Multi-benefit of National parks and protected areas: an approach for the developing countries

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ABSTRACT
National parks as well as protected areas could contribute towards fulfillment of the needs of the people who are poor in a significant manner. There are many people who live in forests and they are dependent on the resources from forests since these are required for their survival. The poor people living in rural areas are having limited economic option, usage of resources from the national park are considered to be main source for them to survive as they gain direct benefit from the resources i.e. food, forest products and medicine. The national parks could contribute towards maintenance of ecosystem and also biodiversity conservation, together with economic benefit to local population. National parks as well as protected areas could contribute significantly in changing climate mitigation also. Benefits from such areas have not been recognized much in management mainly in the developing countries by incorporating them towards climate change mitigation. Much priority has been given to livelihood improvement, climatic change mitigation and conservation and these could be achieved through integration of national parks towards the management as well as policy by giving consideration of potentials which exist in human resources. Hence, integration could improve situation of poverty among the local people and this would help in adapting towards climatic changes in mitigation strategies. Hence, management of national parks as well as protected areas need to be ensure participation of all the stakeholders and local communities.

KEY WORDS: *national park, climate change, integrative approach, livelihoods, management*

1. Introduction Parks have been playing a very important role in conserving world's biodiversity, based on human health and food security issues. Values of the National Parks would range from protecting of associated fauna and flora and natural habitats to maintain environmental stability of the surrounding regions (CBD, 2008). This has provided an opportunity towards sustainability in better human health and food security apart from conservation of environment. The protected areas and National Parks are considered to be important and unique which would bring different objective and subjective oriented sectors such as economic development of region, rational usage of resources, generation of income, creating jobs, monitoring and research, conservation education, tourism and recreation.

Human health and food security are linked with each and they have been reinforcing each other. A community who follows food security would definitely have better health. Recent statistics

indicated by "Food and Agriculture Organization of The United Nations (FAO, 2004)" have disclosed that there are more people who are under-nourished worldwide. As consequence, "spiral effect" of under-nourishment which is being quite evident particularly on human health for people who are poor in the developing countries at alarming rate. There are many countries wherein people who are suffering from various chronic food insecurity having negative impacts for longer term on all the fronts of human development. "Millennium Development Goals" have been set by the United Nations during 2000 which has been endorsed by the 189 nation-states that have been put the highest emphasis based on poverty reduction by improvement in human health and even have environmental management.

Theoretical aspects based on sustainable development comprise of basic pillars which includes economical, ecological and social aspects. Environmental or ecological role to attain sustainable development which is recent than other components. Components of the environmental aspects at times overlap with economic and social aspects. Based on different literatures on the sustainability and sustainable development could be achieved fully if overlapping issues wherein they are satisfied fully.

From the study of Stockholm in 1972 to Rio Earth Summit 1992, there have been two decades were time elapsed towards actualization of sustainable development value, translating rhetoric argument and ecological conservation towards official text. By establishment of UNCBD, biological diversity and their official recognition have been established which puts a benchmark to create and manage the protected areas for biodiversity conservation mainly with issues for cross cutting like establishing of forest management, indigenous rights and human health. Ecosystem approach towards overwhelming and development of goals towards respecting of complex relations between nature and human towards better livelihood. Although the International Union of Conservation of Nature (IUCN) have been exercising the Protected Area's management since the year 1948 but the UN recognition has been tremendous positive blow for IUCN activities and determining fragile ecology.

Recent years have seen a progressive increase in the relevance of protected areas in terms of biodiversity loss, climate change, food security, population pressure, and indirectly the global economic system that drives resource exploitation that is not sustainable. The Johannesburg Summit in 2002 once again reaffirmed the world's pledges to sustainable development, however the agreed-upon activities are still restricted by the "Business as Usual" attitude, which is an apartheid.

By definition, national parks promote environmental integrity in restricted areas with values equal to those of recreation.

No matter where in the world it is located, national parks are no longer solely used for leisure or tourism purposes.

It is essential in a variety of ways, such as through establishing links that are both forward and backward-looking economically. NPs serve as crucial instruments for the preservation of biological diversity and serve as the foundation of sustainable development plans.

In addition to their advantages for the environment, they can contribute significantly to the economies of developing nations. However, the functions of NPs may change depending on the regional conditions and the reasons for designating a region as a national park or protected area.

Particularly in underdeveloped nations, forests serve as a supply of the necessities of life, providing food, shelter, fuel, medicines, and money.

Yet, such an excessive reliance on one natural resource underscores the necessity for sustainable management of forest resources to safeguard and improve people's quality of life, both now and in the future (ATSE CRAWFORD FUND, 2005). Forests support agricultural systems, play a role in rural development, protect environmental integrity, and provide chances for income creation and employment, among many other direct and indirect ways that they contribute to food security and sustainable lives (FAO, 2004).

Furthermore, the ability of forests to contribute to food security, environmental preservation, and other basic necessities for livelihood may be hampered as a result of the issue of deforestation and forest degradation. For instance, logging and cattle grazing frequently cause the destruction of 26 hectares of the Amazon rainforest per minute (ENVIRONMENT, 2009).

Commercial logging for the production of charcoal and timber is the main cause of deforestation in the park (LOPEZ, 2007). About 20% of the greenhouse gas emissions brought on by human activity are attributable to deforestation. We will effectively have lost the fight to maintain greenhouse gas concentrations below levels that many people would deem dangerous unless and until we address the issue of forests as a climate change mitigation strategy. Moreover, the effects will have an effect on overall environmental conditions, human health, and food security (KINVER, 2005).

The management of the forest reserve may have an impact on how sustainably various parties use the resources. This applies to all administrative entities, from the federal government to local governments, who have the authority to manage and use resources. The world's forest cover is rapidly reducing, which suggests that forests are not being managed properly. The poor, who are completely dependent on the woods and the environment, must be given preference in the management of forest resources (ATSE CRAWFORD FUND, 2005).

The involvement of stakeholders in the planning and execution phases of management operations in national parks is another crucial problem. Much attention has recently been paid to stakeholders' participation in decision-making on a limited basis (LOPEZ, 2007). Stakeholders who rely on the resources for a living, however, should have priority over other stakeholders. Those who live inside the park, for example, who are immediately affected by decisions, are frequently forgotten to be consulted (MURRAY, 2007).

As a result, this essay aims to integrate the relationships between national parks and other protected places, the environment, food security, and health issues. In order to draw conclusions and make recommendations for using natural resources without compromising their natural balance and sustainability, as well as to incorporate national parks and protected areas in climate change mitigation in developing countries, the paper also examines whether these pertinent human and environmental aspects are intertwined in harmony and in a sustainable manner. The

paper tries to concentrate on the following issues: the role of national parks for present and future climate change adaptation possibilities and mitigation; the management/governance systems of national parks and protected areas for sustainable development; and the role of national parks for enhancing biodiversity, health, and food security.

2. National parks and protected areas

National parks and protected areas have various definitions according to various international conventions, treaties, and organizations. One of the most important and comprehensive environmental accords ever created is the Convention on Biodiversity, which was signed at the Rio Summit (UNCED) in 1992 and entered into force at the end of 1993.

The Global Biodiversity Assessment (GBA), which treats ecological, organismic, genetic, and cultural diversity as its four main components, adopts a comprehensive perspective on biodiversity. Natural Protected Areas (NPAs) have emerged as the go-to method for implementing site conservation since they are widely regarded as one of the most effective ways to reduce global biodiversity loss.

As previously mentioned, the Convention on Biological Diversity recognises the significance of Protected Areas (PAs), which serve a variety of purposes in preserving biodiversity and environmental integrity. The definition that is most frequently used is "A clearly defined geographical space, recognised, dedicated and maintained, through legal or other effective measures, to accomplish the long-term conservation of nature with related ecological services and cultural values" (IUCN).

This concept encompasses a wide range of topics, including management, ecosystem services, specified geographic space, and conservation. According to IUCN rules, protected areas are categorised according to a set of characteristics that distinguish one category from another states that the IUCN categorizes protected areas into six different kinds.

National parks which are under Category II of the protected areas, have larger natural or the areas which have been set aside for protecting large-scale ecological process, along with complementing of ecosystems and species characteristics of area, that provides foundation for culturally and environmentally compatible recreational, spiritual, visitor, educational and scientific opportunities. The following are listed as the primary goals of a National Park and a Protected Area by previous researches :

1) To safeguard natural biodiversity, including its underlying ecological framework and ancillary environmental process and to advance learning and leisure.

2) To maintain the region's representative samples of biotic communities, physiographic regions, genetic resources, and unhampered natural processes in as natural a state as possible.

3) Maintaining native species populations and assemblages at densities high enough to preserve the long-term stability and resilience of ecosystems is goal number three.

4) To specifically aid in the preservation of widely dispersed species, local biological processes, and migration paths.

5) To control visitor use for motivational, educational, cultural, and recreational objectives at a level that won't significantly degrade the natural resources in terms of biology or ecology.

6) To consider needs of different local communities and indigenous people including the use of resources for sustenance, to the extent that doing so will not jeopardise the main management goal.
7) Tohelp support regional economies via tourism and other revenue-generating activities.

2.1. Links between national parks and biodiversity

The topic of the conversation is the connections between biodiversity and national parks preservation. As stated in the definition, National Parks aim to ecological integrity and has been distinguishing qualities such a larger geographical area, the presence of rare and endangered plant and animal species, and intrinsic economic importance. The national park distinguishes itself from other types of protected areas through different economic activities which are permitted and carried out there. Biodiversity, according to the Convention on Biological Diversity (CBD), is the intricate link between living things (CBD, 2008). Due to various difficulties including the deterioration of the climate, endemic poverty, food insecurity, and health issues, biodiversity inside national parks is currently a significant issue. Biodiversity is a concept that may be moulded to suit the topic under discussion, not an abstract shape. Using certain fundamental elements of biodiversity, the connections between national parks and biodiversity are investigated.

The elements of biodiversity that are under consideration include wild life, plants, conservation, indigenous groups, and management. Climate change, ecosystem services, poverty, ecological integrity and national development are the intersecting challenges that determine how well the biodiversity components work. Although the conservation of wild life is at the heart of national parks, ecological integrity occasionally suffers owing to poor management or urgent needs.

The cascading impacts of this poor management may result in a reduction in the ecosystem services that, in theory, should be provided by a national park. If wildlife is in danger due to poor governance, corruption, population growth, excessive tourism, and unsanitary living conditions, the ecological integrity of the environment must be compromised, which reduces ecosystem services and the other way around.

Ecosystem services and compromised ecological integrity are essential to the poverty dimension.

If ecosystem services and ecological integrity are compromised, the percentage of locals who rely on national parks for their livelihoods should experience a decline in poverty. Those who live inside or immediately outside National Park will receive less support for their way of life due to decreased environmental services.

Also, as national parks are put under increased strain due to unsustainable resource extraction, which would exacerbate potential of ecosystem service, the effects of climate change worsen if poverty levels decline. In conclusion, the total effects will harm national development on a number of fronts, particularly the ones already mentioned: decreased ecosystem services, ecological integrity, increased poverty, negative effects of climate change, and national development. The plant species represented by flora can be thought of as the core of biodiversity. Diverse plant species which serve the national parks from different angles are a key component

of a well-balanced national park. Contrary to homogeneity, variety is the foundation of biodiversity.

A national park's ecological integrity would be stronger and hence offer better ecological services the more variation it has available. Poverty and better services which are ecological in nature are inextricably linked, and it is clear that improved ecological services lead to lower levels of poverty. The value of a diverse and plant species of dense composition cannot be overstated in relation to climate change. As many different plant species as there are in a particular national park will help to absorb CO2 and play a crucial role in carbon sequestration.

Moreover, a national park's population density and plant diversity composition reduce the ferocity of natural disasters. Because of this, the final intersecting issue—national development—realizes the benefits of having national parks with a variety of flora.

The cornerstone of biodiversity is conservation.The words "biodiversity conservation" and "conservation" are frequently used interchangeably, although biodiversity, or the complex interdependence between living things that allows the earth to exist, needs to be preserved and, if possible, enhanced.

From a traditional point of view, conservation is a management component for preserving biodiversity, but it is also a component of biodiversity itself. In an environment with a healthy biodiversity, organisms fight to protect or preserve themselves, which improves the biodiversity itself. In-situ and ex-situ conservation are two crucial things to consider when it comes to conservation, again from a fairly traditional point of view. Both conservation strategies have distinct advantages that contribute to a protected area's increased ecological integrity, ecosystem services, decreased poverty, and, ultimately, a country's or region's sustainable development.

2.2. Forest and climate change

Forests help to reduce land degradation and desertification, store carbon, and offer habitat for species. With the maintenance of ecosystem services and the provision of viable livelihood options, forests have a potential and major role to play in planning for climate change adaptation and mitigation. Deforestation, fragmentation, climate change, and other stressors linked to human activity, however, are putting forests at greater risk. Deforestation causes the loss of around 13 million hectares of forest worldwide every year. Current estimates place the cause of 20% of the annual human-induced CO2 emissions worldwide on deforestation (UNITED NATIONS JOINT PRESS KIT FOR, 2007).

Because the impact that climate changes have on the forest biodiversity and ability in forests have provided carbon sequestration as well as ecosystem services, IPCC concludes that restoration and conservation of forests could considerably lead to reduction of emissions at lower cost and having potentially some co-benefits for sustainable and adaptation development. Due to its significant impact on climate change, efforts have been made for reducing Emissions reduction from “Deforestation and Degradation (REDD)” in the developing countries are currently receiving widespread support from many nations (UNITED NATIONS JOINT PRESS KIT FOR, 2007). One of the main escape doors for avoiding the effects of climate change is the

REDD issue, which takes up a considerable portion of climate change negotiations. Realizing the importance of the forest's capacity to store carbon, REDD is today regarded as one of the most promising adaptation strategies. REDD is one of the key issues under negotiation, according to Conferences of the Parties (COP) 15 of the United Nations Framework Convention on Climate Change (UNFCCC).

The REDD Plus initiatives that are currently the subject of negotiations offer another another chance as well as motivation to better manage, grow, and protect forests for the delivery of all their benefits. While the problem of community rights and governance must be addressed in order to secure benefits to forest users, carbon in the forestry sector is substantial today.

2.3. Inter-linkage between biodiversity and climate change

The relationship between climate change and biodiversity is symbiotic, meaning that while biodiversity is put in danger by climate change, proper management of biodiversity can mitigate its effects. Several of the obvious effects of climate changes on the biodiversity have been discussed in literature. They include in Arctic, polar bear habitat and existence are threatened by shorter sea ice covering periods that give them less time to hunt. The other is that changes in North American climate have a negative impact on plankton populations, which are the North Atlantic right whale's primary food supply. There are currently just about 300 people left, and the reason of death is the decreased food availability brought on by climate change. Also, the Pacific Ocean's male turtle population is under danger due to rising temperatures.Reduced male turtle reproduction and a threat to their survival are caused by high temperatures (SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, 2007). The Monteverde harlequin frog and the newly extinct golden toad have already been identified as first victims towards climate change.

In addition, there are two villages which have already been forced to flee their homes because of the present climate change. Both the Shishmaref village, which is located on a small island in Alaska, and the Lateu settlement, which is situated in the Pacific island chain of Vanuatu to avoid rising sea levels, have recently relocated due to the permafrost's deterioration which is a result of the current as well as future changes in climate impact (ibid). According to Fourth Assessment Report of Panel which is Inter-governmental Panel on Climate Change convention (IPCC), if temperature increases exceed 1.5-2.5°C, 20-30% of plant and animal species currently assessed are considered to be at an increased risk of extinction (ibid).

Climate change is one of the primary direct drivers of ecosystem change, according to the Millennium Ecosystem Assessment.

Changes in distribution, higher extinction rates, altered reproductive cycles, and longer plant growth seasons are only a few effects of climatic change on different species component of biodiversity.

Several species are already suffering negative effects from climate change, making them especially vulnerable (ibid). By using biodiversity-based mitigation and adaptive methods, it is

possible to increase ecosystem resilience and lower the risk of harm to both humans and natural ecosystems.

While adaptation to climate change refers to changes in human or natural system as in response towards climatic stimulus or effects, that moderates the harmful affects' or would exploit advantageous opportunities, mitigation is defined as a human intervention to reduce greenhouse gas sources or enhance carbon sequestration.

Maintaining and restoring native ecosystems, safeguarding and enhancing ecosystem services, managing habitats for endangered species, create buffer zones, create refuges zone, establishing network for terrestrial, freshwater, and marine protected areas that take into account projected changes in climate are all examples of activities that promote climate change mitigation or adaptation (SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, 2007).

2.4. National parks and food security

People all around the world are able to ensure a reliable and adequate food supply thanks to forests and the benefits they offer in the form of food, income, and watershed protection. For those people who are totally reliant on forest resources, forests are crucial since they are the only easily accessible source of productive resources they have. Deforestation and other forms of forest degradation, however, are reducing the ability of forests to provide food security and other requirements of those who depend on them. The regions of the world with the biggest population of people who lack access to food are where tropical rain forests are found. Over 300 million people live there, and they rely on moving towards hunting, gathering and cultivation for survival (FAO, 2004).

The FAO stated that "ensure that all the people are having economic and physical access towards essential food that they need" is the definition of food security in 1984. Increased rates of soil erosion and waterway siltation, a loss of species and genetic diversity, a rise in carbon emissions that fuel global warming, as well as diminished income and food production capacity for communities that depend on forests in particular, are all possible effects of the loss of forest resources. In addition to the losses already described, forest degradation and deforestation may also result in economic gains for the community through the selling of lumber or other goods, the production of forest foods for human use, or crops and livestock for market or subsistence use.

While evaluating the effects of forest degradation, it is crucial to take into account how the benefits outweigh the cost which is incurred that takes into account all of the effects on the global community by taking into account non-human living forms [ibid].

Medicine, food, shelter, fodder, cultural, recreational value and nutrient cycling are just a few of the environmental services that forests provide (SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, 2007). Tourism, recreation, and related sectors based on wildlife are other factors that affect food security. In order to ensure access to food, this sector employs a large number of people. In addition to providing revenue directly through employment, wildlife also directly supports households through hunting, the sale of live animals, the trade in trophies and bush meat for skins and hides, and craftwork using goods from wild animals. The majority

of hunters nowadays are market hunters, and a large percentage of them would prefer to sell their prey and buy less expensive sources of protein, like fish, for feeding their families and for this money is required for covering other essential family needs [ibid].

2.5. Links between national parks and health

Health is a multifaceted term that is inextricably linked to numerous factors, including concerns with food security, the ecology, environmental degradation, economics, and climate change. With time, health issues have risen to the top of the priority list. According to FAO's most recent estimates, 1 billion people worldwide are either starving or malnourished (FAO, 2009).

In the coming years, it is anticipated that global food security would deteriorate as a result of climate change's direct detrimental impact on food production (IPCC, 2007). Due to food insecurity, this unpleasant scenario exacerbates poverty and puts a strain on natural resources, particularly national parks. The world's finite natural resources are being used irresponsibly by people, which increases the risk to their health. Overstressing will lead to the destruction of its output because national parks are one of the major sources of food in the world, as was already said. The loss of national parks' productive ability would cause more health-related issues as they serve as a source of food for several dependent populations and source for medicines for those living nearby and inside. The poorest nations in particular would suffer the most from health issues brought on by overuse of the national parks.

2.6. Local people and management

Indigenous People (IPs) and other indigenous communities are woven throughout biodiversity.

Most of the time, IPs view nature as their mother and are knowledgeable on how to use resources most effectively. Only when resources are extracted in a sustainable way can a healthy ecology be achieved. IPs are currently the best way to learn about the sustainable use of resources, and by utilizing their inherited knowledge of nature, forests, and their behaviour, conservation, management, and promotion of biodiversity may gain fresh momentum. The functions of IPs were disregarded, and they had never been rightful resource owners. After years of advocacy for the establishment of indigenous groups' rights on protected lands, the situation appears to be shifting. As a result, the United Nations recognized the rights of indigenous groups in 2007 and the majority of countries had ratified the convention by that time. Whereas involving them in decision-making and utilizing their knowledge related to conservation of biodiversity is a question of practice, it is clear that the sooner inclusion occurs, the better the outcome.

The management problem is mostly unresolved and contradictory (CBD, 2008). Natural resources, livelihoods, income generation, and luxury tourists all occur in national parks. It's also important to recognize that management should be participative rather than the usual top-down strategy that allows opulent tourism which is inside the national park at expense of the underprivileged and marginalized communities. Despite being protected, national parks' biodiversity is deteriorating since there is outdated management ideologies, lack of participation, expanding population pressure, and rising demands for food, fibre, fuel, and timber. As a result,

the livelihood of the population is actually vulnerable for the people who are dependent on the national parks to support their way of life. Co-management has been a topic of debate, and just a few approaches have so far been put into reality. Pilot studies, however, show that co-management preserves the biodiversity's integrity while providing advantages to all parties involved. A very strong and well-articulated policy or plan is crucial to achieving and realizing the ultimate aim of integrated and sustainable administration of the national parks. International agreements and conventions like the Post-Kyoto Agreement and the Convention on Biological Diversity must be the basis for these policies' formulation. Actually, one of the major problems with achieving a sustainable management system for the national parks is said to be forest management.

The management of national parks comprises the integration of traditional knowledge and indigenous into current management system, as well as the management of finances, human resources, and capacity. Improving livelihood, ensuring food security, and reducing poverty are all benefits of achieving integrated and sustainable management of national parks. Also, it will contribute to the preservation of biodiversity, the reduction of the negative effects of climate change, and the enhancement of ecosystem and human health. The management system for parks and policy concerns may also be affected by these results.

As a result, the relationship between people and natural resources is too complicated and dynamic.

And whenever humans start pushing the acceptable limit and capacity, nature reacts appropriately. Human activity might take the form of excessive resource exploitation, inappropriate management and utilisation, and other things. National parks, forest reserves, and protected areas are being used for a variety of purposes essential to human survival, but as the population grows, industrialization, urbanization, careless resource use, and poor management of these natural resources are becoming more and more of a concern. For instance, people are chopping down trees and timber at an alarming rate, harming local, regional, and global landscapes. For instance, there is already a severe water deficit in about 80 countries, which house 40% of the world's population.

The unsustainable exploitation of natural resources is the cause of climate change and pollution. In order to stop climate change, forests act as a carbon sink, reducing carbon dioxide emissions. High rates of deforestation, however, could result in significant atmospheric carbon emissions. The effects of climate change on the environment, society, and economy impede development efforts. Maintaining food security, ecological balance, health, and biodiversity is a crucial issue that must be addressed.

Also, protected areas such as national parks serve as a crossroads for a variety of challenges, from the preservation of biodiversity to the creation of sustainable livelihoods. The diversity of protected places, such as forest reserves and national parks, is inextricably linked with livelihood, complex composition for integrated social, human, natural, and infrastructure capital.

3. Integrative approach and developing countries

The relationship between people and natural resources is far too intricate and dynamic. As humans start exceeding the acceptable limit and carrying capacity, nature reacts accordingly. Human activity might take the form of excessive resource exploitation, inappropriate management and utilization, and other things. Due to population growth, industrialization, urbanization, careless resource usage, and poor management of natural resources, national parks, forest reserves, and protected places in general have been used for a variety of human survival needs.

The approach which is integrative in nature has focused on how various problems and challenges, including environmental degradation, deforestation, biodiversity loss, food security, impacts of climate change, and environmental health issues, can be resolved from an interconnected and integrated management and development perspective. A more comprehensive and interdisciplinary approach is also necessary to address these delicate environmental and socioeconomic issues. The examples below demonstrate the critical need to focus on an integrated approaches and the way national parks are contributing towards health, food security, livelihoods, biodiversity, and ecosystem management.

From coastal lowland to the highland, Indonesia's national parks contain some of the richest and most diverse surviving rainforests in the entire world. With a vast variety of soils, hydrological conditions, and habitats ranging from sea to sub-alpine volcanoes, as well as a great diversity of flora and fauna, the National Parks considerably contribute to the preservation of integrity of ecosystems. Despite their continued importance, these areas face serious threats from illegal logging, forest fires started to clear land for plantations of palm oil and farming, road construction poaching, a lack of support from government organisations, a lack of funding for staff and equipment needed for park management, and ineffective law enforcement to combat these dangers.

The Sundarban National Park in Bangladesh contains a wide range of vegetation, including grasses, epiphytes, trees, lianas and shrubs are mostly dominated by mangrove types.

The majority of mangrove plant species are shrubs, tall trees, dwarf plants or shrubs that grow gregariously without taking up any area on the ground (ASIATIC SOCIETY BANGLADESH, 2005). Around 3.5 million locals in Sundarban who live close to the forest and 3.5 million individuals who directly benefit from ecosystem services depend on the national park for their livelihood (ADB, 2008). Among other things, wood, honey, and fish, the Sundarban supplies exceptional ecosystem services. The Munda village, which is fully reliant on the resources for its survival, is one example of the dependent community. Fishing, honey harvesting, and wood cutting are among the people's main occupations mentioned in many studies (HOSSAIN ET AL., 2008).

Recent research on the effects of catastrophic cyclones "Sidr" in 2007, which managed to kill 3000 people, and "AILA" in 2009 on food security makes clear how closely intertwined and intact the livelihoods of dependent populations and the forest are. Both cyclones' aftermaths cause severe damage to all capitals that are necessary for survival, including livelihood capital, social capital, human capital, infrastructural capital and natural capital (HUQ, 2008).The brutal

storm onslaught hinders people's efforts to revive forest-based industries because 25% of forest is expected to be completely devastated. As a result, there was widespread food poverty and massive forced migration to metropolitan regions for a brand-new profession that the migrants had no experience with. Together, such issues put people's ability to make a living in grave danger because food was scarce and malnutrition appeared to be a widespread issue. The government's decision to outlaw all forms of commercial logging, resource collection, and tourism inside forests caused even more destruction. As a result, communities that depended on the forest for ecosystem services experienced a second wave of aftereffects (ibid).

The Sundarban, which is situated near the coast and is especially susceptible to sea level rise brought on by climate change, is fragile. Salinity levels are rising, making life more difficult, and cyclones are becoming more frequent, posing a serious threat to Bangladesh's millions of coastal residents. With its thick and dense pattern of forest fabric, where the wind become quite weak and water do not penetrate easily, the Sundarban acts as a shield to protect people's lives and way of life. As long as Sundarbans are present, coastal cities, the residents who live in and around them, and the surrounding villages feel safe from storm surge and cyclones of any size. Each year, the Sundarban preserves thousands of people and other living beings and their means of subsistence at the expense of its own resources. According to projections, the Sundarban will likely disappear by a sizeable percentage by the end of this century in the worst case condition of the global warming (IPCC, 2007).

Vietnam's Van Ban National ParkNGUYEN TIEN HIEP ET AL., 2001 counted 386 plant species in total.The most prominent of these was Taiwaniacryptomeriodes, a conifer that was discovered for the first time in Vietnam and is considered a "living fossil" due to its vulnerability on a worldwide scale. There are 320 species of higher vascular plants, 236 of which are flowering plants, making up roughly three quarters of the total. The remaining portion is mostly made up of ferns (78 species), along with six conifer species, including the critically endangered Taiwania. It is crucial to understand that five of the tree species found in Van Ban are regarded as being internationally threatened. It was discovered that the medicinal plant harvesting was nearly entirely utilised for subsistence purposes inside the hamlet or nearby communes. At Na Hang, it was discovered that 80% of the medicinal plants were used locally, 20% were distributed to other communes, and there were few or no plants exchanged for external market in China and Vietnam. According to the study, the H'mong population uses at least 150 distinct types of medicinal herbs, of 35 species are grown. The H'mong community has a long history of gathering both cultivated and wild medicinal plants. The knowledge, usage, and harvesting of medicinal plants plays a significant role in the cultural health and tradition of the local population; yet, there are certain concerns to the future preservation of this knowledge and custom. Similar to the Sundarban, where human health is a major concern for those who depend on it, many people are frequently offered health treatments using forest resources to maintain their health. Typically, wood collectors, fisherpeople, and beekeepers employ medicinal plants to treat any health issues they may be experiencing. Forest herbs are the only source of treatment for common diseases when people are staying in the forest to gather resources. The most popular

forms of medicine among those who use the resource are honey, medicinal herbs, and bushes. Those who live in SIZ frequently get diseases like fever, malaria, and snakebites (HOSSAIN & KABIR, 2008). Also, some 8000 people depend on the development of medicines from forest resources for their livelihood. From a different perspective, the Sundarban has been mostly alluring location for tourists to witness the wilderness and distinctive assemblage of bio-diversity. That is yet another benefit from the forest in terms of overall wellness.

The primary justification for creating protected areas and national parks is to ensure the survival of the remaining biological species (PRIMACK, 2000). Protected areas help local, regional, and even global populations in a variety of direct and indirect ways. This relationship is dynamic and affected by socioeconomic and political circumstances (MCCARTHY, 2000; CASSON ET AL., 2005). Yet, locals are frequently the victims of protected area administration in underdeveloped countries. In emerging nations, there should be an agreement for maintaining local people's means of subsistence as well as comprehensive, successfully managed, and biologically representative protected area and national park systems (NAUGHTON-TREVES ET AL., 2005).

More than 1.6 billion people depend on forests in one way or another for their livelihoods and sustenance, and 500 million to 1 billion indigenous people are completely reliant on forests. According to CAVENDISH (2003), there are two ways that forest resources can help rural households with insurance. First off, it offers filler material or business opportunities in reaction to expected occurrences like seasonal food shortages.

Additionally, it offers safeguards against more significant, unforeseen occurrences and shocks. The level of environmental degradation and China's success in resolving its environmental issues are examined by ROZELLE ET AL. in 1997. They demonstrate that the Chinese government has made an effort to create a legal framework and a number of institutions to implement environmental policy, and that the country's initiatives to integrate markets, combat poverty and manage population growth appear to have assisted in reducing a number of negative environmental effects.

A very strong and well-articulated policy or plan is crucial to achieving and realizing the ultimate aim of integrated and sustainable administration of national parks. International agreements and conventions like the Post-Kyoto Agreement and the Convention on Biological Diversity must be the basis for these policies' formulation. Actually, one of the major problems with achieving a sustainable management system of national parks is forest management. The management of national parks comprises the integration of traditional and indigenous knowledge and into the current management system, as well as the management of finances, human resources, and capacity. Improving livelihoods, ensuring food security, and reducing poverty are all benefits of achieving integrated and sustainable management of national parks. Also, it will contribute to biodiversity preservation, reducing the effects of climate change, and enhancing ecosystem and human health. In developing nations, these results may potentially have an impact on the administration of parks and policy challenges. The identification of new areas or the expansion of the network of protected areas could both have a substantial impact on emerging nations. A large number of rural impoverished people rely mostly on forest resources. Changes

in their environment, health, and livelihoods, such as food security, may be favorable or unfavorable.

The effects of protected areas on livelihoods vary depending on the state of the protected area, management techniques, and community participation in governance. Inequitable distribution of livelihood benefits and costs is frequently not appropriately addressed in protected area administration. Consequently, ensuring financial or other benefits to local populations when they participate in planning and implementation can lead to a more long-lasting solution to environmental issues.

4. Conclusion

National parks play a crucial role in preserving the natural balance as well as the health and food security of the local population. Consequently, top-down management of different national parks is necessary to ensure that the opinions of all parties who rely on forest resources are considered. Because residents who live close to national parks would consider the resources to be their own property, this would aid in prevention and conservation of people from disrupting the ecology. Stakeholders should embrace and put these solutions into practice, and the government should promote co-management and conservation through policies. So, preserving forests as well as their biodiversity will be a key for addressing challenges with food security, health, and climate change. Therefore, in order to face the upcoming effects of climate change in the most vulnerable countries, it is really mandatory to have a sustainable forest management strategic plan or policy. In this case, an integrated approach would improve the capacity of relevant stakeholders. The livelihood of the local populace must be taken into consideration when planning operations. It is essential to involve local people in all management and empowerment initiatives for these populations. Its engagement will consequently improve local residents' access to employment possibilities and household income. In order to guarantee environmental sustainability and biodiversity, especially the in developing nations, indigenous knowledge on development plans for conservation and mitigating climate change should be appreciated and used.

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