

# ISAS Insights

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Institute of South Asian Studies  
National University of Singapore  
29 Heng Mui Keng Terrace  
#08-06 (Block B)  
Singapore 119620  
Tel: (65) 6516 4239 Fax: (65) 6776 7505  
[www.isas.nus.edu.sg](http://www.isas.nus.edu.sg)  
<http://southasiandiaspora.org>



## Nature without Borders:

### Reconciling the Needs of Wildlife and People in India

*Protected Areas (PAs) in India represent an attempt to ensure the ecological protection of the country, inclusive of wildlife, ecosystem functions and bio-cultural heritage. Despite a strong legal framework, the PAs face threats from the expanding development and infrastructure projects, poor management and the increasing biotic pressure on ecosystems. In this paper, the effectiveness of the PA network in India is examined from the point of view of socio-economic sustainability and long-term viability. Moreover, the local- and national-level policies that are required to mainstream the PAs into the national development process are elaborated. A two-pronged approach at two different levels – re-aligning national policies to encourage green growth and mitigating costs to local communities – is suggested.*

Ghazala Shahabuddin<sup>1</sup>

#### Introduction

India has been undergoing rapid social and economic transformation over the last few decades. Being one of the fastest growing economies globally, the Indian society is also in the process of rapid urbanisation: from 18 per cent in 1960, the proportion of people living in

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<sup>1</sup> Dr Ghazala Shahabuddin is a Senior Scientist at the Centre for Ecology, Development and Research (CEDAR), India. She can be contacted at [ghazala303@gmail.com](mailto:ghazala303@gmail.com). The author bears full responsibility for the facts cited and opinions expressed in this paper.

urban areas has gone up to 33 per cent in 2015.<sup>2</sup> The period has also seen rapid infrastructural development, an improving quality of life and significant social mobility. However, the simultaneous population growth threatens to undo the gains made: from 870.6 million in 1990, the Indian population has reached 1.3 billion people today.<sup>3</sup> The recent period of frenetic development, coupled with an increasing consumerism and population growth, has consequences for the way we conserve our natural resources and, thereby, for the ecological security of the country.

Natural resource extraction and the concomitant degradation in the name of development are barely addressed through scientific management. Consequently, ecological decline and pollution have now become a widespread phenomenon. Each year, the quality of ecosystem services further degrades in all sectors – freshwater, marine, desert and forest. From 2003 to 2015, dense forest cover declined by 9500 square kilometres.<sup>4</sup> Species such as the Great Indian Bustard and the Ganges Gharial are now critically endangered, and their extinction is imminent if corrective action is not taken. Ecosystem services provided by forests, rivers and wetlands, including hydrological and climatic modulation and disaster mitigation, are being adversely impacted. The losses due to ecological degradation in India could be in the range of several trillion dollars globally.

In an attempt to balance the needs of conservation with development, India has set aside 5.8 per cent of its land under a network of Protected Areas (PAs), covering forests, wetlands, rivers, deserts and coasts,<sup>5</sup> established and administered under the Wildlife Protection Act (1972). More than simply biodiversity, it is intended to conserve all the varied services provided by ecosystems, as well as protect the human traditions and cultures that have enabled coexistence with nature.

Given India's development trajectory that seemingly threatens natural ecosystems and their functionality, it is essential to ask two questions. First, how effective has been the approach of setting aside land under government-protected areas? Second, how can the PA network in India be made sustainable in the context of a developing economy? This paper will, therefore,

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<sup>2</sup> <http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=IN>. Accessed on 23 June 2017.

<sup>3</sup> <https://www.indexmundi.com/facts/india/population>. Accessed on 23 June 2017.

<sup>4</sup> <https://www.theguardian.com/environment/blog/2014/jul/18/indias-forest-cover-numbers>. Accessed on 23 June 2017.

<sup>5</sup> [http://www.wiienviis.nic.in/Database/Protected\\_Area\\_854.aspx](http://www.wiienviis.nic.in/Database/Protected_Area_854.aspx). Accessed on 23 June 2017.

first review the PA network in India in terms of its effectiveness in meeting its original aim of ecosystem protection within a densely populated landscape. Second, it will discuss the integration of the PA system into the mainstream Indian economy and its larger land-use matrix, so that it can be socially, financially and ecologically sustainable in the context of national development.

## **The PA Network in India**

India is unusual among the developing countries in having a comprehensive legislation for nature protection and a significant political commitment of resources to the PA establishment and maintenance. As of February 2016, there were a total of 731 PAs in India, with 103 being National Parks, 535 Wildlife Sanctuaries and 93 Conservation Reserves and Community Reserves. The total area of a PA, encompassed in terrestrial, freshwater and marine ecosystems, is 160,896 square kilometres, representing 4.89 per cent of India's land area.<sup>6</sup>

While National Parks are the equivalent of strict nature reserves in India with highly restricted uses, (International Union for Conservation of Nature and Natural Resources [IUCN] Categories I and II), Wildlife Sanctuaries allow limited habitat management and local uses that are in tune with ecology (IUCN category IV), with specific use rights being conferred on locally forest-dependent communities.<sup>7</sup> Community Reserves and Conservation Reserves have additionally been created under law in 2002, in order to protect ecosystems, but with a relatively greater degree of local participation (IUCN Category VI). The de-notification of the PAs is legally difficult, and other regulatory laws disallow activities that could harm the integrity of the ecological landscapes, both in and around the PA.

The conservation value of the PA network is supported by large tracts of multiple use forests and wetlands that are Reserved or Protected Forests/Wetlands under Indian law. Such forests are often managed jointly with village institutions under state-specific legislations. The large area of legal forests in India, that is, 23.84 per cent of the landscape, potentially offers significant buffering to the PAs from extractive and developmental pressures and provides connectivity amongst them (in many cases), despite significant degradation levels.

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<sup>6</sup> [www.wiienviis.nic.in](http://www.wiienviis.nic.in).

<sup>7</sup> <https://www.iucn.org/theme/protected-areas/about/protected-areas-categories>.

Historically, the PA network has been critical to the survival of vulnerable faunal and floral species. Many argue that mega-fauna, such as the Bengal tiger, One-horned Rhinoceros and the Great Hornbill, owe their survival to strong ecosystem-level protection. Apart from strict protection from poaching and hunting, the PA network owes its success to the cultural tolerance of Indians to wildlife in their midst, which enables co-existence (not always easy) in zones of overlap. Indians take pride in affirming that India has not lost any species to extinction in historical times, except for the Asiatic cheetah.

### **Problematic Issues: Long-term Effectiveness**

Yet, the initial design and establishment of the PAs led to many anomalies whose negative impacts are visible today. Problems such as small size, lack of connectivity, fragmentation and edge effects affect a large proportion of Indian PAs. While there are a large number of PAs, their size distribution is highly skewed towards lower values. The median size of the PAs is 68.14 square kilometres and their average size is 248.63 square kilometres. Of the 638 PAs on which data is currently available, there are only 24 PAs above 1,000 square kilometres in area.<sup>8</sup> Research studies show that the PAs, below a few hundred square kilometres in size, are unable to protect the entire complement of fauna present in a given region,<sup>9</sup> unless they are connected to other habitats through viable corridors.

However connectivity is a problem, and increasingly so, owing to the recent spurt of construction of highways, dams, power-lines and ports as well as suburban sprawl. Wide-ranging species such as the elephants and tigers are finding it increasingly difficult to disperse or follow ancient migratory corridors. Genetic inbreeding within an animal population due to lack of dispersal among habitats, can also lead to serious issues over the long term and has become already visible in species such as the Asiatic lion in Gujarat.

There is also considerable variation in the robustness of management and protection of the PAs, and, consequently, their effectiveness on the ground. In general, the PAs managed for charismatic species such as the Bengal tiger and Asiatic lion attract much more political and public support (and scrutiny), governmental funding and research, ultimately leading to better

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<sup>8</sup> Ibid.

<sup>9</sup> However, it is to be noted that small PAs do provide places for smaller species that require less space such as insects and amphibians.

management. Such PAs also tend to enjoy high levels of investment in active protection, local livelihood improvement and conflict mitigation measures.

Most PAs exist within a mosaic of agricultural, suburban and multiple use forest areas. In this situation, adverse impacts take place in two directions – of people on wildlife and of wildlife on people. The lack of management of the human-dominated matrix outside the PAs greatly limits the effectiveness of conservation. As a result, a large number of the PAs have suffered degradation and local species extinctions during the past few decades.

Apart from the simple design issues, one of the most important reasons for the weakness of the PA system is the alienation of local communities. There is considerable evidence that the continued legitimacy of the PA boundaries and sustainable use of the PAs over time is highly dependent on strong local buy-in and involvement. As it stands, very few PAs have adequate local support among the buffer zone villages; many have rather indifferent or even hostile populations.

There are several reasons for this. For one, the restriction of access to natural resources, usually caused after a PA notification, is not adequately compensated by alternative resources or livelihoods. Further, in most PAs, commercial activities such as guided tours, wildlife safaris, hospitality industry and restoration programmes are dominated by urban interests, leading to poor benefits to the local populations. Many PAs have caused large-scale relocation of rural people in order to make the PAs more effective and their boundaries more secure. However, repeated coercive displacement of villagers from many sites, leading to livelihood insecurity and cultural losses,<sup>10</sup> often outweigh the positive benefits. Wildlife-caused crop damage, livestock losses and human injury also take their toll on livelihoods in and around the PAs. As reported by the Elephant Task Force, in 2010, approximately 500,000 families suffered crop damage by elephants, and, on average, as many as 400 people/animals are killed every year in such incidents.<sup>11</sup>

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<sup>10</sup> Shahabuddin, G. 2010. Conservation at the Crossroads: Science, Society and the Future of India's Wildlife. Permanent Black, Ranikhet and New India Foundation, Bengaluru.

<sup>11</sup> Rangarajan, M, Desai, A, Sukumar, R, Easa, P S, Menon, V, Vincent, S, Ganguly, S, Talukdar, B K, Singh, B, Mudappa, D, Choudhary, S and Prasad, A N. 2010. Gajah, Securing the Future for Elephants in India. Report of the Elephant Task Force. Ministry of Environment and Forests, Government of India, New Delhi.

The lack of finances and infrastructure within the PAs is an additional concern that has not received sufficient attention over the last decade. State governments are finding it increasingly difficult to finance infrastructural improvement, research or local outreach when basic expenses such as the salaries for guards and the cost of communication equipment are not fully covered. During the last five-year plan (2012-17), the allocation of funds for the PAs was cut down by approximately 85 per cent, and the conservation of endangered species was auctioned out to corporate houses.<sup>12</sup>

Above all, it is important to recognise that the PAs exist as fragments of much larger landscapes which play host to human enterprise. The PAs are subject to development pressure, increasingly so after the economic reforms process began in the 1990s. Threats from infrastructural projects, mining and industry have emerged anew after a period of relative ease.<sup>13</sup> Dams and highways obstruct wildlife corridors and cause fragmentation; water pollution and reservoirs put paid to aquatic wildlife, and forest areas around the PAs are swallowed up by haphazard suburban sprawl. Regulatory processes, such the necessity of an environmental and social impact assessment, are given short shrift, in the absence of truly independent experts.<sup>14</sup> As a result, the development process is chipping away, literally and metaphorically, at the fortress of protection created by the PA system.

## **Towards Better Integration**

Overall, a two-pronged approach is required to improve the long-term viability of the PAs. On the one hand, the integration of local communities into the PA network is essential. Losses due to wildlife-caused damage, displacement of villagers and loss of access to natural resources have to be adequately mitigated and compensated. In addition, the means through which local residents can economically benefit from the existence of a PA in their neighbourhood need to be enhanced and strengthened through imaginative initiatives.<sup>15</sup>

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<sup>12</sup> Mazoomdar, J. 2015. Budget cuts make govt turn to PSUs: Save snow leopard, gharial. Indian Express, 5 April 2015.

<sup>13</sup> Shahabuddin, G. 2010, op. cit.

<sup>14</sup> Kohli, K, Menon, M. 2015. Moving Forward in the Old Direction: Environmental Regulation in India. *Economic & Political Weekly* 50(50), 12 December 2015.

<sup>15</sup> Ministry of Environment and Forests, Government of India. 2005. Joining the Dots: The Report of the Tiger Task Force. Government of India, New Delhi.

The creation of alternatives and employment for local people can go a long way to reduce such pressures. For instance, economic activities by locals such as homestays, guiding and trekking groups should be encouraged through skills training and the provision of capital. Such a policy has been adopted in the Periyar Tiger Reserve with positive results.<sup>16</sup> There are no policies yet that establish preferential employment to the advantage of people living in the periphery of PAs. On the contrary, people from urban areas usually fill up these niches because they are better equipped in terms of skills or education. One area where local people can do much better than most urban recruits is in forest protection (as forest guards) which forms the frontline of protection against timber mafia and poachers.<sup>17</sup> If all or most of the protection jobs are given to the locals, the quality of protecting the PAs and their resources would tremendously improve. At the same time, such employment can give the locals a strong stake in conservation, particularly as they will see links to their own socio-ecological heritage and culture.

At the country scale, a number of macro-level policies are required, aimed at incorporating the PA network in the wider system. For instance, a cess on the resorts and recreational activities, available around the PAs whose existence really depends on natural landscapes and wildlife, is urgently required. Revenues from entry fees can be enhanced and can also be used for management or for local development interventions. A large proportion of the PAs are outside the revenue net, due to a lack of infrastructure and human resources. Such PAs can benefit from some governmental investment to modify them into attractive tourist sites.

At the macro-level, a Green gross domestic product (GDP) approach<sup>18</sup> would make ecosystem services measurable and their preservation more accountable. Accounting for the depletion of natural capital would enable India to realise the enormous contribution of the PAs to the country's GDP and how much it is losing because of inefficient ecosystem management and protection. A recent evaluation of ecosystem services of six tiger reserves in the country indicated the huge value that these PAs represent.<sup>19</sup> These include direct

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<sup>16</sup> Uniyal, V K & Zacharias, J. 2001. Periyar Tiger Reserve – building bridges with local communities for biodiversity conservation. *Parks*. Vol (11) 2: pp 14-23.

<sup>17</sup> Ibid.

<sup>18</sup> Akita, T, Nakamura, Y. 2000. Green GDP Estimates in China, Indonesia and Japan: An Application of the UN Environmental and Economic Accounting System. Institute of Advanced Studies, United Nations University.

<sup>19</sup> Verma, M, Negandhi, D, Khanna, C, Edgaonkar, A, David, A, Kadekodi, G, R Costanza, Singh, R. 2015. Economic Valuation of Tiger Reserves in India: A Value+ Approach. Indian Institute of Forest Management, Bhopal, India.

employment in the PA, provision of water to nearby cities and towns, mitigation of climate change impacts on agriculture, revenues from tourism and provision of recreational areas.

A new phase in economic planning for forests rests upon the mega-fund created through the national scheme of Compensatory Afforestation Fund Management and Planning Authority (CAMPA) which lay unused until 2016. This fund has been created by charging a “fine” equivalent to the net present value of forests proportionate to the area of forest that is destroyed during the course of any development activity, whether the user agency is a public- or private-sector company. According to current estimates, as much as ₹6,000 crores (\$12.9 billion) will be made available to the states every year to fund forestry activities, as dictated by the new law on CAMPA passed in 2016.<sup>20</sup> Such a fund is highly appropriate for financing the PA network of the country and bringing in much-needed reforms. Yet, under the law,<sup>21</sup> the fund has been largely diverted to activities that would be considered normal forest conservation activities which are already under the domain of state forest departments. Some lobbies have suggested using this fund for the ‘improvement of forests’, which is considered to be a fig-leaf for the industrial takeover of captive tree plantations. Thus, the value of this dispensation for nature conservation or the PA protection itself has come under question.

## Conclusion

An evaluation of the problems afflicting the PAs in India shows that there is a necessity of holistic rethinking on the country’s basic development models. Often, the solution to problems lies in innovative thinking. In the case of the PA protection, for example, it is possible to create economic incentives as well, but often *forma mentis* is prejudiced towards pairing ecology and profit. As the PAs are administratively and ecologically complicated, it is necessary to act on various fronts at the same time – creating new revenue models, quantitatively accounting for ecosystem values at the national level, and mitigating day-to-day losses of local households. Further, a consideration of issues related to governance, institutions, social ecology and economics is required to understand the problems better and create viable solutions. Without such holistic thinking and appropriate steps, India’s PA

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<sup>20</sup> Press Information Bureau. 2016. Compensatory Afforestation Bill passed by Rajya Sabha. <http://pib.nic.in/newsite/mbErel.aspx?relid=147937>. Accessed on 25 June 2017.

<sup>21</sup> Ibid.



network stands to lose its vibrancy and sustainability as well as public support in the long run.

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