]. Rather the questions are aimed at ascertaining the state of the tourism services but not their impact nor what energy saving and waste management measures are to be taken in the area. The master plan does not establish which methodology should be used to measure tourism impact in the NPA. This creates a perverse incentive by allowing the tourism operator to choose the methodology which generates the risk that impacts are underestimated or that different operators in an area use a different methodology. The solution to this problem would be for corresponding authorities to establish standards for infrastructure in NPA and for negative impacts to be identified with a single methodology, making it possible to compare different tourism proposals within a single NPA.

D. On the construction of infrastructure

While the «Lodging Regulations» (Reglamento de Establecimientos de Hospedaje. D.S. N° 029-2004-Mincetur) set forth the requirements for the lodging infrastructure needed to

5. To date neither Mincetur nor Sernanp have established parameters for infrastructure within NPA.

offer services to tourists; it does not contain any additional or specific criteria for lodging that is constructed within a NPA beyond what is included in the general national construction regulations. There are no minimum standards for solid waste management, gray water management, energy sources, or limits of guests. This gap in the regulation could create a perverse incentive for many operators who, wishing to minimize costs, will comply with Mincetur's standards but will fail to take measures to reduce the negative impacts of their tourism activities within NPA.

E. On the instruments for environmental management

The purpose of an environmental certification is to ensure the minimization of the environmental impact of an activity. At the same time, a certification is a kind of disincentive for illegal activities, if it is obligatory. Undertaking an economic activity without the corresponding environmental instrument results in a higher cost for the interested party if he decides not get certification because when he is discovered, he will have to pay fines and runs the risk of his operation being shut down temporarily or even permanently. For any investment project, be it public or private, an environmental impact statement (EIS) or an environmental impact assessment (EIA) is obligatory and serves as an indirect incentive for the conservation of the NPA because it acts as a kind of certification, informing the market of the sustainability of the tourism activities taking place inside the NPA.[6] The operators that attain the certification can transfer the cost of maintaining it to the visitors, ensuring the conservation of the area.

If the Peruvian government wants to align its tourism activity in NPA with a GE it must fill in some of the legal gaps. To identify steps to take to accomplish this, we interviewed officials from various government offices, such as Sernanp, the Directorate General of Tourism (Dirección General de Turismo), the Directorate General of Tourism Development (Dirección General de Desarrollo Turístico) — the latter two within Mincetur — and tourism experts within various NPA including biologists, architects and tourism operators. The responses called for broadening the criteria for establishing tourism infrastructure in NPA, and especially for strengthening the tourism concession system, the only legal mechanism which allows for construction of facilities and one which is aligned with the positive incentives for sustainability that private property affords.

6. The EIS should be included in projects that don't have significant negative environmental impacts. EIA are obligatory for projects whose characteristics, scale and/or relocation can cause significant negative environmental impacts either in terms of quality or quantity. These require thorough analysis to review and propose management strategies.

The proposed regulations, with guidelines for the construction of tourism infrastructure in NPA, is one that is directed (in the economic model in Section 2) at maintaining the quality of the natural capital assets; increasing the physical capital assets by internalizing environmental costs; and at elevating the quality of the physical capital assets. This is achieved by minimizing the impact of the ecotourism activity and by getting local populations involved. Therefore it is advisable that the concessionaries are obligated to:

- Analyze the characteristics of the setting, including soil type, topography, vegetation, bodies of water, and wildlife, when proposing buildings for construction.
- Categorize the access routes
- Avoid depositing rubble or moved earth in bodies of water
- Use the sun and the wind as factors in the design of the infrastructure
- Let the geography inform the building criteria
- Prioritize locals when hiring workers
- Save the maximum possible amount of energy to increase profits, considering the limited access to services that NPA tend to have. Program the use of electronic and electric devices, prioritize the use of gas, program automatic shut off for air conditioners, use energy saving light bulbs, take advantage of natural light.
- Save water by installing water saving fixtures and directing waste water to treatment plants, septic tanks and percolation pits.
- Implement policies for the reduction, reuse and recycling of materials in addition to making different, separate recycling bins accessible to workers and visitors.
- Implement internal policies for conserving water and managing waste and explain these to the visitors.

The regulations will increase initial costs in exchange for the increased probability of sustainability. Because these recommendations for infrastructure will increase costs in the short term, they will only be viable in the framework of concessions, because concessions allow for long term planning, making these initial investments profitable.

4. FINAL THOUGHTS AND RECOMMENDATIONS

This article uses the framework of a GE to examine the GP that are available for a specific economic sector: ecotourism within protected areas. Ecotourism considers three aspects fundamental to the development of a GE: (i) it is labor and natural capital intensive; (ii) it uses ecosystem and landscape services from this natural capital; and (iii) it increases the human capital of the visitors. For this reason this activity is an ideal candidate for creating a GE. We reviewed the current regulations for ecotourism in NPA, identified the incentives

in place, and examined to what extent they are aligned with a GE or could be perverse, that is to say conducive to behaviors that impede the development of a GE.

After reviewing the potential for economic development within the framework of a GE, we believe that ecotourism in NPA represents a viable alternative for the transition to a GE in that it can create social wellbeing and the conserve natural resources and the ecosystem services they provide. In addition, it can contribute to the conservation of traditional cultures and provide employment for the local population.

To ensure that this activity is developed with low carbon emissions, renewable technologies, and fair labor standards and that it promotes social development — in other words, so that it is consistent with a GE — it is essential that the regulations for this activity include clear economic incentives because that will ensure the implementation of policies that are binding for private sector actors.

The few regulations that do exist are only applicable within nationally managed NPA, leaving a loophole for the management of RPA and PPA. What's more, the legal instruments needed to award concessions for the development of ecotourism in NPA are missing. Also missing are regulations for tourism infrastructure construction that are specific to NPA. Our analysis of economic incentives within the regulations reveal many gaps for the development of the subsector within the framework of a GE. This could pose problems for the conservation goals of each NPA by increasing the risk that the activities that are developed are counterproductive for the population and flora and fauna of the area, with repercussions at the local, regional and national level. As our analysis reveals, if Minam maintains its desire to move forward with the development of a GE, there is still much work to be done in the ecotourism sector. Our recommendations for regulatory changes seek to provide clear and concrete steps for the construction and maintenance of infrastructure within the NPA in the framework of a GE. An in-depth analysis of this issue is needed as is the proper management of these activities. We also propose that actions be taken to save water and energy and that the management of solid wastes be given careful consideration as this can disrupt the ecosystems of the NPA, affecting flora and fauna. Studies like this one are needed for each sector, and even for each subsector, if the paradigm of a GE is to be adapted at a national level.

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