Socio-Economic Impact of Covid-19 Lockdowns on Wildlife Tourism Dependent Local Communities: A Study of Six Wildlife Protected Areas of Vidarbha Region in Central India

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ABSTRACT

Wildlife tourism in India has always been an important source of revenue for the government and livelihood for the forest fringe communities. However, nationwide lockdowns imposed due to Covid-19 brought the whole sector to a standstill with sporadic tourism activities in between lockdowns including wildlife tourism. This had an impact on the livelihoods and income of local communities dependent on wildlife tourism. Thus, it became pertinent to explore the extent of the impact as well as the effectiveness of the existing systems to deal with the situation. This paper explores the social-economic impact of Covid-19 induced lockdowns on wildlife tourism in six protected areas (PAs) of the forest-rich Vidarbha region of Maharashtra State. Through a sample survey of villagers dependent on wildlife tourism in these PAs, the study was able to find issues of income loss and a resultant increase in indebtedness as well as low access to government benefits during this time. Thus, reviewing the current systems, plugging leakages in benefit transfers, building additional local skills for forest-based livelihoods, and developing stronger linkages between government financial institutions and local micro-finance systems becomes important to develop stronger safety nets in rural areas.

Introduction

India has a rich biodiversity and 80 percent of it is made up of forests. In terms of geographical area, 24 percent of it constitutes forests (ISFR, 2021) which accounts for two percent of the world's forest area (Koshy, 2022). The economic, cultural, and ecological value of forests especially in the preservation of the umbrella species, the Royal Bengal Tiger, was understood in 1969 prompting the process of launching of Project Tiger in 1973. Preservation of tigers, other wildlife species, and the traditional knowledge of local communities led to the creation of a network of Protected Areas (PAs). Since then, India has built 998 PAs, covering 5.28 percent of the geographical area of the country (Kathayat, 2022). It is important to note that this network constitutes 52 tiger reserves covering 75,796.83 sq. km (NTCA,

2022). These PAs provide diverse and valuable services which are now being recognized and thus prompting their economic valuation.

A two-phase economic valuation study of six tiger reserves was carried out in 2015 and of ten in 2019. These studies have estimated the value of annual services from just six tiger reserves at 8.3 to 17 billion Rupees (Verma *et al.*, 2015) and that from ten tiger reserves at 5,094.91 to 16,202.11 crore Rupees (Verma *et al.*, 2019). Among the ecosystem services that these two studies have identified, livelihood featured as an important one (Verma *et al.*, 2019) as PAs, especially those recognised as tiger reserves, are popular tourist destinations (Banerjee, 2012). Extrapolating this value to 36 remaining tiger reserves would speak volumes of the economic potential of biodiversity of India.

Protected areas and livelihood from wildlife tourism

Livelihood creation from these tiger reserves through tourism is multi-fold as it generates livelihood for guides, jeep drivers, as well as employment provided by lodges or resorts operators. The role of guides is especially crucial as they are an important link between the sustainable consumption of wildlife and revenue generation for wildlife reserves. Thus, protected area managers acknowledge their significant role (Mascardo *et al.*, 2004). To keep this linkage relevant and significant, and with a positive impact on revenue generation through the quality of experience to the tourists, PA authorities train the guides regularly. In countries like India, wildlife tourism guides are now being graded in order to improve their quality of employment (Pinjarkar, 2021).

All this matters as the wildlife tourism sector has the potential as an employment provider as it is estimated to register an annual growth of 15 percent (Rao, 2021), with the main beneficiaries being the local communities (Chundawat *et al.*, 2017, Roy *et al.* 2019). Since many of the tiger reserves are located in geographically remote regions, getting a regular source of employment is valued by the local communities (Verma *et al.,* 2017), and getting good salaries from tourism has also prompted the local youth to give up poaching (Twining-Ward *et al.*, 2018).

Covid-19 and impact on wildlife tourism

However, hospitality industry world over received a setback with the spread of Covid-19 and the result-ant lockdowns, with a loss of over 75 million jobs (Newsome, 2020). In India, the contribution of the tourism sector of 2.7 percent to country's Gross Domestic Product (GDP) and 6.7 percent to employment generation in pre-Covid year of 2019-20, faced a setback as employment dropped by 41.7 percent and income of business owners by 124.4 percent in 2020-21 (Munjal *et al.*, 2021). This clearly brought out the fact that the tourism industry is environmentally sensitive (Zhong *et al.*, 2021), especially wildlife tourism which was resultantly hit severely by Covid-19.

The impact on wildlife and tourism related to it, was manifold such as loss of jobs through wildlife tourism, increase in wildlife poaching as an alternative source of food and income (Newsome, 2020), and reduction in funding for biodiversity conservation (UNWTO, undated). In India, wildlife poaching incidents doubled during the lockdown period which were mainly for food (Pinjarkar, 2020 (a), Badola, 2020). What is more alarming is the increase in the cases of first-time offenders (Deepika, 2022).

However, the impact of Covid-19 lockdowns on wildlife tourism remains empirically unexplored, although newspaper reports and newsletters have indicated loss of income from wildlife tourism (Manwani, 2020; Pinjarkar, 2020 (b); Singh, 2021). In parts of India where dependence of rural communities on forests is large such as the Vidarbha region of Maharashtra, it becomes pertinent to explore what has been the impact of Covid-19 induced lockdowns on socio-economic conditions of local communities dependent on wildlife tourism. This paper answers the same through an empirical study conducted in six wildlife protected areas of Vidarbha region from Central India.

This paper first discusses the study area and the methodology used for data collection and analysis. This is followed by the results of the study and the recommendations.

Materials and Methods

Study area

This study was conducted in Vidarbha region of Maharashtra State of India which forms the eastern part of the State. The State has 7.99 % of India's recorded forest area (PIB Mumbai, 2022) and more than 52 percent of it is concentrated in eleven districts that form Vidarbha. This gives the region the

distinction of being the natural resource rich belt of the State. It is thus only natural that five out of six of the State's tiger reserves (ISFR, 2019) and 98.47 percent of the tiger population (ISFR, 2021) are in this region. Therefore, Vidarbha has the largest potential for wildlife and ecotourism. However, this resource rich area is also an economically backward region of the State (Express News Service, 2020; Mohan, *et al.*, 2022). Therefore, the value of wildlife tourism is indispensable for the local communities, calling for solutions to local problems that got further accentuated due to the outbreak of Covid-19 (Hitavada, 2022).

This research was carried out in four tiger reserves and two wildlife sanctuaries of the region, namely Bor Tiger Reserve (BTR) from Wardha District, Pench Tiger Reserve (PTR) and Umred Pauni Karhandla Wildlife Sanctuary (UKWLS), spread between Nagpur and Bhandara districts, Tadoba Andhari Tiger Reserve (TATR) from Chandrapur district, Navegaon Nagzira Tiger Reserve (NNTR) from Bhandara district, and Tipeshwar Wildlife Sanctuary (TWLS) from Yavatmal district.

These PAs vary in size with TATR being the largest among the six with 625 sq. kms of core area and 1,101.7711 sq. kms of buffer, totalling to 1,727.5911 sq. kms. PTR has 257.26 sq. kms of core and 483.96 sq. kms of buffer with a total of 741.22 sq. kms followed by NNTR with 653.674 sq. kms of core (ENVIS, 2022). UKWLS is spread over 189 sq.kms, TWLS over 148.63 sq.kms (ENVIS, 2021) while BTR is the smallest tiger reserve with an area of 138.12 sq. kms (ENVIS, 2022; Lokhande 2022).

All the PAs have multiple villages surrounding them including their presence in the buffer area which is a part of natural formation of all PAs as they are carved out of forest areas inhabited by traditional forest dwellers. Many of the villages from within the core of the Tiger Reserves have been relocated (Mehra *et al.*, 2004). Currently, PAs like TATR have 53 villages on its fringe (Patil *et al.*, undated) while 48 villages still exist within a 10-km radius of PTR (Reddy, 2015). The examples of just two PAs speaks volumes of the employment potential due to tourism or on the flip side, the likely pressure on the Tiger Reserve in case of limited employment opportunities as is evident with the constant conflict that PTR authorities have with the local fishing community (Pinjarkar, 2022). However, over the years, with the formation of the PAs the locals have been trained and absorbed in tourist activities so as

to provide employment and make them stakeholders in the conservation process.

Data Collection and Analysis

Data for this study was collected from the following sources on parameters namely sources of income, dependence on wildlife tourism, impact of lockdowns on income, economic problems faced, debt incurred, issues of access to institutional debt, social problems, etc:

• Primary data was collected through a structured questionnaire from a sample selected through random sampling of tourist guides who also alternate as tourist jeep drivers, and are also dependent on other sources of employment from wildlife tourism. The study has considered a sample size of 130 which was found to be adequate by statistically determining the optimum sample size with population proportion. In percentage terms, the sample size was 27% of the total tourist guides working in the core areas of all the tiger reserves. Based on the secondary data collected from each PA, 114 tourist guides work in the core of TATR, 110 in NNTR, 27 in TWLS, 25 in BTR, 80 in UKWLS, and 113 in PTR.

• Secondary data was collected from published reports by government and non-governmental organisations.

Standard statistical tools have been used for data analysis along with Pearson's Chi-square test.

Discussion

Demographic profile of the sample

Majority of the respondents (53.8 percent) were found to be in the age group of 18-30 years. About 43 percent were in the age group of 31-50, and 3.1 percent were above the age of 51 years. Since it was a random sample the respondents' age group revealed significant livelihood dependence by young adults on wildlife tourism. This indicates that India with a large demographic dividend and a sizeable chunk of that population in rural areas, wildlife tourism is a crucial employment source (other than farming) for the rural youth. Also reflecting the demographic trend of the country, a large proportion (99.2 percent) of the sample was found to be literate. With the recent incorporation of women in the workforce engaged in wildlife tourism, the sample included 13.1 percent female respondents. Ninety-four percent of them were employed as tourist

guides and remaining as owners of home stays.

Economic dependence on wildlife tourism

The sample found a high economic dependence of the respondents on wildlife tourism. While 71.5 percent of respondents were engaged as tourist guides, 16.9 percent as tourist jeep drivers, 3.8 percent as owners of home stays, 2.3 percent owned eateries meant for tourists, and 5.4 percent were employed in other occupations related to wildlife tourism and management. This was further supported by the fact that for 95.4 percent respondents, wildlife tourism was an important source of income as they were the main income earners for their families. However, the extent of dependence varied. For 34.6 percent, wildlife tourism contributed between 0-25 percent to their income. However, for 47.7 percent of the sample the contribution of income earned from wildlife tourism was found to be more than 25 percent. For the remaining 17.7 percent the contribution was significant as they earned 75 percent and more of their income from wildlife tourism. The average size of the family members dependent on the respondent group was found to be 4.34 with the total number of dependents being 565 thus indicating the scale of impact that a change in income due to a calamity like Covid-19 is likely to have.

Results

Socio-economic impact

During Covid-19 lockdowns, 87.7 percent respondents experienced decrease in family income. Out of this, 35.4 percent experienced a decrease between 0-25 percent, 46.1 percent between 25 to 75 percent and 11.5 percent experienced more than 75 percent decrease. However, 10.8 percent of the total sample reported that their income remained unaffected while 1.5 percent reported an increase in family income during the lockdowns.

A decrease in income definitely had its economic repercussions in the form of dependence on debt and mortgages. From the sample, 73.8 percent of the respondents reported borrowing during this time and for 66.9 percent of them was it for the first time. The diversity in sources of borrowing was seen in the sample with 36.19 percent of them borrowed from their relatives, 22.86 percent from their friends, 14.29 percent from village moneylenders, and 26.67 percent from banks. Nearly half of those who bor-

rowed (45.4 percent) reported mortgaging their assets. Despite the banks being open during the lockdowns as part of essential services, the high magnitude of non-institutional loans could be an indicator of challenges that rural communities still face in order to procure loans from banks. The impact of inaccessibility to institutional loans can be seen in the fact that 28.5 percent of those that borrowed paid an interest rate of more than 10 percent and some of them even reported paying more than 30 percent.

In addition, the other economic effects that could also be seen were of loan repayment and food affordability, with 46.2 percent of the sample faced the problem of loan repayment and 43.1 percent respondents faced issues of food affordability. About 4 percent of the respondents reported problems with access to medicines while a small percentage reported of issues with transportation and communication.

During the lockdowns, there were many instances of social media reportage of financial help being provided to poor families during Covid-19. However, the research revealed the contrary. More than half of the sample (65.4 percent) did not receive any financial assistance from either the central or the state governments, NGOs, or the forest department. This is despite the fact that during lockdowns the central government under its PKMGKP (Pradhan Mantri Garib Kalyan Package) gave five kg wheat/rice and 1 kg pulses free to poor families till November 2021, Rs. 500 per month for three months to poor women, and Rs. 2,000 in the first week of April 2020 to farmers (PMGKP).

Out of those who did receive help, 13.1 percent obtained it from the forest department (FD), 12.3percent from friends, 7.69 percent from NGOs, and 0.77 percent from the state and central governments each. Some of the respondents (22.3 percent) received assistance in 'kind' from the forest department in the form of food and medicines, which was critical.

A very small proportion of the sample (5.4 percent) reported procuring alternate source of employment. However, this was mostly as daily wage earners as farm labour, as *van majdur* (daily wage earners employed by forest department), or from construction work. Some were able to earn through collection of *tendu* leaves or as drivers. During the group discussion with some of the guides of PTR and TATR, they reported that they did not receive

more than eight days of employment from the FD during the lockdown.

Covid-19 induced lockdowns impacted the lives of the respondents beyond economics. Respondents spoke of multiple social issues that they faced. Nearly half (41.5 percent) of them faced issues related to physical health care due to a decrease in income, while 28.5 percent reported lack of access to mental health care. About 18 percent respondents struggled with providing education to their children while 9 percent experienced the problem of social discrimination due to growing social and economic inequalities related to the lockdowns.

Since Covid-19 induced lockdowns were sudden, providing very little time for developing alternative skills for risk-mitigation related to it, we wanted to know if the respondents had since then thought of an alternative strategy or source of income in case a similar situation arises in the future. Despite experiencing the socio-economic shocks that followed Covid-19 lockdowns, a large number (86.2 percent) of the respondents reported a lack of preparedness in terms of an alternate source of livelihood. Even though 14 percent of the sample assented to the need but they did not have any alternative skill to report. Their only hope seemed to depend on farm work, labour work in jungles, saving for the future, working as drivers or finding a job in a private sector in the cities.

Chi-Square result

The research tried to find if certain age groups faced larger decrease in income as compared to the others with the assumption that age and experience and skills are directly proportional, thus reflecting in more opportunities and avenues to enhance their income. However, the chi-square test result (Table 1, Appendix) revealed the contrary where all the age groups experienced decrease in income from wildlife tourism during the lockdowns. The chi-square test result found no relationship between age group and the problems faced during the lockdown**s** thus indicating that all age groups faced issues. Similarly, the analysis also found a significant correlation between income from wildlife tourism and the change in income due to the lockdown, substantiating the fact that all income groups faced a negative change in income due to the lockdowns. The analysis also accepted the null hypothesis - 'there is no relationship between income and borrowing by respondents' - substantiating the fact that maximum respondents from all the income groups borrowed during lockdowns due to the loss of income from wildlife tourism. This was supported further by the rejection of the null hypothesis - 'no relationship between problems faced and borrowings by respondents' - indicating that people borrowed because of the problems that they faced during the lockdowns.

Table 1. Result of Pearson Chi-Square Test

Relationship	Null Hypothesis (H0)	Pearson Chi-Square Test Asymptotic Significance (2-sided)		
Relationship between age of respondents and change in their income	There is no relationship between age and change in income of respondents	Value	Df	Asymptotic Significance (2-sided)
		1.138^a	4	.888
Relationship between respondents' age and problems faced	There is no relationship between age and problems faced by respondents	Value	Df	Asymptotic Significance (2-sided)
		12.714^a	8	.122
Relationship between % of income from wildlife tourism and % change in income due to Covid-19	There is no relationship between income and change in income of respondents.	Value	Df	Asymptotic Significance (2-sided)
		38.621^a	12	.000
Relationship between income and borrowings incurred	There is no relationship between income and borrowing by respondents.	Value	Df	Asymptotic Significance (2-sided)
		$.120^a$	3	.989
Relationship between problems faced and borrowings by respondents'	There is no relationship between problems faced and borrowings by respondents.	Value	Df	Asymptotic Significance (2-sided)
		32.881^a	4	.000

Recommendations

The above facts indicate a high level of socio-economic dependence of villagers on wildlife tourism. In the absence of tourists' footfall, the livelihood of the villagers was severely impacted with a large number of them forced to incur debts at high interest rates. In coming times this would have significant impact on their social and economic well-being with spending curtailed due to debt-servicing.

Income from forests in Vidarbha not only acts as an important safety net for villagers but also has important implications on the sustainability of the forests, as this dependence makes the villagers *de facto* care-takers of forests and wildlife. Thus, it becomes pertinent to think of livelihood alternatives in rich forest areas like the Vidarbha region that can be strengthened in the post-Covid times by promoting eco-tourism, alternate medicine-based tourism activities, mapping the available local resources with skills required to process the same as end marketable products, etc. For the same, modules and strategies based on the strengths and needs should be structured and implemented. This would essentially involve training the human resource from villages along with creating sustainable promotional strategies. Even though these were being done at a small scale around PAs, it would require a more rigorous policy push.

Additionally, the social protection machinery for rural India needs to be strengthened. As an alternate to wildlife tourism work, safety nets in the form of MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) requires a diversified extension in which skilled nature of work can also be included. Besides, linking of MGNREGA with social corpus fund of private multinational can be a way out in harnessing additional resources for social security networking in rural India. Now would be a good time to evaluate all those government schemes that were initiated to mitigate the severe impact of lockdowns on livelihoods that would help plug the leakages that seem to exist despite direct digital monetary transfers(through Public Financial Management System). Most importantly, improvement in access to affordable finance in the rural areas through a robust network of public-sector banks and village level micro-finance groups would enable the villagers to overcome dire situations like loss of jobs during lockdowns.

This study also recommends extending this re-search to other protected areas since an estimated 4.3 million people live in and around India's PAs (Fanari and Broome, 2020).

Acknowledgements

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