Economics of the Natural Capital and The Way Forward

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AUTHORS' CONTRIBUTIONS

G.M conceptualized the study, wrote the manuscript. S.K.S supervised the study and helped in writing and revising the manuscript.

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ABSTRACT

Natural capital is the wealth of nations that give them the economic status they represent. Worldwide, vulnerable people depend on natural capital for employment, salaries, wealth, and livelihoods and, in turn, determine the developmental index of the nation to which they belong. The availability of ecological services is crucial for clean water and air, food and fodder, and agricultural development. In this short commentary, we have tried to sum up the ideas and discussions over natural capital's role in ascribing economic status to countries. We have discussed how the prosperity of humans is intertwined with the services ecosystems provide and how poor natural resource management (NRM) has adversely cost human well-being. The paper concludes that to ensure the current and future human well-being, an in-depth understanding of the services ecosystems provide, is essential.

Keywords: Ecosystem services; Natural resource management, Natural capital, Ecosystem service provisioning, Cost-benefit ratio

INTRODUCTION

Natural capital is the wealth of countries that bestows them the economic status they are represented by in the World. All prosperous nations are wealthy based on their natural resources (Zakaria 1999). Hence the estimates of income in each country are focused on the share they possess in natural capital (Monfreda 2004). This makes it a very crucial reason for efficient natural resources management for each country. Disadvantaged populations world-over depend on the natural resources for employment, wages, revenue, and livelihoods and, in turn, describe the developmental index of the country they belong to (Meraj 2020).

Based on the value of natural resources, policies on their sustainable use are established, and each country has its economic growth priorities that correlate to the scale of its natural resources (Abdulai and Shamshiry 2014). The strategies are also established in terms of their long-term sustainability goals and are among the core principles of sustainable development goals of the United Nations' (Biermann *et al.* 2017). To strengthen motifs for continuous development and eradication of poverty, every resource-rich country has aligned its present and future development policies in this direction (Esanov *et al.* 2001).

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Revenues from natural resources are central to any nation's economy, and it increases due to the increase in goods and services they provide (Repetto *et al.* 1989). Resource-rich countries will continue to grow more productive because of the rapidly increasing demand for their resources from economies (Auty 1998). With the ongoing decline in non-renewable energy, their availability would reduce, raising the competition that contributes to higher costs and higher wages for nations. Eventually, countries having already received their plenty will receive more income from natural capital and result in greater inequity worldwide (Yadoo and Cruickshank 2012). Worldwide, marginal and poor populations, particularly rural communities, depend directly on their natural livelihoods, and hence if managed efficiently and sustainably, natural resources can also play a leading role in alleviating poverty as well (Altieri 2002).

It is one of the critical concept, that local or national strategies intended to enhance natural resource conservation effectively would positively influence global poverty reduction (Adams *et al.,* 2004). Environmental policies have been framed worldwide in this connection. As such, nations ought to boost programs targeted at the citizen engagement in NRM, formulate laws centered on providing access to infrastructure by awarding freedom of usage, and supporting assessment tools to measure the effectiveness of funded programs to alleviate poverty and sustainable development (Nabatchi and Leighninger 2015).

NATURAL RESOURCE MANAGEMENT (NRM) – KEY TO SUSTAINABLITY

NRM and Natural Capital

Natural resource management (NRM) is central to all the policy-making of any country and involves mitigation programs for the vulnerable and underdeveloped during disaster and crisis besides the far-sighted sustainability goals (Blanco and Razzaque 2011). Therefore, every decision and policy-making concerning natural capital protection is crucial for environmental repayments to stay with them for long-term sustenance without becoming victim to the materialistic catastrophe (Andrews 2006). Hence, NRM focuses not only on merely living but also on nurturing and providing for intellectuality, and the returns from natural resources are eventually utilized for the overall good of human civilization (Baromey 2008). For determining the precise value of the natural capital, individual-specific indices need to be generated. Economists have established various methods of measuring the value of natural capital so that people are made aware of their costs (Palmquist 2005). Two are the most used ones, *existing*

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income flows and *the potential income flows*. Both of them operate due to manufacturing costs and demands that rely on the advantages and control of natural resources. However, there are often limitations to each method (McWilliams and Siegel 2001).

Regarding the existing income flows, it is often misleading as it offers the value of natural capital as an inherently inaccurate overview and economic growth because of the inefficient indices that are represented as short-term progress. However, in the long-term, when capital is no longer accessible, development inevitably ceases (Romp and De Haan 2007). This very idea must be integrated into the nation's public policy system that invests in the production of human capital, different portions of the riches of natural resources (De Ferranti *et al.* 2002). Therefore, the basis for future investments is the sustainable management of all types of natural resources (Rist et *al.* 2007).

Humans and Eco-service values

Since early times, the foundation of every human civilization's economy has been the services provided by the ecosystems (Costanza *et al.* 2017). However, it has been considered and limited to the functioning of natural systems. Almost all the life-supporting functioning of the biosphere is sustained by the ecosystem, including waste storage, water and nutrient storage, seed distribution and pollination, control of crop pests, and food and habitat supply for the organisms, in addition to the essential requirement of the life such as air and water (Meraj *et al.* 2018 a, b; Chagnon et *al.* 2015; Kanga *et al.* 2020).

The provision of ecological resources is thus needed for forest, fish and wildlife, safe water and air, and agricultural development and hence necessitates the development and conservation of environmental goods, which otherwise are regarded merely as natural resources (Rather *et al.* 2018). Unless humans noticed the decline in habitats, biodiversity degradation, and deserts propagated, environmental resources were not valued, and the feeling that is understanding the economic effect of depleted environments must be assessed (Barletta *et al.* 2010). Ecosystem facilities also deliver leisure and cultural events, including esthetic enjoyment, teaching, and science study (Hermes *et al.* 2018).

De Groot *et al.* (2012) gave an overview of 10 principal biomes' values based on accounting units for ecological systems (De Groot *et al.*2012). In total, 320 publications were screened,

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covering over 300 case study locations. About 1350 estimates of the value were coded and stored in a searchable Ecosystem Service Value Database (ESVD). For the analysis, a selection of 665 qualitative descriptions was used. The study showed that the total value of ecosystem services is considerable and ranges from trillions of dollars per year for the pack of ecosystem services that could potentially be provided by an 'average' hectare of open oceans (De Groot *et al.,* 2012).

Further, in another report, Costanza and colleagues measured the annual value of ecological services worldwide at around twenty billion dollars. UNEP reports that carbon conservation by trees is worth four billion US dollars. Pollination by insects adds about two hundred billion US dollars per year to cultivation (Costanza *et al.* 2017).

Natural Resources Based Capital and Employment

Natural resources are typically the backbone of local livelihoods in low- and middle-income countries and can be used to encourage investment that enhances the most underprivileged sections of the community by continually monitoring proactive policies and regulations (Kanu *et al.* 2014). In poorer countries, natural capital is the primary source of employment, and leaders also prefer to encourage their optimism as incentives (Luthans *et al.* 2007).

Administrators emphasize their actions on the conditions for unemployment and the need to boost the GDP in all situations (Flammer and Luo 2017). Jobs are created as governments agree that vast numbers of small farmers should be given production privileges. The obligation decisions that seek to achieve sustainable returns from reducing big firms are optional when rising GDP (Costanza *et al.* 2017). The fisheries industry is a persuasive example of this practice, where the more significant yet limited number of ships is more equipped to gather fish for export, while an immense flotilla of small fishing ferries would have a more considerable amount (Goldstein 2010).

Nonetheless, studies indicate that non-farm revenue from natural resources plays a significant role in maintaining rural livelihoods (Davis 2003). Policy policies aimed at promoting small and medium-sized businesses, focused on utilizing local natural capital in many instances, will encourage the development of rural economies (Tambunan 2005). A convergence of priorities-development, employment, and long-term economic prosperity-can

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be seen in the implementation of policies that position countries on the road to green growth (Davies 2007).

Natural resources may provide significant numbers of labor (Marchand and Weber 2018). While this number of employees engaged in industrialized, environmentally destructive companies has decreased substantially enormous potential to mechanization and increased efficiency, job opportunities in the renewable energy sources have risen and have the potential to continue to expand over the long term (Horrigan *et al.* 2002). For instance, clean energy workers in Europe alone have risen from over sixty thousand in the late nineties to more than three lakhs in 2006. Sustainable energy industries created more than a million employees in the late 2000 decade. Over a decade, Sweden has had a substantial and growing conservation sector, which, according to an estimate, hired around one and a half percent of the national population in 1998 (NRC 2012). According to figures, Germany employs approximately two million employees ins sustainable sectors of employment (BMU 2008).

Green jobs are also on the rise in agriculture, with research finding that organic farms have more jobs per output and selling units than traditional farms do. Sustainable, organic farming requires smaller-scale farms and less computer reliance, thereby providing more employment (Adhikari *et al.* 2018). Although the opportunities for job development in forestry are more nuanced, it provides steady jobs for around two percent of the World's population (Shackleton *et al.* 2007). Over the coming decades, foresting programs relevant to growing demands for wood fiber and carbon sequestration would generate new employment (Rudel *et al.* 2005).

Poor NRM and Costs to Human Well being

The worldwide cost of inadequate natural resource protection is considerable, impacting least-developed, and developing countries alike (Mainka *et al.* 2005). Weak management of resources includes failure to sustainably maintain sustainable resources-such as loss of surplus grains in stores of India - as well as failure to adequately spend the profits from non-renewable resource purchases and failure to obtain sufficient rent from energy contracts causing the bulk of capital to go to private companies at the expense of this, a case that is being witnessed in India right now (Baer 2020).

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Maximizing short-term profit is liquidating the natural capital; for example, the green revolution in India generated surplus grains but affected the long term sustainability of the land to maintain natural fertility and hence such unreliable information and forecasts of the pace of production at which the resource is produced ultimately negatively affect the resource itself (Stone 1967; Karkkainen 2002). The returns do not prove sustainable in these cases, and the resource has been depleted. Poor results also arise if the possible competing uses of resources are not considered and strategically integrated (Fulton *et al.* 2011). In a transboundary context, this can be incredibly difficult. For example, water-related problems pose significant obstacles to control of natural resources and international collaboration in Central Asia, such as witnessed in the case of the Amu Darya and Syr Darya basins (Wolf 2007). Water demand is increasing, but frameworks for collaboration between upstream and downstream countries are still inadequate as is witnessed in case of Jhelum basin, Kashmir regions and many other similar areas of the World (Sadoff and Grey 2002; Gujree *et al.,* 2017; Romshoo *et al*. 2020). Deserts expand due to lousy farming methods, fisheries decrease because of the Syr Darya and the Amu Darya, and climate change renders water availability uncertain (Rüger 2003). Also affected is energy production in dams. Increasing food and fuel prices also presented significant challenges to human security, especially in the poorer Tajikistani and Kyrgyz countries (Laruelle and Peyrouse 2012).

THE WAY FORWARD

Throughout the recent global financial and economic crises, the possible synergies between policies for encouraging a transition to green development has became apparent (Perez 2016). Several policymakers have emphasized the significant effect of some of their green initiatives on jobs (Bowen *et al.* 2009). In the U.S. alone, the Economic Advisers Council estimated that by the end of the 2010 decade, the Recovery Act's nearly hundred billion USD jump would maintain or produce over one million productive years. The current research further shows that around thirty million jobs will now be created by 2050, despite mounting energy alternatives such as wind power generation, photovoltaics, and bioenergy-related agriculture and industry (Rosemberg 2010).

Alternatively, poor management of natural resources represents lost opportunities and cost to human beings and the environment for sustainability (Laruelle and Peyrouse 2012). The harm

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to individuals and the ecosystem through ineffective capital management activities and strategies is evident from various global studies, although the net costs in lost resources are impossible to measure (Borrini *et al.* 2007). The mismanagement of resources has a strong, and catastrophic effect on the whole economic set-up human have developed since the industrial development era (Walker and Salt 2012).

These negative effects will only be averted if policymakers implement resource allocation strategies that consider *long-term sustainable horizons* that employs a full resource exploitation process, i.e., shutting /down to avoid hazardous pollution and the equilibrium between existing revenue generation and potential development of energy (Smit and Pilifosova 2003). This in other terms is called sustainable development, that shall preclude new opportunities to the employees, employers and future of Earth (Lawson 2005).

However, the green economy is both a bane or boon for the labor market and for the skills, which are the significant factors that shall govern the green growth market. Hence policies must be developed that shall cater to the challenges and opportunities of the transition to a resource-efficient, low-carbon, green economy. The entire global economy across a wide range of sectors shall bring profound transformations, somewhere more jobs will be created, and many jobs will be eliminated or reframed. Hence a far-sighted approach is required to target the labor market and the skills to establish the necessary conditions for supporting green jobs, bridging the gaps in the required skills and shifting the need for human capital requirements to greener alternatives.

CONCLUSION

The cost of the resources of the planet is too much than what humans have to date known. Using unsustainable means of development, developed and developing countries have adversely affected Earth's natural resource base. The human species cannot thrive without the natural resources; ecosystems provide in the form of their services. The review discussed various studies regarding the capital values of the ecosystem services. Moreover, it has also been discussed how the green economy shall eventually become the new governing concept if the planet's resources have to be managed sustainably. Until now, the mismanagement of natural resources has only led to the devastation of the ecosystems. The solution can only be in the understanding of the importance of the ecosystems by assessing the capital value they possess.

Throughout the World, policymakers need to step up to think about the welfare of the current and future generations by seeking the help of scientists and ecosystem economists. The green economy has to pave the way for the Earth's sustainability in every aspect, be it environmental or human employment.

COMPETING INTERESTS

The authors declare no competing interests

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