

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/328156580>

Sustainability as Corporate Strategy: Importance of the Values of Ecosystem Services for Businesses: Essays in Honour of Anup Sinha

Chapter · January 2018

DOI: 10.1007/978-981-13-1894-8_10

CITATIONS

0

READS

85

1 author:



Nilanjan Ghosh, Ph.D

Observer Research Foundation

77 PUBLICATIONS 232 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Integrated River Basin Management on Brahmaputra [View project](#)



Ecological Economics [View project](#)

Partha Ray · Runa Sarkar · Anindya Sen
Editors

Economics, Management and Sustainability

Essays in Honour of Anup Sinha

 Springer

Economics, Management and Sustainability

Partha Ray · Runa Sarkar · Anindya Sen
Editors

Economics, Management and Sustainability

Essays in Honour of Anup Sinha

 Springer

Sustainability as Corporate Strategy: Importance of the Values of Ecosystem Services for Businesses



Nilanjan Ghosh

1 Introduction

Sustainability, as a concept and in practice, is increasingly being acknowledged by businesses across the world as part of their core operational strategy, and is being prominently adopted for market positioning and branding. Though apparently this trend is more prominent in the developed world, many businesses in the developing world are also catching up (Ghosh et al. 2016). Yet, a large component of business enterprises especially in the developing and the less developed world still remains ignorant of the significance of “sustainability” as a corporate strategy. In the process of protecting their own bottom-lines, the questions that loom large before them are: Why should businesses bother about sustainability? Does it affect their profitability?

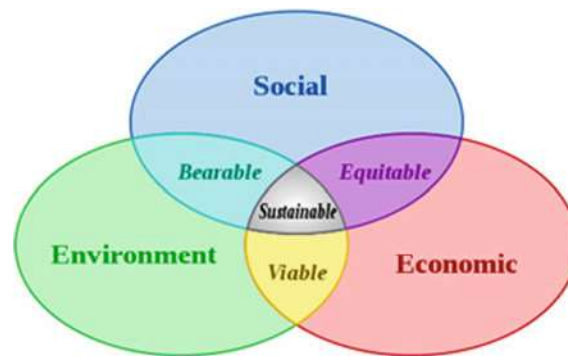
Despite the growing recognition of sustainability in some domains of business, the concept remains abstract and theoretical for many businesses. At a macro-policy level, the recognition of sustainability as a triad or trinity of economic, social, and environmental concerns that need to be reconciled (see Fig. 1) is more ubiquitous in paper, though less in practice. At the firm level, the Brundtland Commission definition of sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”, is often treated as an “ethical”, “normative”, and a “value judgmental” concern. That is precisely why even today, sustainability is treated by a large component of the business as a “social responsibility”.

However, at a micro-level, organisations accept that protecting its capital base is important for its own bottom-line. Yet, they hardly recognize the possibility of

N. Ghosh (✉)
World Wide Fund for Nature, New Delhi, India
e-mail: nilanjan.ghosh@gmail.com

N. Ghosh
Department of Economics, Observer Research Foundation, Kolkata, India

Fig. 1 Source https://en.wikipedia.org/wiki/Sustainable_development



extending the notion to the world's natural and human resources. In fact, till a point in time, environmental and ecological concerns were perceived in most parts of the world as an ethical argument which might be anti-developmental (Krehmeyer et al. 2010; Ghosh 2015). This entire feeling made conservation initiatives move asymptotically with the core human business, and was initially taken as something external to the fundamental human existence.

In this paper, I talk of sustainability primarily from the perspective of conservation. It is in this context, I bring in the notion of Creating Share Value (CSV), as conceived by Porter and Kramer (2006 and 2011) in a broader context, as also the importance of ecosystem services and their valuation in shared value creation. As such, in course of arguments, it will emerge that by embracing sustainability as corporate strategy, firms are essentially creating shared value. This is exhibited in this paper through the application of valuation of ecosystem services. In the process, the ensuing discussion also entails how the firms need to use these values of ecosystem services in the course of decision making.

In Sect. 2, I talk of the changing paradigm from looking at conservation needs as moral-ethical concerns to looking at conservation as selfish human needs. The role of ecosystem services (i.e. services provided by ecosystem to human society for free) is crucial here. Section 3 talks of the CSV notion, and how it is embedded in sustainability as corporate strategy. Section 4 talks of the importance of valuation of ecosystem services, and exhibits two cases of ecosystem service values at two different scales: one at the scale of a wetland ecosystem, and the other at the scale of a landscape. In this context, it also brings in the notion of ecosystem services as “GDP of the poor” thereby linking ecosystem services to livelihoods. Section 5 consists of the concluding remarks highlighting the significance of conservation initiatives by the firms for their own long-run sustainability. In the process, it discusses how firms may use the ecosystem service values for the cost-benefit analysis of projects that entail their interventions in the ecosystem. Thus, it argues that while embracing sustainability as corporate strategy is about creating sustainable bottom-lines with the firm's embedment in the broader ecosystem, valuing ecosystem services and integrating them in the decision-making is about creating shared value.

2 The Changing Perception

A few decades ago, “conservation as an anti-developmental force” was also the feeling in the developed world. But, the accrual of knowledge and scientific understanding at the interface of nature, economy, and society ever since the 70s started changing this perception in the developed world. The extensive development of science in this domain also made humans understand that there is bidirectional causality between ecosystem and the economy. Ever since the Club of Rome’s prediction of apocalypse in their *The Limits to Growth* thesis (Meadows et al. 1972), the human response to the “approaching doomsday” has been characterized by extensive research, gradual knowledge accrual through global assessments, and conventions.

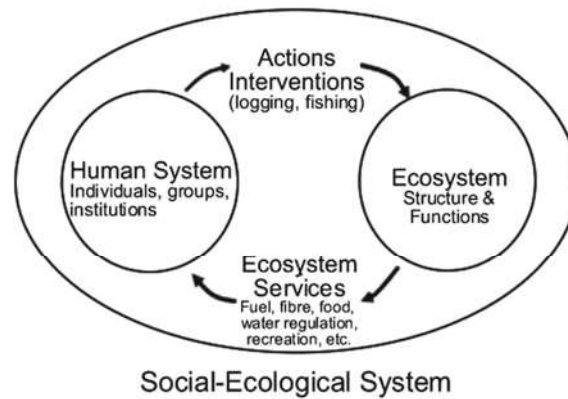
The Earth Summit of 1992 adopted the Brundtland Commission Report’s definition of “sustainable development”, and opened the Convention of Biological Diversity (CBD) for signature. The CBD became effective from December 1993. With CBD, for the first time, the framework of international law recognised conservation of biological diversity as an integral part of the development process.

On the other hand, when David Pearce and Kerry Turner talked of their magnum opus *Circular Economy* in 1989, the term caught up like wildfire in the broader discourse of the interactive dynamics of environment and development. Circular economy marks a clear departure from the very reductionist linear growth thinking of “take, make, dispose” to a more holistic paradigm that conceives of the economy as being embedded in the ecosystem (Pearce and Turner 1989). Therefore, the bidirectional causalities between the two forces (economy and ecology) are better acknowledged.

The *Millennium Ecosystem Assessment* (MA) of 2005 enhanced human understanding of the fact that the ecosystem functions in its own inimitable ways to provide ecosystem services (benefits) to the human society in the form of provisioning services (e.g., food, raw materials, genetic resources, water, minerals, medicinal resources, energy, etc), regulating services (e.g., carbon sequestration, climate regulation, pest and disease control, etc), cultural services (tourism, religion, etc), and above all, supporting services that are necessary for production of all other ecosystem services (e.g. nutrient recycling, gene-pool protection, primary production, soil formation, etc).

The economy-ecosystem linkage seemed much clearer with the better delineation of ecosystem services. Referring to Fig. 2, the social system creates economic forces and enforces economic actions due to the mismatch between needs and availability. “Actions” on the ecosystem are fundamentally meant to satisfy economic needs: Hence “Actions” are “Economic Activities”. “Economic Activities” emerge as interventions on the ecosystem structure and functions, and provide ecosystem services to human society. The proper delineation of “ecosystem services” helped in understanding the direct linkage between human society and biodiversity: for every bit of existence of human society, there is a critical need for the biodiversity as a “stock” to exist, to ensure the “flow” of these ecosystem services! Recent scientific assessments at this interactive interface like *The Economics of Ecosystems and Biodiversity*

Fig. 2 The social-ecological system



(TEEB), published in 2010, recognised that these ecosystem services are the “GDP of the poor”, as the poor’s incomes and survival are dependent on the ecosystem.

While recognising the importance of the food-chain in the context of the ecological balance so as to ensure the integrity of the ecosystem structure and functions in order to ensure the flow of ecosystem services, conservation goals become important. For businesses to survive, natural resources are needed. For sustainable management of the natural resources like forests, wetlands, rivers, etc. one needs to set the right conservation goals for flora and fauna, which through their natural functioning, support and sustain these resources, and provide ecosystem services.

Yet, there is no harm reiterating that till a point in time the businesses felt that the conservation needs of the planets do not really concern them. The entire environmental concern was not intrinsic to its core business and business plan. Pollution is an externality, and often government regulations force them to internalise costs of pollution. There was hardly a recognition that businesses inextricably depend on biodiversity through a well-defined supply-chain, whose recognition is obscure in the public domain, especially in India and the developing world. Later on, however, this dependence has been adequately recognised by the World Council for Sustainable Development in various publications (e.g. WBCSD 2008, 2013).

2.1 The WBCSD and Natural Capital Protocol

The very establishment of World Business Council for Sustainable Development (WBCSD) in 1995 bore ample testimony of the fact that businesses need to acknowledge their dependence on ecosystems for their functioning and existence, and the non-acknowledgement of this linkage can only lead to the extinction of the raw material base. The WBCSD is a CEO-led, global advocacy association of 200-plus international companies dealing exclusively with business and sustainable development.

Lately, the recognition of biodiversity conservation has become extremely important from the perspective of treating the biodiversity as “natural capital”. Natural capital is the world’s stocks of natural assets which include geology, soil, air, water and all living things. It is from this natural capital that humans derive the ecosystem services. The term “capital” therefore apparently has the same connotation as it has in traditional economic thinking where capital is thought to be an important factor of production: “natural capital” is the critical and necessary factor in producing ecosystem services. While new investment can lead to addition in capital stock thereby raising production, investment in “natural capital” can help in sustaining the good health of the ecosystem and its services.

At the same time, there is a need to produce comparable information on natural capital for better decision making so as to measure, value and manage natural capital as carefully as is done for financial capital. This will enable business to make a meaningful contribution to business, society and the environment. It is in this context that the Natural Capital Protocol has been initiated by the Natural Capital Coalition, which is a collaboration of the world’s leading institutions from business, science and academia, membership organizations, standard setting, finance, policy and conservation, subscribing to a common vision of conservation and enhancement of natural capital through initiatives by business.

The Protocol entails a standardized framework for identification, measurement, and valuation of the ecosystem services, thereby helping the firm understand its dependencies on nature and also the impacts of its initiatives on the ambient environment and the biodiversity. In the process, the Protocol helps inform business decision-making and presents the first step towards a consensus on a universal approach. The Natural Capital Protocol Toolkit sorts through the wealth of tools, methodologies and approaches available for natural capital measurement and valuation and maps them against the Natural Capital Protocol framework.

3 Embracing Sustainability and Creating Shared Value

The myopic perception of the corporate sector about the ecological concerns began changing with the notion of “sustainable business”, as they started understanding that their longer term survival is contingent upon the resource base that is steadily getting depleted; their long-term costs will only increase as they impede on the working of the ecosystem thereby diminishing the capacity of the ecosystem to provide its services; those with a “sustainable” and “green” business model will generally have a competitive advantage, and will earn their local community’s goodwill and see their efforts reflected in the bottom line. Businesses, being an integral component of the broader social-ecological system, are inherently dependent on the “natural capital” for their short-run and long-run survival.

As such, many businesses view their principal objective as making money. Others recognize a broader social role. Somehow, the lacking consensus between business leaders on this ground in the developing world is ubiquitous. Businesses continue

to face the trade-off between the need for making money for their survival, while searching for projecting their social face. There are many who are completely oblivious of their social role, and constant reiterations in various forums fail to infuse that culture. The concern of crony capitalism is not yet offset by social initiatives by businesses in India and south Asia: business has been criticized as a major cause of social, environmental, and economic problems; companies are widely thought to be prospering at the expense of their communities; at times trust in business falls to such a nadir that governments' corrective policies undermine competitiveness and sap economic growth.

Therefore, when viewed through the sustainability lens, the trade-off for the firm also arises between the choices of short-term rent-seeking behaviour, and long-term optimization. Porter and Kramer (2006 and 2011) have argued that firms' focus on optimizing short-term financial performance leads them to overlook the greatest unmet needs in the market as well as broader influences on their long-term success. Why else would companies ignore the well-being of their customers, the depletion of natural resources vital to their businesses, the viability of suppliers, and the economic distress of the communities in which they produce and sell? It is in this context that Porter and Kramer bring in the notion of CSV or "creating shared value"—a process by which companies could bring business and society back together by generating economic value in a way that also produces value for society by addressing its challenges. A shared value approach reconnects company success with social progress.

According to Porter and Kramer, firms can create shared value in three distinct ways: by re-conceiving products and markets, redefining productivity in the value chain, and building supportive industry clusters at the company's locations. This can be exhibited in the case of Nestlé, who being players in the global value chain in their various products, attempted to redefine their procurement process in coffee. They worked intensively with small-holder farmers of the poverty-stricken areas of the developing and less-developed world, who were trapped in the vicious cycle of low yield, poor quality, and environmental degradation. Nestlé joined hands with the farmers by advising them better on farming practices, helped growers secure inputs at better cost, and started offering premium for better qualities. Therefore, quality certification and better market linkages with rationalization of the supply-chain helped yields and quality increased the growers' incomes, the environmental impact of farms shrank, and Nestlé's reliable supply of good coffee grew significantly. This entire initiative created shared value which was embedded in the firm's strategic subscription to principles of sustainability.

Lately, by embracing sustainability, and by addressing social, economic, and environmental concerns, some Indian firms are in the process of creating shared value. With the recognition that in the long-run, the corporate sector is dependent on ecosystem services provided by nature like all human endeavours, and that such services affect the bottom-lines of the organisation in the long-run, sustainability is being increasingly viewed as part of corporate strategy. The Aditya Birla group and Tata Power are important cases in this regard (Ghosh et al. 2016).

4 Understanding the Importance of Ecosystem Services

Given this background, it is important that the corporate sector understand the important role of ecosystem services for their own business and for the survival of the global community at a bigger scale. At the very next stage, it is important to understand the footprint created by their own initiatives:—this entails understanding the ecosystem service losses created by the projects or initiatives. This is where the importance of natural resource accounting enters the scene. Essentially, this entails putting a monetary value to ecosystem services (Bockstael et al. 2000; Costanza et al. 1997, 2014).

Valuation of ecosystem services becomes important in various respects. Firstly, a monetary value to ecosystem services helps the community understand their importance to human society (Chopra and Adhikari 2004). Secondly, valuation offers a somewhat objective instrument for decision making. Thirdly, valuation of ecosystem services can raise awareness of the market and the policy-makers on the importance of the ecosystem services under consideration. Fourthly, ecosystem service valuation can help legal proceedings determine damages where a party is held liable for causing harm to another party: Pollution from upstream areas affects the downstream ecosystems negatively. To deal with compensation policies properly, the economic value of the harm so caused needs to be assessed to obtain the extent of the negative externalities. Fifthly, valuation of ecosystem services can help revise investment decisions: e.g. infrastructure development, that might otherwise ignore the related harm expected to be caused to the natural environment and consequent loss to the ecosystem services.

The firm's intervention in such a scenario can happen in the following way:

1. The firm needs to see to what extent its working or new projects intervene into the ecosystem;
2. In the process, it needs to hire or give contract to a consulting economist to assess the value of the loss in ecosystem services that its intervention may cause;
3. For the purpose of sustainability, it needs to create processes to offset the negative impacts. Valuation of ecosystem services can again play a role for monitoring the change.

As such, companies like Tata Power and Hindustan Unilever in the Indian context, and Nestle and many others in the global context, are looking at the impact their operations are having on the environment as well as the positive or negative impact on the communities in which they operate. Understanding these impacts can drive improvements in corporate strategy, day to day operations and ultimately in financial performance.

4.1 *Valuation of Ecosystem services: two cases*

In this section, I talk of two cases of valuation of ecosystem services: one at the scale of an ecosystem, and the other at the scale of a landscape. Both the cases are studies conducted under the aegis of the *Ecological Economics programme* housed in the Policy, Research, and Innovation Division of World Wide Fund for Nature, India (Ghosh et al. 2015). The ecosystem chosen is that of the Kunigal wetlands in the southern state of India, Karnataka. Kunigal wetland is a peri-urban wetland located between 13.02 °N and 77.03 °E at an average elevation of 773 m in Kunigal, Tumkur district of Karnataka state. The lake has a total spread area of 416.20 ha and a gross water storage capacity of 532.2 MCFT. The lake is mainly fed by the Hemavathi River and from the rain water from the catchment area of 33,914 ha. The catchment mainly includes agricultural land, barren land, and scrubland.

On the other hand, the landscape chosen is the Terai Arc Landscape (TAL). TAL in Uttarakhand is among the most densely populated rural areas in the country as more than 8 million people reside there (2011 census). During the last two decades, the population in TAL has increased by as much as 54.2%, which is 9% above the national average. Most of the poorer communities in TAL depend on the forest for their subsistence.

4.1.1 **Valuing ecosystem services of Kunnigal Wetlands**

Wetlands generally provide important ecosystem services, upon which societies depend. They play a vital role in: contributing to food security by enabling direct availability of products such as fish, crops grown, wild fruits and vegetables; providing cash income from sale of raw materials and processed products; and contributing to increased crop and livestock yields as a result of improved productivity from use of water, silt, and through climate moderation. Apart from the various provisioning services, they also support various regulating (carbon sequestration, microclimate regulation) and cultural services (tourism).

The Kunnigal Lake provides many ecosystem services that include providing habitat for fish-breeding, water for domestic and agriculture, support for local biodiversity including migratory birds, aquatic vegetation, flood control, purification of wastewater, and groundwater recharge, among other services that are of immense value to local communities. The lake is an important religious place, with a shrine dedicated to the local deity—Someshwara temple.

The biodiversity of the lake includes 63 species of resident and migratory species of birds such as shovelers, pintail, pochard, spoonbill, painted stark, spot billed pelican, sandpiper, herons, whistling ducks, gadwal, and teals among others. Similarly the fish species included Common Carp, Catla, Rohu, Mrigal, Silver Carp, Grass Carp, Tilapia and Cat fish. The local people have been using the lake resources since ancient times to sustain their livelihoods. Currently the lake is leased to fishing co-operative to culture and harvest commercial fish.

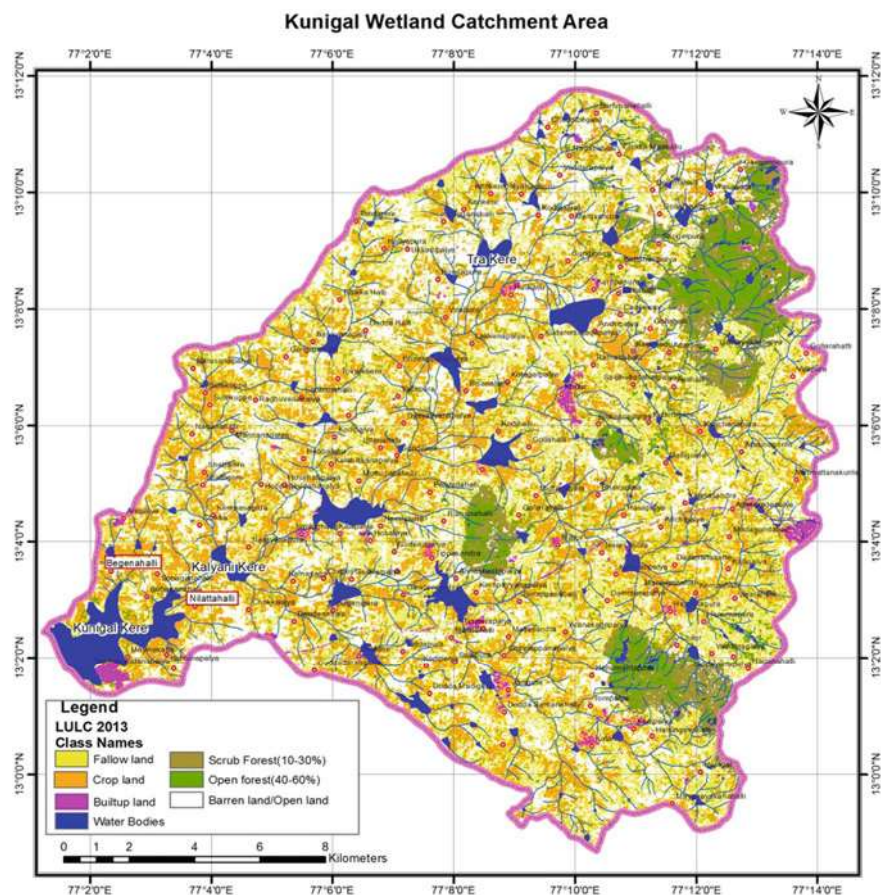


Fig. 3 Kunigal wetland catchment area

The lake is surrounded by a number of villages and the town of Kunigal (Fig. 3). For the current study, three villages—Bagenahalli, Neelathalli and Mavanakatte playa, located in the vicinity of the lake were selected. According to the census (2011) the total population of these villages were 1903 (920 males and 983 females) in 530 households. The villages have a primary school and there are no high schools, secondary schools or college.

A vast majority of the people living adjacent to the lake areas directly use the wetland resources for their sustenance. The valuation of Kunigal Lake in Tumkur is carried out by considering essentially seven ecosystem services, namely, water for agriculture, domestic water supply, fishery, and fodder, as provisioning services on one hand; and water purification, carbon sequestration, and micro-climate regulation as regulating services on the other. This valuation study has also gone ahead to

Table 1 Valuation of Selected Ecosystem Services of Kunigal Wetlands

Ecosystem Service	Value (in million)	Classification	% of each	Level
Domestic water use	25.56	Provisioning	2.96	Meso
Water for agriculture	11.8	Provisioning	1.37	Local/ Micro
Fishery	8.6	Provisioning	1.00	Local/ Micro
Fodder	1.4	Provisioning	0.16	Local/ Micro
Water purification	81.21	Regulating	9.41	Meso
Carbon Sequestration	749.26	Regulating	67.41	Global
Micro-Climate Regulation	152.61	Regulating	17.69	Meso
Total Value of Existing Ecosystem Services	1030.45			
Potential Tourism benefit	159.37 (with 137.26 million as potential revenue)	Cultural		

estimate the potential benefit annually if tourism is developed, as tourism is not yet developed in that region.

The summary findings of the study are given in Table 1.

Therefore, as shown in Table 1, the total value of ecosystem services in 2015–16 was INR 1030.45 million, while there was also an untapped potential of total tourism benefit of INR 159.37 million that can yield an annual revenue of INR 137.26 million.

In this context, it was found that the wetlands provide 24% higher value than the average incomes of the households. This creates a clear case for conservation, as the community at the local and meso levels will lose out 24% more than their annual incomes if the lake is lost. As such the loss will be even more if one considers the global benefit of carbon sequestration. This creates a clear case of conservation.

This study contributes to tackling under-investment in environmental assets through better economic analysis for environmental investments, including mobilization of government and donor resources for environment. In particular, it provides lessons for sustainably managing environmental resources to benefit local community which uses the wetlands as their main source of livelihood as well as improving its management for its sustainable use.

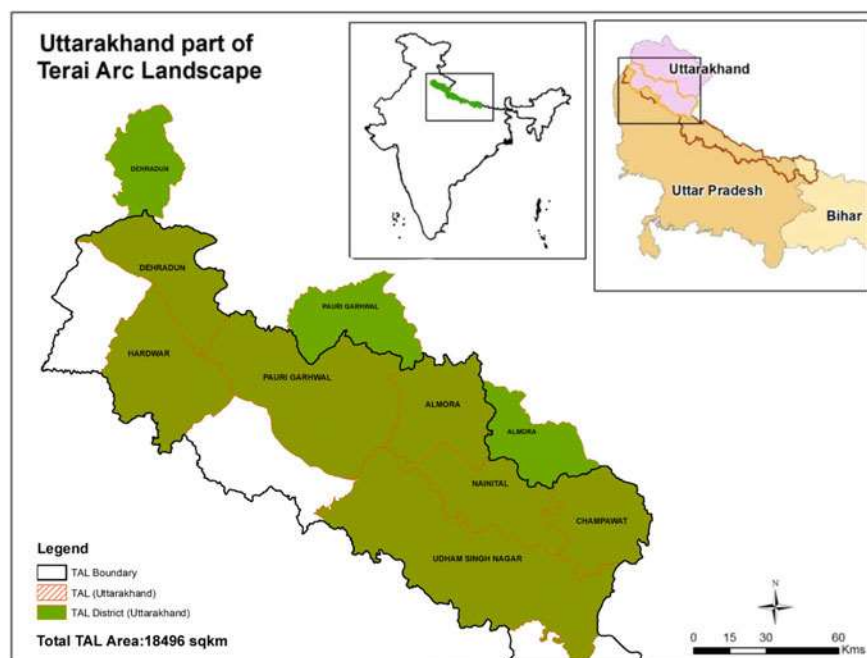


Fig. 4 Uttarakhand part of Terai Arc Landscape

4.1.2 Terai Arc Landscape in Uttarakhand

In the Terai Arc Landscape (TAL) in Uttarakhand, natural resource based occupations are predominant. Only 7% of the population uses purchased fuel such as liquefied petroleum gas (LPG), coal and kerosene in the entire TAL-India, the remainder use firewood collected from the forests. One needs to note here that the entire districts of Dehradun, Haridwar, Pauri Garhwal, and Almora do not fall in the TAL region (Fig. 4).

Values of nine ecosystem services of the TAL have been estimated. These are provisioning services like, water (used for agriculture, hydropower, and drinking water), fuel wood, and fodder; regulating services like carbon sequestration, and microclimate regulation; and cultural services like tourism (nature and pilgrimage). These have been estimated in the 2005-06 prices using standard valuation methods. Then the values of 2010-11 and 2015-16 have been arrived at by using Wholesale Price Index (WPI) as deflators.

The values of the ecosystem services in the landscape are given in Table 2.

The sum of the values of the nine ecosystem services in 2005-06 was INR 227.52 billion (US\$3.5 billion). The same value turned out to be INR 390 billion (US\$6 billion) in 2015-16, and INR 344 billion (US\$5.3 billion) in 2011-12.

Table 2 Value of selected ecosystem services in Terai Arc Landscape in Uttarakhand

Item	Value in 2005–06 (Rs. million)
Water for agriculture	13886.82
Water for hydropower	440.68
Carbon sequestration	66078.20
Tourism (Corbett)	3680.00
Drinking water	2785.64
Fuelwood	41995.50
Microclimate regulation	48011.40
Fodder	3015.54
Religious tourism in hardwar	47623.51
Total	227,517.28

These are conservative estimates for various reasons. First of all, we have confined our analysis to a few selected ecosystem services, and have not extended it to obtain the full gamut of the services provided by the ecosystem. We have considered only nine ecosystem benefits and not the other ecosystem services like climate regulation, flood control, and many other services that Verma et al. (2015) considered while calculating economic valuation of select Tiger Reserves in India. This was more so because of the heterogeneity of the ecosystem that would have made estimation a complex affair. Secondly, there remains the problem of double counting while considering the supporting services of the ecosystem. To remove that possibility completely, we have not considered any supporting service in the analysis. Thirdly, while we have considered only certain aspects of the cultural services, e.g., religious tourism has been considered only for Hardwar, and nature tourism has been considered only for Corbett Tiger Reserve and the buffer and adjoining areas where the tourism has developed. There are many other aspects of nature tourism, e.g. Nainital, by itself, is a major tourist destination. Fourthly, the value of the benefits obtained by communities downstream of the landscape has not been considered. Carbon markets have been taken at one of the lows at USD 10 per ton of CO₂.

Next comes the question of ecosystem dependency of the community. In 2005–06, the estimated total income of the TAL districts was INR 191 billion. This is based on the estimates of population given by Census 2001, and district per capita income estimates by the Central Statistical Organisation. Therefore, the nine ecosystem services (estimated as INR 227.52 billion) yielded 19% more value than the total income of the region. It can therefore be argued that if the landscape ecosystem is destroyed through land use change, one needs to compensate the local community in TAL Uttarakhand by spending 19% more than the total value of the economic output of the landscape.

4.1.3 GDP of the poor

This paper has now discussed the importance and application of valuation of ecosystem services beginning from the ecosystem to the landscape scale. The values that we have arrived at are approximations, conservative, and “tip of iceberg” estimates. Yet, they are indicative of the fact that the contribution of the TAL ecosystem in Uttarakhand to the human community is at least INR 390 billion or USD 6 billion, which by itself is higher than the income of the community of the region. Similarly, a small ecosystem like the Kunnigal lake provides as much as USD 17 million.

It is clear that the population as a whole derives a substantial value from the ecosystem, which, at times, may be more than what they obtain from the economy. It is in this context, we also bring in the idea of the “GDP of the poor”, as ecosystem services have been defined in the framework of TEEB (2010). The poor are more dependent on the ecosystem services than the rich (Martinez-Alier 2011).

In Kunnigal, the ecosystem dependency ratio (ratio of sum of values of ecosystem services and total incomes of the economy of the ecosystem) has turned out to be 1.24, while in 2005–06 in TAL, it was 1.19. However, one needs to note that as per our estimates, the ecosystem dependency ratio has been diminishing in TAL, as estimated in 2011 and 2015. This is because the incomes from other sources especially the tertiary sources that are not dependent on these nine ecosystem services have increased. The *ED*-ratio in 2011 is 0.52, and in 2015, it is 0.41. In any case, one may not ignore the fact the ecosystem services add up 40% more benefits to the earnings of the local community.

One needs to consider here that the ecosystem dependency ratio of the poor will be substantially higher than this. More than half the population in the TAL—Uttarakhand is living below poverty levels and an earning member of a household earns as little as US\$ 1.9/day. The ecosystem dependency of these households is higher than those earning average per capita incomes. Hence, any policy towards land-use change in the landscape and ground actions leading to land use change in the wildlife habitats and corridors should be considered very carefully. One needs to take into account the scarcity value of the ecosystem services, i.e. the economic value loss with ecosystem service loss, as it is the poor who suffer the most from the loss in ecosystem services.

While land use change is planned, one needs to assess on how much of the habitat will be destroyed due to that. In those cases, poorer people will lose out a substantial amount of their “GDP” or “incomes” provided by the ecosystem, and they need to be compensated for the loss to the tune of the damage caused to them. However, this compensation would not take into account other economic impacts from the loss of services such as flood control, water recharge, and soil retention, which could lead to huge costs due to disasters incurred such as floods and landslides.

It therefore becomes important that the results of such an analysis are shared with policy makers to demonstrate that, in terms of economic development, it is critical to take into account the net cost of losing ecosystem services and the impacts of this on the rural poor. If a valuation from a long term development perspective is

undertaken, then it will be clear that the cost of damaging ecosystems and disrupting their services will be higher than the short term gains from some planned projects.

5 The Steps Forward ...

In the wake of globalization and global standards of market efficiency, regulation, and competition, the Indian corporate sector needs to balance increased regulation, protecting the brand and ensuring stable supply chains with seeking opportunity for enhanced performance, thereby using the sustainability agenda for strategic advantage. The new strategic vision entails developing and integrating a detailed sustainability vision into the long-term strategic plan in a way that creates lasting value whilst also building public trust is a common challenge for all types of organisations.

Therefore, it becomes increasingly important for the firm to look at the values of the services provided by the ecosystem in which they plan to intervene. The footprint of the firm may be visible through its activity chain, beginning from procurement to marketing. As shown in the two cases of the valuations, firm needs to take into consideration this value for their own strategic decision making for a project in an ecosystem or the landscape.

At the same time, merely looking at one-year value may not be sufficient. The values of the short-run benefits, that the businesses often look at for justifying their projects, might be extinct in the medium and long-run. What might remain after the short run are apparently the costs incurred from lost ecosystem services that affect the broader human endeavours including livelihoods and businesses! Again, this impact might not only be a temporal phenomenon, but spatial too. While the intervention of the business might affect the ecosystem functioning, and eventually the services, the impacts of their operations might not be confined locally. It may extend much beyond through a ripple effect. Unfortunately, even linear infrastructure projects in India do not often take into consideration the value losses due to ecosystem service losses across space and time.

More importantly, *Sustainability Reports* are becoming popular these days. These reports consist of various initiatives on water management, resource management, energy management, employee benefits, community development, etc by the organisation, and are disseminated through various modes of communication. *Sustainability Reports* have become important strategic tools for positioning the organisation by informing stakeholders about the sustainability performance, and progress made over time in terms of the various indicators. To make sure how the organisation is accurately reporting on its corporate activities to support climate change, resource scarcity and socially responsible investing, assurance from a trusted adviser is sought. Valuation of ecosystem services will also be important here to report on not only the footprint, but also to report on the value created through afforestation measures that have been conducted by many companies.

What is becoming increasingly clear is that a sound sustainability strategy not only protects but also rebuilds a company's reputation, drives innovation and employee

engagement, it satisfies consumers and attracts and retains top talent. This is akin to CSV in the way conceived by Porter and Kramer (2011). At a different level, it demonstrates compliance and leads to market differentiation, thereby helping positioning of the organisation with a unique reputation in the market. In this context, integrating ecosystem services values in firm's decision making for better ex ante or ex post impact assessments, and setting conservation priorities needs to be seen as a cornerstone of sustainability.

To conclude, the values of ecosystem service losses/gains need to be taken into consideration in the benefit-cost ratio of any project intervening into the working of the ecosystem (Barber et al. 2014). These values can do two things: a> if the net benefit-cost ratio is greater than unity, then it justifies that the firm's interventions are not only financially viable for itself, but also socially and ecologically viable; b> if the benefit-cost ratio is less than unity, this might lead the firm to alter investment decisions. Such valuation can also help the firm in placing social, economic, and ecological justifications of their projects in the public forum. While embracing sustainability as corporate strategy is about creating sustainable bottom-lines with the firm's embedment in the broader ecosystem, valuing ecosystem services and integrating them in the decision-making is about creating shared value.

Acknowledgments This paper is largely based on the multiple research projects/papers of the author in his capacity as Senior Economic Adviser at WWF-India. Substantial parts of the ideas presented in this chapter were first published in 2016 by Policy Research and Innovation Division of WWF-India as Issue Brief No. 2 titled, "Valuing Ecosystem Services at the Scale of a Large Mammal Landscape: The Case of the Terai Arc Landscape in Uttarakhand", co-authored by Nilanjan Ghosh, Dipankar Ghose, G. Areendran, Divya Mehra, Ambica Paliwal, Krishna Raj, Kiran Rajasekariah, Ambika Sharma, Anil Kumar Singh, Shashank Srinivasan and Sejal Worah. The same has been reproduced here with permission from WWF India, which further attributed it under Creative Commons.

References

- Barber, C. P., Cochrane, M. A., Souza, C. M., Jr., & Laurance, W. F. (2014). Roads, deforestation, and the mitigating effect of protected areas in the Amazon. *Biological Conservation*, 177, 203–209.
- Bockstael, N., Freeman, A., Kopp, R., Portney, P., & Smith, V. (2000). On measuring economic values for nature. *Environmental Science and Technology*, 34(8), 1384–1389.
- Chopra, K., & Adhikari, S. K. (2004). Environment development linkages: Modelling a wetland system for ecological and economic value. *Environment and Development Economics*, 9(1), 19–45.
- Costanza, R., d'Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B. et al. (1997). The value of the world's ecosystem services and natural capital. *Nature*, 387, 253–60.
- Costanza, R., de Groot, R., Sutton, P., van der Ploeg, S., Anderson, S. J., Kubiszewski, I. (2014). Changes in the global value of ecosystem services. *Global Environmental Change*, 26, 152–58.
- Ghosh, N. (2015). *Need to make conservation everybody's business*, a. Retrieved October 14, 2017 from http://www.abplive.in/blog/need-to-make-conservation-everybodys-business-239921?rs_type=internal&rs_origin=section&rs_medium=article&rs_index=6.
- Ghosh, N., Rajasekariah, K., Babu, S., & Gopala, A. (2015). *Valuation of ecosystem services of Kunigal Wetlands in Tumkur District, Karnataka, Unpublished draft for circulation*. WWF-India.

- Ghosh, N., Tapsall, P., & Shunmugavel, A. (2016). *Sustainability as corporate strategy: The emerging dimension, PRI commentary No. 1*. WWF India.
- Ghosh, N., Ghose, D., Areendran, G., Mehra, D., Paliwal, A., Raj, K., et al. (2016a). *Valuing ecosystem services at the scale of a large mammal landscape: The case of the Terai Arc landscape in Uttarakhand, policy research and innovation division, Issue Brief No. 2*. New Delhi: WWF-India.
- Krehmeyer, D., Lenox, M., & Moriarty, B. (2010). *Sustainability must be central to corporate strategy now*. Retrieved October 14, 2017 from <https://www.forbes.com/2010/06/16/sustainability-corporate-strategy-leadership-citizenship-ethisphere.html>.
- Martinez-Alier, J. (2011). Environmental justice and economic de-growth: An alliance between two movements. *Capitalism, Nature, Socialism*, 23(1), 51–73.
- Meadows, D. H., Meadows, D. L., Randers, J., & Behrens, W. W., III (Eds.). (1972). *The limits to growth: A report for the club of Rome's project on the predicament of mankind*. New York: Universe Books.
- Millennium Ecosystem Assessment (MA). (2005). *Ecosystems and human well-being: Synthesis*. Washington: Island Press.
- Pearce, D. W., & Turner, R. K. (1989). *Economics of natural resources and the environment*. Johns Hopkins University Press.
- Porter, M. E., & Kramer, M. R. (2006). Strategy and society: The link between competitive advantage and corporate social responsibility. *Harvard Business Review*, 84, 78–85.
- Porter, M., & Kramer, M.R. (2011). Creating shared value: Redefining capitalism and the role of the corporation in society. *Harvard Business Review*, January–February 2011 Issue.
- TEEB. (2010). *The economics of ecosystem and biodiversity: Mainstreaming the economics of nature: A synthesis of the approach, conclusions, and recommendations of TEEB*.
- Verma, M., Negandhi, D., Khanna, C., Edgaonkar, A., David, A., Kadekodi, G. et al. (2015). *Economic valuation of tiger reserves in India: A Value+ Approach*. Bhopal, India: Indian Institute of Forest Management, January 2015.
- WBCSD. (2008). *Measuring Impact Framework*. Geneva: World Business Council for Sustainable Development.
- WBCSD. (2013). *Eco4Biz: Ecosystem services and biodiversity tools to support business decision-making Version 1*. Geneva: World Business Council for Sustainable Development.