

**POLITICAL ECONOMY OF COMPENSATORY CONSERVATION: A CASE
STUDY OF THE PROPOSED OMKARESHWAR NATIONAL PARK
COMPLEX, INDIA**

A Dissertation

by

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Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

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August 2013

Major Subject: Geography

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ABSTRACT

Proposed Omkareshwar National Park Complex (ONPC), is a planned park in Madhya Pradesh (central India) that is being designed as a compensatory conservation plan to overcome the loss of wildlife and forest by the construction and submergence from nearby Indira-Sagar and Omkareshwar dams, part of the infamous multi-purpose Narmada dam project. All the village communities in the ONPC largely depend on the forest resources for their daily sustenance, particularly fuel-wood and non-timber forest products such as *tendupatta*, *mahua*, *kullu* and *dhavda gums*. The local people typically engage as gatherers of non-timber forest resources, farmers or work as labors on other agricultural farms. Enclosing, this forest commons, threatens the livelihood opportunities of *adivasis*. Hence, this dissertation questions how compensatory conservation transforms the forest governance and the economic activities of the local communities. I examine how rules-in-use control spatial actions alter economic, political and social relationships within proposed ONPC in central India. I gathered the economic, social and political data through interviews, case-studies and surveys. Farmers benefit from the creation of the ONPC as a biodiversity offset, while other villagers engaged in off-farm and NTFP extraction labor, are more economically vulnerable. *Adivasi* depend mostly on the forest resource extraction for their income generation. Therefore, with increasing restrictions placed on the resource access and control, resource users are forced to travel outside their villages in search of wage labor.

To my late grandparents Santosh and Ishwar,
my parents Ameeta and Rajesh and dearest Isha didi
Thanks for being my pillars of support and inspiration

ACKNOWLEDGEMENTS

Foremost, I would like to thank my committee chair, Wendy Jepson who constantly challenged me beyond my imagination. Thank you for your countless hours of advice and revisions. I would never have been able to finish my dissertation without your persistent but patient guidance and help. I am grateful to my committee members, Kathleen O'Reilly, Christian Brannstrom, and Amanda Stronza, who not only provided a stimulating academic environment, but also for their constant support, encouragement, insightful comments and hard questions posed throughout the course of this dissertation. In particular, my intellectual debt is to Wendy Jepson and Kathleen O'Reilly for making me who I am today. I am truly fortunate to have had worked with both.

I would like to express my sincere gratitude to Andrew Millington without whose help and motivation the dream of pursuing the Ph.D. program would have remained incomplete. You have helped me at every step in getting my doctoral career started on the right foot and providing me with the spot-on foundation.

I would also like to acknowledge the financial, academic, technical and every possible support that I received from Texas A&M University which enabled me to successfully complete my program. My deepest appreciation goes to my friends and colleagues and the department faculty and staff for making my time at Texas A&M University an enjoyable experience. Special thanks to Swetha Peteru for those long nights of revisions and feedbacks.

I also want to extend my gratitude to Chief Conservator of Forest (proposed ONPC) Dr Vinay Varman, Sanjay Dongre and the entire staff of proposed ONPC staff at Indore for providing me, not only the materials but, every possible help at every step during my fieldwork. I could not have completed this study without the help of rangers and forest guards in the field who traveled with me from village to village. I would also like to thank all the villagers who patiently answered my every question even during the hot summer days and heavy monsoonal showers. I cannot thank enough Neelam Chaturvedi and my field assistant, Laxmi, without whom, I could have never solved the logistical problems. I am also grateful to Siddharth and Rekha for their assistance in the field.

Finally, my late grandparents, without their motivation I would not have embarked on this life-changing journey. Thank you for your last gift. My parents Ameeta and Rajesh for their support and encouragement and to my dearest Isha didi for being my champion and always keeping up my spirits. Hugs to my darling Arshia and Vansh for keeping me entertained during troubled times. And finally, I love my dearest *jiju* Deepak, for not only keeping up my morale but also helping me with constant technical difficulties. I hope I made all of you proud.

NOMENCLATURE

CWINC	Central, Waterways, Irrigation and Navigation Commission
CWPC	Central Water and Power Commission
FPCs	Forest Protection Committees
FRL	Full Reservoir Level
FVs	Forest Villages
GCC	Global Commodity Chain
IANS	Indo-Asian News Service
IBM	International Business Machines Corporation
IUCN	International Union for Conservation of Nature
JFM	Joint Forest Management
NBA	Narmada Bachao Andolan
N.D.	No Date
NGO	Non-Governmental Organization
NHPC	National Hydroelectric Power Corporation

NTFPs	Non-Timber Forest Products
NVDA	Narmada Valley Development Authority
ONPC	Omkareshwar National Park Complex
SPSS	Statistical Package for the Social Sciences
US\$	United States Dollar
US/USA	United States of America

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1. INTRODUCTION

CONTEXT AND STATEMENT OF PROBLEM

Creation of the development projects and subsequent conservation enclosures is a customary practice around the world (Seagle 2009, Morris et al 2006, Robertson 2004). Such projects have costs and benefits attached to them. While they advance economic development in the region by providing various benefits including employment and infrastructure development, development projects are also responsible for displacing or restricting resource access to the local communities (Brockington and Igoe 2006, Mclean and Straede 2003). One example is the proposed Omkareshwar National Park Complex in the Indian state of Madhya Pradesh.

The proposed Omkareshwar National Park Complex (ONPC) is a planned park in Madhya Pradesh, a region known for its notorious Narmada Dam development project which has displaced several millions of local inhabitants (Baviskar 1995, Chitale 1997).. The ONPC is being designed as a compensatory conservation project to overcome the loss of wildlife and forest by the construction and submergence from nearby Indira-Sagar and Omkareshwar dams. This complex consists of the Omkareshwar National Park, the Singhaji Wildlife Sanctuary, the Mandhata Sanctuary and the Narmada Conservation Reserve Unit I and II. The ONPC region is largely populated by tribal ‘*adivasis*’ people, a group that constitutes approximately 22.3% of the total state population, and depend on the forest resources for their subsistence livelihoods. The

adivasis literally means ‘original inhabitants’ but are more often called as indigenous groups or tribal people in India.

Creation of this protected area will result in new rules-in-use that will restrict and control the forest access of the local inhabitants and therefore change their livelihoods and socio-cultural relationships. While no villages within five kilometers of the proposed park will be relocated, the effect of the ONPC on the local livelihoods will be significant. This study, therefore, examines how new rules-in-use affect how the forest is governed in the proposed Omkareshwar National Park Complex and the expected changes in the livelihoods and economic activity of local people dependent on the forest resources (Figure 1.1).

The main analytical framework addresses how the state-mandated changes in forest management alter myriad relationships local people have with the forest (Figure 1.1). These changes are captured by understanding different economic, social and political factors. Therefore, this dissertation examines changes in the local responses in context of income generation, labor dynamics and social relationships, all driven by the creation of a conservation enclosure.

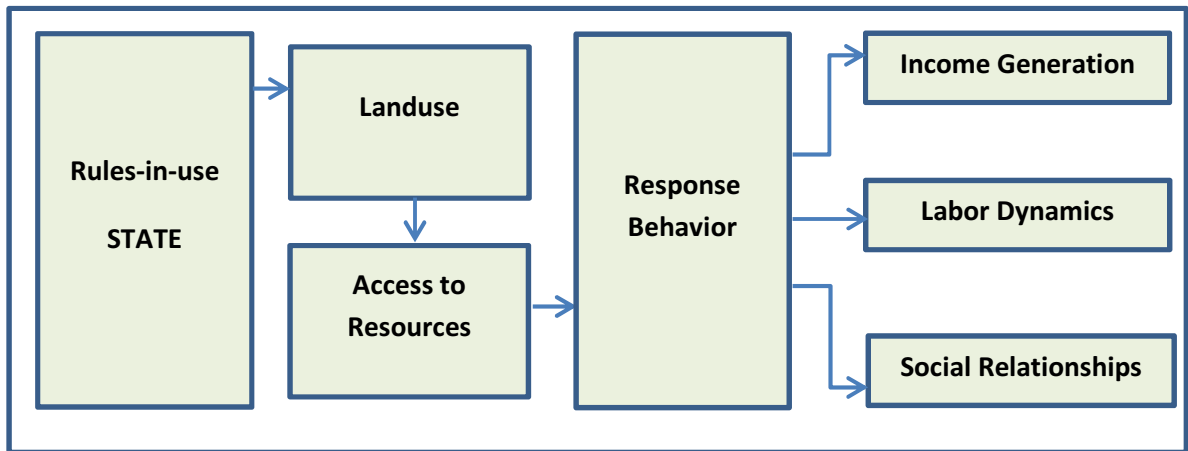


Figure 1.1 Analytical Framework

STATE OF KNOWLEDGE

Biodiversity Offsets^{1,2}

The relationship between biological diversity conservation and human development has evolved over the decades. A sea-change has moved conservation policy from the classic “fortress” (Brockington 2002, Hulme and Murphree 1999, Igoe 2004) to the community based conservation focused on development (Hulme and Murphree 2001, Neumann 1988, McNeely and Miller 1984, Miller 1984, Agrawal 2001, Agrawal and Chhatre 2006, Agrawal and Gupta 2005). Such conservation interventions have also been

¹Unless specified, I have used the terms biodiversity offset and conservation trade-off interchangeably.

² However, the form of compensatory conservation in India is not based on tradable credit type program such as in Australia and New Zealand. Still in infancy stage, it is based on the idea of trading off a developmental project with a conservation enclosure where community development is enforced through projects such as ecotourism.

influenced by changing state-society relations, where previous state policies have taken a back-seat to the current forms of market-based incentives and valuation of ecosystem services (Igoe and Brockington 2007, Igoe et al 2010, Dressler and Roth 2011, Brockington and Igoe 2006, Büscher and Whande 2007). Amidst the conservation paradigm change, a distinct branch has led to the emergence of environmental compensatory mitigation, or “biodiversity offsets”. Biodiversity offsets can be defined as “conservation actions intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects, so as to ensure no net loss of biodiversity” (ten Kate et al 2004:13).

Biodiversity offsets are considered an important tool for addressing environmental impacts of development, thus maintaining an equilibrium between the environment and development (McKenney and Kiesecker 2010). The biodiversity offset program is proving to be beneficial to businesses, governments, conservation groups and communities as evident by the wetland and conservation banking program in USA and habitat conservation in Australia and Canada (ten Kate et al 2004). Some positive aspects of biodiversity offsets include – (1) it permits individuals and institutions to reinforce economic prospects through market based incentives to improve biodiversity conservation outcomes; (2) forest regeneration improves carbon sequestration; (3) by participating, companies’ licenses and their agendas are strengthened, thus empowering them to gain communities’ trust; (4) provides an opportunity for conservationists to secure funding for their conservation goals, (5) without creating new legislative policies for conservation through the mechanism of biodiversity offsets, governments can boost

private participation, (6) by assimilating conservation and development goals, communities will be benefited through livelihood programs (Norton 2007, ten Kate et al 2004, Burgin 2008, Bayon 2008).

However, the social dimensions of these interventions are mixed. For some, such programs have included local communities in resource governance while fostering an interaction between sustainable resource management and economic development (Burgin 2008, Burgin 2011, Norton 2007). But others are not so positive. These offset program have led to the displacement and relocation of local communities from the conservation enclosures (Brockington and Igoe 2006, Rangarajan and Shahabuddin 2006, Adams and Hutton 2007). These negative processes may or may not result in further economic marginalization of the local communities, however (Brockington and Igoe 2006). In addition, biodiversity offsets have been criticized for several reasons. First, different private and public stakeholders lack shared visions for the biodiversity offset programs thus often creating conflicting situations (ten Kate et al 2004). Secondly, by creating strong policy frameworks for the offset programs to encourage private interests, it becomes essential to secure and build trust relationships among the different stakeholders (ten Kate et al 2004). Yet the specific processes are still understudied. Therefore, this dissertation will investigate economic, social and political nuances of the biodiversity offsets type of intervention and how such trade-offs operate in local communities.

While different names for biodiversity offsets exist, including mitigation banking, conservation banking, compensatory mitigation, BioBanking, they all share similar objective: to reduce biodiversity loss through market-based incentives and payments (Madsen et al 2010, ten Kate et al 2004, Morris et al 2006). According to State Biodiversity Markets report, at present 39 compensatory mitigation programs exist across the world, with several individual offset sites, in addition to 25 more programs in different stages of development (Madsen et al 2010). Such offset programs can be particularly found in New Zealand, Australia, Indonesia, Vietnam, Japan, China, South Africa, Madagascar, Sweden, Germany, United Kingdom, Brazil, Colombia, United States, and Canada (McKenney and Kiesecker 2009, Madsen et al 2010, Gordon et al 2011).

Different realities of biodiversity offset programs exist globally (Table 1.1). In North America, the biodiversity offsets programs are well-developed and focus on the wetlands and species mitigation in US (Robertson 2004, Bayon 2008) and fish habitats and wetland compensation in Canada (Madsen et al 2010). In collaboration with the public-private sectors, commercial wetland mitigation banking, an environmental management policy, was introduced in United States in 1991. Under this program, the agencies developed a market in privately owned 'wetland ecosystem services where the ecosystem services are produced and sold through site-restoration (Robertson 2004).

Table 1.1 Examples of Biodiversity Offsets

Country/Region	Program	Legislation	Policy goal
United States	Species Mitigation (of which conservation banking is one tool)	Endangered Species Act 1973 as amended and the Guidance on Establishment, Use and Operations of Conservation Banks	To offset adverse impacts to threatened and endangered species
	Wetland Mitigation	Clean Water Act 1972 Chapter 404(b)(1) and the US Army Corps of Engineers regulation (33 CFR 320.4(r))	“No overall loss of values and functions” (1990); “net gain” (2004)
Australia, New South Wales		Green Offsets for Sustainable Development: Concept Paper (2002); Native Vegetation Act (2003) and subsequent regulations (2005); the Threatened Species Conservation Amendment (Biodiversity Banking) Bill 2006	Net environmental gain”
Australia, Victoria		Native Vegetation Management Framework (2002) and subsequent amendments to related Acts; BushBroker– native vegetation credit registration and trading: Information Paper (2006)	“A reversal, across the entire landscape, of the long-term decline in extent and quality of native vegetation, leading to a Net Gain”
Western Australia		Native Vegetation Act (2003); Environmental Offsets: Position Statement No. 9 (2006)	“Net environmental Benefit”
European Union	Habitats and Birds Directive	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora and Council Directive 79/409/EEC	Maintain overall (ecological) coherence of the sites

Table 1.1 (continued)

Country/Region	Program	Legislation	Policy goal
Canada	Fisheries Act	R.S. 1985, c. F-14, Policy for the Management of Fish Habitat (1986), and the Habitat Conservation and Protection Guidelines, Second Edition (1998); see especially Subchapter 35(1) and Subchapter 35(2) of the Fisheries Act	No net loss in capacity of habitat to produce fish
Brazil	Forest Regulation and National System of Conservation Units	Lei No. 4771 of 1965; Lei No. 14.247 of 22/7/2002, Lei No 9.985 of 18/7/2000, Decreto No. 4.340 of 22/8/2002	No net loss of habitat under a defined minimum forest cover for private landholdings

Source: Bayon 2008

More noticeable offset programs can be found elsewhere in Australia and New Zealand. Twelve biodiversity offset programs currently exist with five more in developmental stages (Madsen et al 2010). The offsets are largely acquired by the urban property developers, infrastructure (road, pipelines) agencies, extractive industries, energy companies and agricultural landowners (Madsen et al 2010). In Australia, there is a sharp rise in the loss of threatened species that primarily exist in the urban areas due to urban expansion (Burgin 2008). In New South Wales, to address this issue, “Threatened Species Conservation Amendment (Biodiversity Banking) Bill” was passed in 2006

(Burgin 2008). Similar to carbon credit program, according to BioBanking, Burgin (2008) explains biodiversity credits may be produced by the land owners based on their commitment to reinforce and protect biodiversity on their land. These credits act as ‘additional actions’ and can be traded off to compensate for the biodiversity impacts due to land development (Bayon 2008, McKenney and Kiesecker 2010, Burgin 2008). The land development may progress, only if the traded credits implement a “net maintain or improve outcome” for biodiversity (Burgin 2008). Main drawback of the program includes lack of government enforcement to base decisions on scientific reasoning (Burgin 2008). According to the State of Biodiversity Market report (Madsen et al 2010), till end of 2009, about 8,865 hectares of land has been cleared and 25,564 hectares of offset has been created under BioBanking program in New South Wales. In New Zealand, the biodiversity offset program is authorized under the Resource Management Act of 1991 and the Conservation Act of 1987 (Madsen et al 2010). Waikatea Station (in New Zealand), is a classic sheep and cattle farm surround by indigenous forest and shrubland, threatened by lack of forest regeneration due to heavy undergrazing by cattle, sheep and feral goats (Norton 2009). The offset areas have been created adjacent to the cleared undergrazed areas within same ecosystem types. In Waikatea station, about 799 hectares of offset area has been created with larger (79 percent) proportion of indigenous forest and shrubland and smaller (21 percent) for pasture (Norton 2009).

Different studies on biodiversity offset program largely explore definition and global status (Madsen et al 2010, ten Kate et al 2004), framework assessment (Norton 2009,

McKenney and Kiesecker 2010, Kiesecker et al 2009, Burgin 2008, Burgin 2011, Tew 2011) and mechanisms and impacts (Bayon 2008, Gordon et al 2011). However, there is inadequate literature linking biodiversity offsets with development parameters of livelihoods, resource sustainability, institutions, and social relationships.

Conservation-Development Nexus in Geography

Conservation paradigm in 1980s and 1990s embraced sustainable use that supports the need to manage the conservation efforts along with the local communities in globalized era (Zimmerer 2006). This third wave is characterized by conservation territories, defined as “designated spaces of nature protection and resource management” (Zimmerer 2006a:8, Zimmerer 2006b). The spatial settings within conservation territories are marked with the environmental management goals and definite set of activities that range from the rigid nature conservation (“fortress conservation”) to sustainable utilization (Zimmerer 2006a, Zimmerer 2006b). These spatial settings are also defined by the changing technological tools that advance such projects. Zimmerer notes, for example, the creation of innovative management spaces including community conservation units, environmental networks, and interconnected spatial units as a result of the participatory planning (Zimmerer 2006a). Emergence of biodiversity offsets can be considered an example of such conservation territories. Biodiversity offsets are trade-offs that set aside land for conservation from within development schemes. Such trade-offs are accompanied by different processes to control and command the project

regulations. They also transform practices and processes at micro-scale, thus forever changing the social, political and economic dimensions of the local communities. Such trade-offs might affect the complex workings of conservative initiatives in either negative or positive ways.

Conservation-development studies have deeply engaged questions about the human-nature dichotomy, thus deepening the age-old park versus people debate, through studies related to the conflict over resources (Jarosz 1996, Peluso 1992, Carney 2004, Schroeder 1993, Rocheleau and Ross 1995, Sundberg 2003), colonial power struggles (Peluso 1993, Robbins et al 2006, Robbins 1998, Neumann 1998) and resource institutions (Robbins 2000, Agrawal and Gibson 1999). These studies explore the different ways through which the human practices and processes shape and are shaped by their environment. However, such studies are absent within biodiversity offset literature. Therefore, this study will employ the following frameworks to examine and further the biodiversity offset literature in India.

Forest Institutions

Institutions have played a central role in mediating how societies use, conserve, and preserve natural resources. Ostrom describes conservation institutions as sets of working rules that determine who is eligible to make decisions for management of natural resources, what actions are allowed, and what procedures are followed to manage the resource (Ostrom 1992: 19). Institutions include a range of social, economic and

political relationships that include markets (Lambin et al. 2003), cooperation (Jiang 2004), authority (Robbins 1998), and contracts (Jepson et al 2008; Jepson et al 2010). Emphasizing on the close direct association between the local institutions (authority) and its impact on the human-environment relationship, Robbins (1998) argues that institutions play a significant role in making decisions related to resource extraction and thus executing them. Consequently, the varied responses to such rules-in-use change according to the social parameters of caste, class and gender. In their study, Jepson et al (2010) redefined institutional interactions that contribute to land-use change by proposing an ‘access regime framework’ which examines how land change is created by the institutions by reshaping their access to natural and productive resources.

Different institutional relationships are shaped by different forms of social capital, that include shared knowledge, trust, social networks, norms and understandings that influence the nature of these relationships. Co-ordination and trust between the state and the resource-users are essential to create rules of use that exclude and enforce rules in the best interest of all the actors involved. Lack of such social capital generally results in power conflicts of varying degrees either between or within different layers of institutions (Ostrom 1992, Robbins 1998). Depending on the degree to which the institutions regulate the power and authority, rules are either resisted, enforced, respected or subverted (Robbins 1998). However, through his case study of Rajasthan, he argued that different producers respond differently to authority as a result of being influenced by social factors such as gender, caste, class. Political ecology of institutions suggests that micro-politics of access and control of forest resources at different scales,

including households, communities and state, may force the marginalized actors to redefine, negotiate and contest the resources (Peet and Watts 1996, Robbins 1998). Hence, this framework will help in understanding how change in rules-in-use control spatial actions that alter social and economic relationships between the resource controllers and the resource-users by restricting their access/control of resources which compel the resource users to often negotiate or contest resources.

Indian Initiatives

Indian forest conservation studies have extensively focused on deforestation (Robbins 1998, Sinha and Swaminathan 1991, Jha et al 2000), resource management institutions (Agrawal 1996, Kumar 2002, Agrawal 2000, Lise 2000), and power dynamics (Robbins 2000, Robbins 1998, Sivaramakrishnan 1995 and Guha and Gadgil 1988). Studies and reports indicate that the boundaries of the conservation enclosures are transformed for various reasons, thus altering how various communities use forests (IANS 2009, Press Trust of India 2010, Agrawal 2005). IANS (2009) report that the boundaries of the wildlife sanctuaries in the state of Himachal Pradesh would be redrawn, for the development activities, such that the number of national parks in the state would increase to a total of four. As a result, 767 villages and about 100,564 people will be moved out of the protected areas. According to another report (Press Trust of India 2010), due to decline in migration of Great Indian Bustard, Karera wildlife sanctuary in Madhya Pradesh will be denotified. Following this, the local communities will be

allowed to carry out commercial activities in the area. In another study, Agrawal (2005) discussed that the changes in the boundaries of the forest reserves in Kumaon, in pre-independence period, resulted in restricted forest rights of the villagers. This led to mass protests in the region by the villagers. As a result, approximately 5000 sq. kilometer of forest reserves was diverted and later came to be known as the community forests (Agrawal 2005). Agrawal (2005) argues that decentralization of authority to the local village councils is significant for the forest conservation. From these reports, it is evident that the boundaries of the protected areas have been expanded as well as downsized. But the effect of these boundary changes on the local communities is still overlooked, particularly in context of their resource use and access.

Scholars study boundaries as something that separates people from parks (Nagendra et al 2010, Persha et al 2011). Nagendra et al (2010) examine particular paths of forest change in different areas of the Tadoba Andhari Tiger Reserve by evaluating land cover change, floral diversity, and people's attitudes towards conservation inside and peripheral areas of the park. In another study, Persha et al (2011) suggest that to improve conservation effects within existing truths of people versus park conflicts in South Asia, management of forest commons through community forestry, instead of strict 'fortress' protected areas, should be implemented. There is a clear lack of studies in Indian forest conservation discourse that highlight the change in access regime due to creation of biodiversity offsets. Therefore, this study focuses on how creation of biodiversity offsets affects political-economic processes through new rules-in-use in the proposed

Omkareshwar National Park Complex. To further our understanding, a background history of Indian Forest Conservation is summarized next.

Indian Forest Conservation: A Review

Forests are considered valuable for its economic, social and cultural services since earliest times. Forests have provided timber for construction purpose, fuelwood, fodder, fruits and roof, medicinal plants, to the local communities for economic and self-sustenance and hunting grounds for the ancient rulers. Customs and traditions of several forest dwelling communities in India or particular trees scared and worship them as abode of Hindu gods or local deities (Robbins 1998).

The absolute role of state has been prominent since the beginnings of the forest management in India. India's critical trust with the forest management began during the Mauryan dynasty particularly in 325 B.C. It was during this time that Chanakya, the then prime minister and a learned scholar, created a set of guidelines for the advancement of forestry in his book "Arthashastra" (Jha 1994, Lal 1989, Jain 1989). He emphasized on the significance of the forest management by the king to preserve and maintain the forests. He highlighted the need for an appropriate way to exploit forests, setting up of processing units for the forest produce, protection of fauna for greater genetic diversity, prescribed specific fines for various offences including destruction of trees (Jha 1994). More importantly, he stressed on the importance of honest government employees for effective policy implementation.

History of Indian Forest Policies and Acts

During the colonial rule, the British remained unsympathetic to the state of India's forests in the first half of the eighteenth century. The 'forest conscience' that developed, during the latter part of British rule in India, originated from safeguarding against climate issues. They extensively exploited Indian forests by exerting pressure through expansion of railways, agricultural production and urban areas (Jha 1994, Lal 1989, Barton 2002, Birla Institute of Scientific Research 1986). However, this perception was changed when the British 'empire forestry' was threatened by the dwindling supplies of timber after the loss of its other colonies (Barton 2002) Subsequently, in 1865 the first Indian Forest Act (also known as Act 7) was passed by the British government which gave powers to the forest officers to issue local rules for conserving the forests in India. The main emphasis of this forest act was "preventing injuries to forests" by exerting force of law (Lal 1989). This act was amended later in 1878 which advanced on its predecessor's shortfalls particularly the conservation and preservation of reserved and protected forests. Based on revised Act 7 of 1878, all the rights and claims to land, in reserved forests, were dissolved and were passed on to the state. But in the case of protected forests, land rights were permitted to continue. It also created a category that later came to be known as '*Panchayat* or community forests' for the local communities to indulge in their daily forest resources needed for sustenance. However this community approach failed as it stressed on the extensive use of the community forests for daily forest functions instead of its preservation and hence this caused severe forest

degradation. By 1889-90, approximately 50,000 square miles of reserved forest and 20,000 square miles of protected forests existed in India (Barton 2002).

Colonial forestry ideology was passed down to the modern-day Indian forest department that stressed on the forest preservation and the increasing role of state in its management (Sivaramakrishnan 1995). A series of legislation acts followed the Act 7 of 1878 and provided further protection to the Indian wildlife through Forest Act of 1927. This was later amended several times in 1930, 1933 and 1948 which permitted the state and central government to announce the wastelands and remaining 'not-privately owned' forest areas as 'reserved forests' (Barton 2002).

After gaining independence in 1947, India passed its first independent National Forest Policy in 1952. This policy offered a functional classification that classified forests owned by state and private sectors into protective forests, national forests, and village forests and tree lands to enhance appropriate forest management to each type created. The 1952 policy granted the state the power to assign reserved forests to village forests where the local villagers can enjoy the extraction and use of minor forest resources in a restricted manner which was later amended in the Forest Conservation Act of 1980 to include the 'dereservation' power to reside only with the central government due to heavy forest degradation (Jha 1994, Barton 2002). Furthermore this policy focused on the long-term scientific management of the forests, preservation of the village forests for the future rural generations and the importance of forest education for its officers including the rangers. A significant characteristic of this policy was its acknowledgment

to allocate one-third of the total geographical area of India to maintain forest cover which has been periodically recorded by the Forest Survey of India since 1989 through remote sensing.

National Forest Policy of 1988 addressed the growing need of afforestation created due to the over-exploitation of forest resources particularly timber. It was at this time that definition of forest preservation was expanded to include conservation of Indian forests. Hence, 1988 policy is well-known for introducing various forestry programs in India and the subsequent increasing demand of power vested in the local institutions. It established Joint Forest Management, social forestry, farm forestry to relieve pressures of the growing commercial needs from the forests in India through plantation management (Poffenberger and McGean 1996, Jha 1994). Changing the economic outlook towards forest to include further conservation of all biological diversity dominated the ideology of this policy. Consequently, massive scale afforestation was promoted including strip plantation alongside the railway lines, streams, canals and roads, establishing *nistaar* depots (where minor forest resources meant for direct consumption including fuelwood are available) replace and supplement the daily needs (particularly fuelwood) of tribals and non-tribals in the forested area with modern sustainable techniques such as bio-gas, solar gas stove and LPG (Liquefied Petroleum Gas) and last but not the least, create environmental consciousness among the Indian masses (Jha 1994). Protected areas including national parks and wildlife sanctuaries were created through this policy all across India. Based on IUCN's categories of protected areas, several national parks and

wildlife sanctuaries among other protected area categories were formed in India (Table 1.2) with specific guidelines to protect and conserve diverse species.

The importance of the role of state was stressed throughout its implementation including the necessity of state approval for various processes in forest management. It recognized the necessity of the legitimate grassroot forest organizations including the Forest Protection Committees or *van suraksha samitis* across the rural settings and brought in the decentralization era in India. State forest departments were pressured to delegate some forest management responsibilities to the local communities and include them in decision-making process thus empowering them (Poffenberger and McGean 1996).

Table 1.2 Different categories of India's Protected Areas under Indian forest Act 1988

Classification of India's Protected Areas	IUCN's categories of Protected Areas	Details
National Parks	Category II	To safeguard conservation species
Wildlife Sanctuaries (Animal Sanctuaries)	Category IV	Conservation of flagship faunal species; step before attainment of National park status
Reserved Forests	Category IV or VI	Explicit permission required for sustainable activities
Conservation and Community Forests	Category V and VI respectively	Areas around parks, act as buffer zone – has ecological value
Village and <i>Panchayat</i> Forests	Category VI	Administered by village or <i>panchayat</i> for sustenance

Source: Ghimire and Pimbert 1997

RESEARCH OBJECTIVES

The overall goal of this research is to examine how new rules-in-use to affect the political economic processes within the proposed ONPC in central India. To investigate this goal, primarily there are three objectives –

Objective 1: To examine how economic processes and practices are affected by the changes in rules-in-use that results. The following aims will fulfill the mentioned objective-

1. Estimate the contribution of different economic activities, in particular Non Timber Forest Products (NTFPs hereafter) to household income.
2. Analyze how income varies across different socio-cultural groups and villages in the proposed ONPC.
3. Examine how formalization of the park complex will change the economic practices and how local communities use forest products in the proposed ONPC.

Objective 2: To investigate how new rules-in-use as a result of compensatory conservation affect the labor dynamics. The following aims are formed to answer the above-mentioned objective.

1. Examine labor dynamics within the proposed ONPC.
2. Investigate the different territorial strategies of compensatory conservation and how they influence the labor regimes of forest use.

Objective 3: To study the changes within the social practices underlined through *tendupatta filières* in the proposed ONPC. Specific aims answered for this objective include –

1. Investigate the *tendupatta filières*.
2. Examine social and political institutions within the *filière*.
3. Identify and analyze politics of the *tendupatta* production and distribution process.

RESEARCH SIGNIFICANCE AND INTELLECTUAL MERIT

This research is significant because it studies a forthcoming national park in a volatile region that has been marked with decades of struggles for rehabilitation and human rights. Several similar biodiversity offsets have been created in India but little research has been conducted. This research's attention to immediate social, political and economic implications advances the study of biodiversity offsets, particularly in a developing country with a colonial history. This study conceptualizes immediate implications of biodiversity offsets in political and economic context while examining resource use and access.

BROADER IMPACTS OF RESEARCH

This doctoral dissertation will produce three peer-reviewed journal articles in addition to the dissemination of the information through different academic conferences. This research will also provide scientifically informed policy recommendations to improve the participation of the stakeholders and assessment of conservation projects in India. In particular, a summary from the results of the sections 3, 4 and 5 will be made available in English to the Chief Conservator of Forest, Omkareshwar National Park Complex in India. By focusing on a project that includes different socio-cultural groups, this project will identify the possible openings and opportunities for increasing local participation and decision-making opportunities in such trade-off schemes.

DISSERTATION OVERVIEW

Different sections within this dissertation are written in a journal article format. Therefore, subsections on the study area and methodology are overlapped in sections 3, 4 and 5. Besides introduction, study area and conclusion sections, there are three additional empirical sections. Each of the three sections caters to the above-mentioned objectives and their specific questions.

Section 2 situates the creation of the new conservation enclosure within the broader Narmada dam development project. Then, it describes the proposed Omkareshwar National Park Complex and its background through its forest resources, villages and

park management plan. The section on the study area is followed by detailed methodology which included a description of qualitative and quantitative data collection and data analysis.

Section 3 addresses the economic effects from the new rules-in-use, thus identifying who benefits from the creation of the proposed ONPC. Three main economic activities include extraction of forest resources, agriculture and labor jobs. It was found that the income varies along with different socio-cultural groups and different economic activities.

Section 4 focuses on how new rules-in-use affect the labor dynamics by altering access to, control and mobilization of forest resources. It shows that with increasing limitations on the extraction of forest resources, commodification of labor is occurring.

Section 5 employs *filière* approach to highlight the social practices in proposed ONPC to explore interlinkages between economic, political and social aspects.

Section 6 summarizes and concludes the research findings and provides recommendations for further research and policy-making.

2. RESEARCH DESIGN

This section is divided into a background of study area and methodology. The first section reviews background information on the study site by presenting a brief history of Narmada Dam Project conflict followed by a description of the proposed Omkareshwar National Park Complex. Subsequent sections describe the qualitative and quantitative data collected through various techniques and analysis. I conclude with the limitations of the research design with a discussion of bias and possible data related problems.

STUDY AREA: A BACKGROUND

Various scholars have written widely on the Narmada Dam Project including the development and nation-building (Nilsen 2008, Dharmadhikary 2001, Mukta 1995), marginalization and mobilization of local masses (Aravinda 2000, Bose 2004, Ram 1993, Gandhi 2003, Sangvai 2002) and environmental costs (Bhattacharya 1989, Sabnis 2001). To understand the creation and possible problems of the proposed ONPC, it is essential to situate it within the background of Narmada Dam Project. Proposed ONPC is being created as a conservation trade-off. Other similar cases in India like that of ONPC park and Indira Sagar and Omkareshwar dams, as examples of conservation trade off include Chandoli dam constructed in 1976 (in Maharashtra) (Whitaker 2007) and the resultant Chandoli National Park formed in 2004. It was previously a Wildlife Sanctuary

which was declared in 1985 (Trepp 2010). Such trade-offs have occurred regularly in India but less is known about them.

This section provides an overall knowledge about the proposed Omkareshwar National Park Complex (ONPC henceforth). First, it begins with the backdrop of Narmada dam project controversy. It briefly describes the pro and anti- development coalitions specifying the different events situated within a timeline. It is followed by an overall summary detailing the costs and benefits of the project. Next, this section examines the proposed ONPC with regards to its creation, logistics including park area, local communities and the different rules-in-use with particular emphasis on *tendupatta*, *mahua*, *kullu* gum and *dhavda* gum.

Narmada Dam Project

The Narmada River originates from Amarkantak plateau in Shahdol district, Madhya Pradesh. It flows through the three Indian states of Madhya Pradesh, Maharashtra and Gujarat. Its total length is 1,312 kilometers, of which around 90 percent (1,112 kilometers) flows through the state of Madhya Pradesh (Cullet 2007, Bhattacharya and Loganathan 1989, Kothari and Bhartari 1984). Narmada River has a potential of irrigating over 6 million hectares of land in addition to its capacity to generate 3,000 megawatts of hydroelectric power (Sangvai 2002, Rajagopal 2005). To harness its benefits, a plan to develop a multi-purpose Narmada Dam Project was introduced after India's independence in 1947. Based on this plan, a series of multi-purpose dams were

planned to be constructed across India to bring prosperity in drought and underdeveloped regions in western India (Kothari and Bhartari 1984).

Dams (like Koyna in Maharashtra and Bhakra Nangal in Punjab) were considered the ‘Modern temples of India’ (Sangvai 2002: 11). As part of nation-building, Central, Waterways, Irrigation and Navigation Commission (CWINC) suggested Bargi, Tawa, Punasa and Bharuch sites in Narmada valley for large-scale dam projects. By 1955, Central Water and Power Commission (CWPC) identified 16 projects sites (Wood 1993, Rajagopal 2005, Dharmadhikary 2001).

Overall, the multi-purpose dam project included construction of a series of 30 major dams and 135 medium and over 3000 small scale dams in the Narmada valley (Baviskar 1995, Cullet 2007, Bhattacharya and Loganathan 1989, Kothari and Bhartari 1984, Sabnis 2001). It comprised of an irrigation project designed to channel water through 66,000km (40,920 miles) of canals, distributaries and water channels to farmers in the drought-prone areas of central and northern Gujarat and even neighboring Rajasthan in addition to two major hydro-electric power generating units, one in the riverbed dam and other at the head of the canal system (Wood 2007). As part of this project, Indira Sagar and Omkareshwar dams were constructed in the Khandwa and Dewas districts of Madhya Pradesh. In 1956, CWINC proposed a 160 feet high dam in Gujarat which, later, came to be known as ‘*Sardar Sarovar*’ (Sangvai 2002, Cullet 2007). A brief timeline of the development of the Narmada dam project is presented in Table 2.1.

Table 2.1 Timeline of Narmada Dam Project

Year	Details
1947	India got independence
1949	Preliminary investigation of Narmada valley for development of Narmada basin
1955	Studies conducted to assess hydro-electric potential of Narmada basin
1957	Sardar Sarovar Project (terminal dam) at Navagam proposed
1959-65	Several major projects (including Indira Sagar dam) were prepared
1960	Sardar Sarovar project (cleared by planning commission)
1961	Onset of disputes between Gujarat, Madhya Pradesh and Maharashtra over height of Sardar Sarovar dam
1964	Khosla Committee appointed by Government of India to investigate the project with particular focus on the height of the Sardar Sarovar dam.
1964	Khosla committee recommendations are released
1969	Narmada Water Dispute Tribunal was set-up to settle inter-state disputes
1978	World Bank becomes interested in Narmada Dam Project
1979	Narmada Water Dispute Tribunal's verdict released
1980	Creation of central Ministry of Environment and Forest
1980	Forest Conservation Act is passed
Early 1980s	Construction at Sardar Sarovar Dam begins
1985	World Bank gave start up loan for Sardar Sarovar Project
1990-94	Narmada Bachao Andolan (NBA) protests the dam construction by mobilizing people
1991	World Bank conducts independent review for environment and resettlement plans
1993	World Bank withdraws financial support upon Government of India's request
1995	Narmada Bachao Andolan spreads from Gujarat to other parts of the Narmada valley

Two major coalitions developed to promote or challenge the construction of the Narmada Dam Project. Federal and state governments, interested corporations, and development agencies, including the Narmada Valley Development Authority (NVDA), supported the pro-development agenda, including advocating for the Sardar Sarovar dam. Conversely, the anti-development coalition was led by the mass social movement *Narmada Bachao Andolan* (NBA) and international allies (including Friends of River Narmada, International River Network).

Pro- Dam Development Coalitions

The Indian government justified the massive dam project by arguing that it will alleviate drought-like conditions from arid Kutch region in western Gujarat. The pro-dam development party argued that primarily the Sardar Sarovar dam and network of other large and small dams will irrigate more than 18,000 sq. kilometers of drought prone areas like Saurashtra and Kutch in western Gujarat and provide employment opportunities through development of fisheries (Opie 1990). They further argued that the dams will protect against advancement of desert from Rajasthan and mitigate damaging floods. Fundamental objective of advocating dam-building was the development of canal irrigation to foster food security and economic development in post-Independence era (Cullet 2007).

Over the years, disputes arose between the three main states over the height of dams and unequal distribution of costs and benefits (Wood 1993). Different planning bodies such

as Narmada Control Authority, Narmada Planning Group existed in different stakeholder states which executed the central government's policies. In absence of a comprehensive planning body, the disputes between the states increased.

The state governments of Madhya Pradesh, Gujarat and Maharashtra disagreed on numerous issues pertaining to water sharing between the states, extent of the areas to be irrigated in each state, and the height of the major dams including Sardar Sarovar dam in Gujarat (Kothari and Bhartari 1984). Initially under the project, project planners decided to construct the Sardar Sarovar dam, a terminal dam, at a height of 160 feet full reservoir level (FRL) which was later raised to 300 feet and then another 320 feet in 1959 (Wood 1993). The idea was that the higher the dam would enable water to flow longer distances through the canals. After the inauguration of the project in 1961, chief ministers of Gujarat and Madhya Pradesh agreed once more to increase the dam height to 425 feet (Cullet 2007). The Gujarat government ratified this agreement unlike Madhya Pradesh. As a result, the Indian government formed Khosla committee in 1964 to investigate the project with particular focus on the height of the dam. The committee recommended in 1964 to raise the height 500 feet (Cullet 2007). This decision annoyed the governments of Madhya Pradesh and Maharashtra because they had signed an agreement to build a dam at Jalsindhi (Madhya Pradesh) which would benefit both states. Implementation of the newer recommendation would mean that the dam at Jalsindhi would be submerged by the reservoir of the Sardar Sarovar dam. The then chief minister of Madhya Pradesh objected to this project, arguing that "the river primarily belongs to Madhya Pradesh and

that Gujarat had been claiming more than its due share in the allocation of the Narmada waters” (Sangvai 2002:13).

To settle the disputes between the different states, Narmada Water Disputes Tribunal was established in 1969 (Wood 1993, Sangvai 2002). Some of the important decisions taken by the tribunal included: a) Rajasthan should also be included among the disputed parties, who/which allied itself with Gujarat based on its invested interests; b) height of Sardar Sarovar dam which Gujarat and Rajasthan wanted to increase to maximize water delivery to these states whereas the Madhya Pradesh and Maharashtra wanted to curtail the dam height to limit the submergence area; and finally c) allocation of the cost of dam construction and resettlement among the four states (Wood 1993, D’Souza 2002). The tribunal determined that the height of the terminal dam would be set at 455 feet, much less than what Gujarat wanted. By its reservoir, it was estimated that 34,996 hectares in Madhya Pradesh, Maharashtra and Gujarat including 248 villages and a population of 66,593 will be submerged. Out of the four states, Madhya Pradesh was set to bear the maximum brunt of the project as 193 villages and 45,000 people were affected. In the case of rehabilitation and resettlement, the tribunal decided to grant “land for land” under which displaced families would receive land of their choice, equivalent to their loss or minimum of 2 hectares in the irrigable command of the project in addition to every male, 18 years or older, would be considered a separate family. Approximately two thirds displaced in the Sardar Sarovar project are/were *adivasis*.

Originally estimated at US\$1.673 billion, it was believed by engineers that the project cost would increase to US\$4.649 billion by the time it is completed (Kothari and Bhartari 1984, Wood 1993). This project received World Bank's attention in 1978 when the central government of India concluded that it cannot incur such high investment (Cullet 2007, Opie 1990). Subsequently, the World Bank gave a 'start-up' loan of 450 million in 1985 to the Sardar Sarovar Project. This included \$350 million for canal-construction and \$90 million for environmental protection.

Influenced by the global environmental events (including Stockholm Conference in 1978), a new Indian Ministry of Environment and Forests was created who passed their first Forest Conservation Act (1980) stating that before any central clearance is provided to any developmental project, the condition of conducting environmental assessment of developmental projects will have to be satisfied (Wood 1993). Subsequently, it was mandatory for the governments of Madhya Pradesh and Gujarat to a) provide an alternative site for afforestation activities to compensate for the submerged forest lands; b) amend rehabilitation package for the displaced masses; c) establish wildlife sanctuaries; d) to adapt the command and catchment areas for dam's environmental consequences (Wood 1993). Shoolpaneshwar Wildlife Sanctuary, in Gujarat, was developed as part of conservation effort extension of Sardar Sarovar dam. It was extended from original Dumkhel Slothbear Sanctuary from 5,300 to 68,000 sq. hectares (Whitehead 2007). By 1983, the central clearance to the projects was denied as the mandatory guidelines were not met.

Due to the pressure applied by various member countries, the World Bank, conducted an independent review of environmental and resettlement aspects within the Narmada project in 1991. The findings included a) people affected by the project were not consulted neither by the Indian government nor by the World Bank and no human impact assessment were conducted; b) special needs of the *adivasis* were not acknowledged; and c) the 'oustees' compensation packages offered by the Madhya Pradesh, Maharashtra and Gujarat were not accepted by the World Bank (Cullet 2007, Morse and Berger 1992). In addition, the review supported that the downstream population whose livelihoods would be affected and those displaced by the canal construction should be provided compensation packages. Concerning the environmental impacts, the review concluded that besides insufficient studies, plans to mitigate environmental damage had not been prepared. Moreover, current schemes on compensatory afforestation, prevention of waterlogging and salinization within the command area were also criticized. Consequently, the review suggested that the World Bank should withdraw from the Narmada dam project until all the expected standards are met (Morse and Berger 1992). As a result, all the European member countries encouraged the withdrawal of The World Bank from the Narmada dam project (Wood 1993). As a result, The World Bank withdrew its financial support from the Narmada Dam Project in 1993 (Morse and Berger 1992).

Anti-Dam Coalitions

Communities and individuals affected by the dam projects formed various anti-dam coalitions with grassroots organizations (*Narmada Bachao Andolan*/Save Narmada Movement, NBA) and international allies (including Friends of River Narmada, International River Network) that focused on the social and environmental costs of Narmada development (Sangvai 2002). These organizations struggled for the people's right to know and participate in the decision-making process while analyzing their resource base and livelihoods, compensation, submergence of fertile land and loss of cultural heritage (Sangvai 2002, Cullet 2007, Bose 2004).

The issues were wide-ranging, but they were always grounded in the local and community outcomes of development. Over the years, the NBA raised several critical questions - Whose development? At what cost? What kind of development? How do they outweigh benefits? Is such a development essential for a developing country like India? Are the rights of those affected by it recognized? Are the resources being distributed in democratic and egalitarian manner? Who participates in the decision-making process?

The most internationally recognized anti-dam organization is the coalition *Narmada Bachao Andolan* (NBA hereafter) or Save Narmada Movement. In 1986, Medha Patkar, an activist with Setu (an NGO) organized a seminar to train and coordinate the *adivasis* for the struggle (Wood 1993). When she learned about lack of participation of *adivasis* in their own future decision-making, she mobilized all small grassroots organizations

that existed in different parts of the valley to form the NBA at the village level. NBA was inspired by first dam movement in India during the independence struggle in 1921 in Maharashtra when Tata company wanted to build a hydro-electric dam there (Sangvai 2002). NBA provided an umbrella for many groups challenging the Narmada projects, including environmentalists, neo-Gandhians, socialists, and neo-Marxists. Moreover, NBA built a middle-class coalition with economists, journalists, advocates, doctors and engineers from all over India to advance their cause. NBA, drawing upon Gandhian philosophy of non-violence, organized and engaged in direct action (Bose 2004). Some of the protest tactics involved by them include *jalsamadhi* (protest by standing in the water), rallies, hunger-strikes, marches, blocking highways, *dharnas* (camping on the banks of river Narmada) and singing songs about the movement (Baviskar 1995, Sims 2001, Aravinda 2000). NBA interacted and engaged masses for mobilization at different levels- village, *tehsil* (block), district, state, and national levels as well as the international level.

In the Narmada valley, different struggles arose and people were mobilized to fight in different ways. In 1989, the NBA along with communities, including *adivasis* and other local farmers, crystallized opposition (towards dam-building) in two-point programs: (1) non-cooperation with all dam related work in the villages and (2) refusal to leave their lands and villages. This plan is embodied by the slogan ‘we will drown but won’t move out’ (Baviskar 1995). Moreover, in the same year a nationwide action plan was formed. From 1990-1994, NBA and its allies carried out some major protests in form of *dharna* and marches (Baviskar 2001, Bose 2004, Gandhi 2003). The state repressed them by

arresting people, beating them, stealing their grains/ ruining their lands and destroying their homes. Thereafter, NBA launched *satyagraha* (fight for truth), following a similar non-violent tactic to stop the submergence of Manibeli village in Maharashtra. *Satyagraha* sent a strong message to the nation about their struggle. NBA continued to employ non-violent tactics like *jalsamadhi* (protesting by standing in water). While the non-violent approach to social action did not stop immediate submergence of homes, temples, land and villages, NBA action led to the withdrawal of financial support by international aid agencies and the international civil society (Wood 1993, Sangvai 2002, Gandhi 2003, Rajagopal 2005, Dharmadhikary 2001).

In cases of specific schemes, NBA employed focused strategies for mobilizing people and protesting against dams. The NBA organized boat rallies as another tactic to protest Narmada development. In Tawa dam case, since 1980s the aggrieved population demanded fishing rights similar to that by the people in Bargi dam area (Sims 2001). In 1996 the government finally granted them the rights. In another instance of the struggle, in 1991, in the case of Bargi dam, among various tactics adopted- boat rally by fishermen demanding their fishing rights over the reservoir and finally in 1996 government was compelled to recognize their demands (Baviskar 1995). Following this, the people organized themselves into cooperative societies and now they handle the production and marketing of the fisheries. This has emerged as a model for participatory and sustainable fisheries (Sims 2001).

In the instance of Maheshwar dam, the struggle against submergence by increasing the height of the dam started in 1997. This was the first hydro-electric project whose construction was given to a private company S.Kumars. The struggle continued for a long time through *dharnas* and marches. In 2000, various NGOs and people's organizations appealed to the German government to withdraw their loan from the project. In 2001 January, a loan of US\$ 130 million was cancelled and hence the construction was halted (Sangvai 2002). Until the summer of 2007, it was noted that no construction activity has been going on there.

Man dam, another example, which was predominantly tribal and constituted mainly of *Bhils* and *Bhilalas*, over 1000 families submerged (Sangvai 2002). According to the rehabilitation policy of the government, land would be given for land but instead the people were given paltry amounts and their struggles were crushed. The people were provided a temporary camp with food and water and half the minimum wages for unskilled labors for two months only (Sangvai 2002).

The Narmada Dam Project has displaced more than quarter million people directly and indirectly and had four times more effect on the livelihoods especially on people living downstream (Chitale 1997). The following table provides an idea by elaborating the percentage of *adivasis* that were affected due to construction of various dams under Narmada dam project (Table 2.2).

Table 2.2 Percentage of *adivasis* affected due to Narmada project

Project	Total number displaced	Tribal persons displaced (in percent)
Bansagar	142,000	75
Bargi	35,000	43
Narmada Sagar	170,000	20
Sardar Sarovar	200,000	56

Source: Sangvai, 2002

Overall, the Narmada dam project came to world's attention due to its considerable size succeeded by various controversies. While the project had some positive implications in terms of nation-building and development, it also created severe consequences for the masses. Its proponents argued that the dam-building is beneficial, particularly in terms of drinking water, irrigation and hydroelectric power (Bose 2004). Consequently, the opponents opposed the project due to massive social and environmental costs that included flooding of 245 villages, conversion of farm lands of 140,000 farmers for constructing canals, disruption in livelihoods (fisheries), loss of dense forests and endangered wildlife, probable seismicity risks, soil degradation due to water logging (Bose 2004, Bhattacharya and Loganathan 1989, Sabnis 2001). They further debated the inadequate resettlement and rehabilitation plans for the displaced people due to the land submergence from the Narmada dam project till 1988. From the Sardar Sarovar Project in Gujarat alone, it was estimated that 4,000,000 people and livelihoods of another 6,000,000 people will be affected (McCully 1996, Ram 1993, Sangvai 2000). After

1988, they demanded completely suspension of the project (Gandhi 2003). However, one of the positive effects of the project remained the Indian Forest Act (1980) which resulted in compensatory afforestation. This led to the establishment to the proposed Omkareshwar National Park Complex.

The Proposed Omkareshwar National Park Complex

The Proposed Omkareshwar National Park Complex is a planned protected area in Madhya Pradesh (Figure 2.1). It is being designed as a compensatory conservation project which will overcome the loss of wildlife and forest resulting from the construction of and submergence from the nearby Indira-Sagar and Omkareshwar dams. The creation of the ONPC broadly results from one of the mandatory guidelines from the independent review conducted in 1991.

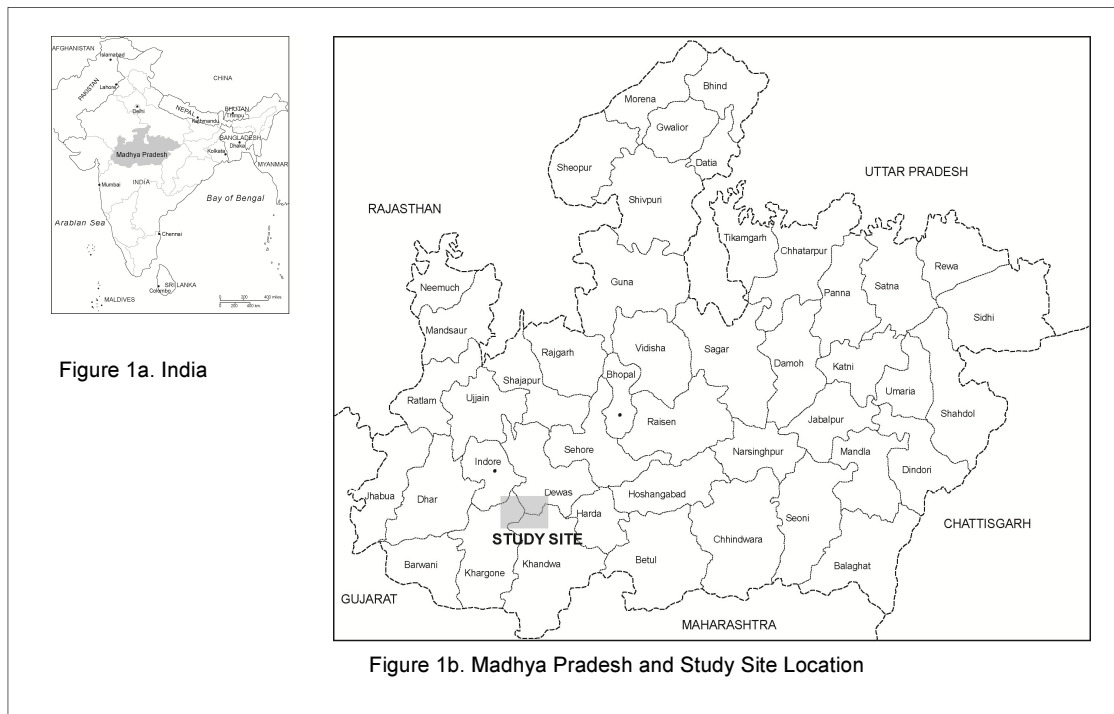


Figure 2.1 (a) and (b) Location of the proposed Omkareshwar National Park Complex in India and within the state of Madhya Pradesh

The ONPC region, situated in the south-west part within the state of Madhya Pradesh, makes an ideal site location for the study of people-park relationships as a consequence of conservation trade-off for multiple reasons. First, while two major dams from the Narmada project – Indira Sagar and Omkareshwar dams are situated here, it has resulted in mass displacement of local population particularly from their submergence areas. Moreover, the office of the mass social movement Narmada Bachao Andolan (NBA) is also located in the Khandwa district of this region. Based on the history of the region in context to the social movement, in addition to the social along with environmental

inadequacies which resulted from the massive dam project, make the ONPC region sensitive for policy implementation.

Second, the state of Madhya Pradesh has 30.72 percent of India's total forests cover, the largest forested area within a state in India (Forest Survey of India 2005). Furthermore, the state boasts nine national parks and 25 wildlife sanctuaries (highest in India) that cover 3.36 percent of the state's geographical area (Forest Survey of India 2011). In addition to supplying fuelwood for domestic use, the forests are rich in non-timber forest products (NTFPs). In a constant effort to maintain the state's forest cover, the state government has stricter forest rules implemented for resource use.

Third, since the idea to establish ONPC park project is quite recent, I can study the formation of the park from its inception focusing on reasons for its creation, its current impacts on the local communities and their resource use. Where less has been written on the conservation trade-offs such as ONPC in India, this site provides an excellent chance to further explore it. Future opportunities could include more in-depth studies on the park-people relationship for instance the different forest management programs in the park and their status.

In 1987, the Government of India approved the redirection of 41,111.97 hectares of forest lands in the districts of Dewas, Khanwa and Hoshangabad (in the state of Madhya Pradesh) towards the construction of the Indira Sagar dam project (Personal Communication. Government Official 2012). However, at the same time, the government also made it mandatory that representatives from different stakeholder

agencies should form a committee for wildlife management and conservation, which would be displaced during the dam construction. These stakeholder agencies were the National Hydroelectric Power Corporation (NHPC), the Narmada Valley Development Authority (NVDA hereafter), the state government of Madhya Pradesh and the state forest department. This committee selected the Wildlife Institute of India and Friends of Nature Society to prepare impact assessment reports, which were released in 1994 and 1996. As a result, in 1993, NVDA declared its intentions to create a national park and sanctuaries.

The idea to create the ONPC was marked by disagreement based on the total extent of the protected area. Dominated by the controversies of the Narmada dam project, impact assessment studies conducted by the Wildlife Institute of India and Friends of Nature Society recommended that a protected area be established as a combination of national park and wildlife sanctuary (total area 758.88 sq. km.). Such an area would help minimize the consequences of direct and indirect losses resulting from the development of Indira Sagar and Omkareshwar dams. They suggested that the selected forest area should share similar conservation characteristics with those that were lost due to submergence, so that the wildlife displaced by submergence could take refuge in the protected areas built around the reservoirs. However, the NVDA solicited another agency, the Indian Institute of Forest Management, to conduct an independent study to review the recommendations of Wildlife Institute of India and Friends of Nature Society. They suggested reducing the total extent of the proposed protected area (658.35 sq.km) by 100 sq.km. This decision was opposed by Wildlife Institute of India, who argued that

the reduced area is not sufficient to restore the affected biodiversity (Personal Communication. Government Official 2012).

The Supreme Court ruled that the stakeholders should compensate submergence area with increased forested area. This increase in forested area was implemented through the Compensatory Afforestation program. Under this program, compensation for any change in forest land use to a definite non-forest land use achieved 'on-site' (for deforestation, de-reservation or diversion for any development project) was implemented, carried out and monitored through set of established guidelines (Kohli et al 2011). Based on the management plan of the proposed ONPC, the compensation should be carried out on forest area equivalent to the change into a non-forest land use. Ultimately, in 2007, it was considered pragmatic to announce the total extent of the protected area to 651.31sq.km.

The proposed conservation complex consists of Omkareshwar National Park, Singhaji Wildlife Sanctuary, Mandhata Sanctuary and Narmada Conservation Reserve Unit I and II (Figure 2.2). It is situated at the junction of three districts, namely, Dewas, Khandwa and Khargone. Created under the Indian Forest Act of 1980, different zones within the ONPC are based on the International Union for Conservation of Nature's (IUCN) categories of Protected Areas for specific objectives (Table 2.3).

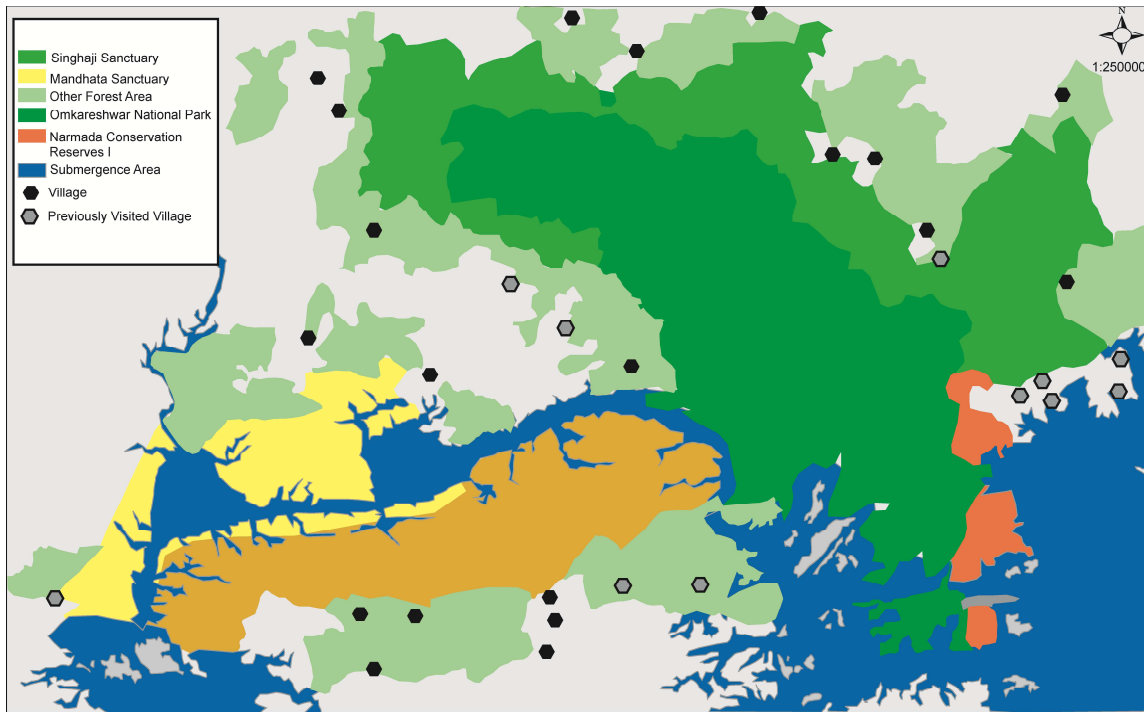


Figure 2.2 Proposed Omkareshwar National Park Complex

Table 2.3 Details of different categories of India’s Protected Areas

Classification of India’s Protected Areas	IUCN’s categories of Protected Areas	Details
National Parks	Category II	To safeguard conservation species
Wildlife Sanctuaries (Animal Sanctuaries)	Category IV	Conservation of flagship faunal species; step before attainment of National park status
Reserved Forests	Category IV or VI	Explicit permission required for sustainable activities
Conservation and Community Forests	Category V and VI resp.	Areas around parks, act as buffer zone – has ecological value
Village and <i>Panchayat</i> Forests	Category VI	Administered by village or <i>panchayat</i> for sustenance

Source: Ghimire and Pimbert 1997

In terms of use, I identified the different demarcated zones based on the zones suggested by the ONPC management report (Table 2.4). I classified the wilderness areas as the core National Park with strict restrictions on use. The wildlife management zone would include Mandhata and Singhaji wildlife sanctuaries with limited ecotourism use in form of safaris and wildlife sightings. Finally, the utility zone will be comprised of the buffer zone around the entire complex with settlements and the community dependency on the forest use, including the Narmada Conservation Reserve Units I and II. These zones are largely based on defined limits of the forest specified by formal notifications.

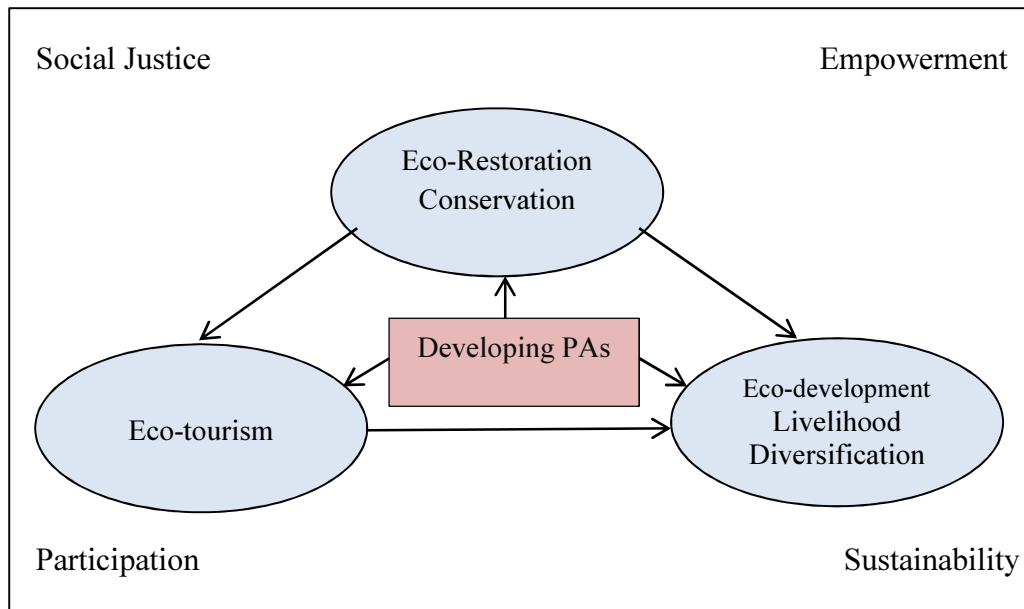
The proposed ONPC is yet to be notified. By notification, it means that the state government declares its intention to constitute a protected area specifying its territorial limits and declare that the said area shall be a protected area in and from such date as specified in the notification (Ministry of Environment and Forest 2013). It is important to mention here since this is quite a recent development, there are hardly any conflicts created by the ONPC. As the fencing of the park began in 2010, definite struggles to access forest resources are yet to be seen.

Table 2.4 Zones based on management objectives

Zones within ONPC	Suggested Zones	Details
Omkareshwar National Park	Wilderness zone	Shall include all parts of area, except for wildlife management zone and management facility development zone, for the preservation, protection and maintenance of the natural state of the natural ecosystems. No human activity including tourism should be allowed, except for most essential research and training.
Singhaji and Mandhata Wildlife Sanctuaries	Wildlife Management Zone	Shall include the areas of the reserve where research and management actions related with maintenance and enhancement of wildlife and their habitats is permitted. Compatible tourism is encouraged.
Narmada Conservation Reserve Units I and II; Other Forest Area	Utility Zone 1. Administrative facility zone 2. Tourism use zone 3. Eco zones a. Resource Management zone b. Infrastructure Development zone c. Settlement zone	Shall include the areas where high human pressure is expected due to location of administrative, tourism and other public work installations. Further divided into – Shall include areas like reserve and protection unit headquarters and post areas, fire lines and communication towers. Shall include areas, designated hotels and campsite areas, religious sites, jungle drives, nature walk routes, and public work installation areas. Should include areas delineated to villagers for meeting need of their forest products and cattle as well as for eco-development. Further divided into- Forest area managed for sustainable utilization of natural resources including agriculture and institutional and community waste land. Areas for development of roads, schools, industries and markets. Areas with settlements and villages, cultivated lands and tourism facilities like hotels, lodges, resorts, restaurants and recreational services

Source: ONPC management plan, N.D.

The main objectives of the proposed ONPC focus on developing programs related to eco-restoration and sustainable livelihoods. They include identifying problems related to wildlife, ecology, people’s livelihoods and eco-tourism; determining management priorities for development within the region; and developing detailed project reports for the development of the protected areas as part of the Indira Sagar project (Figure 2.3).



Source: ONPC N.D.

Figure 2.3 Conceptual Framework of the proposed ONPC

According to the plan, the conservational dimension of the project emphasizes on the habitat and species conservation and restoration whereas the livelihoods aspect will focus on the local capacities related to the local cultures and skills (ONPC N.D.). To implement these, different zones will be created to facilitate effective and efficient management of the planned ONPC (Table 2.5). Once these zones are identified, they will be demarcated by erecting “boundary pillars, integrated trench-mound wire-biological fence and propagate social fencing (awareness and motivation) to discourage boundary encroachment” (ONPC N.D.:27). During the fieldwork in 2009-2010, I observed that the park officials had started putting wired fences around the communities selected for this study. According to the management plan (ONPC N.D.), the objective of eco-development policy is to lessen the reliance of local resource-users on the forest resources and to get their extensive support in implementing the conservation-development policies in the region in addition to the goal of boosting household incomes. This objective will be fulfilled by the development of agroforestry, village resources, alternative energy and participatory forest management (ONPC N.D.).

Table 2.5 ONPC Project Objectives and Strategies

Objective	Strategy
Manage and restore critical ecosystem important for the sustenance of wildlife	Establish corridors or passages for wildlife species
	Reintroduce both floral and faunal endangered species
	Relocate species in the submergence area
	Restoration of threatened sub-ecosystems due to submergence
Conserve, enhance and maintain biodiversity of the region	Notify protected areas
	Identify and protect biological hotspots
	Conduct species monitoring and research
	Develop species conservation action plan
	Control of illegal hunting and poaching activities
	Reduce human dependency on protected areas' resources
	Strengthen conservation education and awareness programs
Establish land use based management system	Classify area into different management zones
	Demarcate boundaries and develop detailed plan
Strengthen management of protected areas	Prepare comprehensive management plan
	Develop organizational capacity
	Develop human resources
	Establish biodiversity conservation trust fund
Enhance the knowledge and skill on biodiversity conservation and wise use of bio-resources	Promote multi-disciplinary management
	Strengthen research and documentation
	Develop effective management informative system
	Carry out monitoring and evaluation
Maintain and improve the conservation, utilization and ownership of biophysical resources	Constitute/strengthen community-based institutions
	Delineate eco-zones for providing souvenir rights to local communities
	Minimize conflicts between protected areas and people
	Document indigenous and ethno-biological knowledge
Diversify livelihood opportunities of the local communities	Improve Agriculture and livestock farming
	Develop alternative means of livelihood
	Develop alternative forest resources outside protected areas
	Implement eco-development for the protected area periphery villages
	Relocate villages of sub-submergence area
Promote community based eco-tourism	Identify areas of tourism importance and develop tourism infrastructure
	Develop models of physical facilities for rural tourism
	Promote cultural heritage for conservation
	Develop a strategy for private sector investment for tourism development in the area
	Develop ecotourism management plan for the area
Build and strengthen the capacity of local people and community institutions	Form federate units of community based institutions
	Establish linkages and coordination with stakeholders
	Strengthen capacity of the local institutions
	Gender empowerment and mainstreaming in resource conservation
	Community capital generation and mobilization

Source: ONPC report (N.D.)

The ONPC region is rich in both floral and faunal species. According to the ONPC report, Friends and Nature Society (1996) stated that a total of 311 floral species were found in the submergence area of the Indira Sagar dam (Table 2.6). Of these, 36 percent belong to the different tree species, followed by herbs and shrubs (34 percent), and climber species (21 percent). About 69 plant species, reported in this area, were significantly categorized into medicinal and food groups. In addition, there are about 206 faunal species in the submergence area of the Indira Sagar dam (Table 2.7). More specific distribution of the faunal species which is spread over the ranges of Kantaphod, Satwas, Punjabura and Udaynagar is presented in Table 2.8. Important wildlife in the region includes lion, panthers, nilgai, deers, jackals and other smaller animals.

Table 2.6 Floral diversity of the submergence area

Number	Type	Number of species reported	Proportion
1	Tree	112	36.0
2	Herbs and Shrub	106	34.1
3	Grasses	29	9.3
4	Climbers	64	20.6
	Total	311	100.0

Source: FONS (1996) in ONPC report (N.D.)

Table 2.7 Faunal diversity within the submergence area

Type	Species reported	
	Number	Percent
Mammals	33	16.0
Birds	126	61.2
Reptiles	15	7.3
Amphibians	8	3.9
Fishes	24	11.7
Total	206	100.0

Source: FONS (1996) in ONPC report (N.D.)

STUDY SITE COMMUNITIES

Approximately 84 villages are situated around the proposed ONPC - 55 villages in the Dewas district; 28 in Khandwa and 1 village in Khargone. Largely, this region incorporates the tribal '*adivasis*' population, constituting approximately 22.3% of the total population. All the villages in the ONPC largely depend on the forest resources for their daily sustenance, particularly fuel-wood and non-timber forest products. Since the decision to create the park has been recent, presently there is no direct or indirect conflict between the park officials and the local communities regarding the changes in rules-in-use.

Table 2.8 Specific faunal distribution within the ONPC region

Wildlife Species	Kantaphod range	Punjabura range	Udaynagar range	Satwas range
Panther (male)	1	4	4	-
Panther (female)	1	3	4	-
Panther (unknown gender)	1	-	4	-
Nilgai (boselaphus tragocamelus)	10	95	47	337
Deer	26	-	288	50
Monkey	649	2177	212	410
Rabbit	26	568	965	305
Jungle Cat(Felis Chaus)	9	94	116	-
Dhole/ Asiatic wild dog(Cuon Alpinus)	8	-	113	3
Jackal	103	248	428	159
Wild boar(Sus scrofa)	11	391	532	297
Fox	-	26	101	36
Indian black buck (Antelope cervicapra L.)	-	4	-	-
Peacock	-	155	144	100
Lion	-	-	1	-
Bear	-	-	3	8
Hyena	-	-	26	14
Porcupine	-	-	34	19
Wild Buffalo	-	-	8	-
Indian Gazelle	-	-	26	-
Grey Junglefowl	-	-	73	-
Indian Bison (Gaur)	-	-	55	-
Crocodile	-	-	5	-
Fishes	-	-	Enough	Plentiful
Cheetal/ Spotted deer (Axis Axis)	-	-	-	30

Source: ONPC official (Personal communication 2009)

Within the proposed ONPC, six sample villages were selected for this study. Of these six villages, villages A, B, C and D are located within the Khandwa district. The remaining villages E and F are situated in the Dewas district. Of these six villages, two villages, namely Village E and Village F, are situated in the Dewas district while, the other four villages – Village C, Village B, Village D and Village A are located in the Khandwa district of Madhya Pradesh. These villages were selected on the criteria based on the proximity to the base station (Narmadanagar), safety and accessibility especially during the severe monsoon season in July-August. In addition, these villages were especially selected under the guidance of the advisor, the Chief Conservator of Forests (of proposed ONPC) and the proposed national park's office. The guiding factor in this study was the proximity to the proposed national park. As a result, the villages selected for the study were situated within two kilometer of the park boundary and had alternate selective criteria such as safety and daily commute especially during the monsoons. In such cases, the weekly market or *haat* are one of the adopted trading places where the resources extracted are sold locally except in the case of *tendupatta* which is sold on contractual basis.

Villages E and F are located in Dewas district. From the base-station in Khandwa district, the base station of Dewas was about 140 kilometers away. The second base-station Pipri was located right on the main road. The forest office complex had three separate one-room buildings. There was no electricity in the vicinity. For water, the forest staff has installed water tanks on top of every building to conserve water and for 24 hours use. One of the most interesting things was that the forest staff has installed

three solar lamps in the compound for lightning purposes in the evening. They are automatic so when it starts getting dark, they automatically are switched on and as dawn arrives, they are automatically turned off. They are six watts each and can conserve up to 100 watts battery. So even if the sun does not come out for few days, they can still use the conserved solar energy. They even use solar portable lamps and torches which they charge everyday using the solar energy and use it during the night. Next, I present a description of the selected communities from the proposed ONPC.

Village A

Village A is located about 25 kilometers away from the base station. It is situated close to the submergence area of the Indira-Sagar dam. It is accessible through public transport buses. The village is situated on one side of the main state highway. On one side of the paved road, there was forest and the other side was the entry to the village. A forest post guards the entry to the village, adjacent to which there was a 4 room house has been built for the forest guards and the other visiting forest officials. In front of the forest-house and forest post, there was a unpaved mud road that extended into the village. After almost 0.5 kilometers, the road was lined with mud houses on both the sides. Beyond the houses, extensive agriculture fields could be seen. I noted that many houses in the village are made of mud walls and locally made country tiles called *kavelu*. The built material make-up of the houses looked same but they differed in sizes. Every house had a mixture of mud and cow-dung coated on the walls and the floor. A common

picture of clean mud yard, with a tree or two and a woven cot called *charpai* greeted the eyes.

There are twenty five households in this village. Some were located right next to each other while some were placed a bit farther from the unpaved road. A couple of the affluent households were noted as they were constructed of bricks with *kavelu* on the roof. There were less trees and shrubs along the roadside. However, at the other end of the village, the 2.5 km unpaved road leads up into another village. Fields separate the villages. Towards the end of the village, there was a large ground which had a couple of scattered trees. The Village A *tendupatta* cooperative society was located there with a giant storage unit, locally called *godaan*. During the *tendupatta* season, the bundles of leaves are collected there and then placed into numerous sacks. There was only one small general shop in the village which sold confectionaries, dry snacks like biscuits and *bidis*.

Village B

Village B is situated deep inside the forest (Figure 2.4). It is accessible through private vehicles including bullock-carts, cycles or by foot. From village A, continuing further on the state highway away from the base-station, the road bifurcates. One road goes further up to Satwas and other leads into the forest. The unpaved forest road extends up to about nine kilometers before connecting to the Village B. The forest extends to about eight kilometers before opening into agricultural fields and mud and bamboo houses. It was

observed that the households within this village used bamboo for roofs instead of *kavelu*. To go to Village B, another village must be passed through first. Village B is shaped like a circle. Beyond the village lies the forest and in front of the households, the agricultural fields are situated.



Figure 2.4 Village B bordering the ONPC forest

Village C

Village C is located approximately 5 kilometers away from the base station. It is accessible through public transport buses which connects Khandwa (town) on one side to Satwas (town) on another. After getting down from the bus on a paved road, a small unpaved muddy road, locally called *pagdandi* led into the village. Numerous tire marks were found on the *pagdandi* which led to the conclusion that either many households have a two wheeler in the village or this is an important forest post. Both options were found to be true. This *pagdandi* extended for two and a half kilometer before entering the village. On both sides of the *pagdandi*, agricultural fields were found, some of which had growing crops and hence were green. In the agricultural fields, towards the front of the village, some *machaans* (raised temporary hay shelter) were noted which are constructed by the farmers on their lands, generally as a resting place while taking care of their fields. In addition, three to four fields had built animal shelters. Small dead shrubs marked the edges of the *pagdandi*. A huge garbage dump lies, where the entire village throws their garbage, immediately before the entry of the village. This made the village look very dirty. Unlike village A where the houses were only lined next to the main unpaved road in the village, Village C had numerous multiple houses, one behind another. These houses were made of mud with mud floors and had front fences constructed out of bamboos. Outside some of the houses, bathroom/toilets were constructed with bricks and covered by a cloth curtain at its entry door. The *pagdandi* ended in the village center (square) where a temple (*Hanuman*) was located. On one side of the village square, there was a handpump where small girls were filling water into

their earthen pots and on another corner there were two general shops. One of the general store had an extended shop that repaired two-wheelers including tires. From this village center, the houses extended in an asymmetrical fashion in every direction. It was noted that different social tribes live in separate neighborhoods within the village. For instance, all *bhilalas* and *barelas* lived towards the right side and *bhanjaras* towards the back end of the village. It was observed that the *banjara* neighborhood was the worst in terms of cleanliness and hygiene. It really looked dirty with human (or animal) feces lying and people's spits on the almost every path around the village. There were lots of dirty water puddles as a result of which there were lots of flies around.

From the village square towards the right, after almost half a kilometer, there are two schools – one primary and one secondary (till 8th class). These schools are located almost towards the right periphery of the village surrounded by the forests. In the school, it was observed that the teachers verbally scolded small children. Some of the reasons included not attending school daily, not wearing school dress, or not bringing school copy/slate. One of the school teacher informed that the main problem teaching in such a school is that when parents are not interested in their children studying then they do not care. They often do not send their children to school daily. Just because children get food at school every day under government's mid-day lunch scheme hence they come daily. Often children do not come because they have to help their parents in the agricultural fields/ grazing the cattle or goats/ go to jungle with them for bringing wood. Their society and culture is such that they don't think it necessary for their kids to learn how to read and write. Ultimately the kids have to help the parents with different chores and get

married later. As a result, the pass percentage of the children in the school from this village is really low (as told by the school teacher).

At the back side of the village, there was a large dirty pond, surrounded by the forests, where cattle take bath and village women wash their clothes. Village C is a bigger village in land size and population. Of all the sampled villages, it was closest to the forest, only next to village C.

Village D

Village D is located further down the road from the base station. From the main road, the village is situated further approximately 10 kilometers on a dusty unpaved road. The village has water shortage and hence has less greenery. The forests surround the village from left to right in a semi-circular pattern. As seen in the other villages, the houses are made of bamboo and are mud coated. The houses are lined on either side of the unpaved road that follows into the village from the main road. While entering the village, more houses are clustered together and as one moves farther away, the houses become scattered. The main agricultural fields are located just outside the village along the unpaved road (Figure 2.5). A shared *godaan* for *tendupatta* can also be seen about a kilometer before entering the village. There is no school in the immediate village and hence the children have to travel to another nearby village. Because of the distance between the nearby village and Village D and the fact that there is no secondary school nearby, some families do not send their children to school. Therefore, many children

from different age groups are seen loitering away on the streets. There is only one weekly public bus that connects the Village D to larger villages.



Figure 2.5 Village D farm lands with scattered huts and forests in the background

Village E

Village E is situated towards eastern direction, at least 4 kilometers away, on the hill slope on the Dewas side of Narmada river. From the second base station, Village E is about 25 kilometers away. Two villages are located between the base station and the Village E. Just outside the village, the forests include *anjan* (*Hardwickia binata* Roxb.)

trees, which are often lopped by the villagers for cattle food. Some of the trees have been lopped so badly that the park officials had to advise and educate them about lopping branches.

This is a relatively small and scattered village. There are about 48 households within the village. *Adivasis* from *Maan Thakur* tribe live here. It was found that in 1910 only 12 families or 12 households lived in the village. By 2009, the total number of households has increased to 48. Due to constant electricity and water problem, Village E looked the poorest (Figure 2.6). While the other villages looked green with the mud houses, Village E had bamboo houses. Only houses were coated with mud and rest were not. Two hand pumps were installed by the park officials for the villagers, but the ground water level is so low that the water cannot be pumped with installing an electric pumping machine. To operate this machine, electricity is required. Hence, there is an acute shortage of water and electricity in the village. The only source of water is the Narmada river. To fetch water for household purposes, a trip of 4 kilometers downhill and then another 4 kilometers uphill has to be made.

From the months of March till June, the local inhabitants of Village E get enough work from the forest by extracting *tendupatta*, *mahua*, and gums. During the monsoon, only *jowar* (Sorghum), maize, *tuar* (Gram), soybean and cotton are grown in the village E. Out of these, soybean and cotton are sold and rest all are used for subsistence purposes. Animals like wild pigs and monkeys often cause problems during the growing crop season. Hence, the villagers have to stay all night at the fields to take care of the crops.



Figure 2.6 Unpaved roads in Village E

Village F

Village F is located about 4 kilometers inside the forest from the second base-station. The houses were made of bamboos which are tied in a crisscross pattern and are filled by cow-dung and mud. Every four months, the owner has to apply more cow-dung paste on the walls to beautify the walls and make it stronger. The courtyards were also coated with the mud and cow-dung paste. This is a large village with scattered agricultural fields around the periphery of the village. The forests are located beyond the fields (Figure 2.7). The village is not shaped in a symmetrical manner. Some houses are close to each other and some are far away. There is a community center in the village which is

well-constructed by the bricks. Of all the sampled villages except for Village C, Village F has the most livestock mainly cows and buffaloes. This means that the Village F is more agricultural and depends relatively less on forest resources.



Figure 2.7 Village F with unpaved roads and mud houses

Different selected communities engage in different productive economic activities. Since the state of Madhya Pradesh is predominantly an agricultural economy, the inhabitants of proposed ONPC mainly engage as gatherers of non-timber forest resources (NTFPs),

farmers or work as laborers on other agricultural farms (Table 2.9). While waiting for the designation of the ONPC as protected area, the villages situated within the area have been declared forest villages. Forest protection committees have been formed there by the ONPC management as the micro-forest governance structures.

Table 2.9 Occupation details within the study area

Types of occupation	Number of households within villages					
	A	B	C	D	E	F
Total Farm	-			-		
Own		140	175		25	70
Labor		4	150			6
Total Labor	-			-		
Farm		146	150		25	6
Development		3	300			
Forest extraction	-	146	450	-	83	76
Temporary migration	-	14	40	-	10	6

Source: Fieldwork 2009-2010.

Note- some categories overlap

Regional differences also result in infrastructure disparities across the six selected villages (Table 2.10). The data for the infrastructural facilities was generated through the village forms. These forms were filled by the local school teachers, as they are the ones who are engaged in the census data collection. There is no NGO, regional or international, that operates within this region. However, every village has an *anganwadi*

for the basic healthcare as a part of the public healthcare system. In addition, *asha karyakarta*, or the women healthcare workers for particularly poor women and children, can also be found in these villages. Every selected village has a primary school, while insufficient middle and senior schools.

Table 2.10 Details of infrastructures within selected villages

Parameters	Details of infrastructure within villages					
	A	B	C	D	E	F
Total Population	-	715	2139	748	500	700
Total Households	-	146	478	155	83	78
Literacy rate	-	51%	37%	25%	25%	60%
Total livestock	-	-	1945	-	700	360
Water sources	-					
Hand pumps		4	12	4	2	5
Well		0	2	1	1	2
Tube well		20	0	2	0	0
Pond		1	1	0	0	0
Others		0	0	0	0	0
Sanitation facility in households	Incomplete	1	433	0	0	0
Electricity	Yes	Yes	Yes	Yes	Yes	Yes
School						
Primary	1	1	1	2	1	1
Middle	0	0*	1	0	0	0
Senior	0	0	0	0	0	0
<i>Anganwadi</i>	1	1	2	1	1	1

Table 2.10 (continued)

Parameters	Details of infrastructure within villages					
	A	B	C	D	E	F
Number of families below poverty line	-	33	128	84	40	76
Number of families above poverty line	-	113	350	127	43	2

Source: Fieldwork 2009-2010. *Proposal sanctioned. Construction will begin within one or two years

FOREST RULES: BEFORE AND AFTER PROPOSED ONPC

Different rules-in-use exist for different forest resources such as *tendupatta* (leaves of *Diospyros melanoxylon*), flowers of *mahua* (*Madhuka indica*), *Kullu* gum (*Sterculia urerns*), and *Dhavda* gum (*Anogeissus latofolia*) (Table 2.11). These rules-in-use varied during pre-ONPC and during ONPC implementation. The extractions of all these forest resources are restricted to the ‘Other Forest Area’ within the ONPC. At this point, it is unknown whether ‘Other Forest Area’ has been declared as the village forests within the ONPC.

Table 2.11 Summary of Forest Rules-in-Use before and after the ONPC implementation

Forest extraction activities	Rules before implementation	Rules during/after implementation	Location within ONPC where allowed
Fuelwood	Extracted from village forest; extract as per need; Nationalized in 1974	One headload per person allowed during one/multiple visits	Other Forest Area
Cattle Grazing	Cattle can graze anywhere	No cattle grazing allowed except on reserved forest land	Other Forest Area
NTFPs: 1. <i>Tendupatta</i>	Private extraction; Nationalized in 1964	Extracted under Park officials' supervision; sold to cooperatives only	Other Forest Area
2. <i>Mahua</i>	Extracted from private trees; sold to village merchants	Private extraction; sold to village merchants	Other Forest Area
3. <i>Kullu</i> gum	Nationalized in 1995; free extraction	Extracted from reserved forests; sold to cooperatives.	Other Forest Area

These rules-in-use will be described as follows-

1. *Nistaar* Rights
2. Fuelwood
3. Cattle grazing
4. NTFPs
 - a. *Tendupatta*

b. *Mahua*

c. *Kullu and Dhavda* gums

***Nistaar* Rights**

Under the Indian Forest Act 1878, all unreserved forests were notified as reserved. This restricted the local forest dwellers to unreserved forests for their daily needs. To help them fulfill their needs, the state introduced '*nistaar*' rights. *Nistaar* rights are the rights that relate to villagers' necessities of forest produce made available to all agriculturalists, village artisans and agricultural laborers (Buch 1991). Before India's independence in 1947, to exercise their *nistaar* rights, villagers were issued licenses in rotation for extracting forest materials for their needs such as bamboo for constructing house. In post-independence period, Forest *Nistaar* policy of Madhya Pradesh was introduced in 1958 under which *nistaar* depots were started, specifically for those villagers who did not live near the forests. The state government stated that "all *nistaar* requirements of the cultivators be fulfilled, as far as possible from those forests which are most conveniently located. There should be no distinction between any class of cultivators, including on account of the nearness or distance of residence from the forest" (Buch 1991:68). Currently in the proposed ONPC, no household depends on the *nistaar* depots as they exercise their *nistaar* rights to extract from the nearby forests. While planning the creation of the proposed ONPC, the ONPC authorities have decided to grant enough area in the nearby reserved forests to the local communities so that they do not depend on the

proposed ONPC for their daily sustenance. In addition, the local people will be encouraged to use *nistaar* depots.

Fuelwood

Before the proposed ONPC came into existence, the designated park area was managed by the state territorial forest department as village forest. There, local inhabitants were allowed to use resources for different sustenance needs. The timber was nationalized in 1974. As a result, to control illegal tree felling, the forests of Khandwa division were classified as protection forests, production forests and social forests (Lal 1987). Protection forests were the forests which were found on steep and precipitous slopes (25 degrees Celsius and above) along the river banks. To control rapid soil erosion, conservation of such forests was determined by banning logging within 2 kilometers along Narmada River. Production forests included that belt of forests which was managed for timber production for commercial and industrial purposes. Lastly, local communities were allowed to fulfill their daily needs through social forests. However, according to one of the working plans of the then territorial forest department in 1987, it was noted that the village forests were gradually being destroyed by the local inhabitants for agricultural, settlements and other purposes (Lal 1987). Hence, to control the rapid exploitation of tree felling, measures were taken to spread awareness and educate the local communities through meetings.

Once ONPC was proposed as a protected area, its broader management and policy planning related to wildlife conservation was guided by the Central Ministry of Environment and Forestry. For the day to day tasks, a self-regulating department under the state forest department was created with vested responsibility of implementation of the national policies and plans, administered by centrally appointed forest officer called Chief Conservator of Forest (Ministry of Environment and Forest 2012).

All the previous rules and regulations that were applied to the space, now defined as ONPC, were terminated. New rules (based on combination of the Wildlife Protection Act 1972, Indian Forest Act of 1927, Forest Conservation Act 1980, Environment Protection Act 1986 and Biological Diversity Act 2002), under which different categories of protected areas were created, came into being (Ministry of Environment and Forest 2012). According to these new rules-in-use, no commercial or subsistence activity will be allowed inside the core area that included the national park and wildlife sanctuaries. Furthermore, to use the conservation reserves, the local inhabitants were expected to acquire permission from the forest guards. Based on the newer rules-in-use, women are allowed to bring fuelwood, but only as much as they can carry in a single headload. Local people are not allowed to take vehicles like tractors or bullock carts inside the forest. This inhibits their ability to cut down large trees for constructing their small huts.

Cattle-Grazing

It is believed that before the ONPC was created, the peripheral communities grazed their cattle in the forests. Due to stricter rules-in-use, the cattle grazing will be limited to the 'Other Forest Area'.

Tendupatta (Leaves of *Diospyros Melanoxylon*)

In the pre-ONPC period, before 1964, *tendupatta* extraction was done privately by landowners and sold it to *bidi*-making (local cigarettes) businesses independently. To stop illegal extraction of *tendupatta* from government and forest lands, safeguard extractors' interests against exploitation and to increase the state revenue, in 1964 *tendupatta* extraction was nationalized, which means that it cannot be traded freely (Madhya Pradesh State Minor Produce 2010). Under this policy, the *tendupatta* producing forest areas were divided into forest compartments, in such a way that from each compartment, the maximum extraction can be 2500-3000 *manak boras* (1 *manak boras* = 50,000 leaves or 1000 bundles). This measure is still followed currently in the ONPC. Different processes including pruning of the *tendu* shrubs and the extraction of leaves are now supervised by the forest department officials (previously) and park officials (currently). Since the nationalization of *tendupatta*, all the villages within the region were divided into clusters and cooperative societies were formed. As a result, the bundled *tendupatta* are now sold to the respective cooperative societies which are supervised by the *bidi* contractor and the park officials.

Flowers of Mahua (Madhuka Indica)

Flowers of *mahua* are extracted in this region for subsistence purposes including its use as a raw material for cooking. It is mainly employed to prepare local alcoholic drinks. These trees can be found in and around the villages in addition to the forests. Local households generally own the trees scattered around the villages. Hence, during the pre-ONPC days, local inhabitants could freely extract flowers of *mahua* from the forests and around their villages. However, when the park gets officially notified, the local inhabitants would still be able to extract flowers from their private trees but not from the forests, unless it lies within 'other forests' created for the local village use.

Kullu Gum (Sterculia Urerens) and Dhavda Gum (Anogeissus Latofolia)

Extraction of *kullu* gum is done during the summers particularly, while the extraction of *dhavda* gum is done throughout the year. The extract of *kullu* gum has high medicinal value and hence is bought by the pharmaceutical companies. In addition, it is also used for making confectionaries. In local practice, extracted *kullu* gum is often given to pregnant ladies for strength. Before the creation of ONPC, due to rapid exploitation of these trees in Madhya Pradesh, the state government banned its extraction by the late 1980s. However, this ban was uplifted by 1995 when the extraction of *kullu* gum was nationalized. Currently, in the ONPC, it is extracted particularly through Minor Produce Cooperative Societies and district unions. It was observed that the ONPC management holds meetings about one a year to educate the locals about the right procedure to extract

gum. In addition, they are also given necessary equipment including a sickle and plastic sheets.

The ONPC officials regulate the collection and sale of some NTFPs. For example, the forest department gives contracts to the ONPC inhabitants to collect *tendupatta*, and once collected, the local communities make bundles and deliver it to the forest department who then exports it out of the region based on national or international demands. At the same time, current conservation reflects some aspects of “fortress conservation,” such as guards (*nakedaar*) empowered by the proposed ONPC principles to enforce and regulate forest access, particularly for local people living in the nearby forest villages.

The changes in rules-in-use have implemented a ban or restrictions on the daily extraction of forest resources for livelihood activities. Forest cover density is measured on the basis of density of the tree canopies. Canopy density is defined as “the relative completeness of canopy usually expressed as a decimal coefficient, taking closed canopy as a unit” (Forest Survey of India 2009). Forest covers with 0.4 densities or more will have a *van suraksha samiti* (Forest Protection Committee). On the other hand, in areas with less than 0.4 forest cover densities, *gram van samiti* (village forest committees) are found. The villages with *van suraksha samitis* are characterized as forest villages, while the villages with *gram van samitis* are categorized as revenue villages (Personal Communication. Government Official 2010).

METHODOLOGY

I collected the data and information for the different research objectives from a qualitative semi-structured interviews, case studies, and household surveys.

Data Collection

I conducted intensive household surveys and participant observation, in the selected six villages, which attempted to extensively collect resource use and household economic related data from different socio-cultural groups inhabiting the region. I designed the household survey to generate quantitative data.

I collected data and information for this study from six villages situated within five kilometer radius of the proposed ONPC boundary in the central Indian state of Madhya Pradesh. Of these six villages, two villages, namely Village E and Village F, are in the Dewas district while, the other four villages – Village C, Village B, Village D and Village A are in the Khandwa district of Madhya Pradesh. I also obtained a map of proposed ONPC from the park officials during the preliminary fieldwork in the summer of 2008. Based on the map, I then identified villages lying within 2 kilometers radius. During the pre-fieldwork in 2008, few random villages were selected for a visit on the basis of accessibility and contacts for the purpose of getting acquainted with the region. Preliminary data was collected from these selected villages. Ultimately, a final selection of the villages were based on the criteria including proximity to the base station

(Narmadanagar), safety and accessibility especially during the severe monsoon season in the months of July August. Except for Village D and Village F, rest of the selected villages had been visited during preliminary fieldwork in the summer of 2008 and contacts were established there. In addition, these villages were especially selected under the guidance of the advisor, the Chief Conservator of Forests (of proposed ONPC) and the proposed national park's office.

Focusing on the household economics, in contrast to selecting villages situated within 5 kilometer of a market town (Mahapatra and Albers 2005), the guiding factor in this study was the proximity to the proposed national park. As a result, the villages selected for the study were situated within 2 kilometer of the park boundary and had alternate selective criteria such as safety and daily commute especially during the monsoons. In such cases, the weekly market or *haat* are one of the adopted trading places where the resources extracted are sold locally except in the case of *tendupatta* which is sold on contractual basis.

I collected the data from November 2009 to August 2010 and December 2010-January 2011 involving a random chain sample of 204 panel households in the six villages. The target population was 18 years and older. As a different dialect of Hindi language is spoken in the region (Nimari), I hired field assistants. Education, social networking, availability and family permission were the main criteria I used to select the assistant. Three different field assistants were hired at different phases of the fieldwork. One field assistant helped with the data collection in the Village A, Village B, Village C and

Village D in the Khandwa region. On the other hand, two assistants provided help in the Village E and Village F of the Dewas region. These assistants helped in translating the interviews and filling out of the survey forms. They were trained for two days that included their orientation with the study objectives and IRB protocol. I discussed interview and survey questions with them to help them understand how to explain the question, if required, and what kind of answer to expect. Interviewer training consisted of role playing which was followed by practice interviews. I decided to spend one and half months in each village to collect data. I began the process by visiting each village for first three days, either early morning or late evenings (for the convenience of the villagers) and socialized with the villagers by introducing ourselves and the study objectives. Along with my field assistant, I spent time at the local schools interacting with the school teachers, chatting with the *bais* (village women) about their daily activities and discussing local health issues at the local *anganwadi* (basic healthcare provider in the village). At the end of the three-day period, I broadly understood the daily routines of the villagers and their activities and situated my plan for data collection around it. I visited villages early in the morning to talk to men and late mornings to talk to *bais* within each household. Visits to the villages were canceled during cultural events. Often, I accompanied the *bais* to the forest for collecting fuelwood or *tendupatta* while interviewing them at the same time. A voice recorder was used to record the interviews once interviewee gave his/her permission. At the end of the day, observations were noted in the field diary.

Surveys

I conducted a total of 204 household surveys. In order to provide detailed information, the household survey was designed in six elaborative sections. Out of these six sections, two sections contributed to the data on household economics. Of these, the first section ‘general economics’ focused on the data from individual households and was divided into three categories based on the income generation activities – forest products, farm and non-farm. The first category compiled detailed data such as which resources they collected each year, month-wise resource extraction, units collected and its sale. The second category on ‘income generated due to farm activities’ included questions related to the agricultural activities such as how much land do the people own, how much do they produce, what do they grow, if they need to work on other’s land or if they hire labors for their own land. Questions related to, travel in particular labor tasks outside the village and how much do they get paid, formed part of the third category.

Other section aimed at calculating (closest approximate) individual household incomes, utilizing forest resources for cultural events, forest management institutions and consumption of fuelwood for different purposes based on the information provided by each household. Numerous questions on forest management institutions were incorporated in the household surveys to acquire perception of the resource-users to understand the dynamics of forest institutions.

Case-Studies

I developed household case-studies to describe detailed household resource use and mobilization of *tendupatta*, *mahua*, *kullu* and *dhavda* gums particularly. Altogether I conducted 18 case studies, three from each of the sample villages. Before I began my fieldwork, I prepared a set of detailed prompts for each of the resource. Then I tested these prompts randomly on the local villagers from the six sampled villages to experiment the type of responses. Once I was satisfied, I conducted the micro case-studies in the selected villages. Each interview ranged from 3 to 5 hours depending on the respondent's work schedule. I selected three households from each village based on random chain sample. I ensured that the respondents selected for the micro case-studies were not engaged in the household surveys. I, along with my field assistant, visited the three selected households in each village and interviewed them based on the final prompts. Once I gained the respondent's permission, these interviews were recorded on my voice recorder. At times, the entire family gathered while these interviews took place and the responses of the family members were also recorded. The names of the respondents were not recorded to maintain confidentiality so that their identities cannot be linked with the information they provided. As I had spent weeks visiting each of the villages and forming relationship with the village *bais*, I gained their trust which helped me particularly during the interviews.

The prompts focused on the household resource use and mobilization of the selected resources particularly on how they mobilized and accessed resources, how often, for

what purposes, their perceptions of the recent changes on their access to resources and its regular mobilization and how it affect the social relationships within the household due to lack or excess of resources. The prompts also explored how they use the forest resources for cultural events, which resources and how it affects them and their social relationships when such resources are inaccessible due to restrictive access to forest or its unavailability. Some interviewees offered elaborative responses while others answered in few sentences.

Interviews

I conducted ten interviews with the park officials randomly varying from the rangers to the forest guards. These interviews were designed to elicit responses based on the relationship between villages committees and park officials, history of the regional forest conservation practices and the recent changes. I asked questions involving changes in the condition of the local forests, role of local communities in safeguarding forest, their access to forest resources is beneficial or destruction to foundational forest conservation goals, *van suraksha samiti* and its role, whether they are successful or disaster and if decentralizing has been a good idea. These prompts were designed to examine whether any conflicts exist between the park officials and the local communities and in what role do the park officials situate the local communities – as benefactors or destroyers?

In addition, I also developed some prompts to interview the head of the *van suraksha samiti* (Forest Protection Committee) from each selected villages. Out of six villages, I

was able to interview only four heads, while other two were unavailable for interviews. These prompts were helpful in obtaining specific information about each *van suraksha samiti* including when they were established, their goals and members, how are they elected or selected, powers that reside with the head and the members, their duties and responsibilities as per the committee rules towards forest conservation, involvement of women within the committee, meetings held, how often, any conflicts among the villagers or between the villagers and the park officials and its benefits to the village. These interviews revealed the role of *van suraksha samiti* in village development and forest conservation.

Data Analysis

The data collected from the surveys was designed into excel spreadsheets, with each village maintaining a separate spreadsheet. Once these spreadsheets were complete with the raw survey data, I created descriptive statistics highlighting the participant households engaged in different income generation activities and related labor dynamics along with the actual income generated from these economic activities. Descriptive statistics included mean, median, standard deviation and variance which were all calculated through IBM SPSS version 20 software.

Three categories were created that included farm activities, off-farm activities and non-timber forest resources for 204 households. For the farm activities, all the income generated from the crop production in summer, monsoon and winter seasons was

registered separately along with the livestock sale. The income from the off-farm activities was divided into the work on another's farm, work under forest department, work under the village *panchayats*, and temporary remittances. Subsequently, incomes from the non-timber forest products were noted separately from the sale of *tendupatta*, *mahua*, *kullu* gum, *dhavda* gum and fuelwood.

For the qualitative data, the first step for analysis involved transcribing all the interviews from Hindi/Nimari to English through Express Scribe software. Next step entailed developing a theory through focused coding – categorizing and organizing codes into key themes, which was done by employing Atlas.ti software. Following codes, memos were prepared for transparent analysis. Subsequently, these memos were linked together to form a grounded theory (Charmaz 2006, Corbin and Strauss 1994).

Data Problems

When I initiated investigating the creation of the ONPC in summer 2007, I encountered resistance from the State Ministry of Environment and Forest, Madhya Pradesh. Repeatedly, I was told that there is no such plan and that I should end this project and select another area for my doctoral research. Over the years, I made a breakthrough by establishing contacts and gained entry into the ONPC. This resistance decreased over the years but did not completely disappear. While gathering data from the villages has not been a problem, but securing government plans and documents about the park has been difficult as they were not ready to share them. This greatly affected the data analysis.

One of the other main problems that I encountered was that there was no way to corroborate the household income data which was collected through the surveys. It is possible that household heads or members, when surveyed, exaggerated their household income data, which might have caused anomalies in the data. However, I tried to ascertain the income told by the household head/member by observing the number of consumer items such as a television, a radio, a motor vehicle, a refrigerator in the house and type and built of the house. In addition, there were few cases in which the field assistants forgot to ask for the detailed household income data. Such cases have been included in the data analysis. These factors can again cause abnormality in the data.

Table 2.12 Socio-cultural make-up of the six sampled villages

Socio-cultural groups	Village A	Village B	Village C	Village D	Village E	Village F
Total sample	19	36	34	40	36	39
<i>Adivasi</i>	12	29	30	33	33	37
Non- <i>Adivasi</i>	7	7	4	7	3	2
Total percentage of <i>Adivasi</i> (%)	63	81	88	83	92	95

Source: Fieldwork (2009-2010)

Note: Percentage has been rounded off

It should be noted here the complex social heterogeneity of the rural Indian society is such that it cannot be ensured during sampling that similar socio-cultural groups are evenly distributed in each sample villages (Table 2.12). The total percentage of *adivasi*

reflects that the study area is predominantly tribal in social nature and non-*adivasi* are relatively smaller in number. Hence this affected the data analysis as the sample is not normally distributed.

Field Biases

It is important to recognize the biases that existed during the fieldwork, thus playing an important role in the research results. Spending almost one year at the field site, I was conscious about minimizing these biases. Being an Indian and ability to speak Hindi was beneficial as it was relatively easy to gain trusts of the villagers. Despite the cultural advantages, the villagers were sensitively aware about me and my presence around their villages every day. Visiting villagers or the park officials, I took precautions to dress properly in Indian everyday clothes. I spent hours interacting with the villagers, ate food with them and walked several kilometers into the forest with the *bais* to collect fuelwood or *tendupatta*. I became accustomed to their lifestyle in order to minimize the biasness. However, at the same time, I was wary of the hygienic conditions in the villages, for instance, often covering my nose with a long scarf or carrying my own water bottle. During the fieldwork, I was thrice confronted by local events where in all circumstances, a small child had died and a feast was organized in the village. As a local school teacher told me it included drinking alcohol and eating meat. It was during these events that I stayed away from the villages. Throughout the *mahua* collection in February when the inhabitants begin preparing and consuming local alcohol, I spend minimal time in the

villages. I noticed particularly during February, either men would not go for work or return home from their jobs early in the afternoon. Both men and women would, then, spend the rest of the day drinking alcohol. Moreover, I was attentive to the rigid patriarchal village society structure. Before beginning the village surveys or interviews, it was important to first meet village headman and introduce the research. Several times during the fieldwork, my field assistant in Khandwa district compelled me to hire another field assistant for her position. I increased her salary to make her stay because of her social contacts in the selected villages. A local school teacher was astonished when she heard what I was paying my field assistant. She, then, told me that I am paying exorbitant salary to my field assistant in relation to the regional salaries. Hence, there was economic biasness that I could not overcome. These biases exerted unequal relations to some extent.

CONCLUSION

The creation of the ONPC is a result of conservation trade-off compensating the loss of biodiversity from the submergence of forests from the nearby Indira Sagar and Omkareshwar dams. Developed under the compensatory afforestation program, ONPC is a result of the guidelines as per the independent review conducted by the World Bank in 1993. Various zones have been created within the ONPC based on the IUCN's categories namely, Omkareshwar National Park, Singhaji Wildlife Sanctuary, Mandhata Sanctuary and Narmada Conservation Reserve Unit I and II. Important wildlife in the

region includes lion, panthers, Nilgai, deers, jackals and other smaller animals. The ONPC focuses on the development of the programs related to eco-restoration and sustainable livelihoods within the forest communities. Six villages have been selected from the ONPC to conduct this study. These villages are dependent on the nearby forests for fuelwood consumption in addition to the income generating extraction of *tendupatta*, *mahua*, *kullu* and *dhavda* gums. Each of these resources has a distinct set of rules. Combinations of techniques were employed to gather qualitative and quantitative data including household surveys, interviews and micro case studies.

3. A TRADE-OFF FOR WHOM? CONSERVATION TRADE-OFFS AND INCOME DYNAMICS IN INDIA

INTRODUCTION

Biodiversity offsets emerged as a response to increasing number of development projects (Seagle 2009, Burgin 2008). It is important to study characteristics and shifts within biodiversity offsets because they can be thought of as double-edged sword – implications for the local communities from both conservation and development aspects. Creation of the proposed Omkareshwar National Park Complex in Madhya Pradesh is an example of one such conservation trade-off. Construction of the Indira Sagar and the Omkareshwar dams, part of the Narmada dam project in central India, marked severe deforestation and submergence of healthy forested areas. This threatened large areas of forest cover in the region. The Indian Forest Conservation Act of 1980 (1988 re-amended) has implemented compensation for any change in forest land use to a definite non-forest land use, accomplished ‘on-site’ through deforestation, de-reservation or diversion for any development project, carried out and monitored through set of established guidelines (Kohli et al 2011). Establishing such areas necessitated reorganization of the rules-in-use, thus affecting the local communities. While the creation of the conservation trade-off addressed concerns of global environmental change, it consequently enhanced command and control policies at the local level. Yet,

we know little about the economic costs and benefits of changes in forest-resource use policies on the local people (Hirsch et al 2011, Igoe and Brockington 2007).

To fill this knowledge gap, this section examines income dynamics across different socio-cultural groups within the proposed ONPC. Restructuring of the forest management institutions may alter access, control and mobilization of forest resources by all stakeholders. Change in access to forest resources implies a shift in local household economic practices. Hence, this study will investigate household economies to study the trends of income generation. Using data gathered from the six sample villages in the ONPC, this section will describe different economically productive activities and outline the shift in the household economic participation.

I begin this section with a review of the relevant literature on biodiversity offsets and non-timber forest products in global and Indian context. The second sub-section describes the research design reviewing the case study site and data collection (household surveys) and analysis methods. I present results of two quantitative analyses of the data. First, I employ descriptive statistics to estimate the contribution of different economic activities to the household income. This analysis reveals income variance and discrepancies within the data. Second, I use non-parametric independent *t-test* to document how income varies across different socio-cultural groups and villages in the proposed ONPC. This test provides a better understanding of the micro-realities of the economic relationships by indicating income variations. I use these data to analyze how formalization of the ONPC will change the local communities' use of forest products

and household economies. My analysis indicates that three main income production activities exist in the ONPC region that includes farm, off-farm and extraction of NTFPs. Different people engage in different economic activities in varying degrees. For all of the sampled villages, monsoon farming is most profitable. An inverse relationship exists between incomes derived from farm and NTFP extraction based on different farm sizes. Based on ethnicity, *adivasi* engage in more NTFP extraction, while non-*adivasi* prefer farm income, thus making the *adivasi*'s more economically vulnerable to changes in forest governance.

LITERATURE REVIEW

Biodiversity Offsets

The relationship between biological diversity conservation and human development has evolved over the decades. A sea-change has moved conservation policy from the classic “fortress” (Brockington 2002, Hulme and Murphree 1999, Igoe 2004) to the community based conservation focused on development (Hulme and Murphree 2001, Neumann 1998, McNeely and Miller 1984, Miller 1984, Agrawal 2001, Agrawal and Chhatre 2006, Agrawal and Gupta 2005). Such conservation interventions have also been influenced by changing state-society relations, where previous state policies have taken a back-seat to the current forms of market-based incentives and valuation of ecosystem services (Igoe and Brockington 2007, Igoe et al 2010, Dressler and Roth 2011, Brockington and Igoe 2006, Büscher and Whande 2007). Amidst the conservation

paradigm change, a distinct branch has led to emergence of environmental compensatory mitigation or specifically called biodiversity offsets. Biodiversity offsets can be defined as “conservation actions intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects, so as to ensure no net loss of biodiversity” (ten Kate et al 2004:13).

Biodiversity offsets are considered an important tool for addressing environmental impacts of development, thus maintaining an equilibrium between the environment and development (McKenney and Kiesecker 2010). The biodiversity offset program is proving to be beneficial to businesses, governments, conservation groups and communities as evident by the wetland and conservation banking program in USA and habitat conservation in Australia and Canada (ten Kate et al 2004).

However, the social dimensions of these interventions are mixed. On one hand, such programs have included local communities in resource governance while fostering an interaction between sustainable resource management and economic development (Burgin 2008, Norton 2007). But on the other hand, negative outcomes, including displacement and relocation of local communities from the conservation enclosures, still occur (Brockington and Igoe 2006, Rangarajan and Shahabuddin 2006, Adams and Hutton 2007). These adverse processes may or may not result in further economic marginalization of the local communities (Brockington and Igoe 2006). While different names for biodiversity offsets exist, including mitigation banking, conservation banking, compensatory mitigation, BioBanking, they all share similar objective – to reduce

biodiversity loss through market-based incentives and payments (Madsen et al 2010, ten Kate et al 2004, Morris et al 2006). According to State Biodiversity Markets report, at present 39 compensatory mitigation programs exist across the world, with several individual offset sites, in addition to 25 more programs in different stages of development (Madsen et al 2010). Such offset programs can be particularly found in New Zealand, Australia, Indonesia, Vietnam, Japan, China, South Africa, Madagascar, Sweden, Germany, United Kingdom, Brazil, Colombia, United States, and Canada (McKenney and Kiesecker 2010, Madsen et al 2010, Gordon et al 2011).

Different realities of biodiversity offset programs exist globally. In North America, the biodiversity offsets programs are well-developed and focus on the wetlands and species mitigation in US (Robertson 2004, Bayon 2008) and fish habitats and wetland compensation in Canada (Madsen et al 2010). In collaboration with the public-private sectors, commercial wetland mitigation banking, an environmental management policy, was introduced in United States in 1991. Under this program, the agencies developed a market in privately owned 'wetland ecosystem services where the ecosystem services are produced and sold through site-restoration (Robertson 2004). More noticeable offset programs can be found elsewhere in Australia and New Zealand. Twelve biodiversity offset programs currently exist with five more in developmental stages (Madsen et al 2010). The offsets are largely acquired by the urban property developers, infrastructure (road, pipelines) agencies, extractive industries, energy companies and agricultural landowners (Madsen et al 2010). In Australia, there is a sharp rise in the loss of threatened species that primarily exist in the urban areas due to urban expansion (Burgin

2008). In New South Wales, to address this issue, “Threatened Species Conservation Amendment (Biodiversity Banking) Bill” was passed in 2006 (Burgin 2008). Similar to carbon credit program, according to BioBanking, Burgin (2008) explains biodiversity credits may be produced by the land owners based on their commitment to reinforce and protect biodiversity on their land. These credits act as ‘additional actions’ and can be traded off to compensate for the biodiversity impacts due to land development (Bayon 2008, McKenney and Kiesecker 2010, Burgin 2008). The land development may progress, only if the traded credits implement a “net maintain or improve outcome” for biodiversity (Burgin 2008). Main drawback of the program includes lack of government enforcement to base decisions on scientific reasoning (Burgin 2008). According to the State of Biodiversity Market report (Madsen et al 2010), till end of 2009, about 8,865 hectares of land has been cleared and 25,564 hectares of offset has been created under BioBanking program in New South Wales.

Studies on biodiversity offset program largely explore definition and global status (Madsen et al 2010, ten Kate et al 2004), framework assessment (Norton 2009, McKenney and Kiesecker 2010, Kiesecker et al 2009, Burgin 2008, Tew 2011), mechanisms and impacts (Bayon 2008, Gordon et al 2011). However, there is inadequate literature linking biodiversity offsets with development parameters of livelihoods, resource sustainability, institutions, and social relationships.

Conservation paradigm in 1980s and 1990s highlighted its interface with particularly, resource use and agriculture livelihoods, thus emphasizing its sustainable use that

supports the need to manage the conservation efforts along with the local communities in globalized era (Zimmerer 2006a). This third wave is characterized by conservation territories – “designated spaces of nature protection and resource management” (Zimmerer 2006a: 8, Zimmerer 2006b, Zimmerer 2000). The spatial settings within conservation territories are marked with the environmental management goals and definite set of activities that range from the rigid nature conservation to sustainable utilization (Zimmerer 2006a, Zimmerer 2006b). These spatial settings are also defined by the changing technological tools that advance such conservation territories; creation of innovative management spaces including community conservation units; and environmental networks as well as interconnected spatial units, as a result of the participatory planning (Zimmerer 2006a). Emergence of biodiversity offsets can be considered an example of such conservation territories within spatial settings. Biodiversity offsets are trade-offs that set aside land for conservation from within development schemes. Such trade-offs are accompanied by different processes to control and command the project regulations. They also transform practices and processes at micro-scale, thus forever changing the social, political and economic dimensions of the local communities. Such trade-offs might affect the complex workings of conservative initiatives in either negative or positive ways. Hirsch et al (2011), expressing their concern, argue that the different distributional costs and benefits related to conservation enclosures including who pays, who loses and who benefits have been ignored and this interruption could result in conflicting struggles between different actors within the conservation initiative. In their study, the authors also claim that different methodology

should be employed that supports different complexities of conservation initiative in social and political context (Hirsch et al 2011). Karanth and Nepal (2012) examine local resident's perception of losses and benefits from living in and around the protected areas in India and Nepal. The authors suggest that based on local resident's perceptions, living in and around the conservation enclosures implies incurring losses such as crop, property and livestock damages while receiving benefits at the same time including access to fuel and fodder and tourism (Karanth and Nepal 2012). However, their focus on losses and benefits from living in or around protected areas fail to engage the importance of persistent access to resource use and mobilization, particularly in India where millions of people still depend on daily forest resources like fuelwood. Hence, this study will fill the gap in the literature by addressing the economic benefits and losses within the local households in the upcoming biodiversity offset in the ONPC and how it might influence the regulation of access to forest resources.

Conservation-development studies has well-established the human-nature dichotomy/relationship through studies related to the conflict over resources (Jarosz 1996, Peluso 1992, Carney 2004, Schroeder 1993, Rocheleau and Ross 1995, Sundberg 2003), colonial power struggles (Peluso 1993, Robbins et al 2006, Robbins 1998, Neumann 1998), resource institutions (Robbins 2000, Agrawal and Gibson 1999). These studies explore the different ways through which the human practices and processes shape and are shaped by their environment. However, such studies are absent within biodiversity offset literature.

Studies have overlooked how the changes in the rules-in-use transform the livelihoods, thus impacting the income dynamics (Southworth et al 2006, Hirsch et al 2011, Igoe and Brockington 2007), within the context of conservation trade-offs. According to Igoe and Brockington (2007), emerging concerns from creating exclusive conservation enclosures not only include, further inequalities among the various actors, but it also challenges the local traditional environmental knowledge and local initiatives. They further highlight the gap within the literature by suggesting that consequences of such processes on local communities are poorly addressed (Igoe and Brockington 2007). Southworth et al (2006) argue that in trade-offs resulting in conflicts between the people and parks, studies should examine and record the livelihoods of people around park peripheral areas and assess how their livelihoods and activities are in turn transformed by the effects of the protected areas.

Non-Timber Forest Products and Conservation

Rural forest dwellers across the world are known to extract and use extensively timber and non-timber forest products (NTFPs hereafter) to sustain their livelihoods (Love and Jones 2001, de Beers and McDermott 1989, Saxena 2003, Hembram 2007, Sunderland, Harrison and Ndoye 2004). The proximity of these dwellings to the forested areas exert pressure to the forest in forms of increasing human and livestock population along with growing poverty resulting in increasing loss of biodiversity (Cernea and Schmidt-Soltau 2003, Colchester 1994). Under such circumstances, the state either relocates the entire

forest dwelling, situated close to a protected area, away from the buffer zone or else amalgamates these communities with the conservation goals of the protected area (Brockington and Igoe 2006, Mclean and Straede 2003).

Researchers have identified NTFPs oriented forest management as a viable option for sustainable forestry as it employs most economical and practical method for integrating the use and conservation of forests (Mahapatra and Mitchell 1997, Gubbi and MacMillan 2008, Arnold and Ruiz-Perez 2001, Guariguata et al 2008, Appasamy 1993). Since 1980s, growing interest in NTFPs has been noted in view of its increasing relevance and contribution to rural development and conservation of natural resources. Being less ecologically destructive than timber harvesting, NTFPs provided a sound base for sustainable forest management. Moreover, commercial harvest of NTFPs was increased thus providing more incentives to retain the forest resources (Arnold and Ruiz-Perez 2001).

Extensive global studies on NTFPs have been conducted to investigate the correlation between conservation and sustainable development, more particularly, contribution of forest resources to poverty alleviation (Kusters et al 2006, Arnold and Ruiz Pérez 2001, Belcher et al 2005, Belcher et al 2003, Sunderlin et al 2005, Ruiz Pérez et al 2004, Belcher and Kusters 2004). Main findings of global NTFPs literature have well-established that– (1) the NTFPs play an important role in contributing to household economics, thus extensively to conservation- development goals, (2) NTFPs is widely employed as a ‘coping’ strategy within subsistence households, ‘diversified’ strategy to

provide supplemental income along with other productive activities, and ‘specialized’ strategy focusing specifically to integrate within high cash economy through marketing NTFPs, (3) to alleviate poverty, NTFPS should be increasingly and efficiently integrated into commercial production and trade, (4) as spaces of chronic rural poverty and forests are likely to overlap, thus increasing chances of human dependency on forest resources, it becomes critical to provide incentives for conserving forests, and (5) for successful commercialization of NTFPs, there need to be efficient infrastructure, access to skills and services and expanding markets. In India, about 60 percent of NTFPs are consumed by approximately 70 million tribals. NTFPs contribute about 10 to 40 percent of the household income (Shiva 1993).

However, over the decades, regional studies have also recognized and examined the importance of non-timber forest products and their role in poverty alleviation particularly in Latin America (Hecht 2007, López-Feldman and Wilen 2008, Pattanayak and Sills 2001, Pyhälä et al 2006), Asia (Belcher and Kusters 2004, Hogarth et al 2013, Mallik 2000, Fehr 2007, Mahapatra et al 2005, Nevins and Peluso 2008, Li 2008), and Africa (Lingani et al 2009, Fairhead and Leach 1994, Dovie 2003, Awono et al 2002, Van Den Berg et al 2007). These studies suggest (1) resource extraction is shaped by market forces, institutional and land tenure regimes, (2) different power relations at the household scale result in different access regime, (3) as an important livelihood option, NTFPs market integration and commercialization is not completely realized, and (4) as commodification process changes, the interwoven social relations and the perceptions of people, nature and places also change in political-economic context resulting in

changing access and control of resources. Belcher and Kusters (2004) argue that different regions have different significant characteristics, particularly seen in the extreme cases of Africa and Asia. For instance, African cases are marked with lower household incomes, increasing market demands for NTFPs, smaller volumes of trade and sometimes reverse migration from urban areas. On the other hand, Asian cases have typically higher and more stable economic state, stable NTFP markets, more stable resource bases and comparatively slower population growth due to urban migration. Conversely, cases from Latin America have exhibited higher frequency of unstable markets, little private investment, products created from diverse sources and less pressure on the resource base (Belcher and Kusters 2004).

Much recent work in South Asia has focused on livelihoods (Gunatilake et al 1993, Fehr 2007, Hegde et al 1996, Hegde and Enters 2000, Narendran et al 2001, Das 2005, Mukul et al 2010), income diversification (Mahapatra and Mitchell 1997, Illukpitiya and Yanagida 2008, Mahapatra, Albers and Robinson 2005, Hegde and Enters 2000), gender (Kelkar 2007, Krishna 2001), ecosystem conservation (Murali et al 1996) and institutions (Bhattacharya and Hayat 2004, Ghate et al 2009). However, addressing a range of functions and constraints of the NTFPs extraction in mitigating poverty in developing countries, scholars argue that their contribution and potential is still least examined in India (Rasul et al 2008, Gubbi and MacMillian 2007 and Saxena 2003). Moreover, Indian studies (Murali et al 1996) mention that creation of protected areas often result in banning of previously established practices. There exists a wide gap in

assessing how new rules-in-use influence the local livelihood practices thus altering the household economy.

In South Asia literature on NTFP livelihoods, Gunatilake et al (1993) argue that by introducing new conservation program in the Knuckle Forest Range in Sri Lanka, the potential income of the peripheral communities would be most affected as they would be forced to abstain from the extractive activities. Until such potential income losses are estimated, a sound socially acceptable forest management plan cannot be generated. Creation of Buxa Tiger Reserve in India resulted in a shift from commercial forestry to forest conservation thus affecting the local livelihoods based on NTFP income (Das 2005). Once more, how livelihoods are influenced by introduction of new rules-in-use through new conservation enclosures has not yet been addressed. In another study, Hegde and Enters (2000) quantify forest dependence of local people to address forest importance within local household economy and assess how restrictive conservation regulations affect local livelihoods. They argue that commercialization of NTFPs is determined by both access to resources and markets (Hedge and Enters 2000). Therefore, it seems clear that persistent access to forest resources is the key for household economies to alleviate poverty but it still remains to be seen how this occurs when new rules-in-use are introduced in the equation. In an important study, Narendran et al (2001) conclude that while income from NTFP extraction still remains significant to forest household economies, it is plays a greater role in ethnic households. This study complements Narendran et al (2001) to address how new rules-in-use may influence the persistent benefits from NTFP income within ethnic households.

Studies on income diversification in context of South Asia has well –established that income from farm, off-farm primarily labor work and NTFP income constitute the household economy in varying degrees (Mahapatra, Albers and Robinson 2005, Hegde and Enters 2000, Illukpitiya and Yanagida 2008). In Sri Lanka, Illukpitiya and Yanagida (2008) established a positive correlation which suggests an increase in household income due to increasing sources of diversified income. More specifically, Mahapatra, Albers and Robinson (2005) argue that the contribution of NTFPs to cash-income differs in Orissa and Jharkhand in India due to seasonality, household income, proximity to specific resources, traditions and skills, farm size, caste, ecological and climate setting and the ability to harvest two crops per year. The authors mention the cash-income differences between the tribals groups, scheduled castes and the upper caste households (Mahapatra, Albers and Robinson 2005) but they fail to provide the readers more in-depth knowledge of the workings of this dynamic, thus generating immense gap within the ‘ascertained’ relationship of NTFPs extraction and income generation among different resource users.

Parallels can be drawn between the global studies and Indian context, but with the added caveat that NTFPs in South Asia represent increasing importance of local dependence of household economies on NTFP extraction (Bawa 1993, Rasul et al 2008). In India, about 60 percent of NTFPs are consumed by approximately 70 million tribals. NTFPs contribute about 10 to 40 percent of the household income (Shiva 1993). Hence, the economic costs and benefits based on ethnicity within biodiversity-offsets have been overlooked with broader implications on effect of new rules-in-use on resource

extraction. What are the economic implications of conservation trade-offs for local people, particularly, across different ethnicity? Who benefits among the local communities? How does it influence different socio-cultural groups in terms of their income generation? This study fills the empirical gap in the NTFP literature as noted by Hirsch et al (2011), Brockington and Igoe (2006). Furthermore, this study complements Narendran et al (2001) to address how new rules-in-use may influence the persistent benefits from NTFP income within ethnic households. This furthers our understanding in context of India where such complex social organizations still exist. Hence this study estimates the contribution of different economic activities, in particular, NTFPs to household income; analyze how income varies across different socio-cultural groups and villages in the proposed ONPC; and finally, it will assess how the implementation of the ONPC may change the economic practices of those communities most dependent upon the forest for their livelihood.

RESEARCH DESIGN

Proposed Omkareshwar National Park Complex

Proposed Omkareshwar National Park Complex (ONPC) is a planned protected area in Madhya Pradesh (Figure 3.1a and 3.1b). It is being designed as a compensatory conservation project which will overcome the loss of wildlife and forest resulting from the construction of and submergence from the nearby Indira-Sagar and Omkareshwar dams, part of the notorious multi-purpose Narmada dam project. This complex consists

of Omkareshwar National Park, Singhaji Wildlife Sanctuary, Mandhata Sanctuary and Narmada Conservation Reserve Unit I and II (Figure 3.2). It is situated at the junction of three districts, namely, Dewas, Khandwa and Khargone.

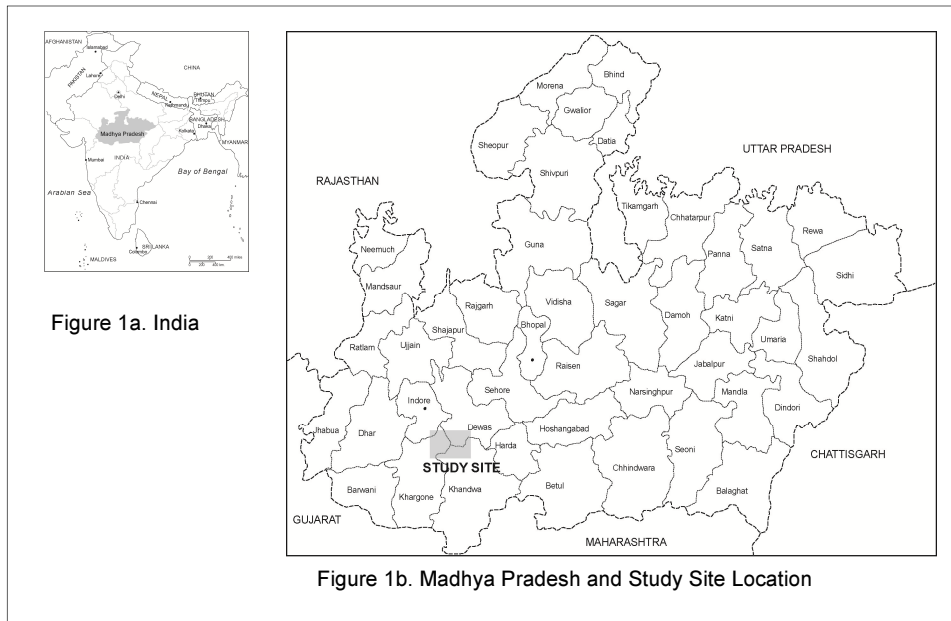


Figure 3.1 (a) and (b) Proposed Omkareshwar National Park Complex in India and in Madhya Pradesh

The creation of the ONPC broadly results from one of the mandatory guidelines from an independent review conducted in 1991. The World Bank had committed about \$450 million in 1985 to the Narmada dam project that led to mass-displacement which had ultimately resulted in Bank's image as an abuser of human rights and environment (Ram

1993, McCully 1996, Rich 1990). With the onset of global environmental consciousness in the late 1980s onward, the World Bank was pressurized largely by the non-governmental organizations in the United States, Europe and some developing countries to withdraw from the project (Rich 1990, Morse and Berger 1992).

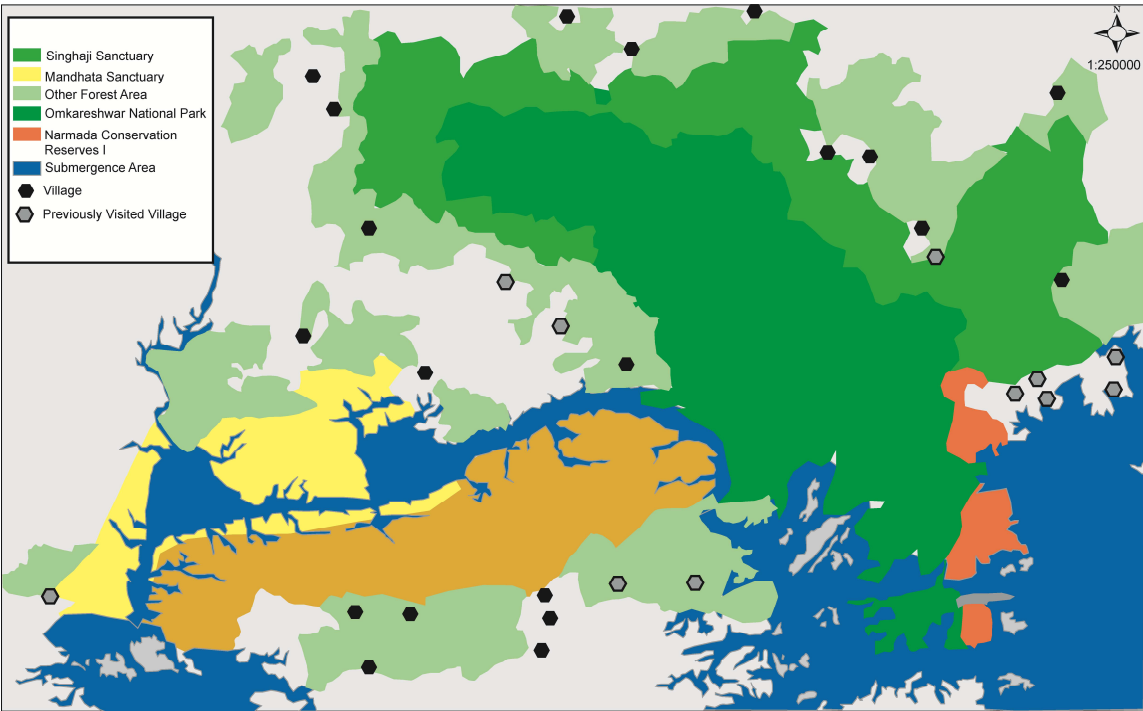


Figure 3.2 Descriptive map of the Proposed Omkareshwar National Park Complex

In 1987, the Government of India approved the diversion of 41,111.97 hectares of forest lands in the districts of Dewas, Khanwa and Hoshangabad (in the state of Madhya Pradesh) towards the construction of the Indira Sagar dam project (Personal

Communication. Government Official 2012). However, at the same time, the government also made it mandatory that representatives from different stakeholder agencies should form a committee for wildlife management and conservation, which would be displaced during the dam construction. These stakeholder agencies were the National Hydroelectric Power Corporation (NHPC), the Narmada Valley Development Authority (NVDA hereafter), the state government of Madhya Pradesh and the state forest department. This committee selected the Wildlife Institute of India and Friends of Nature Society to prepare impact assessment reports, which were released in 1994 and 1996. As a result, in 1993, NVDA declared its intentions to create a national park and sanctuaries. (ONPC N.D.)

Dominated by the controversies of the Narmada dam project, impact assessment studies conducted by the Wildlife Institute of India and Friends of Nature Society recommended that a protected area be established as a combination of national park and wildlife sanctuary (total area 758.88 sq. km.) (ONPC N.D.). Such an area would help minimize the consequences of direct and indirect losses resulting from the development of Indira Sagar and Omkareshwar dams. They suggested that the selected forest area should share similar conservation characteristics with those that were lost due to submergence, so that the wildlife displaced by submergence could take refuge in the protected areas built around the reservoirs. However, NVDA solicited another agency, the Indian Institute of Forest Management, to conduct an independent study to review the recommendations of Wildlife Institute of India and Friends of Nature Society. They suggested reducing the total extent of the proposed protected area (658.35 sq.km) by 100 sq.km (ONPC N.D.).

This decision was opposed by Wildlife Institute of India, who argued that the reduced area is not sufficient to restore the affected biodiversity (Personal Communication. Government Official 2012). Ultimately, in 2007, it was considered pragmatic to announce the total extent of the protected area to 651.31sq.km (ONPC N.D.).

Approximately 84 villages are situated around the proposed ONPC - 55 villages in the Dewas district; 28 in Khandwa and 1 village in Khargone. Largely, this region is comprised of the tribal '*adivasis*' population, constituting approximately 22.3% of the total population. All the villages in the ONPC largely depend on the forest resources for their daily sustenance, particularly fuel-wood and non-timber forest products. While planning the creation of the proposed ONPC, ONPC authorities have decided to grant enough area in the nearby forests to the local communities so that they do not depend on the proposed ONPC for their daily sustenance. The local people mainly engage as gatherers of non-timber forest resources, farmers or work as labors on other agricultural farms. While waiting for the designation of ONPC as protected area, the villages situated within the area have been declared forest villages, and forest protection committees have been formed there as micro-forest governance structures. The changes in rules-in-use have also implemented a ban on the daily extraction of forest resources for livelihood activities.

ONPC and NTFPs

Based on an earlier available figure, Madhya Pradesh generates approximately US\$ 700 million of non-timber forest products in India (Worldwatch Institute 1991). Important NTFPs in this region include *tendu patta* (leaves of *Diospyros melanoxylon*), flowers of *mahua* (*Madhuka indica*), *Kullu gum* (*Sterculia urerns*), *Dhaoda gum* (*Anogeissus latofolia*) and *achar* (*buchanania lanzan*). Of these, *tendu patta* and *kullu gum* are nationalized and regulated NTFPs, and the rest are non-nationalized, which means they can be traded freely (Madhya Pradesh State Minor Produce 2010). Other non-timber forest produce species include various seeds, tamarind fruits, nuts, bamboo shoots and honey (Khare et al 2000).

Each NTFP represents an important product for household livelihood strategies; however, each NTFP has a distinct market and use.

1. Fuelwood: While fuelwood forms the basis of daily survival needs of the local communities, NTFPs provide important economic resources for households. Social and cultural factors play a significant role in deciding which tree species can be utilized for fuelwood and which cannot. For instance, wood from tree species such as *pipal* (*Ficus Religiosa*), *neem* (*Azadirachta Indica*), *kalam* (*Mitragyna parviflora*), *mohini*, *amla* (*Phyllanthus emblica*) are not used, as these trees are worshiped by different *adivasis*. They believe their family god resides in these trees. On the other hand, *fansi*, another species, is considered inauspicious; as a result tribes do not use this wood for cooking.

2. Mahua: Known for its high sugar content, the *mahua* flower (*Madhuka indica*) is used to prepare local alcohol and also eaten as a cooked vegetable. *Mahua* flowers are used to make local alcoholic drinks. Between February and April, liquor is made from *mahua* flower in almost every household in the selected villages in Khandwa district of ONPC. Approximately 405 liters of alcohol is yielded from one ton of dried flowers (Ministry of Agriculture 2006). Estimated production value of non-timber forest products in Sheopur district in Madhya Pradesh includes about US\$ 45,000 of *mahua* (*Madhuka indica*) flowers used for making local alcoholic drinks (Bhattacharya and Hayat 2004).

3. Tendupatta: *Tendupatta* (leaves of *Diospyros melanoxylon*) are used to produce local cigarettes or *bidis* largely as it is decay resistant and its capacity to retain fires. The *bidi* industry provides large-scale employment to rural population hence promoting the rural economy. The collection of *tendupatta* begins around mid-April until mid-May before monsoon. As previously mentioned extraction of *tendupatta* is nationalized, and the forest department actively participates in its collection and sale.

The ONPC officials regulate the collection and sale of some NTFPs. For example, the forest department gives contracts to local people to collect *tendupatta*, and once collected, the local communities make bundles and deliver it to the forest department who then exports it out of the region based on national or international demands. At the same time, current conservation reflects some aspects of “fortress conservation,” such as guards (*nakedaar*) empowered by the proposed ONPC principles to enforce and regulate forest access, particularly for local people living in the nearby forest villages. For

example, women are allowed to bring fuelwood, but only as much as they can carry in a single headload. Local people are not allowed to take vehicles like tractors or bullock carts inside the forest. This inhibits their ability to cut down large trees for constructing their small huts.

Efforts to provide economic incentives are not the result of any intention of community development. Instead, these efforts are the result of economic interest in the future of this area, namely, ecotourism. But at the same time, the ONPC officials have also suggested eco-development strategies for broader community development in the proposed ONPC region. According to an initial ONPC management plan (N.D.), the objective of eco-development policy is to lessen the reliance of local resource-users on the forest resources and to get their extensive support in implementing the conservation-development policies in the region in addition to the goal of boosting household incomes. This objective will be fulfilled by the development of agroforestry, village resources, alternative energy and participatory forest management (ONPC N.D.).

Methodology

Data Collection

I conducted intensive household surveys and participant observation, in the selected six villages, which attempted to extensively collect resource use and household economic

related data from different socio-cultural groups inhabiting the region. Each survey questionnaire was designed to generate quantitative data.

I collected data and information for this study from six villages situated within five kilometer radius of the proposed ONPC boundary in the central Indian state of Madhya Pradesh. Of these six villages, two villages, namely Village E and Village F, are in the Dewas district while, the other four villages – Village C, Village B, Village D and Village A are in the Khandwa district of Madhya Pradesh. Then, I obtained a map of the proposed ONPC from park officials during the preliminary fieldwork in the summer of 2008. Based on the map, I identified villages lying within 2 kilometers radius. During the pre-fieldwork in 2008, I selected few random villages for a visit on the basis of accessibility and contacts for the purpose of getting acquainted with the region. Preliminary data was collected from these selected villages. Ultimately, I made a final selection of the villages on the criteria based on the proximity to the base station (Narmadanagar), safety and accessibility especially during the severe monsoon season in the months of July August. Except for Village D and Village F, rest of the selected villages had been visited during preliminary fieldwork in the summer of 2008 and contacts were established there. In addition, these villages were especially selected under the guidance of the advisor, the Chief Conservator of Forests (of proposed ONPC) and the proposed national park's office.

Data was collected from November 2009 to August 2010 and December 2010-January 2011 involving a random chain sample of 204 panel households in the six villages. For

this purpose of this paper, a sample of 198 households was taken. The paper studies distribution of income from different economic activities among different socio-cultural groups. I removed data from six households from the results of this paper as they did not mention their socio-cultural groups during the survey. Village-based young adults were hired to conduct the household panel surveys in summer of 2010 and December/January 2011.

In order to provide detailed information, the household survey was designed in six elaborative sections. Out of these six sections, two sections contributed to the data on household economics. Of these, the first section ‘general economics’ focused on the data from individual households and was divided into three categories based on the income generation activities – forest products, farm and non-farm. The first category compiled detailed data such as which resources they collected each year, month-wise resource extraction, units collected and its sale. The second category on ‘income generated due to farm activities’ included questions related to the agricultural activities such as how much land do the people own, how much do they produce, what do they grow, if they need to work on other’s land or if they hire labors for their own land. Questions related to, travel in particular labor tasks outside the village and how much do they get paid, formed part of the third category.

Other section relevant to this section aimed at calculating (closest approximate) individual household incomes based on the information provided by each household.

The income generated by resource extraction, farm activities and off-farm activities, income based on farm size and cumulative income was calculated in this section.

Focusing on the household economics, in contrast to selecting villages situated within 5 kilometer of a market town (Mahapatra, Albers and Robinson 2005), the guiding factor in this study was the proximity to the proposed national park. As a result, the villages selected for the study were situated within 2 kilometer of the park boundary and had alternate selective criteria such as safety and daily commute especially during the monsoons. In such cases, the weekly market or *haat* are one of the adopted trading places where the resources extracted are sold locally except in the case of *tendupatta* which is sold on contractual basis.

Table 3.1 Socio-cultural groups within the six sampled villages

Socio-cultural groups	Village A	Village B	Village C	Village D	Village E	Village F
Total sample	19	36	34	40	36	39
<i>Adivasi</i>	12	29	30	33	33	37
Non- <i>Adivasi</i>	7	7	4	7	3	2
Total percentage of <i>Adivasi</i> (%)	63	81	88	83	92	95

Source: Fieldwork (2009-2010)

Note: Percentage has been rounded off

It should be noted here the complex social heterogeneity of the rural Indian society is such that it cannot be ensured during sampling that similar socio-cultural groups and

sub-groups are evenly distributed in each sample villages (Table 3.1). Since the study area is predominantly tribal in social nature, people belonging to other socio-cultural groups would be relatively smaller in number. Hence this affected the data analysis.

One of the main problems was that there was no way to corroborate the household income data that was collected through the household surveys. It is possible that household heads or members, when surveyed, exaggerated their household income data, which might cause anomalies in the data. However, I tried to ascertain the income told by the household head/member by observing the number of consumer items such as a television, a radio, a motor vehicle, a refrigerator in the house and type and built of the house. In addition, there were few cases in which the field assistants forgot to ask for the detailed household income data. Such cases have been included in the data analysis. These factors can again cause abnormality in the data.

Data Analysis

First, I filed the data collected from the surveys into an excel spreadsheet where the raw income data from different economic activities was arranged. Three categories were created that included farm activities, off-farm activities and non-timber forest resources for 198 households. For the farm activities, all the income generated from the crop production in summer, monsoon and winter seasons was registered separately along with the livestock sale. The income from the off-farm activities was divided into the work on another's farm, work under forest department, work under the village *panchayats*, and

temporary remittances. Subsequently, incomes from the non-timber forest products were noted separately from the sale of *tendupatta*, *mahua*, *kullu* gum, *dhavda* gum and fuelwood. Statistics software IBM SPSS version 20 was used to analyze this data set.

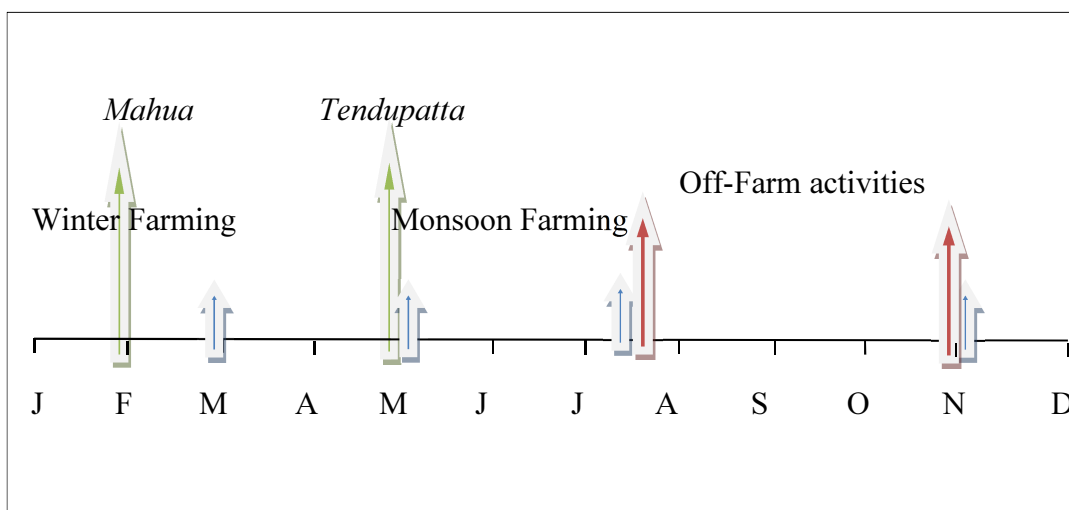
RESULTS

This sub-section investigates how economic practices and processes are affected by the new rules-in-use. Alternatively, I examine who benefits, from establishing new rules-in-use as part of compensatory conservation, among the local communities (*adivasi* versus non-*adivasi*) in the proposed ONPC. First, I estimate contribution of different economic activities to household income. Then I analyze income variation among and across different socio-cultural groups based on different economic activities in the sample villages. Finally, I investigate how formalization of the park complex will change the economic practices and how local communities use forest products in the proposed ONPC.

Contribution of Different Economic Activities to Household Income

Three main economic activities exist in the ONPC region which includes farm, off-farm and NTFPs extraction that are primarily seasonal activities (Figure 3.3). The resource-users generally begin the year with the extraction of *mahua* flowers for subsistence or commercial use in February which continues from a fortnight up to a month. At the same

time, if the wealthy households have irrigation facilities, they indulge in winter farming from November to March. In May, *tendupatta* is extracted for up to a month. Farming, based on the monsoon, is practiced from May to July/August which is the mainstay of majority of the farmers in the proposed ONPC. In between the extraction and the farming activities and for the rest of the year, the forest communities depend on the off-farm activities, majority of which are outside their own village. Generally, labor is hired during agricultural season for preparing the land for sowing seeds, sowing seeds, watering and harvesting. The household labor largely engages in the extraction of forest resources including *tendupatta* and *mahua*. Due to insufficient monthly data for the farm and the off-farm activities, seasonal data could not be calculated. In addition, data on seasonal variation of economic activities cannot be calculated distinctively for farm and off-farm activities as the respondents did not specify the years.



Note: *Kullu* and *Dhavda* varieties of gum are extracted throughout the year

Figure 3.3 Seasonal variations of economic activities

Farming constitutes one of the main economic activities in the ONPC region which is primarily restricted to monsoon months (end of May- beginning of August). Table 3.2 presents descriptive statistics for 198 sampled households for farm activity. It provides a clear representation of the households participating in the farm activities from all the six sampled villages. Income from farm activities is generated primarily from the monsoon farming (33.2 percent) and livestock sale (15.2 percent). This finding signifies that fewer farmers engage in winter (0.28) or summer farming (0.20), and largely local farmers depend on the monsoons in absence of adequate irrigation system.

Table 3.2 Household participation in seasonal farming activities

<u>Agriculture</u>		Total N*	Frequency(%)	Mean	Median	Standard Deviation	Variance
Summer income	No =0 Yes= 1	196	179(91.3) 17(8.7)	0.09	0	0.282	0.080
Monsoon income	No =0 Yes= 1	196	131(66.8) 65(33.2)	0.33	0	0.472	0.223
Livestock sale	No =0 Yes= 1	197	167(84.8) 30(15.2)	0.15	0	0.360	0.130
Livestock income	No=0 0-100 =1 100-500 =2 500-1000=3 <1000 =4	197	167(84.8) 6(3.0) 6(3.0) 18(9.1)	0.52	0	1.264	1.598
Winter income	No =0 Yes= 1	197	189(95.9) 8(4.1)	0.04	0	0.198	0.039

In terms of income generation, the maximum average income per household is produced during the monsoon months (Table 3.3). Larger standard deviation during the monsoon and winter months indicates that there is too much income variation between the least and most income generated households. This variation could be a result of affordability of adequate irrigation systems or larger farm size and type of crops grown by a larger proportion of richer households. At the same time, the income from the livestock sale reflects that fewer people engage in livestock sale (as also represented in Figure 3.4) but larger standard deviations for the participant households and income generated signifies that some households sell their livestock for larger sum of money (<1000) thus creating wider income fluctuations. Hen, bull, cow, goat are some of the examples of the livestock in this region.

Table 3.3 Average Household Income from Farming activities (US\$)

Income source	Average Income per household	Standard Deviation	Minimum	Maximum
Summer production	266.09	1.82	0	26,00,000
Monsoon production	329.21	81,316.46	0	6,79,600
Winter production	2.76	1,334.07	0	15,800
Livestock	5.69	1,347.19	0	12,000

Source: Fieldwork 2009-2010

Second important economic activity in the ONPC region is off-farm activities. Table summarizes household characteristics including off-farm activities and income. One of the obvious characteristics revealed includes that there is no full-time employment available in the ONPC region except for a miniscule population (8.7 percent). The off-farm income generation includes working on another's farm land, working outside the village (commuting or temporary migration), remittances from short-term employment and lastly, incomes from work offered by forest department or *panchayats*. Annually, about 66 percent of the sampled households suggested that employment is available during different seasons. A quick look at the frequency reflects that more manual? Labor is available to work on other's farm land during the monsoons (40.7 percent) but less in the winter season (14.8 percent). A significant proportion (63 percent) of local households earns income by working on another's farm land. Likewise, more people (56.6 percent) travel daily outside their village for work particularly during the

monsoons (9.1 percent). In the ONPC region, remittances, from chili factory and cotton factory, provide another form of off-farm income. Larger standard deviation means wider disparity between the low and high remittance income households. Additional seasonal employment is provided by short-term (e.g. daily) work opportunities offered by forest department and *panchayat* such as to dig a pond in the village or dig around the agricultural fields.

Table 3.4 Household participation in seasonal off-farming activities

<u>Off-Farm</u>		Total N*	Frequency(%)	Mean	Median	Standard Deviation	Variance
Full time employment	No =0 Yes= 1	196	179(91.3) 17(8.7)	0.09	0	0.282	0.080
Work available on other's land (seasons)	No=0 Summer =1 Monsoon =2 Winter=3 Monsoon +Winter =4 Summer + Monsoon +Winter=5 Monsoon +Summer =6 Summer + Winter =7	189	67(35.4) 0(0.0) 77(40.7) 7(3.7) 28(14.8) 6(3.2) 2(1.1) 2(1.1)	1.181	2	1.658	2.747
Work available on other's land income	No=0 0-100=1 100-500=2 500-1000=3 <1000=4	197	73(37.1) 17(8.6) 17(8.6) 29(14.7) 61(31.0)	1.94	2	1.722	2.966
Income in Cash or Kind	No =0 Cash =1 Kind =2	197	70(35.5) 110(55.8) 17(8.6)	0.73	1	0.609	0.371
Daily travel for work outside village	No =0 Yes= 1	196	85(43.4) 111(56.6)	0.57	1	0.497	0.247
Work availability outside village (Seasons)	No=0 Summer =1 Monsoon =2 Winter=3 Monsoon +Winter =4 Summer + Monsoon +Winter=5 Monsoon +Summer =6 Summer + Winter =7	197	144(73.1) 0(0.0) 18(9.1) 12(6.1) 12(6.1) 2(1.0) 0(0.0) 9(4.6)	0.98	0	1.854	3.438
Work available outside village income	No=0 0-100=1 100-500=2 500-1000=3 <1000=4	197	161(81.7) 3(1.5) 6(3.0) 4(2.0) 23(11.7)	0.60	0	1.354	1.832

Table 3.4 (continued)

		Total N*	Frequency(%)	Mean	Median	Standard Deviation	Variance
Income in Cash or Kind	No =0 Cash =1 Kind =2 Both=3	197	152(77.2) 38(19.3) 6(3.0) 1(0.5)	0.27	0	0.538	0.289
Remittances	No =0 Yes= 1	197	141(71.6) 56(28.4)	0.28	0	0.452	0.204
Remittances Income	No=0 0-100=1 100-500=2 500-1000=3 <1000=4	197	141(71.6) 3(1.5) 6(3.0) 12(6.1) 35(17.8)	0.97	0	1.613	2.601
Forest	No =0 Yes= 1	204	160(78.4) 44(21.6)	0.22	0	0.41	0.170
Forest Income	No=0 0-100=1 100-500=2 500-1000=3 <1000=4	204	160(78.4) 1(0.5) 9(4.4) 8(3.9) 26(12.7)	0.72	0	1.44	2.06
<i>Panchayat</i>	No =0 Yes= 1	204	144(70.6) 60(29.4)	0.29	0	0.46	0.21
<i>Panchayat</i> Income	No=0 0-100=1 100-500=2 500-1000=3 <1000=4	204	144(70.6) 8(3.9) 12(5.9) 10(4.9) 30(14.7)	0.89	0	1.51	2.28

Table 3.5 Average Household Income from off-farm activities (US\$)

Income source	Average Income per household	Standard deviation	Minimum	Maximum
Farm labor	37.80	7,171.51	0	90,000
Forest labor	30.06	2,488.32	0	18,000
<i>Panchayat</i> labor	8.83	1,932.78	0	18,000
Remittances	13.78	7,457.49	0	90,000

Source: Fieldwork 2009-2010

Tables 3.4 and 3.5 reflect off-farm income from farming on another's land, remittances and temporary wage work provided by forest department and *panchayat*. Large standard deviations can be seen in the case of all the four sub-activities. This implies that there exist a large income variation between the least and the maximum income generated as proved by minimum and maximum figures in the table.

Extraction of NTFPs is another significant source of income generation in the ONPC (Tables 3.6 and 3.7). Four main NTFPs extracted here include *tendupatta*, *mahua*, *kullu* and *dhavda* gums. Less variance seems to exist among the four sub-activities in context of household participation. This signifies that largely all households engage in extraction of NTFPs.

Based on income produced from extraction of four NTFPs in the ONPC, a substantial income variation exist. Different households extract NTFPs in varying amounts. Hence, large standard deviations suggest that income differences prevail among different households that extract NTFPs.

Table 3.6 Household participation in seasonal NTFP activities

NTFPs extraction		Total N*	Frequency(%)	Mean	Median	Standard Deviation	Variance
Tendupatta sell	No =0	196	31(15.8)	0.84	1	0.366	0.134
	Yes= 1		165(84.2)				
Mahua sell	No =0	197	139(70.6)	0.29	0	0.457	0.209
	Yes= 1		58(29.4)				
Kullu Gum sell	No =0	197	174(88.3)	0.12	0	0.322	0.104
	Yes= 1		23(11.7)				
Dhavda Gum sell	No =0	197	182(92.4)	0.08	0	0.266	0.071
	Yes= 1		15(7.6)				

Table 3.7 Average Household Income from NTFP extraction (US\$)

Income source	Average per household Income	Standard Deviation	Minimum	Maximum
<i>Tendupatta</i>	25.85	1,527.35	0	10,400
<i>Mahua</i>	8.49	2,203.43	0	30,000
<i>Kullu gum</i>	26.19	5,523.73	0	34,500
<i>Mahua gum</i>	4.52	1,680.96	0	19,500

Source: Fieldwork 2009-2010

Income Variation Among and Across Different Socio-Cultural Groups

The second aim of this analysis is to examine the income variation among and across different socio-cultural groups. To fulfill this, two sets of groups have been determined –

adivasi versus non-*adivasi* and landowners versus non-landowners. Previously (Table 3.1) it has been established that the sample villages are predominantly tribal in nature. Hence, it becomes important to examine if and how income variation will differ among the two socio-cultural groups. In addition, income variation will also be established for landowners versus non-landowners. From the previous sub-section, it becomes clear that farm and off-farm economic production primarily revolve around the land use. To understand how economic practices and processes are changed due to implementation of new rules-in-use, land tenure for economic production can provide a good portrayal. First, Table 3.8 presents village-wise average household income distribution across different economic activities (US\$). It seems obvious that farming is the most profitable occupation particularly the monsoon farming in the sampled villages. It is striking to note that village D produces more income from summer farming. Possible reason for this trend may include additional irrigation system. Consequently, variable incomes are generated through off-farm and extraction of the NTFPs. Geographic factors including location of the villages, type of forest, status of forest degradation and regional development, also play important role in deciding the economic activities.

Table 3.8 Village wise average per household income detailed distribution (US\$)

Economic Activity	Income source	Village-wise Average Income Per Household (US\$)					
		A	B	C	D	E	F
Farm	Summer farming	46.38	48.22	42.06	1253.44	0	2.52
	Monsoon farming	227.90	1061.53	525.30	41.81	39.73	93.61
	Winter farming	0	13.52	0	0	0	1.94
	Livestock	18.87	14.10	0.69	0.97	3.05	2.95
Off-farm	Farm labor	22.39	99.36	20.32	15.16	30.24	40.25
	Remittances	8.58	43.14	11.05	72.65	20.12	10.50
	Forest labor	62.99	5.71	11.04	3.92	16.64	7.13
	<i>Panchayat</i> labor	10.05	4.42	11.87	4.95	22.32	1.21
NTFPs	<i>Tendupatta</i>	58.90	51.94	11.98	6.03	16.42	40.39
	<i>Mahua</i>	6.50	3.12	2.83	0.23	4.52	31.51
	<i>Kullu</i> gum	48.26	2.56	0	0.21	120.17	0
	<i>Mahua</i> gum	0.79	4.30	0	0.14	20.76	0

Source: Fieldwork 2009-2010

Location of village and access to factors of production explains some variation among income distribution between farm activities and NTFPs (Table 3.9). Villages, that are particularly close to the forests but far away from the nearest developed road, engage more in NTFPs extraction. The proximity to the nearest main *pucca* (paved) road attracts resource-users to opt for the labor jobs, be it working at another farmer's agricultural land in another village, or at a chilli producing factory, thus providing income during the peak-off extraction season.

Table 3.9 Distance between villages and nearest forest and roads in kilometers

Village	Distance between village and nearest forest (in kms.)	Distance to nearest <i>pucca</i> road (in kms.)
A	3	2
B	1	9
C	1	3
D	2	4
E	2	4
F	2	10

Source: Fieldwork (2009-2010)

Based on the three main economic activities, non-parametric statistical *t-test* was calculated to investigate the income variation across six sampled villages (Figure 3.4). The null hypothesis of this *t-test* concluded that there is income variation between the six villages from different economic activities except for income from winter farming and remittances. These show strong statistical significance, thus implying that there is no income variation based on these two specific activities. For all other income generating activities, the null hypothesis was rejected, thus implying income difference.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of summerinc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.038	Reject the null hypothesis.
2	The distribution of monsooninc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.005	Reject the null hypothesis.
3	The distribution of winterinc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.269	Retain the null hypothesis.
4	The distribution of livestockinc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.004	Reject the null hypothesis.
5	The distribution of nfarminc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.022	Reject the null hypothesis.
6	The distribution of fdinc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.
7	The distribution of panchayatinc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.012	Reject the null hypothesis.
8	The distribution of remittinc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.657	Retain the null hypothesis.
9	The distribution of tenduinc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
10	The distribution of mahuainc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
11	The distribution of kguminc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
12	The distribution of dguminc is the same across categories of villages.	Independent-Samples Kruskal-Wallis Test	.007	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 3.4 Independent *t*-test for income variation between villages

It is evident from the comprehensive data of average income per household from the six sample villages (Table 3.8) that while farming is the main choice of economic activity in sampled Villages A,B,C, D, while extraction of NTFPs is more prevalent in the villages from Dewas district (Figure 3.5).

For the off-farm activities, several people from the six villages have received benefits from the national poverty alleviation program called Mahatma Gandhi National Rural Employment Guarantee Act. If and when some labor job becomes available in the park vicinity, they (the villagers) are asked to work. Irregularity of these job openings is a main problem. Despite the fact that this is a national poverty alleviation program, not many households are getting any benefits from this. The off-farm activities include working as hired laborers on another's agricultural field for 2-15 days at a stretch during harvesting or sowing in monsoons and in winters (for those farmers who can afford to grow two crops due to lack of irrigation facilities). Other than working on other's land, people send their children to cotton factories or chili factories to work there for 2-3 months at a stretch. The villagers also travel outside their village to work in the fields during wheat and soybean harvest. It should be noted here that in this situation, people receive reciprocal payments in form of five kilogram of wheat instead of money for their 15-day labor. Several members of the household working in such a job would mean receiving plentiful amount of grain in return of labor. It was observed that local inhabitants sell their share of wheat, considered as a high quality grain, in return of seeds to grow or other grains such as jowar and barley for consumption reasons.

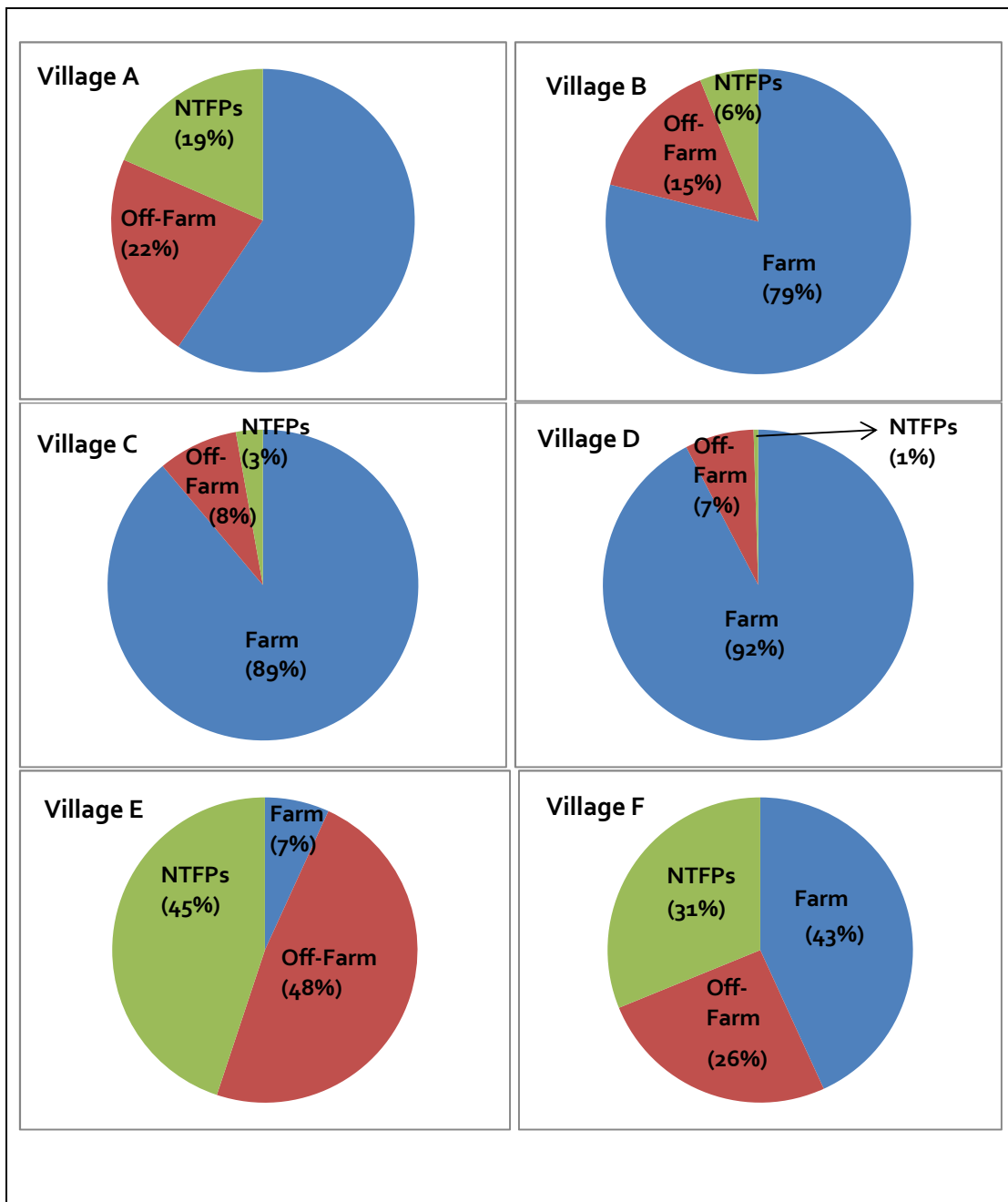


Figure 3.5 Comparison of NTFPs share per household among the six sample villages

The income also varies based on land tenure. An inverse relationship can be seen here between the farm income and the NTFPs based on different farm sizes (Table 3.10). It demonstrates that higher the farm size, less percentage of total income is generated from the extraction of NTFPs and vice-versa. People who have no land or own less than half an acre concentrate more on the extraction of NTFPs for their income generation. It exhibits that the smaller farm size owners yield 33.6 percent of their total household income from the extraction of NTFPs as compared to that of the farm activities. This signifies that poor forest dwellers depend more on forest resources for their sustenance. While, on the other hand, it is clearly evident from the table that people who have larger land size (more than 5 acres) produce a huge proportion of their total income from the farm activities.

Table 3.10 Total Annual Cash Income by farm-size per household (in US\$)

Land size (acres)	Annual Farm income per household	Annual Off-farm income per household	Annual NTFPs income per household	Total annual income	% total income from NTFPs
More than 5	11,582	102	95.6	11,780.2	0.81
5 to 2.5	3,169	128	71.9	3,369.1	2.13
2.5 to 0.5	3,918	174	146.8	4,238.4	3.46
0.5 to 0	11	207	110.4	328.3	33.63
Total	18,680	611	424.7		

Source: Fieldwork (2009-2010)

Note: 1 US\$ = INR 53

Ethnicity based on *adivasi* versus non-*adivasi* is also an important criterion. Table 3.11 illustrates the income differences between *adivasi* and non-*adivasi* groups. It is clearly evident that *adivasis* generate most of their cash income by the extraction of NTFPs (US\$ 342.1) followed by the farm activities (US\$ 1,902.3) whereas the non-*adivasi* groups produce maximum of their cash income through the farm activities (US\$ 1,4181.5) and least from the NTFPs extraction (US\$ 169.9).

Table 3.11 Average Annual Cash Income Distribution per Household based on different socio-cultural groups within the proposed ONPC (in US\$)

Socio-Cultural Groups	Number of households	Farm activities	Off-farm activities	NTFPs
<i>Adivasi</i>	174	1,902.3	353.6	342.1
Non- <i>Adivasi</i>	23	1,4181.5	1,847.6	169.9

Source: Fieldwork (2009-2010)

Note: 1 US\$ = INR 53

Specifically for the extraction of NTFPs, different socio-cultural groups collect varying amount of NTFPs that result in their varying household income (Table 3.12). The main share of NTFPs is extracted by the tribal groups while the non-tribal groups extract the least amount of NTFPs annually. Extractions of *tendupatta* and the gums from *kullu* and *dhavda* trees are the most income generating activities. However this is limited due to the spatial distribution of the *kullu* and *dhavda* trees. These NTFPs also fetch high prices

in the market – the *kullu* gum is sold at US\$ 4.72 per kilogram and the *dhavda* gum is sold at US\$ 2.83 per kilogram in the market. In addition to the cash income, these communities also extract the same NTFPs for self-consumption such as *mahua* and *kullu* gum. In the case of the non-*adivasi*, it seems clear that they invest their time particularly in the extraction of the *tendupatta* as both *mahua* and gum extractions are time and labor- intensive. Hence the economic differences can be identified among different socio-cultural groups.

Table 3.12 Average Annual NTFP cash incomes of tribal and non-tribal per household within the six sampled villages (in US\$)

Socio-cultural groups	<i>Tendupatta</i>	<i>Mahua</i>	<i>Kullu Gum</i>	<i>Dhavda Gum</i>
<i>Adivasi</i>	110.0	21.2	174.9	36.0
<i>Non-Adivasi</i>	100.0	40.7	29.2	0

Source: Fieldwork (2009-2010)

Note: 1 US\$ = INR 53

Non-parametric statistical *t-test* was also calculated to investigate the income variation across *adivasi* and non-*adivasi* based on the three main economic activities (Figure 3.6). Except for income derived from monsoon and winter farming along with extraction of *Kullu* gum, the null hypothesis of this *t-test* concluded that there is no income variation between the *adivasi* and non-*adivasi* from other different economic activities. Income

from monsoon and winter farming and extraction of *kullu* gum show strong statistical significance, thus implying that there is income variation. For all other income generating activities, the null hypothesis was accepted, thus implying no income difference. This might also be attributed to large income discrepancies within the three specific activities.

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of summerinc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.191	Retain the null hypothesis.
2	The distribution of monsooninc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.016	Reject the null hypothesis.
3	The distribution of winterinc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.004	Reject the null hypothesis.
4	The distribution of livestockinc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.509	Retain the null hypothesis.
5	The distribution of nfarminc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.633	Retain the null hypothesis.
6	The distribution of fdinc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.831	Retain the null hypothesis.
7	The distribution of panchayatinc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.633	Retain the null hypothesis.
8	The distribution of remittinc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.071	Retain the null hypothesis.
9	The distribution of tenduinc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.882	Retain the null hypothesis.
10	The distribution of mahuainc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.410	Retain the null hypothesis.
11	The distribution of kguminc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.047	Reject the null hypothesis.
12	The distribution of dguminc is the same across categories of ethnicity.	Independent-Samples Mann-Whitney U Test	.165	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 3.6 Independent *t*-test for income variation between *adivasi* and non-*adivasi*

DISCUSSION

Proposed ONPC is an example of transformation of the common forest reserves into a restrictive protected area by implementing a new set of rules-in-use. This is positioned within the region of Narmada dam development project which is loaded with the history of struggles and conflicts depicting marginalization of the *adivasis*. This research advances the biodiversity offset literature by focusing on the economic benefits and losses within conservation enclosures examined through income generation by different economic activities across different ethnicity which the previous studies lacked (Gunatilake et al 1993, Mahapatra, Albers and Robinson 2005, Hirsch et al 2011).

Main finding of this study include – (1) three main income production activities exist in the ONPC region that include farm, off-farm and extraction of NTFPs; (2) Different people engage in different economic activities in varying degrees. For all of the villages, monsoon farming is most profitable; (3) income production from different economic activities relies on seasonality; (4) for farm activities, there is higher dependence on monsoon farming followed by livestock sale; (5) working on other's farm lands particularly during monsoon and winter seasons seem to be desirable for the off-farm work; (6) an inverse relationship exists between incomes derived from farm and NTFP extraction based on different farm sizes; (7) Based on ethnicity, *adivasi* engage in more NTFP extraction, while non-*adivasi* prefer farm income, even though, as indicated by the *t-test* that there is no difference between the total income generated from the NTFP activities (minus *kullu gum*) for the two social groups. The results clearly reveal that a

significant portion of the resource-users, from the forested communities of proposed ONPC, depend on the extraction of forest resources for their sustenance, particularly in the Villages E and F. The remaining portion generates their income from increasing farm and off-farm activities.

Sale of NTFPs contributes to rural economy, thus alleviating poverty. By developing the model of ONPC, both objectives of rural development and forest management will be achieved, thus bringing economic development to the region. The context of farm activities, when the forest is cleared to carve out additional agricultural land, can be considered development. Increasingly greater income generated from the agriculture with the help of additional arrangements including irrigation systems, fertilizers, chemical pesticides, better improved seeds and better technology prove this. However, to reminisce ONPC is an example of biodiversity offset. Biodiversity offsets are trade-offs that set aside land for conservation from within development schemes. By greater engagement in farm activities to produce household income is another form of imposing development over conservation, which was the purpose of introducing biodiversity offsets in the first place. This is of greater concern particularly when there is a shift among local households towards farm jobs rather than extraction of NTFPs as opposed to the existing belief of latter being the mainstay of forest economy.

There are certain disadvantages to this development over conservation phenomenon. First, as mentioned previously, in absence of available forest resources and opportunities, majority of the local communities are shifting to the off-farm activities.

This would imply movement of the local labor to other places, most likely to be situated outside their villages, which would imply absence of labor in the immediate geographical settings. This would result into commodification of labor particularly in the case of the *adivasis*. Another indirect consequence of labor as a commodity would include the decline in the economic productivity of the industries (such as *tendupatta*) that extract raw materials from the forests closer to the proposed ONPC. Secondly, it was deduced that the majority of the local communities engage in the farm activities primarily during the monsoon season, except for some of the elite families that can afford irrigational facilities during the rest of the year. This results in the economic disparities among the various socio-cultural groups in the sampled villages. Already evident in the local economy, these economic disparities further are responsible for creating distinct different economic classes among different socio-cultural groups, particularly giving rise to local ‘elites’.

National poverty alleviation programs and occasional jobs provided by the ONPC officials and the village *panchayats* are not generating adequate household income. Hence, the *adivasi* become vulnerable to change by being economically placed at the lower rungs of the pyramid, thus further socially and economically marginalizing them by the local ‘elites’ and the forest officials. This struggle is further intensified by the restricted activities such as seasonal farming, remotely located off-farm jobs, and forest degradation, which will be further controlled by the creation of the proposed conservation unit.

The question of who benefits the most among the local communities in this process, the answer would be farm owners. They earn the profits from their agricultural produce such that they need not supplement their income with the extraction of the NTFPs except during an abnormal monsoon season. And who suffers the most? It is the *adivasi* who depend largely on the extraction of different forest produce to support their income. In absence of extractive economy, all the other resource-users that depend on it, will switch over to other economic activities mainly labor jobs within and outside their villages.

Different interactions with the rules-in-use result in different ways of shaping the landscape. Based on access regime framework as proposed by Jepson et al (2010), access does not only include institutions but also other arrangements that might affect social productions of landscapes. In the current context of ONPC as a biodiversity offset, access to forest resources can be defined not only through forest institutions but also by changing labor patterns particularly gender, opportunities to generate income, introduction of technology, social capital, infrastructure and financial capital. All these factors have an impact on the decisions taken by the resource users to access and mobilize of the forest resources. In the case of proposed ONPC, with the change in the access to and mobilization of forest resources for the purpose of income generation, the local inhabitants have negotiated the change in access by shifting the economic practices from NTFPs extraction to farm or off-farm activities. With increasing unemployment from the loss of income from the NTFP extraction, as a result commodification of labor occurs where labor is exchanged as a commodity. In addition, the changes in rules-in-use also invent 'reserve army of labor' which may prove beneficial particularly for the farm-

owners by providing supplemental labor. This will be discussed in detail in the next section.

It is important to recognize and work towards conserving forest, not only for the conventional reasons but also to address the growing needs of the ethnic groups. This is critical especially as with the creation of ONPC as a protected area, more restrictions to control access to forest resources will be implemented. I suggest introducing economic incentives such as payments to the local communities to supplement their interest and efforts to conserve forest. This will help to achieve not only the conservation with poverty alleviation goal but also the purpose of creating biodiversity offset. Another suggestion is to re-introduce Joint Forest Management within the proposed ONPC which would give the local communities not only the accountability and decision making authority but also would help them to economically sustain themselves.

CONCLUSION

With the creation of proposed ONPC as a biodiversity offset, this study examined how new rules-in-use will influence the household economies by changing the income dynamics. To determine this, contribution of different economic activities to the household income and how income varies across different socio-cultural groups was examined. Three main economically productive activities were identified including farm, off-farm and NTFP extraction.

Different socio-cultural groups engage in different economic activities. Results suggest that the *adivasi* are the main economic beneficiaries of the extractive economy of NTFPs. For additional income, they engage in the farm and the off-farm activities. Therefore, the tribal groups will be the losers in the creation of proposed ONPC as a biodiversity offset. Subsequently, it is evident that mainly the farm owners have no economic loss in the creation of the proposed ONPC. It is found that higher the farm size, less percentage of total income is generated from the extraction of the NTFPs and vice-versa. People who have no land or own less than half an acre concentrate more on the extraction of NTFPs for their income generation.

Hence this paper illustrates the significance of the extraction of NTFPs in the proposed ONPC and speculates about the future of the economic benefits provided from these extractive activities when the national park becomes notified. Factors such as geographical proximity, seasonality and land-size play a significant role in contribution of the NTFPs towards household income. It has been suggested here that more participatory initiatives including Joint Forest Management and payment for ecosystem services should be introduced in the park area to overcome the economic problems that are bound to change the economic and social dynamics of this region when the proposed national park complex becomes notified.

4. LABOR DYNAMICS WITHIN COMPENSATORY CONSERVATION: A CASE STUDY OF PROPOSED OMKARESHWAR NATIONAL PARK, INDIA

INTRODUCTION

Compensatory conservation has emerged as a result of conflicts between state development projects and the environmental movement (Burgin 2008, Bayon 2008, Robertson 2004, Madsen et al 2010). Biodiversity offsets, one form of compensatory conservation, are “conservation actions intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects, so as to ensure no net loss of biodiversity” (ten Kate et al 2004:13). Countries and regions such as United States, Canada, Uganda, European Union, Brazil, Australia, New Zealand and Switzerland have biodiversity offset programs established (McKenney and Kiesecker 2010, ten Kate et al 2004).

Recently scholars have argued that a careful analysis of labor relations in relation to conservation (Robertson 2012). Within market based conservation, studies reveal a lack of research on marginalization of labor relations (Foley 2000). To extend this work, this section draws on labor theory of value, as interpreted by Marx, because it provides a better understanding of labor relations in context of social classes. Additionally, the biodiversity offset studies have focused on its definition and global status (Madsen et al 2010, ten Kate et al 2004), framework assessment (Norton 2009, McKenney and Kiesecker 2010, Kiesecker et al 2009, Burgin 2008, Tew 2011), mechanisms and

impacts (Bayon 2008, Gordon et al 2011). However, there are no studies on how the institutional change will alter how people use the resources, and thus, restructure labor regimes for forest product collection.

The Indian Forest Conservation Act of 1980 is one such governmental policy that has implemented compensation for any change in forest land use to a definite non-forest land use accomplished 'on-site' through deforestation, de-reservation or diversion for any development project, carried out and monitored through set of established guidelines (Kohli et al 2011). Compensatory activities are carried out across comparable area of non-forest land exploited for development projects including mining, hydropower, and public welfare such as community centers in rural areas. For creation of such areas, specific territorial enclosures with restructured governance are formed such as the case of proposed Omkareshwar National Park Complex (ONPC hereafter). Consequently, restructuring of the forest management institutions transforms the different political-economic processes thus altering the access to, control and mobilization of the forest resources that forces the resource-users to re-negotiate or contest access, control and mobilization of forest resources. Restructuring also enhances command and control policies through re-regulation of ecosystem services, which changes the access and control dynamics to ensure existence of capitalist power and accumulation dynamics.

The case of the proposed Omkareshwar National Park Complex (ONPC hereafter) in Central India is an example of such compensatory conservation. The ONPC was initiated as a conservation trade-off to the development of Indira Sagar and Omkareshwar dams,

part of the notorious Narmada dam project. It entails significant changes to the current forest management institutions and the forest policies that directly cause the local communities to lose their access to, control of and the mobilization of the resources, thus affecting their livelihoods that are dependent on the forest resources. On the other hand, the state participating in such dispossession projects gains capital by reinvesting the seized commons' ecosystem services and resources, thus shifting the dynamics of labor relations among the different stakeholders. Future plans to introduce ecotourism in the proposed park will shift it to market based conservation where the local inhabitants will be encouraged to get involved in the park management along with the park officials, in return of incentives.

This study will address the gaps by examining the undercurrents of the social relations, in which the dynamics of labor relations will be analyzed through labor theory of value based on the Marxist tradition in proposed ONPC in India. Hence, the new rules-in-use reframe the political, economic and social problems of the local “labor” communities in the name of market based conservation. It will address how new rules-in-use affect the labor relations by altering access to, control and mobilization of forest resources.

Therefore, this paper will–

1. Examine labor dynamics within proposed ONPC with particular emphasis on changing state-society relations.
2. Examine the different territorial strategies of compensatory conservation and how they influence the labor regimes of forest use.

This paper begins by examining the literature on the biodiversity offsets and labor within the conservation paradigm. The second section presents the details of proposed ONPC and its communities. The third section addresses the two research questions pertaining to labor dynamics and social relationships between different actors.

LITERATURE REVIEW

Biodiversity Offsets

Biodiversity offsets are a recent phenomenon within conservation-development paradigm. Part of compensatory conservation, biodiversity offsets are trade-offs that set aside land for conservation from within development schemes, similar to carbon credit tradable certificates. Specifically, biodiversity offsets are “conservation actions intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects, so as to ensure no net loss of biodiversity” (ten Kate et al 2004:13). They are considered an important tool for addressing environmental impacts of development, thus maintaining an equilibrium between the environment and development (McKenney and Kiesecker 2010).

While different names for biodiversity offsets exist, including mitigation banking, conservation banking, compensatory mitigation, BioBanking, they all share similar objective – to reduce biodiversity loss through market-based incentives and payments (Madsen et al 2010, ten Kate et al 2004, Morris et al 2006). According to State

Biodiversity Markets report, at present 39 compensatory mitigation programs exist across the world, with several individual offset sites, in addition to 25 more programs in different stages of development (Madsen et al 2010). Such offset programs can be particularly found in New Zealand, Australia, Indonesia, Vietnam, Japan, China, South Africa, Madagascar, Sweden, Germany, United Kingdom, Brazil, Colombia, United States, and Canada (McKenney and Kiesecker 2009, Madsen et al 2010, Gordon et al 2011). In Europe, biodiversity offset is generally signified as compensatory conservation that fundamentally involves creation of new habitat enclosures as trade-off to development consequences (Morris et al 2006). While examining compensatory conservation activities from cases around the world, the authors suggest they are being employed extensively by the governments and businesses to authorize development activities which require clearance of the ecosystems within a no net loss or net gain framework (ten Kate et al 2004). In another study, Seagle (2009) examines how the Rio Tinto mining project in Madagascar is perceived by stakeholders, in context of access, use, ownership of land and environmental resources, which are symbolized through labor, knowledge and human health. By creating biodiversity offsets outside their mining areas, Rio Tinto has legitimately gained access to land in Madagascar.

Extensive research has been conducted on assessing the biodiversity offsets through various frameworks (Norton 2009, McKenney and Kiesecker 2010, Kiesecker et al 2009). Norton (2009) studies two biodiversity offsets, one offset as a trade-off to landfill and another compensating for pasture reestablishment in New Zealand and proposes an environmental framework to assess its effectiveness. Within United States, numerous

studies have been conducted on wetland mitigation, one form of biodiversity offsets (Robertson 2004, Robertson and Hayden 2008, Rolband et al 2001, Brown and Lant 1999). Robertson (2004) examines wetland mitigation banking in Illinois, as an emerging form of rules-in-use for the existent phase in neoliberal governance, thus creating a balance between the policies, institutions and capitalist interests in an attempt towards market environmentalism.

Studies on biodiversity offset program largely explore definition and global status (Madsen et al 2010, ten Kate et al 2004), framework assessment (Norton 2009, McKenney and Kiesecker 2010, Kiesecker et al 2009, Burgin 2008, Tew 2011), mechanisms and impacts (Bayon 2008, Gordon et al 2011). However, there is wide gap within the literature linking biodiversity offsets with development parameters of livelihoods, labor dynamics, social relationships and institutions.

Re-Territorialization and Conservation Trade-Offs

Sack's territoriality theory (1986) has been applied to this study to understand how changes in rules-in-use control spatial actions that alter social relationships between the resource controllers and the resource-users by restricting their access/control of resources. The changes in rules-in-use compel the resource users to often negotiate or contest resources. He defines territoriality as "the attempt by an individual or group to affect influence or control people, phenomena and relationships by delimiting and asserting control over a geographic area. This area will be called Territory" (Sack 1986:

19). Territoriality is a social construction that emphasizes how people perceive space and how they categorize it by situating things, processes and people in certain spaces which would ultimately affect the interrelationships. Territoriality can be identified by three characteristics: classification of area, communication and enforcement of area that must exist in space (Vandergeest and Peluso 1995). Examining territorialization theory, Vandergeest and Peluso (1995) argue that market systems and territorial administrative units are not the only factors involved in its broader process. Subsequently, territoriality can be thought of as a resource control strategy, as emphasized by Vandergeest and Peluso (1995) that is put into effect by creating boundaries, and by controlling communities and their interaction with forest resources. Different activities are managed by different territorial strategies across different spaces.

Production of power dynamics between different actors originates from Marx's economic division of labor which is a key element in determining who controls whom and for what purposes (Sack 1986). In a capitalist society, economic division of labor determines social division of labor and hence these two processes are interrelated. According to the capitalist view, the state has a double role of suppressing the class conflicts to avoid any contestation of resources in the society and to safeguard the capitalist tendencies. Capitalism perceives space as location for production and distribution of resources which can be turned into commodities and hence generate profits. Marxism influences territoriality theory by advocating that dynamicity is essential for capital accumulation in a capitalist economy and dynamicity signifies a

flexible relationship between people, things and space. Hence its ability to change the varying degrees of asserting control towards access to resources.

Works of Conservation: Dynamics of Labor in Compensatory Conservation

Within market based conservation, studies reveal a lack of research on marginalization of wage versus non-wage labor relations (Foley 2000). Brockington and Duffy (2010: 480) state that “the restrictions conservation can impose on rural livelihoods can increase the importance of wage labor,” and thus capitalist conservation creates opening for creating or deepening the production of rural working classes. Sodikoff (2007) examines low-wage laborers hired within special reserve of Andasibe in Madagascar, developed under Integrated Conservation and Development Program initiative. He describes how decentralized governance has change the economic circumstance for this group. He argues that conservation reduces labor as a means of production, which in turn, produces difficulties for the success of conservation initiatives in tropical developing countries like Madagascar (Sodikoff 2007). In other words, in absence of labor, it is difficult for the conservation initiatives to be successful, following the notion of the people living harmoniously with the park. Sodikoff (2007) improved on Brockington and Duffy (2010) but his work does not focus on the exchange value of labor which emphasizes of the role of the state in this process.

Some have even argued that market based conservation have created hegemonic capitalist agencies by (re) regulating the resources from welfare to privatized state, thus

creating social and economic inequality among the different stakeholders (Harvey 2005). Therefore, there have been concerns that transitioning resource management through capitalist expansion will not lead to acceptable outcomes via effective and efficient conservation of forests and biodiversity (Bakker 2005, Büscher and Whande 2007, Büscher et al 2012).

Market-based conservation produces entities that have a market value. Labor is one of few fictitious commodities (others being land and nature), which are neither concretely traded nor fundamentally produced for sale (Polanyi 1944). Hegemonic state agencies accumulate surplus labor that is over-accumulated across a period of time. By restricting control of, access to and mobilization of resources that result in lack of local job opportunities, the state agencies create this surplus labor. It is this surplus of labor that is commodified; in other words, labor is exchanged for monetary or non-monetary payment. State redistribution of resources from common tenure into private ownership restricts the previously allowed income generating activities, forcing commodification of labor/ local resource-users to sell their labor elsewhere in absence of employment opportunities.

Labor theory of value plays an essential role in a capitalist commodity producing economy and proves to be a useful tool in discussing the market conservation. Commodities are produced to fulfill the materialistic needs of the society. Each commodity has an exchange or a use value. Use value of a commodity refers to its usefulness to the humans to satisfy their basic material needs. On the other hand, the

exchange value expresses how much of a given commodity it takes to equal the value of another commodity. In a capitalist society, those who do not own any means of production must sell their labor to sustain themselves (Smith 1990). Hence, the worker's labor is considered as a commodity exchanged in forms of barter, reciprocal or cash incomes.

The value of labor power is a subsection of the larger labor theory of value. Marx understood value as that which is created by the labor and its importance is based on proportional amount of labor invested to produce commodities (Foley 1982, Wolff 1981, Vlachou 2002). Marxist view of labor theory of value explains how the labor process both conserves and increases the innovative value of the commodities it produces. Therefore, Marxism defines a value of commodity as "socially necessary abstract labor" expressed in the commodity that is created (Foley 1982, Foley 2000). Under this tradition, the value is perceived based on social perspective through forms of exploitation. Abstract labor is a characteristic of commodity producing labor that is shared by all different types of labor (Marx 1898). By 'socially necessary', Marx refers to the quantity required to produce a commodity in a given state of society, determined by social standards. Foley (2000) advocates that according to Marx, solutions to the transformation of human societies were arranged in those instruments through which the elite class, within the society, procured the hegemony of surplus production. It is this surplus production that also forms part of Marx's primitive accumulation.

The discussion above raises the question of how this surplus labor is re-invested in the system. What are the instruments through which the hegemonic state procures surplus labor? Labor has an exchange and use value attached to it. What benefits do laborers get in exchange for their labor? Who pays for this exchange value of labor? Who makes the rules? Who is responsible for the infrastructure? Who are the producers and the consumers in this process? Particularly in the case of proposed ONPC, how this value of labor is negotiated by the forest officials is raised by this change in the rules-in-use from welfare to market based conservation. How does the re-territorialization and restricting the resource-user's forest access contribute to the dynamics of labor relations? Who is doing the labor jobs within the controlled area of proposed ONPC? Who is controlling these jobs?

Hence, this study will address the gaps by examining labor dynamics through labor theory of value in the proposed ONPC in India. The new rules-in-use reframe the political, economic and social problems of the local "labor" communities in the name of market based and compensatory conservation. It will address how new rules-in-use affect the labor relations by altering access to, control and mobilization of forest resources. Therefore, this paper will examine labor dynamics within proposed ONPC with particular emphasis on changing state-society relations. Then, it will study the different territorial strategies of compensatory conservation and how they influence the labor regimes of forest use.

RESEARCH DESIGN

Proposed Omkareshwar National Park Complex

Proposed Omkareshwar National Park Complex (ONPC) is a planned protected area in Madhya Pradesh in India (Figures 4.1a and 4.1b). It is being designed as a compensatory conservation project which will overcome the loss of wildlife and forest resulting from the construction of and submergence from the nearby Indira-Sagar and Omkareshwar dams, part of the infamous multi-purpose Narmada dam project. This complex consists of Omkareshwar National Park, Singhaji Wildlife Sanctuary, Mandhata Sanctuary and Narmada Conservation Reserve Unit I and II (Figure 4.2). It is situated at the junction of three districts, namely, Dewas, Khandwa and Khargone.

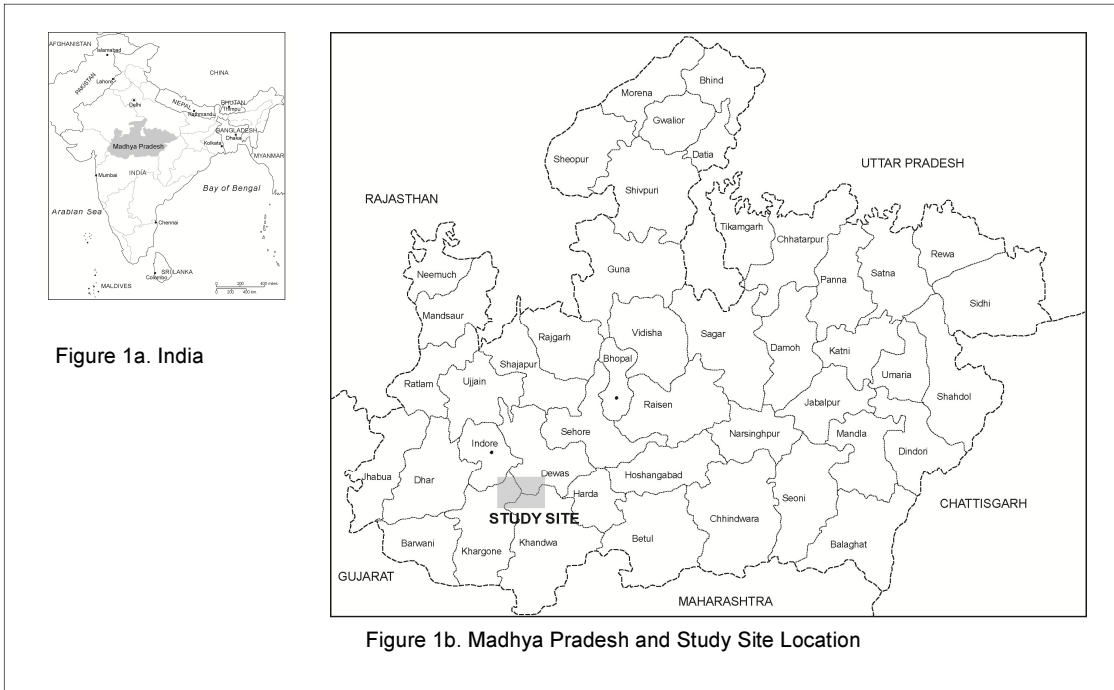


Figure 4.1 (a) and (b) Depiction of the proposed Omkareshwar National Park Complex in India and within Madhya Pradesh

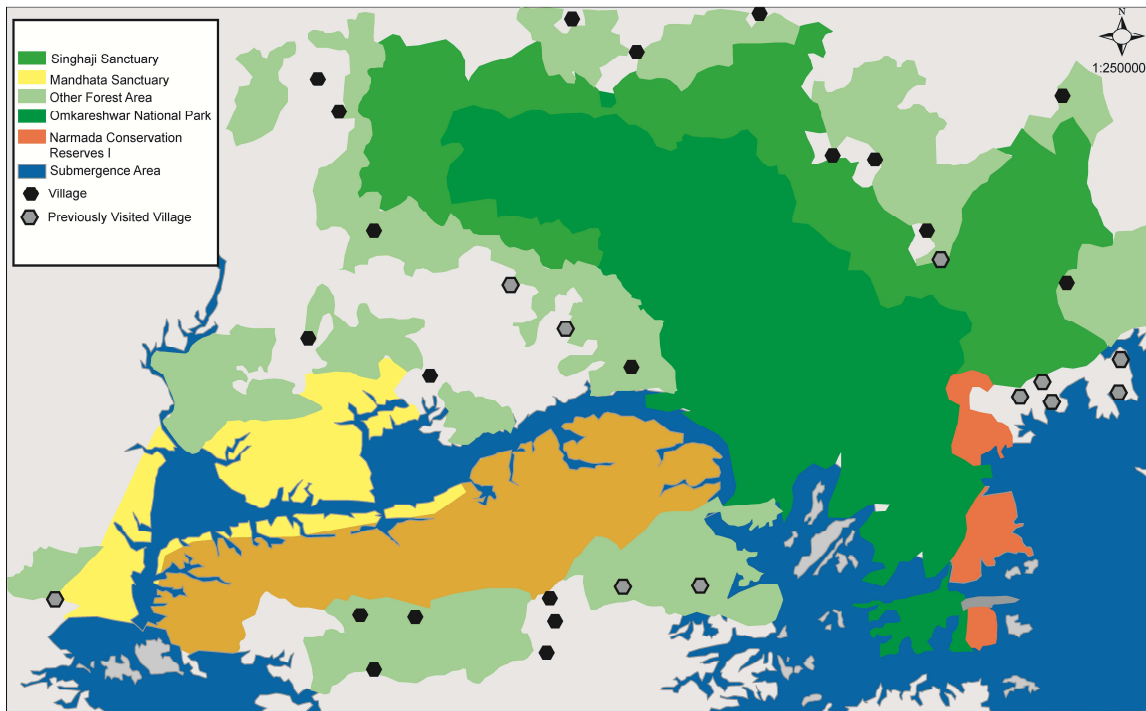


Figure 4.2 A map representing the Proposed Omkareshwar National Park Complex

The creation of the ONPC broadly results from one of the mandatory guidelines from an independent review conducted in 1991. The World Bank had committed about \$450 million in 1985 to the Narmada dam project that led to mass-displacement which had ultimately resulted in Bank's image as an abuser of human rights and environment (Ram 1993, McCully 1996, Rich 1990). With the onset of global environmental consciousness in the late 1980s onward, the World Bank was pressurized largely by the non-governmental organizations in the United States, Europe and some developing countries to withdraw from the project (Rich 1990, Morse and Berger 1992).

In 1987, the Government of India approved the diversion of 41,111.97 hectares of forest lands in the districts of Dewas, Khanwa and Hoshangabad (in the state of Madhya Pradesh) towards the construction of the Indira Sagar dam project (Personal Communication. Government Official 2012). However, at the same time, the government also made it mandatory that representatives from different stakeholder agencies should form a committee for wildlife management and conservation, which would be displaced during the dam construction. These stakeholder agencies were the

National Hydroelectric Power Corporation (NHPC), the Narmada Valley Development Authority (NVDA hereafter), the state government of Madhya Pradesh and the state forest department. This committee selected the Wildlife Institute of India and Friends of Nature Society to prepare impact assessment reports, which were released in 1994 and 1996. As a result, in 1993, NVDA declared its intentions to create a national park and sanctuaries. (ONPC N.D.)

Dominated by the controversies of the Narmada dam project, impact assessment studies conducted by the Wildlife Institute of India and Friends of Nature Society recommended that a protected area be established as a combination of national park and wildlife sanctuary (total area 758.88 sq. km.) (ONPC N.D.). Such an area would help minimize the consequences of direct and indirect losses resulting from the development of Indira Sagar and Omkareshwar dams. They suggested that the selected forest area should share similar conservation characteristics with those that were lost due to submergence, so that the wildlife displaced by submergence could take refuge in the protected areas built around the reservoirs. However, NVDA solicited another agency, the Indian Institute of Forest Management, to conduct an independent study to review the recommendations of Wildlife Institute of India and Friends of Nature Society. They suggested reducing the total extent of the proposed protected area (658.35 sq.km) by 100 sq.km (ONPC N.D.). This decision was opposed by Wildlife Institute of India, who argued that the reduced area is not sufficient to restore the affected biodiversity (Personal Communication. Government Official 2012). Ultimately, in 2007, it was considered pragmatic to announce the total extent of the protected area to 651.31sq.km (ONPC N.D.).

Approximately 84 villages are situated around the proposed ONPC - 55 villages in the Dewas district; 28 in Khandwa and 1 village in Khargone. Largely, this region is comprised of the tribal '*adivasis*' population, constituting approximately 22.3% of the total population. All the villages in the ONPC largely depend on the forest resources for their daily sustenance, particularly fuel-wood and non-timber forest products. While planning the creation of the proposed ONPC, ONPC authorities have decided to grant

enough area in the nearby forests to the local communities so that they do not depend on the proposed ONPC for their daily sustenance. The local people mainly engage as gatherers of non-timber forest resources, farmers or work as labors on other agricultural farms. While waiting for the designation of ONPC as protected area, the villages situated within the area have been declared forest villages, and forest protection committees have been formed there as micro-forest governance structures. The changes in rules-in-use have also implemented a ban on the daily extraction of forest resources for livelihood activities.

ONPC and NTFP

Based on an earlier available figure, Madhya Pradesh generates approximately US\$ 700 million of non-timber forest products in India (Worldwatch Institute 1991). Important NTFPs in this region include *tendupatta* (leaves of *Diospyros melanoxylon*), flowers of *mahua* (*Madhuka indica*), *kullu* gum (*Sterculia urens*), *dhavda* gum (*Anogeissus latifolia*) and *achar* (*Buchanania lanzan*). Of these, *tendupatta* and *kullu* gum are nationalized and regulated NTFPs, and the rest are non-nationalized, which means they can be traded freely (Madhya Pradesh State Minor Produce 2010). Other non-timber forest produce species include various seeds, tamarind fruits, nuts, bamboo shoots and honey (Khare et al 2000).

Each NTFP represents an important product for household livelihood strategies; however, each NTFP has a distinct market and use.

1. Fuelwood: While fuelwood forms the basis of daily survival needs of the local communities, NTFPs provide important economic resources for households. Social and cultural factors play a significant role in deciding which tree species can be utilized for fuelwood and which cannot. For instance, wood from tree species such as *pipal*, *neem*, *kalam mohini*, *amla* are not used, as these trees are worshiped by different *adivasis*. They believe their family god resides in these trees. On the other hand, *fansi*, another species, is considered inauspicious; as a result tribes do not use this wood for cooking.

2. Mahua: Known for its high sugar content, the *mahua* flower (*Madhuka indica*) is used to prepare local alcohol and also eaten as a cooked vegetable. *Mahua* flowers are used to make local alcoholic drinks. Between February and April, liquor is made from *mahua* flower in almost every household in the selected villages in Khandwa district of ONPC. Approximately 405 liters of alcohol is yielded from one ton of dried flowers (Ministry of Agriculture 2006). Estimated production value of non-timber forest products in Sheopur district in Madhya Pradesh includes about US\$ 45,000 of *mahua* (*Madhuka indica*) flowers used for making local alcoholic drinks (Bhattacharya and Hayat 2004).

3. Tendupatta: *Tendupatta* (leaves of *Diospyros melanoxylon*) are used to produce local cigarettes or *bidis* largely as it is decay resistant and its capacity to retain fires. The *bidi* industry provides large-scale employment to rural population hence promoting the rural economy. The collection of *tendupatta* begins around mid-April until mid-May before monsoon. As previously mentioned extraction of *tendupatta* is nationalized, and the forest department actively participates in its collection and sale.

The ONPC officials regulate the collection and sale of some NTFPs. For example, the forest department gives contracts to local people to collect *tendupatta*, and once collected, the local communities make bundles and deliver it to the forest department who then exports it out of the region based on national or international demands. At the same time, current conservation reflects some aspects of “fortress conservation,” such as guards (*nakedaar*) empowered by the proposed ONPC principles to enforce and regulate forest access, particularly for local people living in the nearby forest villages. For example, women are allowed to bring fuelwood, but only as much as they can carry in a single headload. Local people are not allowed to take vehicles like tractors or bullock carts inside the forest. This inhibits their ability to cut down large trees for constructing their small huts.

Efforts to provide economic incentives are not the result of any intention of community development. Instead, these efforts are the result of economic interest in the future of this area, namely in ecotourism. But at the same time, the ONPC officials have also suggested eco-development strategies for broader community development in the proposed ONPC region. According to an initial ONPC management plan (N.D.), the objective of eco-development policy is to lessen the reliance of local resource-users on the forest resources and to get their extensive support in implementing the conservation-development policies in the region in addition to the goal of boosting household incomes. This objective will be fulfilled by the development of agroforestry, village resources, alternative energy and participatory forest management (ONPC N.D.).

Forest Institutions within ONPC

In case of proposed ONPC, previously, the forest commons were under the jurisdiction of Forest departments of Khandwa and Dewas districts. Presently, the ONPC authority governs this region. The resource governance structure two institutions: (1) *van suraksha samiti* (Forest Protection Committees, FPCs henceforth) and (2) the ONPC officials. Formal FPCs have been established in the forest villages (FVs) situated within the complex, and are responsible for protecting biodiversity and village development with the assistance of ONPC officials. Under the Forest Protection Act 1988, protected areas such as proposed ONPC are situated under direct control of central forest ministry with no interference from the state government.

Every forest village has its own FPC that has a total of 13 members, including both males and females. These members are elected by the villagers in presence of the ONPC ranger and a forest guard, who facilitate the process, during village meeting within a day. There are as such no criteria for the selection of members with any fixed representation of different social groups. There are no seats reserved on the committee based on sex, caste, class, education or age. It is quite common for the FPC chief within a village to hold the same post for number of years (Fieldwork 2009-2010). These FPCs have limited set of power and responsibilities, as per the ONPC officials. They are responsible for helping the ONPC officials with forest protection through functions like providing manual labor for jobs- related to village development or forest protection and for guarding the forest against poachers and illegal woodcutters (Fieldwork 2009-2010).

While planning for the creation of ONPC, the ONPC authorities have decided to grant enough area in the nearby forests to the local communities so that they do not depend on the ONPC for their daily sustenance. In addition, the proposed ONPC is to implement a Joint Forest Management (JFM) plan (Khare et al 2000), a strategy developed by the Indian government to decentralize forest management to local communities (Forest Official, personal Interview, 2008).

Methodology

Data Collection

I conducted intensive household surveys and participant observation, in the selected six villages, which attempted to extensively collect resource use and household economic related data from different socio-cultural groups inhabiting the region. Each survey questionnaire was designed to generate quantitative data.

I collected data and information for this study from six villages situated within five kilometer radius of the proposed ONPC boundary in the central Indian state of Madhya Pradesh. Of these six villages, two villages, namely Village E and Village F, are in the Dewas district while, the other four villages – Village C, Village B, Village D and Village A are in the Khandwa district of Madhya Pradesh. Then, I obtained a map of the proposed ONPC from park officials during the preliminary fieldwork in the summer of 2008. Based on the map, I identified villages lying within 2 kilometers radius. During

the pre-fieldwork in 2008, I selected few random villages for a visit on the basis of accessibility and contacts for the purpose of getting acquainted with the region. Preliminary data was collected from these selected villages. Ultimately, I made a final selection of the villages on the criteria based on the proximity to the base station (Narmadanagar), safety and accessibility especially during the severe monsoon season in the months of July August. Except for Village D and Village F, rest of the selected villages had been visited during preliminary fieldwork in the summer of 2008 and contacts were established there. In addition, these villages were especially selected under the guidance of the advisor, the Chief Conservator of Forests (of proposed ONPC) and the proposed national park's office.

I collected data from November 2009 to August 2010 and December 2010-January 2011 involving a random chain sample of 204 panel households in the six villages. The paper studies how labor dynamics, resulting from new rules-in-use, shape access to resources. I hired village-based young adults to conduct the household panel surveys in summer of 2010 and December/January 2011.

In order to provide detailed information, I designed the household survey in six elaborative sections. Out of these six sections, two sections contributed to the data on household economics. Of these, the first section 'general economics' focused on the data from individual households and was divided into three categories based on the income generation activities – forest products, farm and non-farm. The first category compiled detailed data such as which resources they collected each year, month-wise resource

extraction, units collected and its sale. The second category on 'income generated due to farm activities' included questions related to the agricultural activities such as how much land do the people own, how much do they produce, what do they grow, if they need to work on other's land or if they hire labors for their own land. Questions related to, travel in particular labor tasks outside the village and how much do they get paid, formed part of the third category. Other sections aimed at calculating (closest approximate) individual household incomes, utilizing forest resources for cultural events, forest management institutions and consumption of fuelwood for different purposes. In context of forest institutions, I incorporated numerous questions within the household surveys to acquire perception of the resource-users to understand the dynamics of forest institutions.

Data Analysis

To analyze, I designed the data collected from the surveys into excel spreadsheets, with each village maintaining a separate spreadsheet. I transcribed the interviews of the resource-users and the officials through Express Scribe and coding was performed by employing Atlas software. For the qualitative analysis, field notes, interviews with officials and case- studies narratives were examined.

It should be noted here the complex social heterogeneity of the rural Indian society is such that it cannot be ensured during sampling that similar socio-cultural groups and sub-groups are evenly distributed in each sample villages (Table 4.1). Since the study

area is predominantly tribal in social nature, people belonging to other socio-cultural groups would be relatively smaller in number. Hence this affected the data analysis.

Table 4.1 Broad socio-cultural groups within the sampled villages

Socio-cultural groups	Village A	Village B	Village C	Village D	Village E	Village F
Total sample	19	36	34	40	36	39
<i>Adivasi</i>	12	29	30	33	33	37
Non- <i>Adivasi</i>	7	7	4	7	3	2
Total percentage of <i>Adivasi</i> (%)	63	81	88	83	92	95

Source: Fieldwork (2009-2010)

Note: Percentage has been rounded off

Data Problems

One of the main problems was that there was no way to corroborate the household income data that was collected through the household surveys. It is possible that household heads or members, when surveyed, exaggerated their household income data, which might cause anomalies in the data. However, the researcher tried to ascertain the income told by the household head/member by observing the number of consumer items such as a television, a radio, a motor vehicle, a refrigerator in the house and type and built of the house. In addition, there were few cases in which the field assistants forgot to

ask for the detailed household income data. Such cases have been included in the data analysis. These factors can again cause abnormality in the data.

RESULTS

This sub-section investigates how new rules-in-use as a result of compensatory conservation affect the labor dynamics thus altering the access to forest resources. Based on quantitative data, two aims are examined. First, I examine the labor dynamics within the ONPC. Secondly, I study the different territorial strategies of compensatory conservation and how they influence the labor regimes of forest use.

Labor Dynamics in the ONPC Region

Within the park, an average household has four to seven members depending upon its status as a nuclear or a joint family. A nuclear family includes parents and two to four children whereas a joint family consists of parents, their son/s, their wives and children. It was observed that the different family status influences different household labor. For instance, in both nuclear and a joint family, it is the responsibility of the woman/women of the house to perform all household chores inside the house. The only distinction includes that a woman from the nuclear family is responsible for all chores inside as well as outside her house. A normal day routine would include preparing food twice a day, cleaning the house, taking care of her small children (if any), preparing older children

for school and collecting fuelwood two three times a week particularly for cooking and bathing. During the *tendupatta* season, she may or may not go with her husband to extract *tendupatta* but after lunch, she and her children would sit and tie them in bundles. She does not engage in extracting *kullu* and *dhavda* gums. When children grow old enough to go to school, the couple engages in farm labor within the village. The woman from the nuclear family does not participate in labor jobs outside her village. In that case, only the husband would be the sole earner in the household. On the other hand, the women (daughter/s-in-law) from the joint families are responsible only for the household chores including taking care of their parents-in-law, husbands and children, preparing food, and cleaning the house. If there is a young unmarried daughter in the house, fuelwood collection responsibility lies on her. In this case, there may be more than one income producers in the household which may be limited to the father and his sons. Approximately 46% of average household members engage in contributing to their household income by working on the farms or in the forests (Table 4.2). This implies that out of an average family of five, only two members work and generates income while three members are not bread-earners.

Table 4.2 Contribution of the household laborers

Village	Total households surveyed	Total family members	Total members contributing to household income	Percentage of members contributing to household income (%) [^]
A	19	111	51	46
B	36	271	116	42
C	34	206	86	42
D	40	221	97	44
E	36	243	130	53
F	39	240	114	47

Source: Fieldwork (2009-2010)

Note: [^]Percentages have been rounded off

In the proposed park, labor can be categorized into both formal and informal categories on the basis of duration of wage-work available in a year (Figure 4.3). Formal labor category includes those wage laborers who receive year-round payments from the ONPC officials for their duties and responsibilities. For instance, *van suraksha samiti* (forest protection committees) chief and *chowkidaar* (security guards) constitute this category. During the fieldwork, it was found that *van suraksha samiti* chief and *chowkidaar* receive monthly salaries of US\$ 22.64 and US\$ 28.30 respectively. Consequently, informal labor is related to seasonal work in which payments are either in monetary or non-monetary forms. These include daily labor or fixed-period employment. In the case of informal labor, payments are made by farmers (in case of agriculture), factory owners (remittances) or the park officials (forest work). For *panchayat*³ work, the state government pays the wages if the work conducted is under a government employment

³ *Gram Panchayat*, or generally known as *panchayat*, are local self-government at the level of village or small town in India (Government of India 2013). It is a basic unit of administration formed in 1958.

program. However, these payments are handed to the workers by the park officials. The data below largely discuss the wage and non-wage labor from different activities active in the ONPC region. Here the informal labor can be classified into –

Agricultural Labor

During monsoon and harvesting seasons, the farm owners, who have more than one acre land, hire external laborers to work on their fields. Depending on the size of the farm land, these laborers, both men and women, can be hired from the same village or from another village. Labor work includes watering, sowing, harvesting different crops such as soybean, maize, wheat, *jowar*, chillies and cotton. It was noted that the farm owner always worked on his/her own land and hired labor depending on the size of the land and only when extra work needed to be done which he/she could not handle alone such as sowing or harvesting. At times, the whole family of the farm owner including his wife and children work in the fields to avoid the cost of hiring laborers.

Workers are hired for a maximum of four to five days depending on different conditions such as weather, soil and quality of the crop. Due to low groundwater table and in the absence of day round electricity, farmers (farm owners) grow crops during the monsoon season from June to August. Some rich farmers have installed private tubewells or other irrigational facilities on their farm lands. As a result, with the help of tubewells or supplemental irrigational facilities, the farm owners can grow winter crops during the

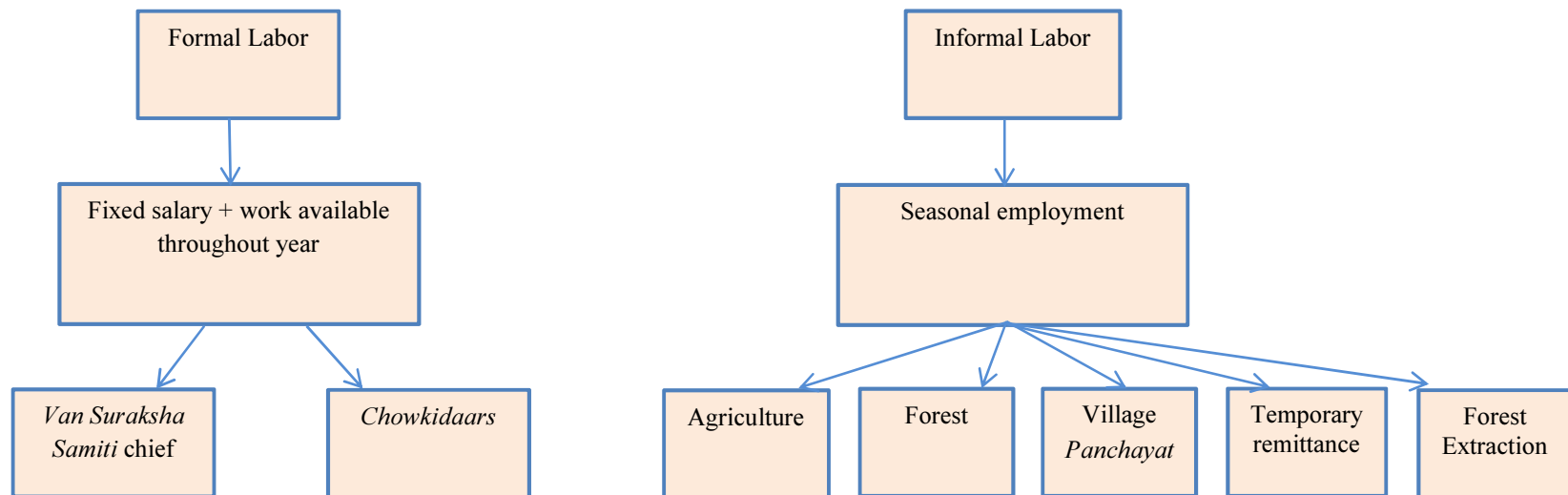


Figure 4.3 Classification of labor in the proposed ONPC

winter months of December to March. During the peak farming time, when additional labor is required, the farmers inform their neighbors and other villagers. Subsequently the farmer picks a handful of laborers, both men and women as required, to do the work. In some cases, farm owners from other near and far villages also come and hire laborers from this region. They call someone in the village to inform them about the additional number of laborers required and for how long. If the farm lands are too far, the farm owners send and pay for the trucks to bring the laborers. This implies that this region has cheap and productive labor.

It is believed that this process of hiring laborers from within or outside own village has been occurring from several years as the farm owners know exactly who to hire. They do not have to search. At times during failed monsoons, farm owners do not hire any laborers in absence of irrigational facilities. Some particular days during the farming season, my visits to the villages had to be canceled. Several times I found locks on the household doors with all the men and the women working in the fields and children studying in the school. About 70 percent of the total surveyed households own agricultural land (Table 4.3). Despite this large percentage of households, villagers still engage in additional labor tasks. Two households reported income (US\$ 1698.11 and US\$ 754.72 respectively) from engaging in contracted labor at another's agricultural field. Village D (50%), Village C (53%) and Village A (63%) respectively have less percentage of total households that own land. This implies that rest of the households, within these villages which do not own land, find employment elsewhere either through

off-farm work or extraction of forest resources such as *tendupatta*. Access to paved road and access to forest can also be responsible for this trend.

Table 4.3 Ownership of farm land

Villages	Total Households Surveyed	Total number of households that do not own land	Total number of households that own land	Percentage of households that own land (%) [^]
A	19	7	12	63
B	36	4	27	89
C	34	14	18*	53
D	40	20	20	50
E	36	8	28	78
F	39	7	32	82

Source: Fieldwork (2009-2010)

Note: *2 households did not mention

[^]Percentages have been rounded off

In addition to the money, the laborers also receive reciprocal income that includes large quantities of grains (Table 4.4). This is a common practice in the villages, to receive payments in agricultural product (grains) instead of money. Despite this, some laborers complain that reciprocal income is not enough to compensate cash income. A laborer from village F explained “we still take loans around rainy season but when we go for soybean cutting, we get paid in cash and we bought a motor from that money”. Another from village E complained “sales from agricultural production is not enough, I have to

do extra labor jobs”. Many respondents (22%) said it [earned income whether cash or reciprocal] is not enough but we have to somehow manage it.

Table 4.4 Details of labor jobs and annual income generated per household from agriculture in the proposed ONPC

Village	Total households surveyed	Households engaged in agriculture labor	Average Annual Income (US\$)	Note: Total Reciprocal income*
A	19	12	397.17	58kgs of wheat
B	36	27	606.04	3 quintals and 21kgs
C	34	18	573.96	2 sacks wheat
D	40	13	408.49	
E	36	28	260.19	5 kgs of maize
F	39	32	752.28	3quintals maize + 8kgs jowar

Source: Fieldwork (2009-2010)

Note: 1 US\$ = INR 53

*only 6 households reported reciprocal income

Remunerated Forest Labor

Work under this category is made available and supervised by the ONPC officials including the Forest Ranger and the Forest Guards. Since the work conducted is within

the ONPC, hence the state government pays for these jobs. These payments are handed directly to the wage workers by the deputy-ranger two to three months after the work is done. The deputy-ranger keeps a village-wise account of what work was done, who did the work and how much the worker was paid. For such jobs, both men and women are hired. Work, such as constructing water holes for animals, check dams, plant saplings, and working in the forest nurseries, are done during the day-time. In addition, only young men are hired as guards or *chowkidaar*- to patrol the forests during night time. It was surprising that out of all the villages, only the FPC chief from village A reported her income. Villages in closest proximity to the forest including Village A (US\$ 118.19), Village C (US\$ 46.93) and Village E (US\$ 74.88) generate large wages by working for the ONPC officials (Table 4.5). These jobs are temporary and hence are not a constant source of wages throughout the year.

Table 4.5 Employment details and annual income generated per household from forest projects in the proposed ONPC

Village	Total households surveyed	Households engaged in forest projects	Total Income (US\$)	Average Income per household (US\$)	Note
A	19	13	1536.42	118.19	Includes salaries of two <i>chowkidaars</i> and a fpc chief
B	36	7	183.49	26.93	
C	34	8	375.47	46.93	
D	40	8	158.68	19.83	
E	36	8	599.06	74.88	
F	39	16	280.09	17.51	

Source: Fieldwork (2009-2010)

Note: 1 US\$ = INR 53

Panchayat Labor

Central government's rural employment scheme, Mahatma Gandhi National Rural Employment Guarantee Act, was passed in the parliament in September 2005. Its main objective was "to provide for the enhancement of livelihood security of the households in rural areas of the country by providing at least one hundred days of guaranteed wage employment in every financial year to every household whose adult members volunteer to do unskilled manual work and for matters connected therewith or incidental thereto" (The Gazette of India 2005). Following this program, different developmental projects are initiated in different villages with a goal of providing income from one hundred days of employment (Table 4.6). Such developmental projects are supervised by village

panchayats. Work within these projects include digging of well, repairing village road and digging *khanti* at the edge of agricultural fields. It was noted during informal discussions across different selected villages that not everybody gets benefits from the Mahatma Gandhi National Rural Employment Guarantee Act's one hundred days of employment.

There is not enough work in the region to provide one hundred days of work. Hence, one can estimate from the results that only a small percentage of total households actually benefit from such project work. For instance, the annual household data of Village A shows that out of a year, a total of 35 days of work was available under Mahatma Gandhi National Rural Employment Guarantee Act. Works such as digging a well or digging *khanti* required about 15 people from the whole village. For each *khanti* dug, each laborer receive paltry sum of US\$1. Although few villagers sometime decide to work on all days during which the work is available, while some work only for a day or two. Depending on the availability of the family members, on an average only one or two work members work from particular households. Both men and women engage in *panchayat* labor. This also reveals that geographic location plays an important role. For instance, Village B which is situated about 10 kilometers inside the forest has more number of households engaged in village projects but generate less income. Due to the greater distance between the village and the nearest developed road, officials do not travel deeper into the forests to open up development projects under the employment scheme.

Table 4.6 Details of labor work and income generated from village developmental projects in the proposed ONPC

Village	Total households surveyed	Households engaged in village projects	Total Income (US\$)	Average Income per household (US\$)
A	19	9	190.94	21.22
B	36	10	159.06	15.91
C	34	7	394.43	56.34
D	40	8	213.21	26.65
E	36	8	804.34	100.54
F	39	3	48.30	16.10

Source: Fieldwork (2009-2010)

Note: 1 US\$ = INR 53

Temporary Remittances Labor

Different households engage in different economic activities, some within their village and some outside, hence generating remittances (Table 4.7). In surveyed villages, it was found that villagers often travel outside their villages for generally temporary opportunities during the monsoon season. Such work included working as a laborer on another's agricultural land especially during the sowing and harvesting seasons and in the chili factories for which the region is famous and cotton factories. In such rural areas, income from reciprocal labor plays a significant role. Reciprocal form of labor entails receiving payment through forms different than money. For instance, when villagers work on another's agricultural land, they are generally paid in particular quantity of grains such as wheat, instead of money. Under such circumstances, the laborer stays at the workplace and return home only after the season ends. The laborer stores wheat back

at his house and consumes it throughout the year. In addition, some families send their young sons or daughters to nearby towns to work in a cotton or chilli factory. The laborers receive payments for their labor and transportation. In return of their services, they receive free accommodation and food. It is evident that there are spatial differences in income from remittances across different villages. These incomes vary because of geographic location of the villages and their proximity to the nearest developed road. Both local men and women engage in temporary remittances labor.

Table 4.7 Details about annual temporary remittances in the proposed ONPC

Village	Total households surveyed	Households with temporary remittance	Total Remittance income (US\$)	Average Annual Remittance income per household (US\$)	Income from Reciprocal labor
A	19	3	163.02	54.34	-
B	36	12	1460.37	121.70	3 households reported wheat
C	34	8	279.62	34.95	160kgs of wheat
D	40	13	2769.25	213.09	5.5 quintal wheat
E	36	10	724.34	72.43	1 quintal wheat
F	39	9	409.43	45.49	-

Source: Fieldwork (2009-2010)

Note: 1 US\$ = INR 53

Forest Extraction Labor

In proposed ONPC, extractive labor refers to labor done by members of a household by engaging in extraction of different forest produce for subsistence or income generation. Males and females, within a household, both engage in extractive labor. For instance, they both engage in fuelwood collection and extraction of *mahua*. But only men engage in extraction and collection of *kullu* and *dhavda* gums. Labor involved in *tendupatta* extraction is not discussed here. There is a separate section on *tendupatta*.

Mahua: Extraction of *mahua*, a difficult task, is done over the month of February. To extract *mahua*, tree owners, visit the tree site every day before dawn to catch the falling *mahua* flowers from the tree. Since these trees are lined around the edge of the villages and forest, wild animals, particularly bear, always pose a danger. Sometimes these are sites of contention when outsiders or neighbors steal someone's *mahua* flowers during the night. Many households depend on income from *mahua* extraction (Table 4.8). *Mahua* used for preparing local alcoholic drinks, is sold in the village market. Largely within a household, women engage in extraction of *mahua* but sometimes men also accompany in case of a conflicting situation with neighbors.

Table 4.8: Details of income from *mahua* extraction

Village	Total households surveyed	Households engaged in <i>mahua</i> extraction	Annual total Income (US\$)	Average Annual Income per household (US\$)
A	19	10	130.34	13.033
B	36	5	114.15	22.83
C	34	6	96.27	16.04
D	40	4*	9.05	9.05
E	36	12*	162.57	16.26
F	39	29	746.60	25.74

Source: Fieldwork (2009-2010)

Note: 1 US\$ = INR 53

*Remaining households extract *mahua* for household use

Kullu and *Dhavda* Gums: Of all the extractive activities, extraction of *dhavda* and *kullu* gum is a hard and demanding work, but it provides significant returns (Table 4.9). Extractors, generally men, have to walk as much as 8 to 10 kilometers to extract *kullu* gum. Due to time and distance, women do not engage in extraction of gums. Instead, they stay back at home and take care of their children and cook meals. *Kullu* gum is more expensive, due to its medicinal value, in the market as compared to the *dhavda* gum. Sold through the ONPC officials, the *kullu* gum is traded for US\$ 4.72 per kilogram or less (US\$ 2.45 per kilogram) if traded illegally in the market. Gum extractors are educated through the workshops and are provided with the useful tools like clean plastic sheet and sickle by the ONPC officials. Extractors generally leave their homes for forest around dawn and walk to the deeper parts of the forest. Once they find the specific *kullu* or *dhavda* tree, they mark a cut across the trunk and fix their plastic sheet in such a way that the oozing sticky gum can fall directly into the plastic sheet.

They return home and go again the next day to collect the solidified dripped gum. Over-extraction and degrading quality of forest over the years has affected the extraction of gums in the park area. The cleaner and freer the gum is from the impurities, more valuable it is to the pharmaceutical companies. It is evident that extraction of gums is an economically productive activity in villages A, B and E only generating large household incomes. Particularly in the forests proximate to Village A and Village E, it seems obvious that *kullu* and *dhavda* trees can still be found.

Table 4.9 Details of income from *kullu* and *dhavda* gum extraction

Village	Total households surveyed	Households engaged in gum collection	Total annual Income (US\$)	Average Income per household (US\$)
A	19	2	943.40	471.70
B	36	3	290.19	96.73
C	34	0	0	0
D	40	1	17.55	8.77
E	36	20	5085.85	254.29
F	39	0	0	0

Source: Fieldwork (2009-2010)

Note: 1 US\$ = INR 53

Fuelwood Collection: Fuelwood collection is part of subsistence livelihood. The villages in and around the proposed ONPC utilize fuelwood for the purposes of cooking food and bathing. As similar patterns are seen across the six sampled villages, only Village A is

discussed here. During the survey, 100 percent participants expressed that women from their households collect the fuelwood from the forests surrounding their villages and change their collection sites on weekly basis. On an average, a *bai*⁴, from Village A, walks two to four kilometers one-way to collect fuelwood. In some cases, *bai* take their young children along with them to the forest. After spending about three to five hours on an average, each *bai* gets one *moli* (headload). Several family members accompanying her signify additional *moli*. Some *bai* complained that walking almost five kilometers two-three times a week has changed their lifestyle. Some protested that a major portion of their day is spent in collecting fuelwood such that they cannot take out time for income producing labor jobs or for their small children. In addition, they get tired due to the heavy weight of the headload and less number of stops made during their journey to back home. At times, they do not get time to rest and they have to continue with their leftover household chores upon returning.

In Village A, about 42 percent participants take a bullock-cart inside the forest for fuelwood collection, while rest 58 percent respondents walk to the forest and bring only a headload as per the forest rules. All respondents informed that according to them, all the tree species exist in the forest. 42 percent of the respondents agreed that the quality and the density of the wood species has changed, making them walk further in the forest in absence of several good quality wood species. Some of the wood species that they do not prefer for cooking include *mohini*, *salai*, *temru* (because they smoke a great deal); *neem* (bitterness), *pipal* and *fansi* (sacred trees). It was noted that the fuelwood

⁴ Term used for local woman in villages.

collection changes with the season. In order of utilization, most fuelwood is used during the winters followed by the monsoons and then the summer. During the summer season, the households stock up fuelwood for the monsoons. Depending on the household size, during the summers one to three *moli* are collected each week from the forest while during monsoons and winter seasons, two to six and four to ten *moli* are collected each week in Village A respectively. Primarily, the villagers pick up the fallen branches or cut dead branches from the trees as allowed by the forest officials. However, the officials informed that when villagers take carts inside the forest for fuelwood collection, they cut down whole, sometimes green, trees. This results in forest degradation. For instance, in the peripheral forests around Village E, due to bad lopping techniques and felling of the green trees, the quality of the forest has deteriorated. Participants informed that they do not use Liquid Petroleum Gas (LPG) or buy wood from *nistaar* depot in absence of fuelwood. However, sometimes they cook *batti* (type of Indian bread) on cowdung cakes *kande* to enhance the taste of the food particularly during social cultural events.

In the proposed ONPC, local inhabitants generate household income by engaging in the labor jobs at the fields and the developmental project sites in addition to extracting and selling forest resources.

Territorial Strategies and Conservation Enclosure

As the idea of creation of the ONPC is flourishing, several instruments were implemented by the state agencies to imply their presence in the area. Within a few

years, the villages that were included within the five kilometer boundary of the new conservation enclosure, were declared 'forest villages' and were placed under complete control of the state forest department. Imposition of rules and regulations was placed on access to resources based on the National Forest Policy of 1988, according to which restrictions were placed on the surrounding forest villages to curb their access to forest resources. Furthermore, monetary fines were levied on the rule-breakers from the forest communities. These rules were imposed to safeguard the degrading quality of the forest evident by the heavy dependency of the local inhabitants on the forest resources such as *kullu* and *dhavda* gums. According to the management plan of the proposed ONPC, the park officials are designing developmental projects in the forest villages to diversify livelihood opportunities of the villagers and promote community based ecotourism as an alternative to their dependency on the forest resources.

Construction of new developmental projects, such as a village pond or village roads, as a means to gaining the trust of the local inhabitants and to keep them content with the progress of the proposed national park has been effective. This can also be considered as a direct or indirect form of state controlling activities, through which it rules local communities. The work done through FPC was primarily funded by the ONPC department, the creators of FPC. A FPC chief seemed satisfied with the working of their FPC -

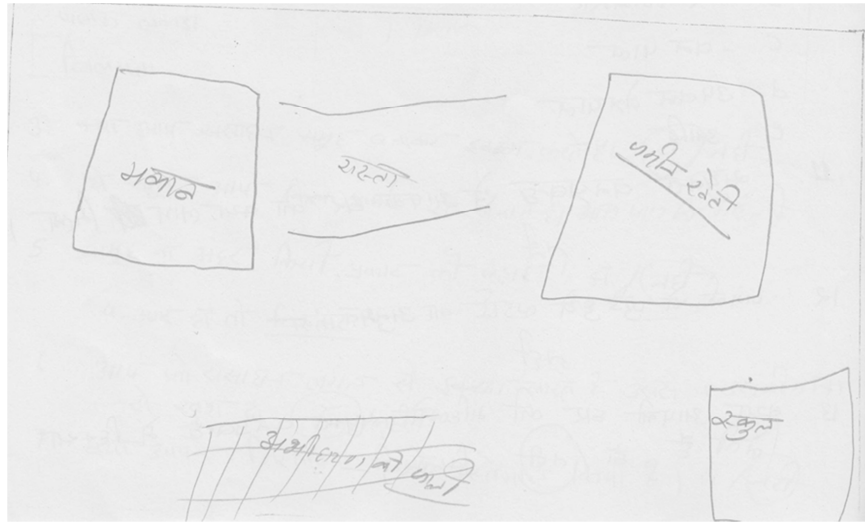
“We have received many benefits from *van suraksha samiti* [fpc]. We got a well, engine [diesel pump for irrigation] and jobs.... If *van suraksha samiti* hasn't helped us, then who

got us well, engine and cemented roads? We also built canals along the agricultural fields. Twice it has been constructed so far. What else do we need?”

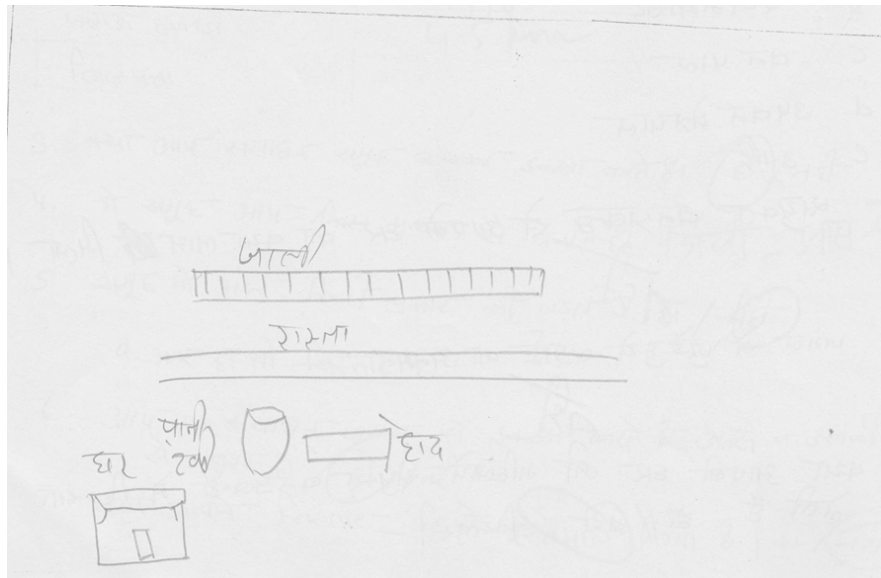
In addition, physical boundaries such as wired fences were erected around the periphery of the proposed national park. Manifestation of such a physical boundary was meant to ensure that the villagers get the clear message that beyond the borderline area is out of limits for them.

“[ONPC official] we are fencing around so that the wild animals and other animals do not come out from the forest and disturb the villages.”

When asked, some of the local villagers drew a mental map based on the perception of how their own village is situated around the forest (Figure 4.4). Without hinting, they themselves drew the wired fence around the forest that separates it from their village. This signifies that the local villagers are aware of the presence of the wired fences that have been positioned around the Village B (Figure 4.5). During the fieldwork, I observed that at places, the wired fence was broken in. For instance, in Figure 4.5b, a big gaping hole is evident and two cows can be seen on the other side of the fence. This illustrates how the rules are broken by the villagers. The whole duration of my stay, I did not notice any conflict between the park officials and the villagers as the idea of the park is quite novel and the villagers are still getting used to the idea.



a). The map depicts a household (of map maker) on the left side that is connected by a road to his agricultural land on the right. At the bottom right, he drew his school and adjacent to his school, the park fence is drawn



b) In the above image, a young girl drew her house at the bottom left which is located near to the water pump. Across from the pump, there is a road beyond which the forest lays. The forest is separated by a wired fence from the village

Figure 4.4 Mental maps depicting forest boundaries



a). A picture of wired fence around Village B



b). Another picture of the wired fence around Village B. Upon close inspection, a hole can be seen in the center left

Figure 4.5 Wired fences around Village B

The results indicate that local people, who help the ONPC officials to protect forests, were unsatisfied with the benefits provided to them. When asked, a FPC chief replied “they don't give us anything. Only during the fire protection, the men work in extinguishing fire and they are paid for their labor. No other benefits.” When asked about their wages for forest protection, another villager stated that they are paid “per day approximately US\$ 2 to extinguish fire and they [ONPC officials] keep two to three *chowkidaar* [security guards] on each gate, currently they are getting salary of approximately US\$30 each month.” Not only the hired security guards paid higher, they also get free-rides from the forest guards, or with little bribes, access to the forest. Furthermore, “.. what they [forest officials] do is that they hire 4 *chowkidaar* and they keep 2 on duty and they keep the salary of other two *chowkidaar* in their own pocket.” This indicates the exploitative and corrupt relationship between the controller (ONPC officials) and the controlled (local people). This suggests that, according to the FPC chiefs, the benefits given to the communities in the form of development projects (such as pond development, road construction) to ease their difficulties are not considered benefits. Another FPC chief seemed helpless about the prospect of job opportunities -

“Whatever work we get, we do it. We did not have the road [connecting cemented road from nearby bigger village of Ratanpur to Premgarh] so we asked for it and we got the road built.”

Another FPC chief mentioned -

“In the forest, through *van suraksha samiti* the only work, so far, we were given was to cut trees, put some place markers. Whatever work comes through the *van suraksha samiti* we go for it.”

Due to lack of regular job prospects, an indirect bribe, in form of some work offered, can keep the people diverted by doing odd jobs for the ONPC officials. In return, the ONPC provide money, in the form of funds, for the village development projects.

“Through forest department, funds are allocated to the *van suraksha samiti* of the village and then they decide what work needs to be done in the village and accordingly decide to spend that money on developmental projects around the village. For instance, someone needs a job or water well needs to be fixed. *Samiti* are given loan also if they need for weddings, or other social events. All that money comes from the funds that were deposited with the *samiti*.”

There is a strong presence of the forest department in the form of FPCs in this region. Yet survey results clearly highlight the fact that a majority of the household respondents admitted they do not receive any kind of benefits from the JFM program (Figure 4.6).

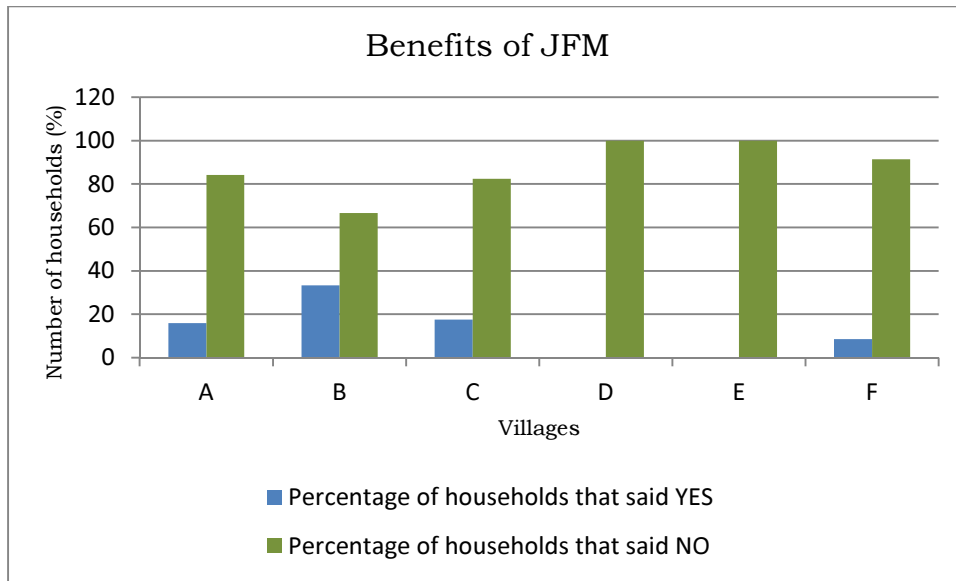


Figure 4.6 Benefits of Joint Forest Management program in the proposed ONPC

When different village communities were asked whether they proposed or opposed any resolutions in the JFM meetings, all 100% respondents from all the six villages replied that they do not participate in proposing or opposing resolutions at the meetings (Fieldwork 2009-10).

Different participants provided a range of answers about their role in forest protection (Figure 4.7). 63% respondents admitted they actively participate in the forest protection and management programs. Of these 63%, the most common answers included help in extinguishing forest fires (35%), catch poachers (29%), and following the forest rules (36%) (Figure 4.8). Of the remaining respondents, 35% denied any role in forest

protection while 2% of participants did not know about their role in forest protection (Fieldwork 2009-10). From the above discussion, it seems that the local inhabitants are not contented and satisfied with the on-going plans of the park officials. They do not see JFM as a strategy of empowerment. Hence, they do not engage in the Joint Forest Management process including the forest protection.

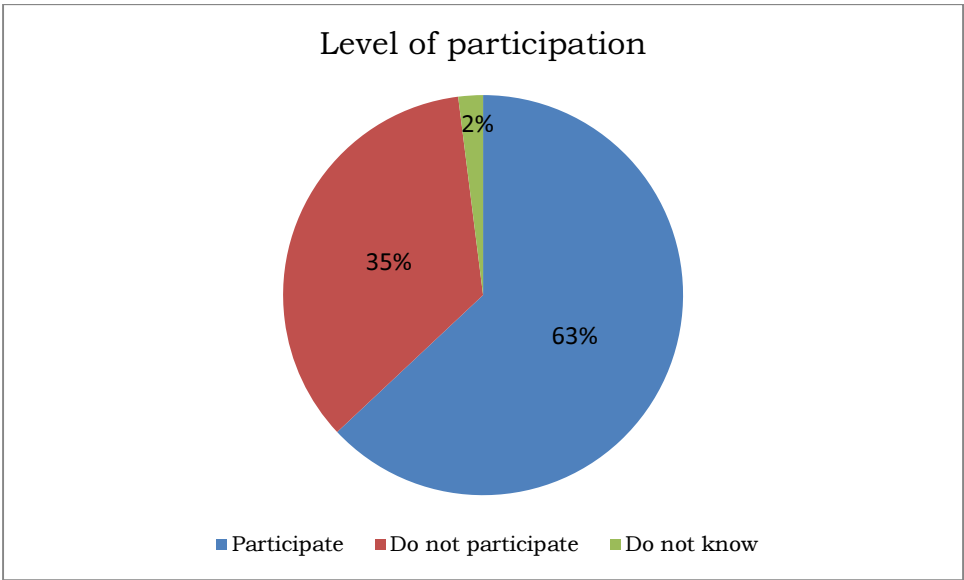


Figure 4.7 Level of participation in the Joint Forest Management in the proposed ONPC

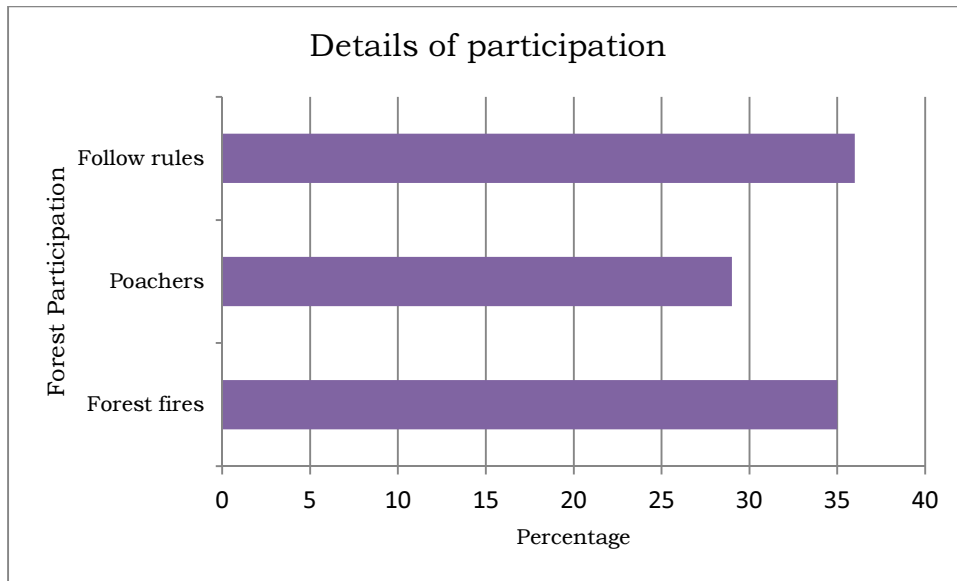


Figure 4.8 Details of participation in the Joint Forest Management in the proposed ONPC

The working population from the forest villages is hired by the park officials. Table 4.10 summarizes the forest employment and the income generated. Only a small percent (30%) people work seasonal jobs from the park officials. Uneven distribution pattern can be seen here in terms of average money per participated household and the total number of households participated. Main factors for this uneven distribution included geographical location of the villages, job site, and availability of the jobs.

Table 4.10 Number of the labor jobs provided by the park officials

Villages	Total number of household surveyed	Number of households getting jobs out of total surveyed households	Total percentage of households getting jobs (%)	Average Annual money earned in a month (US\$)
A	19	13	68	26.50
B	36	7	19	14.82
C	34	8	24	45.74
D	40	7	18	23.74
E	36	9	25	35.00
F	39	16	40	18.64
Total	204	60	100	

Source: Fieldwork (2009-2010)

Note: 1 US\$ = INR 53

All the decimals have been rounded off.

Different territorial strategies including the conservation enclosure can be seen as an effective form of influencing control. In an effort to empower the local communities with the decision-making process, the park officials are striving to reintroduce the Joint Forest Management in the region by establishing forest committees which the local inhabitants are not attracted towards.

DISCUSSION

The study illustrates how creation of compensatory conservation enclosure, as a part of 'market based' conservation strategy, becomes a site for struggle of access and mobilization of forest resources. The struggle, although subtle, occurs as more and more restrictions are placed on the activities of the local communities to fulfill the state's plan to gain capital by reinvesting the seized common's ecosystem services into ecotourism. This study investigates how changes in rules-in-use, as a result of compensatory conservation, influence labor dynamics thus altering resource access.

Previous section 3 established main sources of income within the ONPC. Subsequently, the main findings of this paper include (1) employment includes both seasonal wage and non-wage work within the ONPC, (2) formal wage labor includes a steady annual income for *chowkidaar* and chief of *van suraksha samiti*, (3) informal labor includes seasonal employment that ranges from labor jobs within agriculture, forest, *panchayats*, temporary remittances and forest extraction, (4) agriculture labor is compensated through both wage and non-wage income, (5) access to road and forest plays an important role in earnest engagement in off-farm jobs, (6) the state agencies exert pressure on the local communities by strictly imposing new rules that restrict their access to forest. This has also been done by constructing wired fences around the park, thus separating it from the villages, and (7) the local people are not satisfied by the role of the local forest institutions.

Some generalizations can be made about the labor dynamics in the ONPC: (1) both unskilled wage and non-wage working class exists, (2) wage labor can be temporary or permanent, (3) based on social norms, different labor jobs require different people depending on the nature of the work, particularly within a household men engage in work related to income generation while women involve in labor work related to household for instance fuelwood extraction, (4) however, during monsoon farming, when additional labor is required, both men and women engage in farm labor to generate household income, and (5) only men or young adults from a household travel outside the village for labor work. These generalizations reflect that season and social norms control the labor relations.

Future plans for this proposed park complex entail establishing ecotourism as a compensatory ‘market-based’ conservation initiative. By privatizing and commercializing the newly formed ONPC, restrictions are being imposed on the extraction of NTFPs for both subsistence and commercial uses. This ban on the NTFPs extraction, which provides seasonal employment to the forest communities, may further compel them to alter their livelihoods. It is clear that fewer jobs are made available to the local communities in absence of the extraction of forest produce. Benefits derived from these employment opportunities within proposed ONPC include both wage income (cash) and reciprocal income in form of wheat and maize which the workers use for subsistence rather than selling it. Instead of extracting NTFPs, resource users will have to travel outside their villages for employment to compensate the loss of income. Even

with active government policies such as Mahatma Gandhi National Rural Employment Guarantee Act, 100 days of work is not available or guaranteed in the sampled villages.

Exchange labor is a characteristic feature in determining the social relationships. It is evident from the results that currently, an imbalanced equation exists between the FPCs, formed by the resource-users, and the ONPC officials. Resource-users are not involved in the decision-making process of forests management, protection and conservation. In addition, according to the local communities, they do not receive any benefits from the Joint Forest Management. However, formation of FPCs, through which the member villages get regular sum of money for village development from the ONPC department, should be considered a positive outcome from the creation of ONPC. This money is invested in village projects such as constructing school, community center, buying utensils for weddings and hand pumps. These incentives in form of monetary and non-monetary benefits should be considered as forms of additional privileges to the different villages.

With the new rules-in-use, there will be change in the control of the local access of resources (for any purposes) in varying degrees. Hence, in this case, the state becomes the controller through the forest communities become the controlled. Territoriality can be understood as a social, human and power construction. This asserts power equation between the state and the forest communities across different institutions. This is an example where institutional and structural changes are made by establishing FPCs and transferring the control reins from territorial forest department to ONPC officials. The

forest area in question is being privatized by converting it into a national park with restricted use and by introducing ecotourism. According to the park officials, future efforts would include granting projects to private businesses to construct rest houses within the park area, hiring private transportation services to move the travelers/guests from one end to another end of the park, contracting food chains and local restaurant owners to open restaurants to provide meals and snacks, that is, creating more economic opportunities within the park for the state's capitalist interests.

By restricting access and mobilization of forest resources, thus influencing livelihood opportunities results in the creation of the surplus labor. This surplus labor should be re-invested in the privatized economy in order to save the shield the system from collapsing. In the case of ONPC, the park officials plan to empower the surplus labor (unemployed) by engaging them in the new economy supported by ecotourism.

Different Territorial Strategies of the State

Proposed ONPC presents an ideal example of state's use of territorialization as a resource control strategy. The state has used/ is using different strategies for privatizing resources in this spatial unit called proposed ONPC. Such strategies include creating physical boundaries through park fences thus cutting off the forest communities from the communal forest resources. Subsequently, physical fences are a symbolic representation of boundary, thus hindering people's access and mobilization of forest resources that provide livelihood opportunities to forest communities including *adivasis*. A second

strategy is to impose restrictions on use of and access to forest resources for livelihood activities for subsistence purposes including permitting only to carry a headload of fuelwood for household purposes. A third strategy is to hire forest guards (hence under state control) to ensure proper and effective implementation of forest rules and policies through the creation of FPCs in the forest villages. Consequently, rights to use forest ‘state’ land and associated resources are marginalized. Therefore, all the activities of the forest communities, be it social, political or economic in nature, are all controlled and governed by the park officials including agricultural labor and extraction of resources within the park boundaries. Based on Sack’s (1986) examples, territoriality, in proposed ONPC, is asserted through (Table 4.11)–

Table 4.11 Examples of Territorial Strategies from the proposed ONPC

Example	In ONPC context
Job description	ONPC officials telling FPCs what to do and what not to do
Legal rights in land	Imposing a ban on extraction of NTFPs including <i>tendupatta</i> which generates large revenues for the state government
Brute force or power	Indirectly, when the forest guards take money (bribe) from the resource-users to enter forest to extract fuelwood
Alter cultural norms	Force resource-users to modify their cultural lifestyles by not extracting forest resources such as bamboo needed for cultural events like wedding
Subtler forms of communication	Telling the resource-users that the forest is closed for extraction today, go back home

Based on the labor theory of value, the village people, that is, the laborers produce and enhance the value of the commodity (in this case proposed ONPC) by engaging in different activities such as extraction of *tendupatta* for making *bidis* especially during the early grafting season in the month of March that results in better leaf quality, extinguishing fires during forest fires, following forest rules and regulations to protect their forests, stop poachers from illegal cutting of trees, getting jobs as *chowkidaar* (security guards) and roam around the forests at night and finally help the forest guards to protect the forest in every way. Often villagers from different nearby villages (out of the study site) come and cut down trees in the middle of the night to cope during the absence of electricity or during winters. As the village life is completely dependent on the forest in absence of any materialistic things for their livelihoods and sustenance, the villagers assess the forest as their source of food, employment, cultural materials. This makes a strong reason for the villagers to protect their own forest compartments so that they never face shortage of wood or other forest resources.

As mentioned earlier, territoriality is an approach to ascertain varying degrees of access to people, things and relationships. This access can be altered by the differing interests of the ONPC department, thereby supporting unequal relationships in the ONPC. With this move to create proposed ONPC in central India, the state and the ONPC department has brought attention to its interest in the function of market based system approach, that is, payment for ecosystem services as a better idea to conserve ONPC nature. It can be determined that conservation trade-offs, managed through structural and institutional changes, can become influential in controlling access to the former commons. However,

it is not necessary that the local communities are economically marginalized in the process. For instance, in the case of ONPC, structural and institutional changes have resulted in restrictive forest access, thus limiting livelihood opportunities. On the other hand, the purpose of introducing ecotourism in the park signifies that lost livelihood opportunities will be taken care of.

To bridge the gap between the park officials and local inhabitants, it is recommended that more workshops should be organized by the park officials, on regular basis, to 1) explain the future of the ONPC; 2) describe their objectives related to forest management; 3) break down the purpose and the workings of Joint Forest Management; and 4) empowering local communities with special focus on women. This would be beneficial as the local communities will get a clear idea of the future of the park and hence their own, in turn making them as active stakeholders with invested interests. Joint Forest Management program should be redesigned by the park officials to demand more active participation of the local communities including their ability to make decisions. In addition, the park officials should find solutions along with the local communities to provide basic infrastructural amenities such as water and electricity so their daily sustenance is not hindered.

CONCLUSION

The case of proposed Omkareshwar National Park Complex in Central India is a result of a resource control strategy which entails significant changes to the current forest

management institutions and the forest policies that directly affect the local communities, their control of, access to and the mobilization of the resources. Through creation of this new conservation enclosure, local livelihoods are being threatened and may compel the forest communities to travel outside their villages for labor jobs. Another implication is the commercialization of enclosure by introducing ecotourism.

Conservation efforts, to be successful, must be a combination of more accountable and decentralized transformation of traditional power relations. There should be an exchange of ideas, practices and knowledge between the different stakeholders for sustainable resource management and conservation. Support and participation of the local communities whose lives and livelihoods are impacted by such policies, should be engaged. By creating Forest Protection Committees in the participant villages, women resource users should be encouraged not only to become elected to these committees but they should be involved in the decision-making power.

5. COMMUNITIES AND FOREST USE IN PROPOSED OMKARESHWAR NATIONAL PARK COMPLEX: INTERACTIONS OF TERRITORIALITY AND

FILIERE

INTRODUCTION

Along with many countries in the developing world, including Brazil, Colombia, Ecuador, Peru, Mexico, China, and Indonesia, India is one of the twelve mega-diverse countries in the world (Brooks et al 2006). About 200 million poor people are dependent upon the forest resources itself for their daily sustenance (Forest Survey of India 2009). Rural forest dwellers across the world are known to extract and use extensively timber and non-timber forest products to sustain their livelihoods. Some of the products harvested offer employment opportunity, while remaining contributes to the daily food consumption. The proximity of these dwellings to the forested areas exert pressure to the forest in forms of increasing human and livestock population along with growing poverty resulting in severe loss of biodiversity.

Rapid emergence of development projects in the vicinity of the conservation enclosures is another reason for the loss of biodiversity. Formation of the proposed Omkareshwar National Park Complex (ONPC henceforth) is an example of one such development project – the Narmada dam development project. Under such circumstances, trade-offs are made to set aside land for conservation from within development schemes for biodiversity conservation. In such cases, the state either relocates the entire forest

dwelling, situated close to a protected area, away from the buffer zone or else amalgamates these communities with the conservation goals of the protected area. This results in restricting and controlling the local communities' resource access and use.

I will employ *filières* that maps out the actual flow of the commodity and identifies the agents and activities within the chain, to examine the social relations and the institutions that establish and influence local economic systems including markets (Bernstein 1996). This framework will allow me to highlight the social practices and processes of forest product extraction within the proposed ONPC. By acquiring in-depth and accurate information about the interrelationships between the physical and social processes in an environment, *filière* approach provides a meaningful understanding of the social relations. As a result, the *filière* approach is an optimal alternative to examine the production and reproduction of proposed ONPC as an economic space that is negotiated and contested by a myriad of economic and social processes through different institutions.

In particular I examine the *tendupatta filièrè* – leaves of *Diospyros melonoxylon* largely used in making local cigarettes known as *bidis* —in terms of social networks, social activities, social capital, and social tensions. Additionally, this approach will allow me to identify more directly the micropolitics of NTFP (*tendupatta*) production and consider the economic and social consequences of the ONPC implementation. I focus on *tendupatta* because of its significance in the regional economy. Another reason pertains to the fact that other resources, that are extracted such as *mahua*, *belpatta* and *dhavda*

and *kullu* gums, are not extensively found in the entire region like *tendupatta*, hence they were not included in this section.

This study examines how territorial restructuring reinforces inequalities among the resource-users as the producers and the state as the capitalist. Through *filière* approach, links between the social relations among different actors at different scales at various stages within the chain will be highlighted. It would also reflect the unequal power dynamics among different actors within the economic productive space of proposed ONPC. This paper begins by examining the literature on the territoriality and *filières*. The second section presents the details of proposed ONPC and its communities. The third section addresses the two research questions pertaining to micropolitics of social relationships between different actors within *tendupatta filiére*.

LITERATURE REVIEW

Non Timber Forest Products and *Filières*

Since 1980s conservation and development research illustrated the importance of forest resources, particularly non-timber forest products, among the forest people. Forest communities often collect, process, sell and consume NTFPs to meet their subsistence needs and support commercial activities. As defined by De Beer and McDermott (1989), “the term ‘Non-Timber Forest Products’ (NTFPs) encompasses all biological materials other than timber, which are extracted from forests for human use.”

Studies have argued for the effectiveness of the commodity chains as a tool to understand the processes of production and distribution of commodities (Le Billion 2007, Belcher 2005, Ribot 1998). The role and the potential of NTFPs can be well-determined by studying the economic and environmental context of the production, processing and marketing system than by the physical characteristics of the product itself (Belcher 2005). Le Billion (2007) argues that commodity chain analysis play an important role in resource conflicts by identifying the actors involved and exposing their responsibilities at different scales. It further takes away the attention from the local scales and places the conflict within broader processes of resource production. Through commodity chain analysis, historical processes of mode of production of a resource conflict can also be studied.

Several scholars have examined and offered definitions and differences between commodity chains and *filieres*. Raikes et al (2000) compare and critique Global Commodity Chain and *filière* approach – two frameworks used by scholars to study dynamics of commodity-specific production. Global Commodity Chain (GCC) has been developed within political economy of development and owes its origin to world systems theory. It largely concentrates on the industrial commodity chain. One of the positive aspects of GCC is its focus on power within economic relations. Hopkins and Wallerstein (1986) envisioned commodity chain analysis as a mean of examining the whole network of flows and exchanges that disclose the ‘real division of labor in complex production processes’. Ribot (1998) defines a commodity chain as ‘a series of interlinked exchanges through which a commodity and its constituents pass from

extraction or harvesting through production to end use'. The concept of commodity chain, as defined by Hopkins and Wallerstein (1986: 159) 'refers to a network of labor and production processes whose end result is a finished commodity' – something that can be bought and sold. Global value or commodity chain analyses the effectiveness of the system as a whole from collection to production. The main goal of commodity chain analysis is to determine the division of surplus and labor among the different stages. However, it does not take into account the unequal distribution of surplus and labor at each stage (Shillington 2002) and between participants of those stages (Dunaway 2001). It also fails to give attention to minute specifications of socio-economic processes concerning each key actor at each micro-level.

Filière approach, on the other hand, is considered an empirical analytical tool rather than a theory. It studies both local and international production systems and consumption processes. It maps out the actual flow of the commodity and identifies the agents and activities within the chain. Regulation, both state and private, power and access to resources can be empirically studied at different stages of commodity chain. *Filière* studies identify agents and activities within a *filière*, how public institutions create a physical flow of commodities and their resultant effect on the local production system emphasizing particularly on the structure and relations of production and power around the specific commodities (Raikes et al 2000).

Commodity chain research has examined studies on gender and NTFPs (Shillington 2002, Leslie and Reimer 1999, Barrientos et al 2003) and race (Wilson 2005). The

concept of a local commodity chain enhances the potential of commodity chain analysis as a tool to examine not only households and gender within a global framework (Shillington 2002) but also women's informal economic activities which are usually located at the micro level and in many cases are linked to the macro institutional chains. It is evident that the women's involvement in local economic activities is not only significant to the survival and the maintenance of the households but also contributes to the local commodity chain making them an important actor in the process.

Studies have emphasized on the importance of the *filière* approach to ascertain different presence of, if any, obstructions in the production and distribution market systems that may slow down economic development process and hence demands attention from scholars, policymakers, local communities and state officials. In their study, Bosc and Freud (1995: 89) define *filière* s or commodity systems as a reference “to the successive chain of activities from production to the final sale of the output on local or export markets”. They further characterize the concept in context of qualitative and quantitative dimensions within the *filière* approach. Qualitative dimension within *filière* approach is a horizontal investigation of the benefits and shortcomings of the *filière* system and the interaction among different stakeholders along the chain (Bosc and Freud 1995). On the other hand, the quantitative dimension is an examination of the structural supply and demand in addition to the market costs of the product at micro and macro scales (Bosc and Freud 1995).

Following the quantitative or the vertical structural dimension of *filière* approach, extensive research has been conducted including straw brooms and coco baskets (Shillington 2002), *tendu* leaves (Boaz and Boaz, 2003), *adda* leaves (Suryakumari et al 2008). Boaz and Boaz (2003) described the cooperative model of the community-based sustainable management of *tendu* leaves in Madhya Pradesh with special emphasis on the socio-economic impact of the rural communities in Harda district. This paper will complement Boaz and Boaz (2003) by focusing on the micropolitics of the social relationships within the *tendupatta filiè* including different conflicts and rapport that exist between the park officials and the local communities particularly. In another similar study, Suryakumari et al (2008) suggest an alternative theoretical framework to address the problems created by the deregulation of ‘*adda*’ leaf, used to make leaf plates and cups by the tribal communities, by the Andhra Pradesh state forest department.

On the other hand, limited numbers of studies emphasize the need to examine the social dimension of the commodity systems between different actors within the micro-level production and distribution processes (Bernstein 1996, Jarosz 2000, Gibbon 1997 and Rammohan and Sundaresan 2003). Jarosz (2000) suggests actor network theory and supply chain management theory for better understanding of the social relations, based on trust and cooperation, intertwining the different actors in agri-food systems in the United States. In India, Rammohan and Sundaresan (2003) address the need to trace the social connections of production and interchange of coir yarn spinning in southern India and to focus on their social consequences. Bernstein’s (1996) classic paper on maize *filière* emphasizes on the *filière* approach as socio-cultural analytical tool which can be

applied to social practices and processes within economic domain. He studied the different social characteristics, such as class and gender, and its interactions with the market agents like producers and consumers in a comparative examination of maize *filière* in USA and South Africa (Bernstein 1996). This paper recognizes and employs *filière* approach as a sociological analytical tool. Following Bernstein's (1996) study, this research examines the social relations and the institutions that establish and influence local economic systems including markets.

***Filière* and Territoriality: A Social Framework**

Few scholars have studied the interaction of *filières* and territoriality (Mather 1999, Lagendijk 1997, Lewis et al 2002, Jones and Clark 2003). Lewis et al (2002) examines how the term 'governance' can be understood through different literatures including NIE (New Institutional Economics), spatial embeddedness and regulation approach through an example of New Zealand and European wine *filières*. Jones and Clark (2003) investigates the role of *contrat territorial d'exploitation*, a specific feature of European Union's Common Agriculture Policy in Languedoc region which has broad concerns related to viticulture, diversification efforts and urban and tourist development pressures. In another study, Mather (1999) employs *filière* framework to examine the organization and the restructuring of the South African citrus exports. However, such *filière* studies lack inclusion of the territoriality as a resource control strategy (Vandergeest and Peluso 1995) and to what degree it affects the social practices and processes.

Territoriality has been studied in context of broadly political boundaries (Brenner 1999, Agnew and Corbridge 1995, Passi 1998, Anderson and O'Dowd 1999, Passi 2001, Kratochwil 1986), resource rights (Vandergeest and Peluso 1995, Vandergeest 1996, Walkers and Peters 2001), resource access (Levine 1984, Robson and Nayak 2010), social relations (Barnard 1992, Bernstein 1996) and territorial disputes (Perez et al 2009, Sikor and Lund 2009). Most of the studies based on territoriality are outdated. Passi (2001) examines changing narratives of Europe's spatial identity since 1990s and the shifting interaction between spatial structures, social relations and meanings. Boundaries are understood as the indicators of the social practice and discourse (Passi 1998). Creating boundaries are one method to organize social space (Massey 1995) and are considered an expression of power structures (Passi 1998). Therefore, to understand territoriality as a resource control strategy, within the proposed ONPC, the local social relations within extractive economy of *tendupatta* will be highlighted through *filière* framework. How resource control strategy transforms the social relations? Who decides who has access to the forest resources? How is power relations defined? Who are the controllers and controlees? How controlled access and resource deprivation affects horizontally across different social relationships?

Forms of access and control as well as cognition (one person's accumulation is another person's degradation) influence how people manage and use resources. Therefore, by applying this reasoning to the case study of proposed biodiversity offset in India, this section examines on how territorial restructuring restructures the social relationship of resource-users to the broader political economy. Through the *filière* approach, I can

examine the links between the social relations among different actors at different scales at various stages within the chain. Within that analysis I can assess how social power operates within the economic productive space of proposed ONPC.

RESEARCH DESIGN

Proposed Omkareshwar National Park

Since late 1950s, Madhya Pradesh is the site of contention of notorious Narmada Dam Project which is spread over other states of Gujarat, Maharashtra and Rajasthan. Proposed Omkareshwar National Park Complex (ONPC), is a planned park in Madhya Pradesh, represents 30.72 percent of India's forests, and is the largest forested area within the state of India (Figures 5.1a and 5.1b). It is being designed as a compensatory conservation project which will overcome the loss of wildlife and forest resulting from the construction of and submergence from the nearby Indira-Sagar and Omkareshwar dams, part of the notorious multi-purpose Narmada dam project. This complex consists of Omkareshwar National Park, Singhaji Wildlife Sanctuary, Mandhata Sanctuary and Narmada Conservation Reserve Unit I and II (Figure 5.2). It is situated at the junction of three districts, namely, Dewas, Khandwa and Khargone.

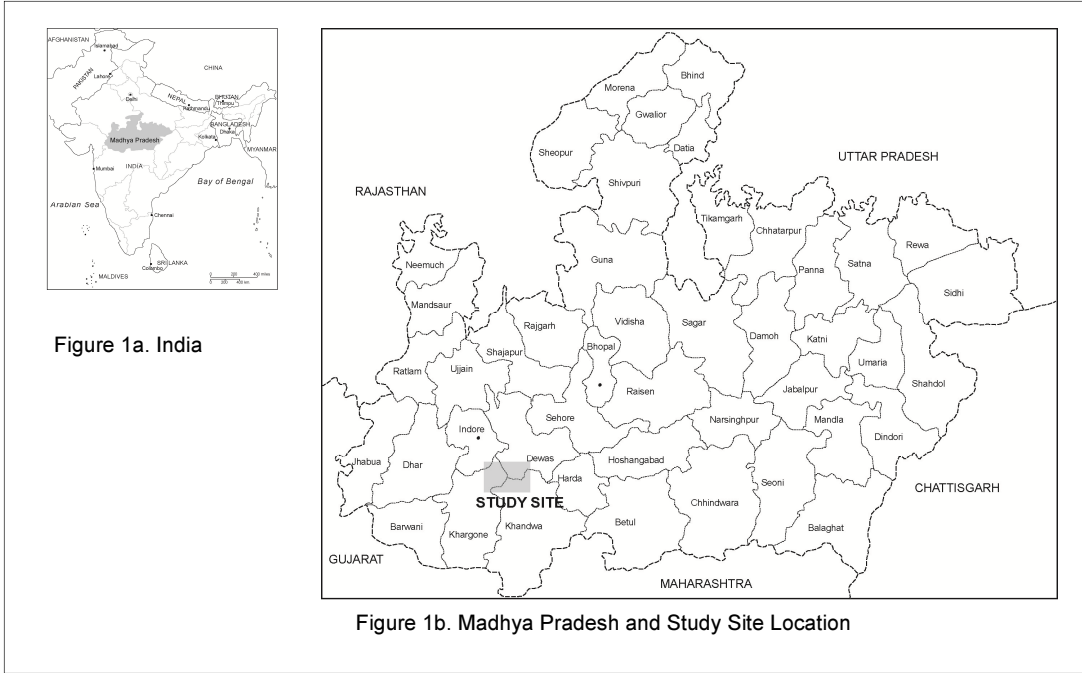


Figure 5.1 (a) and (b) Position of the proposed Omkareshwar National Park Complex in India and within Madhya Pradesh

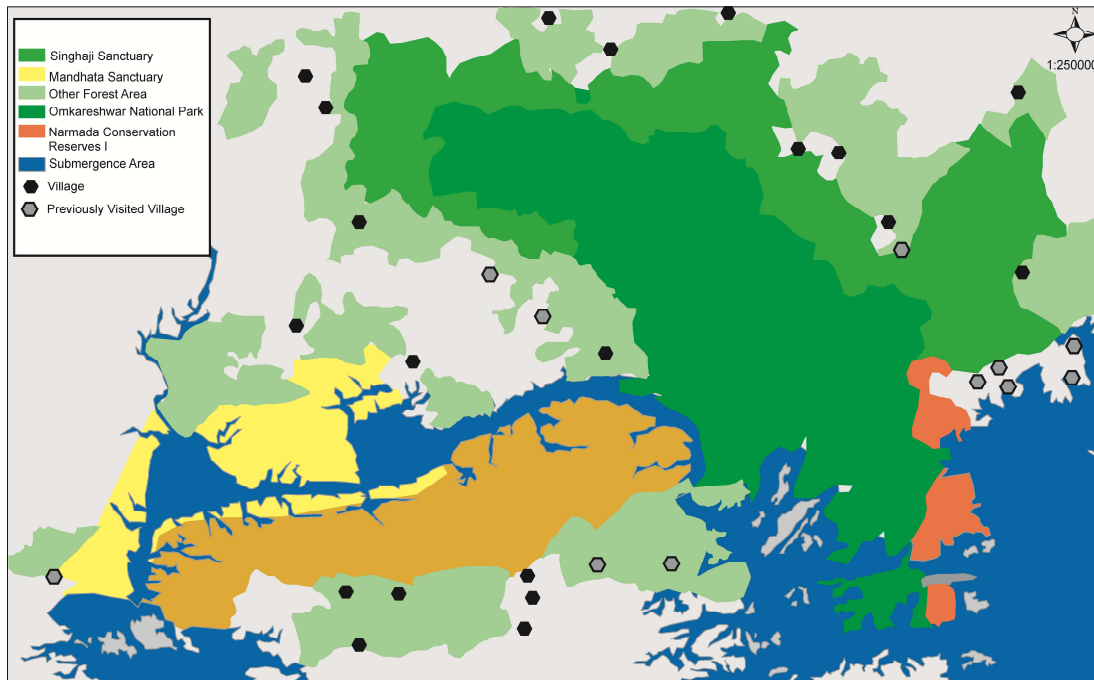


Figure 5.2 Details of the Proposed Omkareshwar National Park Complex

In 1987, the Government of India approved the diversion of 41,111.97 hectares of forest lands in the districts of Dewas, Khanwa and Hoshangabad (in the state of Madhya Pradesh) towards the construction of the Indira Sagar dam project (Personal Communication. Government Official 2012). However, at the same time, the government also made it mandatory that representatives from different stakeholder agencies should form a committee for wildlife management and conservation, which would be displaced during the dam construction. These stakeholder agencies were the National Hydroelectric Power Corporation (NHPC), the Narmada Valley Development Authority (NVDA hereafter), the state government of Madhya Pradesh and the state forest department. This committee selected the Wildlife Institute of India and Friends of Nature Society to prepare impact assessment reports, which were released in 1994 and 1996. As a result, in 1993, NVDA declared its intentions to create a national park and sanctuaries. Approximately 84 villages are situated around the proposed ONPC - 55 villages in the Dewas district; 28 in Khandwa and 1 village in Khargone. Largely, this region is comprised of the tribal '*adivasis*' population, constituting approximately 22.3% of the total population.

Previously the forest commons were under the jurisdiction of Forest departments of Khandwa and Dewas districts. Presently, the ONPC authority governs this region. The resource governance structure two institutions: (1) *van suraksha samiti* (FPCs) and (2) the ONPC officials. Formal forest protection committees (FPCs) have been established in the forest villages (FVs) situated within the complex, and are responsible for protecting biodiversity along with village development. Forest villages are under direct

control of forest department of the central government with no interference from the state government.

All the villages in the ONPC largely depend on the forest resources for their daily sustenance, particularly fuel-wood and non-timber forest products. The local people mainly engage as gatherers of non-timber forest resources, farmers or work as labors on other agricultural farms. The local farmers usually grow soybeans, wheat, peas, gram, black gram, corn and sorghum all year round.

Methodology

To understand the dynamics of social relations as affected by the newly implemented rules-in-use, I conducted intensive household surveys, interviews and micro studies in the selected six villages, which attempted to extensively collect resource extraction and use related data from different social groups inhabiting the region. I designed each survey questionnaire and the micro study prompts with special care to generate both qualitative and quantitative data.

Data Collection

I collected data and information for this study from six villages situated within five kilometers radius of the proposed Omkareshwar National Park Complex boundary in the central Indian state of Madhya Pradesh. Of these six villages, two villages, namely

Village E and Village F, are situated in the Dewas district while, the other four villages – Villages C, B and A are located in the Khandwa district of Madhya Pradesh. I selected these villages on the criteria based on the proximity to the base station, safety and accessibility especially during the monsoon season around July-August. In addition, these villages were especially selected under the guidance of the advisor, the Chief Conservator of Forests (of ONPC) and the proposed national park office.

I collected data from November 2009 to August 2010 and December 2010-January 2011 involving a random chain sample of 204 panel households and 18 micro-studies in six villages. I hired village-based young adults to conduct the household panel surveys in summer of 2010 and December/January 2011. I conducted all the micro studies along with my assistant who helped with the local dialect.

Data Analysis

I incorporated numerous questions on *tendupatta filières* in the household surveys and particularly in micro-study prompts to acquire experiences of the resource-users to understand their approach to extract and use *tendupatta*. Other resources that are extracted such as *mahua*, *belpatta* and *dhavda* and *kullu* gums were not included in this section as these resources are not extensively found in the entire region like *tendupatta*. I transcribed the data collected from the micro-studies from Nimari, the local dialect to Hindi and then into English through Express Scribe and coding was performed by employing Atlas software. For the qualitative analysis, field notes, interviews with

officials and case- studies narratives were examined. These helped in understanding the production and distribution process of various extractive resources and investigate every actor's role in it. Summaries of the result, from both surveys and interviews, are presented below.

RESULTS

This sub-section investigates how new rules-in-use as a result of compensatory conservation affect the micropolitics of *tendupatta filière* thus altering the access to forest resources. Based on quantitative data, three aims are examined. First, I examine the *tendupatta filière* within the ONPC. Secondly, I examine social and political institutions within the *filière*. Thirdly, I identify and analyze politics of the *tendupatta* production and distribution process.

Tendupatta Filière

Tendupatta is used for making localized cigarettes called *bidis* which are sold in India as well as internationally such as in Pakistan, Sri Lanka, and Bangladesh. In the proposed ONPC, the resource-users belonging to different social groups have been extracting *tendupatta* since many years. It is the most profitable resource extraction within the region (Tables 5.1 and 5.2).

Table 5.1 *Tendupatta* collection in Khandwa district in the ONPC ranges

Range	Year	<i>Samiti</i>	<i>Phad</i> (Collection center)	Total <i>tendupatta</i> collection (<i>Manak bora</i>)*
Punasa	2004	Richpal	Village D	326.700
	2005			245.300
	2006			174.950
	2007			191.680
	2008			-
	2009			107.850
	2010			-
Moondi	2004	Udaypur	Village C	-
	2005			248.900
	2006			83.055
	2007			589.750
	2008			527.665
	2009			331.450
	2010			610.510
Chandgarh	2004	Village A	Village A	246.850
	2005			-
	2006			53.865
	2007			-
	2008			188.860
	2009			230.150
	2010			-

Source: Fieldwork 2009-2010

*1 *manak bora* = 1000 bundles; 1 bundle = 50 leaves

Before 1964, *tendupatta* extraction was done privately by landowners and sold it to *bidi*-making businesses independently. To stop illegal extraction of *tendupatta* from government and forest lands, safeguard extractors' interests against exploitation and to increase the state revenue, in 1964 *tendupatta* extraction was nationalized. Under this policy, the *tendupatta* producing forest areas were divided into forest compartments, in such a way that from each compartment, the maximum extraction can be 2500-3000

manak boras (1 *manak boras* = 50,000 leaves or 1000 bundles). For each forest compartment, procurators were appointed who helped at the collection centers or *phads*.

Table 5.2 Details of *tendupatta* collection in Dewas district in the ONPC ranges

Range	Year	<i>Samiti</i>	<i>Phad</i> (Collection center)	Total <i>tendupatta</i> collection (<i>Manak bora</i>)*
Punjabura	2005	Palasi	Village F	831.340
	2006			954.400
	2007			894.650
	2008			771.705
	2009			686.070
	2010			660.225
Punjabura	2005	Ratanpur	Village E	207.130
	2006			251.775
	2007			524.920
	2008			518.750
	2009			503.050
	2010			327.750

Source: Fieldwork 2009-2010

*1 *manak bora* = 1000 bundles; 1 bundle = 50 leaves

In Madhya Pradesh, the organizational structure includes Minor Forest Produce is the apex body, district forest product organization in the middle (total 60) and primary forest produce cooperatives (total 1066 in number) at the local level (Figure 5.3). In 2004, some changes were introduced in the *tendupatta* policy that included provision of storage and transportation facilities to the suppliers. Some of the benefits provided to the extractor include umbrella, wall clock, slippers, rechargeable torch and carry bags. In

addition, health insurance was provided to about 1.505 million extractors from ages 18 to 60, based on a new plan introduced in 1991.

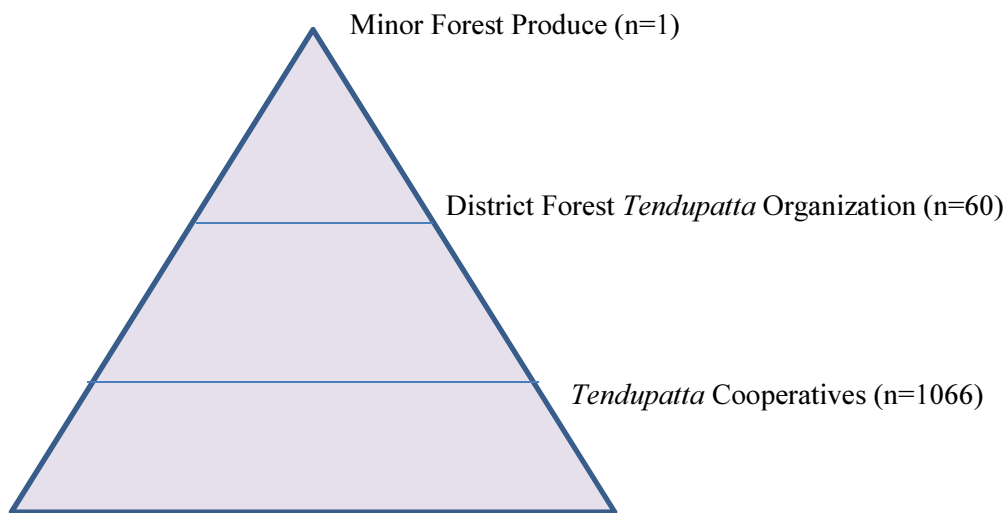


Figure 5.3 Organizational Structure of *Tendupatta* in Madhya Pradesh

Madhya Pradesh is one of the several central states where state regulates *tendupatta* extraction for private businesses. Though seasonal, extraction of *tendupatta* is a significant economic activity in the region as it generates substantial income for the extractors (Table 5.3). Based on the household data collected during fieldwork, it is evident that different villages generate different revenues from *tendupatta* sale based on mainly geographic proximity to the forest as well as the road. From the table 3, it is

obvious that within the proposed ONPC region, villages B, D and A generate the maximum income from the extraction of *tendupatta* respectively.

Table 5.3 Details of village-wise *tendupatta* sale

Villages	Total households	Average number of <i>tendupatta</i> bundles sold	Average money generated (in US\$) per Household
A	19	2528	31
B	36	4235	52
C	34	976	12
D	40	492	6
E	36	1339	16
F	39	3282	40

Source: Fieldwork 2009-2010

Note: Decimals have been rounded off. Exchange rate 1US\$ = INR53

The entire season of *tendu* leaves commercial extraction ranges from mid-March to early June in Khandwa and Dewas districts of Madhya Pradesh. The process starts by auctioning tenders for the state forest compartments for the extraction of *tendu* leaves by the state forest department. For this purpose, tenders are invited from several industrialists who have established *bidi* factories in India. A list is then generated and numbers of forest compartments are allotted to each one of them. The success rate of the extraction of *tendu* leaves or fulfilling their estimated quota depends on the quality of the

forest. Due to regional differentiation, southern part of Madhya Pradesh extracts more *tendupatta* than the northern part. Each village or a group of smaller villages, depending on the total number of households, has a *samiti* or a *phad* (collection center).

In the month of March, the contractors visit the forest areas which they have been awarded. Accompanied by the local forest department officials, they recruit a group of villagers to prune the *tendu* shrubs. It is not clear how few extractors are selected from the entire village by the ONPC officials for the pruning process (Figure 5.4).

Primarily, during the pre-season work, women and children are involved in the extraction of *tendu* leaves. They work from morning till late afternoon pruning every *tendu* shrub in the allotted forest compartment for roughly 7-10 days. They are paid a fixed rate of INR35 (less than US\$ 1) per day for their work.



Figure 5.4 Filière of Tendupatta

During the pruning season, the forest officials often ask village workers to prune the *tendu* shrubs particularly in the areas closer to the forest paths/trails (*pagdandi*). The workers are not instructed to prune the shrubs located interior-wards from the forest paths. This constitutes a major concern for the contractors. In absence of proper pruning, depending on the poor quality of leaves and the forest compartments, they are, sometimes, not able to fulfill their total quota. As one villager explained -

“Contractor takes contracts of different *samiti*. Cutting [pruning] is supervised by the contractor. Contractor doesn't come here, his manager does. What they do is, they hire daily labor from the villages. They don't get the cutting done carefully. They get the areas cut that are closer to the village. Work just maybe one day and that's it. If they get the cutting done properly, then it will be good. We can pick more leaves then. The villagers are paid for the cutting that they do in maybe one, two or three days. This time cutting for only two days was done. In their attendance register, they mark the presence of the villagers for ten days but in reality the work is done only for two days.”

On the other hand, according to a contractor, forest officials and their elected representatives *phadmunshis*, are to be blamed-

“no, their *phadmunshi* don't give their last payments...see it's because they are poor laborers, forest officers and *phadmunshi* together take most of the money.”

From mid-march till mid may, the *tendu* shrubs are allowed to grow. The forest officials regularly check the growth of the *tendu* leaves and when satisfied would declare the extraction season open. From each household, the adult male and female members collect the *tendu* leaves. It was observed during the fieldwork that households that have large agricultural fields generally do not engage in *tendupatta* extraction. They go to the forest at dawn break and engage in picking of the *tendu* leaves for 2-3 hours. The collection workers travel as much as 4-6 kilometers one way from their village to the interior forests to pick the *tendu* leaves. After each member of the household has collected enough to make at least 100-200 bundles (1 bundle=50 leaves) or about 10,000 leaves, they return back to their houses. Leaves are counted and tied into bundles of 50.

Since most of the times, the workers are illiterate, they often miscount the leaves in the bundle as a result of which they are not paid for that bundle.

“There are less leaves in it, and they cut money for it. We do full labor and hard work and then they won't accept it. They cut money from the full pay and give us..... (Inaudible). What do poor people do, because of INR200-300 [USD 4-6], we can't sleep. We have to go so far into the forest to get these leaves”.

Each worker is paid a fixed amount of INR65 (about 1.50 USD) for every 100 bundles he/she makes. On an average, each household makes about 200-700 bundles in a day, depending on the family size. Once the bundles are made, the bundles are taken to the *phad* and are handed over to the *phadmunshi* or the collection agent. *Phadmunshis*, a male member, are selected by the forest department and elected by the villagers.

During the fieldwork, I observed that each household that engages in the extraction of *tendupatta* are required to hand over five extra bundles of *tendu* leaves. This means for every 105 bundles that the extractors present to the *phadmunshi*, they receive US\$ 1.22. Generally, US\$ 1.22 is paid to the extractors per 100 bundles. When asked for clarification, the *phadmunshi* acknowledges this and argued that this is the general rule since many years. An ONPC official said that “when there is a loss and *tendupatta* quota cannot be fulfilled, these extra bundles make up for the loss”. This implies that during the extraction season, each extractor has to pick about 500 extra leaves to make such extra bundles.

Once the bundles are handed over to the *phadmunshi*, he takes them to a fallow agricultural field in the village and spreads them over in neat rows so that the leaves can dry. Once the leaves are dried, they are handed over to the contractor/manager at the designated *phad*. Once the bundles reach the *phad*, they are sorted out and put into sacks. Each sack has 1000 bundles. Each sack is then marked. For this particular laborious task at the *godown* (storage unit), the manager/contractor hires trained people from Maharashtra. From the storage units the sacks are transported to the *bidi*- factories located in different parts of India. At such factories, *tendu* leaves are transformed into *bidis*. The profits from the whole process are generally distributed among the workers next year. There exist tension between the contractors and the workers due because of lower than expected distributions. According to a forest guard,

“If the contractor gets a profitable margin in selling the *tendu* leaves in the market, then he distributes about 50 percent of the profit among the villagers so that they are motivated to work better. In case, when there is no profit, then there is no bonus” (per.comm. Forest Guard 2010).

Due to regional forest differences and local differences in the targets for extraction of *tendupatta*, different villages receive different bonus amounts. The villagers are generally upset about the lack of profits. Because they are illiterate, they do not understand the whole process and those *tendupatta* contractors are different from the forest officials (government). As one villager said,

“We listen to others who tell us that bonuses have been given in this village and that village, then we tell them they (officials) say that other people are making a fool of us.

When bonuses haven't been released from higher offices how can we give you? That's what they tell us. See, government is only one, right. So when government has released the bonus then why haven't we got it yet? All these forest guard, deputy *sahab*, ranger - they all cut money from the bonus and distribute leftover money to the villagers.”

From the above, it is clear that there is significant tension among the extractors and the managers who represent the contractors. One of the main reasons for is that the *phadmunshi*, selected by the ONPC officials or the earlier forest officials, is given power over the extractors. He has the authority to reject or accept any bundle if it does not look good and this creates social tension among the villagers, and it is thus open for corruption.

Relations Across *Tendupatta Filière*

Within the *tendupatta filière*, there are four main actors – extractors, *phadmunshi* (collection agent), ONPC officials and contractors and their managers.

Extractors

Extractors from same villages usually belong to similar social groups (Table 5.4). Low level of competition exists among the villagers. Fearful of the wild animals, particularly the wild bear, villagers tend to stick together and go into the forest as a group. Generally,

all *bais* women go together to extract *tendupatta* or fuelwood or any other forest resources.

“If someone from the neighborhood is going, I go with them. With all the men in the neighborhood, we relate ourselves to them, and ask them to accompany us to the forest. If another *bai* goes, then we go together. Those you like in the village, you go with them.”

Another woman from the village, emphasizing the role of men, said -

“*bai* go to the forest. Men don't go to the forest for the *tendupatta* plucking. If men go, then we get leaves for about 100 bundles otherwise if only we go, then we (*bais*) go, then we get leaves for about 50-60 bundles.”

She further explained that –

“If my husband is here at home, then I prefer to go with him. He climbs trees also. I can't. He lops the branches of *tendu* tree, when the branch falls down to the ground, I pick up what I need and leave the rest there. Cutting is not done well in this forest. That's why we can't pluck many leaves.”

Table 5.4 Income generated by *tendupatta* across different socio-cultural groups

Socio-cultural Groups	Income from <i>Tendupatta</i> (US\$)
<i>Adivasi</i>	4,651.47
Non- <i>Adivasi</i>	550.06

Source: Fieldwork 2009-2010

Note: Decimals have been rounded off. Exchange rate 1US\$ = INR53

Phadmunshi/ ONPC officials

Phadmunshi (collection agents) are the selected appointees of the ONPC officials. It was noticed during the fieldwork that in most of the cases, same person has held the post for more than 5 years. The main role of ONPC officials is to administer the entire process of pruning and extraction of *tendupatta* to safeguard the interest of extractors from the contractors. *Phadmunshi* and ONPC officials are combined here together as a single category because although *phadmunshi* work under the officials, they do not have any decision making power other than accepting or rejecting the *tendupatta* bundles. They both share a contentious relationship with the villagers/ extractors. The villagers complained that officials do not educate them well about the selection of each *tendu* leaf during plucking and then the bundles are rejected by the *phadmunshi*.

“There is no separate meeting. The forest people give us advice when the season start, when we go to the forest to pluck leaves. They don't organize a meeting particularly to give advice.”

Further the villagers complained when asked if they receive the money that they are promised for *tendupatta*, they said -

“No, the rate they tell us doesn't match with what they pay us. For the cutting [pruning] they said they will pay us US\$ 1.5 but they gave us only US\$ 1.”

Contractors/Managers

Contractors merely act as mediators between the ONPC officials and the *bidi* business-owners. These business owners prefer *tendupatta* of specific size for making *bidi*. At times, they supervise the pruning process and educate the extractors about quality of the leaves. Often there is a conflict between the extractors and the contractors related to the meetings arranged prior to *tendupatta* season to educate them (Table 5.5). A small proportion of households (22.5 percent) stated that before the *tendupatta* season begins, no meetings are held either by the contractor or the ONPC officials. As a result, they are not well-advised about the quality of the leaves. This results in extraction of undesirable leaves (red, small or torn) which are then thrown away by the *phadmunshi*.

Table 5.5 Households' stance on whether properly advised or not

Villages	Total Households	Total households that agree meetings were held	Total households that agree meetings were not held
A	19	17	2
B	36	24	12
C	34	23	11
D	40	31	9
E	36	29	7
F	39	30	5

Source: Fieldwork 2009-2010

In addition, for *tendupatta* extraction, there is another category of extractors called 'camping laborer'. These extractors belong to peripheral or distant villages. They are hired by contractors to work in specific deep pocketed forest areas that are away from the inhabited villages. Consequently, these laborers move with their families and temporary belongings and live in make-shift camps as a group. The need to mention about camping laborers is important in the context of the ONPC because this group will lose significantly when the ONPC is fully operational as a protected area. Restrictions will be imposed on taking camping laborers to deep pocketed forest areas, which will then come under core park area where all activities need to be banned. Some of the camping laborers were observed during the fieldwork but were not interviewed as none of them belonged to the study-specific villages.

DISCUSSION

Tendupatta is the mainstay economic activity of the forest communities in proposed ONPC. Like any system, there exist conflicts and harmony regarding the different production and distribution processes among the different social actors. For most of the extractors, their social lives are surrounded by around such economic activity.

Main findings of this paper include (1) *tendupatta* is the most profitable resource extraction within the ONPC, (2) based on close proximity to the road and forest, different villages generate different revenues from *tendupatta* sale, (3) conflict exists between contractors and the park officials due to inadequate pruning of the *tendu* shrub which implies less production of *tendupatta*, (4) villagers also have difference with the contractors that include low pay for the extraction of *tendupatta*, (5) based on geographic proximity and forest condition, different villages receive different bonus amounts, (6) *tendupatta* is extracted by both men and women, and (7) *adivasi* generate more income from *tendupatta* extraction than non-*adivasi*.

Conflicts exist between extractors and forest officials, *phadmunshi*. Lack of proper adequate pruning practices adopted by the forest officials can be considered a form of resource control as it affects the quality of *tendu* leaves extracted which means more susceptible to bundles being rejected by the *phadmunshi*. As stated earlier, forms of access and control as well as cognition (one person's accumulation is another person's degradation) influence how people manage and use resources. Unsustainable practices of extracting *tendu* threaten the forest quality, particularly its ability to regenerate. This

hinders the forest officials in their main objective of conserving and protecting forest and its resources. Moreover, forest degradation also signifies loss of income from *tendu* extraction.

Once the ONPC gets notified, *tendupatta* collection will be stopped. For the *filière*, notification of the ONPC would signify (1) loss of main source of income for both the state and the local communities, (2) different conflicts among the stakeholders, related to the extraction of *tendupatta*, will cease to exist and hence will change their social relationships, for better or worse, (3) losing this source of income would imply less focus on the forest degradation, which would have been otherwise done to improve the quality of the *tendupatta*, (4) local people, particularly *adivasi* would seek additional employment elsewhere to supplement their household income which is more likely to be from off-farm sources, (5) as *adivasi* are the main benefactors of *tendupatta* extraction, they are most vulnerable to this change, (6) loss of social capital, otherwise gained during the extraction process, and (7) notification of the ONPC would imply less interaction between the park officials and the communities which would result in more rigid implementation of forest rules.

The implications are wide-reaching. First, the *tendupatta* is an important wage labor that involves largely all members of the household including the children. With the entire family working to produce maximum *tendu* bundles in a day, more income can be generated. Rejecting the *tendu* bundles, the *phadmunshi*, threaten not only the household income but also the exchange labor value. Secondly, both *tendupatta filièrè* and forest

access is controlled and managed by the state. Change in state policies implies a shift in access to resources in context of both *tendupatta filière* and forest resources. This will largely affect the *adivasi* as they are the main economic beneficiaries of *tendu* extraction. Thirdly, social interactions during the labor process will be affected and it would make the forest communities vulnerable. In absence of trust, cooperation and support from the contractors and the forest officials, the communities tend to strengthen themselves. For instance, when few neighborhood women travel together into the far stretches of the forest, they talk and through such processes, social networks and social capital are formed. Under such situations, locals get a chance to discuss about every topic ranging from previous day's activities, new job opportunities, visiting family, cultural festivals, etc. Subsequently, it seems clear that successful social relations among different forest communities would result in disturbing state's capitalist and power-oriented territorial goals to bring in the era of development in the region and vice-versa. This could result in commodification of social institutions where a common place, in this case, the forest is removed from the equation which is the foundation for constructing social networks and social capital through trust and cooperation. Space is defined by its social characteristics that are embedded through different social practices and processes. This is threatened by further creation of protected area. This discussion leads back to people versus park debate – conservation of biodiversity or development of societies.

Territorialization as a resource control strategy can have profound effects on the local social dynamics. Control and command type of ideology, as adopted by the state, also leads to social tensions among the different actors. It creates conflicting identities of 'us

versus them'. For instance, the *adivasis* villages identify themselves as different from the ONPC officials. Due to the implementation of the new territorial rules, a new category is created in the productive economic space of proposed ONPC - domination versus subordination. Perhaps not in its crudest form, but subtle instances of this new relationship are emerging. Different forms of reactions to territoriality are also emerging. Instances of manipulation, free rides, bribery and corruption are widely evident. Extraction of forest resources are often accompanied by such reactions from either actors.

CONCLUSION

This section examined the *tendupatta filière* within the proposed Omkareshwar National Park Complex in Central India. Then, it analyzed the interaction of the social relations embedded within these *filières*. Conflict exists between different stakeholders. Struggle between contractors and the park officials exist due to inadequate pruning of the *tendu* shrub which implies less production of *tendupatta*. Villagers also have difference with the contractors that include low pay for the extraction of *tendupatta*. Based on geographic proximity and forest condition, different villages receive different bonus amounts. *Adivasi* generate more income from *tendupatta* extraction than non-*adivasi*. Different forms of reactions to territoriality including manipulation, free rides, bribery and corruption are emerging within the social processes.

6. SUMMARY AND CONCLUSION

In recent years, an increasing number of biodiversity offsets have been created to compensate the negative aspects of the regional development projects. Such offsets cause the local communities to lose their access to, control of and the mobilization of the resources through new rules-in-use. The state, by participating in such projects, earns capital by reinvesting the seized commons' ecosystem services and resources.

This dissertation examined the political economic processes in the proposed Omkareshwar National Park Complex. Section one introduced the context of the problem and reviewed the biodiversity offset literature. It also included a brief overview of the Indian Forest Conservation. Section two included the research design and thus was divided into two parts. The first part described the history of the Narmada dam development in the region and consequent development of the ONPC, followed by a description of the six selected village communities. This was followed by detailed segment on methodology that included data collection and data analysis. Section three focused on the income dynamics across different socio-cultural groups within the park. It studied the economic costs and benefits of the changes in access to and control of forest resources. Villagers, who own agricultural lands benefit from the creation of the ONPC as a biodiversity offset, while other villagers engaged in off-farm and NTFP extraction labor, are more economically vulnerable. It is found that higher the farm size, less percentage of total income is generated from the extraction of the NTFPs and vice-versa.

The data also illustrated that the different tribal groups depend most on the forest resource extraction.

Section four highlights how new rules-in-use affect the labor dynamics by altering access to, control and mobilization of forest resources. The result shows that labor work is paid through either cash incomes or reciprocal incomes. With increasing restrictions placed on the resource access and control, resource users are forced to travel outside their villages in search of wage labor. Hence, the process of privatization of the former forest commons (via ecotourism) will result in the commodification of labor.

The last section, section five, assesses the social relations through *tendupatta filière* approach. It investigates how territorial reorganization highlights inequalities among the resource-users as the producers and the state as the capitalist. Subtle identities of subordination and domination and ‘us versus them’ are created. Different forms of reactions to territoriality including manipulation, free rides, bribery and corruption are emerging within the social processes in the park area. In addition, there will be several repercussions when the ONPC gets notified, having an effect on both territoriality and the filière.

Different interactions with the rules-in-use result in different ways of shaping the landscape. Based on access regime framework as proposed by Jepson et al (2010), access does not only include institutions but also other arrangements that might affect social productions of landscapes. In the current context of ONPC as a biodiversity offset, access to forest resources can be defined not only through forest institutions but also by

changing labor patterns particularly gender, opportunities to generate income, introduction of technology and people's perception towards income generation. All these factors have an impact on the decisions taken by the resource users to access and mobilize of the forest resources.

It is critical to recognize and work towards conserving forest, not only for the conventional reasons but also to address the growing needs of the ethnic groups. This is critical especially as with the creation of ONPC as a protected area, more restrictions to control access to forest resources will be implemented. I suggest introducing economic incentives such as payments to the local communities to supplement their interest and efforts to conserve forest. This will help to achieve not only the conservation with poverty alleviation goal but also the purpose of creating biodiversity offset. Another suggestion is to re-introduce Joint Forest Management within the proposed ONPC which would give the local communities not only the accountability and decision making authority but also would help them to economically sustain themselves. Decentralization of the power and authority will overcome the economic and labor issues that are bound to change the economic and social dynamics of this region when the proposed national park complex becomes notified.

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APPENDIX

RESOURCE SECURITY MICRO-PROMPTS

Micro Case Study # _____

Name:

Village:

Education:

Tribe:

PHYSICAL ASPECT

1. What all do you collect from the forest? For subsistence/commercial

- *Tendupatta*
- Gum
- *Mahua*
- Fuelwood
- Others

2. What are your sources of income? Contribution to household income- Annual cash income from different sources – explain the sources like agricultural laborer, *tendupatta* picker, *mahua* seller, gum seller etc. OR off-farm activities like remittances, livestock, NTFP sale

3. Do you have agricultural land? How much?

Subsistence – *Mahua* and Fuelwood

Mahua –

1. Uses of *mahua* – which parts are collected – How to identify a good *mahua* flower/wood/fruit and a bad one
2. When do you collect *mahua* – how long does the season lasts- Do men of the house gather the *mahua* flowers or women/ children and why? quantity able to bring back – male/ female/children respectively – how do you feel about the wasted quantity if any?
3. Collection in self-organized groups- neighborly, women etc - Any rules that governs - How do you feel about collecting *mahua* in groups? -any threats while collecting *mahua* - collect *mahua* earlier but have stopped now? Why?
4. Are the flowers sufficient? How many do you collect? Is a basket load enough? How many times in a week do you have to go out to get sufficient flowers? How long do you collect *mahua*? (hours) Is it taking you longer to collect what you need? How many baskets of flowers do you need to make *mahua* drinks? (unit) - Do you also store *mahua* raw material / processed for future use
5. Do you also sell *mahua* – who do you sell it to – intra/inter – where do you sell it? How much do you get for it per unit? How would you feel if you are not able to sell your collection?

6. Role of *van suraksha samiti*/gram van samiti in collection/ processing/storage/market of *mahua*
7. Do you make the drink? Do you consume it? How many bottles are made in a day? (quantity unit) – number of bottles you consume in a day - how is *mahua* drink made? Is it good enough to make what you need- how are you using it?
8. Does someone hire you to pick *mahua* flowers? Do you hire someone to pick flowers for you? Do you get the labor cost? Does it add to your household income?
9. How do you use wood / *mahua* fruit – how many times in a year do you collect these – what do you use the *mahua* wood to build for – any restrictions from the forest officials
10. Collection of *mahua* – Processing of *mahua* flower/fruit/wood – in detail
11. Do you collect enough to fulfill your requirements in your household? What problems do you have in collecting these products for your family in your household? Are you able to fulfill your family's basic needs? How do you feel about fulfilling your family's basic needs?
12. Have you had to change (the ways) how you collect *mahua* – describe that - If there is change, how has change affected your use of *mahua* – make more drinks/ less drinks
13. How has the quality of your collection changed?

14. Has your collection changed over last 5 years? How has it changed? (increased/decreased) What problems has that change caused you? How do you feel about this change in the collection?

15. Any restrictions in the collection quantity of *mahua* - What do you feel? – does it interfere in your collection? Any restrictions on the movement of *mahua* parts - how do you feel about restrictions on movement of *mahua*- any restrictions on storage of *mahua*- how do you feel about restrictions on storage

16. How do you feel about the quality/ quantity that you get from the forest? Describe what do you feel when you collect - Describe what do you feel when you do not get your desired quality? How often do you feel the above emotions?

Fuelwood-

1. Type of fuelwood you use - its uses - How to identify a good fuelwood from a bad one

2. When do you collect fuelwood - daily/ weekly/bi-weekly/monthly - Who collects it - women / men / both - Do you have to walk farther for it – how much - How do you feel about it? How much has the distance changed over 1 year, 5 years, 10 years. - quantity able to bring back – male/ female/children respectively – store wood for future use

3. Collection in self-organized groups- neighborly, women etc - Any rules that governs - How do you feel about collecting fuelwood in groups? -any threats while collecting fuelwood - collect fuelwood earlier but have stopped now? Why?

4. Do you also sell fuelwood - Who do you sell it to – intra/inter – any particular species that you sell- where do you sell – how much do you get per unit? how would you feel if you are not able to sell your collection?
5. Use/access a nistaar depot? How do you feel about using nistaar depot - How much do you pay at nistaar depot - Has the cost changed at nistaar depot? Distance traveled to nistaar depot
6. Role of *van suraksha samiti*/gram van samiti in collection/ processing/storage/market of wood
7. Do you collect enough to fulfill your requirements in your household? Are you able to fulfill your family's basic needs? How do you feel about fulfilling your family's basic needs?
8. Have you had to change (the ways) how you collect fuelwood – describe that - If there is change, how has change affected your use of fuelwood
9. Have you changed the types of fuelwood that you collect?
10. Has your collection changed over last 5 years? How has it changed? (increased/decreased) What problems has that change caused you? how do you feel about this change in the collection?
11. Any restrictions in the collection quantity of fuelwood - What do you feel? – does it interfere in your collection? Any restrictions on the movement of fuelwood - how do you

feel about restrictions on movement of fuelwood - any restrictions on storage of fuelwood - how do you feel about restrictions on storage

12. How do you feel about the quality/ quantity that you get from the forest? Describe what do you feel when you collect - Describe what do you feel when you do not get your desired quality? How often do you feel the above emotions?

13. Are you collecting enough good products? Are you happy with the resources that you collect from the forest?

14. What do you do in absence of wood / *mahua*? Do you still get to cook food?

15. Why do men and women go out to collect *mahua* but only women go out to collect fuelwood?

COMMERCIAL – *tendupatta*, bel leaves and gum

Tendupatta

1. Who collects– male/female/ both/ children - quantity able to bring back – male/female/children respectively - collection in self-organized groups- neighborly, women etc - Any rules that governs - How do you feel about collecting *tendupatta* in groups? -any threats while collecting *tendupatta* - how do you feel about the wasted quantity?

2. When do you collect *tendupatta* (season)? Engaged in pruning, collecting and drying activities before? Previous seasons? Since how many years have you been doing this?

3. Working for cooperative society or contractor – benefits received - how do you feel about not getting benefits? - Daily wage received – get promised amount or not? – how do you feel?
4. Role of gram van samiti/*van suraksha samiti* in collection/ pruning/drying/marketing of *tendupatta* - who controls the pruning activity
5. Relative household income from production of the *tendupatta* increased, remained stable, or declined over the previous decade? How do you feel about this change? previous year's income from *tendupatta* collection
6. Do you also sell *tendupatta* - Who do you sell it to – intra/inter market – how much do you get per unit? How would you feel if you are not able to sell your collection?
7. Collection and processing of *tendupatta* – in detail
8. Have you had to change (the ways) how you collect *tendupatta* – describe that - If there is change, how has change affected your use of *tendupatta*
9. Has your collection changed over last 5 years? (increased/decreased) - What problems has that change caused you? How do you feel?
10. Do you collect enough to fulfill your requirements in your household? How do you feel about it
11. Restrictions in the collection quantity of *tendupatta* – what do you feel – does it interfere in your collection? Any restrictions on the movement of *tendupatta*

12. Does *phadmunshi* or contractor give you instructions about picking/ drying of *tendupatta* – who gives these instructions – what instructions are given?

13. How do you feel about the quality/ quantity that you get from the forest? Describe what do you feel when you collect - Describe what do you feel when you do not get your desired quality? How often do you feel the above emotions? How to identify a good *tendupatta* leaf from a bad one

14. Dynamics of quality/ quantity of collection- different for villagers n different for contractors

Bel Leaves

1. Uses of *belpatta* – how did you start this activity? How to identify a good *belpatta* leaf from a bad one

2. Who collects– male/female/ both/ children - quantity able to bring back – male/female/children respectively - collection in self-organized groups- neighborly, women etc - Any rules that governs - How do you feel about collecting *tendupatta* in groups? -any threats while collecting bel leaves - Did you collect *bel patta* earlier but have stopped now? Why? How do you feel about it? how do you feel about the wasted quantity?

3. When do you collect bel leaves (season)? Engaged in collecting and marketing activities before? Previous seasons? Since how many years have you been doing this?

4. Working for cooperative society or contractor – benefits received - how do you feel about not getting benefits? - daily wage received – get promised amount or not? – how do you feel?
5. Role of gram van samiti / *van suraksha samiti* in collection/marketing of belpatta - who controls it?
6. Relative household income from production of the belpatta increased, remained stable, or declined over the previous decade? how do you feel about this change? previous year's income from belpatta collection
7. Do you also sell belpatta - Who do you sell it to – intra/inter market – how much do you get per unit?- where do you sell it - presence of middleman or direct market - how would you feel if you are not able to sell your collection?
8. Collection and processing / marketing of belpatta – in detail
9. Have you had to change (the ways) how you collect belpatta – describe that - If there is change, how has change affected your use of belpatta
10. Has your collection changed over last 5 years? (increased/decreased) - What problems has that change caused you? how do you feel?
11. Do you collect enough to fulfill your requirements in your household? How do you feel about it

12. Restrictions in the collection quantity of belpatta – what do you feel – does it interfere in your collection? Any restrictions on the movement of belpatta – do you store belpatta – any restrictions

13. Do you get any instructions about picking of belpatta – who gives these instructions – what instructions are given?

14. How do you feel about the quality/ quantity that you get from the forest? Describe what do you feel when you collect - Describe what do you feel when you do not get your desired quality? How often do you feel the above emotions? How to identify a good *tendupatta* leaf from a bad one

15. Do you use these products for your home and family? In what capacity?

Gum

1. Type of gum that you collect -its uses - How to identify a good gum from bad one (quality)

2. Who collects– male/female/ both/ children - quantity able to bring back – male/female/children respectively - collection in self-organized groups- neighborly, women etc - Any rules that governs - How do you feel about collecting gum in groups? - any threats while collecting gum – how do you feel about the wasted quantity?

3. When do you collect gum (season)? How long does it lasts? Engaged in collection before? Previous seasons? Since how many years have you been doing this? Did you collect gum earlier but have stopped now? Why? How do you feel about it?

4. Working for self or cooperative society or contractor – benefits received - how do you feel about not getting benefits? - daily wage received – get promised amount or not? – how do you feel?
5. Role of gram van samiti / *van suraksha samiti* in collection/ marketing of gum
6. Relative household income from production of the gum increased, remained stable, or declined over the previous decade? How do you feel about this change? previous year's income from gum collection
7. Do you also sell gum - Who do you sell it to – intra/inter market – where - how much do you get per unit?- how would you feel if you are not able to sell your collection?
8. Collection of gum – Processing of gum– Marketing and preparation of gum
9. Have you had to change (the ways) how you collect gum – describe that - If there is change, how has change affected your use of gum
10. Has your collection changed over last 5 years? (increased/decreased) - What problems has that change caused you? How do you feel?
11. Do you collect enough to fulfill your requirements in your household? How do you feel about it

12. Restrictions in the collection quantity of gum– what do you feel – does it interfere in your collection? Any restrictions on the movement of gum– any restrictions on storage – how do you feel

13. Do you get instructions about collection of gum– who gives these instructions – what instructions are given? What are these instructions

14. How do you feel about the quality/ quantity that you get from the forest? Describe what do you feel when you collect - Describe what do you feel when you do not get your desired quality? How often do you feel the above emotions?

15. Do you use these products for your home and family? In what capacity?

CULTURAL/SUBJECTIVE ATTITUDES

1. Are you concerned about obtaining fire fuelwood wood, leaves like *tendupatta/mahua* in the near future? Why? How would you feel if that supply is threatened – how often do you feel this way?

2. How do you feel if you are not able to earn your daily wages? What do you feel regarding your inability to meet daily needs social norms? How often

3. What do you feel if there is a resource shortage? If the forest is closed to you for a day? – how often - Any restrictions in resource collection/use due to social structures – how do you feel about it? - How do you feel if you have a shortage of fuelwood and you request your neighbor for a loan and she refuses you?

4. Have you ever collected resources from the forest illegally- when – were you punished by forest officials – what was fine- how do you feel about it?
5. How do you feel that you have to work so hard to collect the resources, taken care of your family and earn money? -
6. Do you use any resources from the forest (wood, leaves, *mahua*,etc) for any festivals? If yes, name them. What role does it play in the festivals? What do you do if a particular resource is not available? How would you feel if you are unable to meet social norms?
7. Any particular specie of wood that you don't use in your society. Why?
8. Is there any resource (wood, leaves, etc.) that you consider sacred? Do you worship it? Why do you think it is sacred?
9. Is there any other resource that you consider evil and hence don't use it? Why do you think it is evil? How do you feel about it?
10. Is there any resource that you use for medicinal purposes? Name them. How do you use it?
11. Do you use any resource during your cultural functions like marriage/death/ birth of a baby? What is its significance? How do you use it? If that particular resource is not available, then do you have any preferred alternatives? How do you feel if a particular resource is not available? Does it hurt your cultural sentiments?

12. How is the relationship between you and your mother-in-law (MIL)/ you and your daughter-in-law (DIL)? Do you both go to collect the resources from the forest? Does your MIL or DIL scold you when you don't go to forest to collect the resources due to health reasons? How do you feel In case you don't get the desired wood (both quality and quantity), do you get scolded by anyone in your family- Mother-in-law or husband? How do you feel

13. What does wood or NTFPs like *mahua/tendupatta* mean to you? What significance does it have for you?

14. What does your husband do? Stay-at home/work Where does he work? Does he shares the profits of his work with you? How much? Does he have a share in your profits? How much? If he doesn't help you- how do you feel?

15. Does he go with you to the forest to collect the resources? If yes, How often? How do you feel when he accompanies you? And alternatively when he doesn't ?

16. Resource most important to women and why - Resource most important to men and why

RELATIONAL ASPECT

1. Has the distance you have to travel to collect the *mahua* and fuelwood changed over the past several seasons? If so, why do you think? Do you feel frustrated when you have to travel farther?

2. Are the *mahua* and fuelwood available to you without any restrictions? Fuelwood and *mahua* – subsistence – break down by products
3. How do you feel about collecting *mahua* / fuelwood?
4. How would define quality – in Hindi and Nimari terms
5. Organization of groups - are they organized by external agents? How do these groups work? Who are the members of these groups? Any certain name given to these groups? Do they organize themselves in similar or different fashion for different resource collection? Have they changed? What are the different changes that they have undergone over last several seasons? Are they organized tribe-wise? Any social tension in organizing the groups?
6. Any social exchange of any resources– reciprocal exchanges
7. Are there local, i.e., traditional or customary, nonstatutory, rules governing access to and management of the product? Answer yes or no.
8. Do these rules promote equitable access to the resource? If not, which groups dominate resource access? Do these rules affect total production?
9. Are state laws and traditional (local) rules conflicting, complementary, or neutral to each other with regard to the product in question?

FOREST PROTECTION COMMITTEES (VAN SURAKSHASAMITI)

1. Name of FPC (if any)
2. Year of establishment
3. Does your organization have any members? Yes/No
 - a. If yes, how many? Are these members from this village or outsiders?
 - b. If no, why no members?
 - i. Then who are included as members?
4. Explain (in your own words) what is *van suraksha samiti* ?
5. How are members elected in *van suraksha samiti* ?
 - a. Is the decision based on caste/class/age/sex/experience/other (specify)?
6. Describe the process of selection of members
7. Describe the history of *van suraksha samiti* in this village
8. Explain the powers of *van suraksha samiti*
 - a. Rules and regulations of *van suraksha samiti* (for governance)
 - b. Details of duty and responsibility involved
9. How many offences are recorded each year?

- a. Details
- b. Types of offences and their statistics
- c. Details of fines and punishments

10. What is the hierarchy of *van suraksha samiti* upto state level?

11. Is there any other branch of *van suraksha samiti* in this village such as Mahila (Women) *van suraksha samiti* etc?

12. Describe the types of activities allowed in the forest

- a. What are the limits to their activities?
- b. What punishments or fines are offered in case of offences?
- c. Can people harvest any forest produce for - subsistence/commercial
- d. Who can harvest the forest produce –
 - i. members only (as outsiders)
 - ii. members as villagers
 - iii. nobody
 - iv. with special permission

13. Is there any local participation to protect the forest and its produce? Explain

14. What powers reside with you?

15. Enumerate anthropogenic burdens on the forest, if any.

16. How would rate the village's *van suraksha samiti* as a forest protection program?

Successful/ average/ failed

17. Salient features of *van suraksha samiti*

- a. *van suraksha samiti* managed area (in hectares)

per household/ per person/per cattle unit
- b. reserved forest in the vicinity of the village
- c. type of forest
- d. status of forest in terms of degradation
- e. women's involvement in terms of forest management

18. Since how many years have you been elected the president of *van suraksha samiti* ?

How many times?

19. After how many years the samiti members are elected?

20. Can anybody become a member of *van suraksha samiti* or does it require any special skills/situation?

21. Are there any reserved seats for women? How many?

22. How many women presently hold membership of *van suraksha samiti* ?

23. Relationship with the forest department before and after the JFM

24. Benefits of *van suraksha samiti* to village

25. Rules of forest product distribution used

26. Your experience of forest –related conflicts

27. Do you think that *van suraksha samiti* is able to unite the village and forest department?

28. How does the committee deal with the people who don't participate?

29. How often meetings are held?

30. How often do you attend meetings?

31. Do you feel that the economic benefits from the *van suraksha samiti* activities are adequate?

32. Nature of forest before and after the JFM activities

33. Who should own forest land? Why?

JFM committee, village panchayat, forest department

34. Any powers you think should or should not be given to the *van suraksha samiti* ?
Why?

35. How many women from this village participate in *van suraksha samiti* activities?

PANEL SURVEY

Name:

Village:

Present harvest activities

- Agriculture
- NTFPs

I Demographic

Family size

Criteria	Family Members								
	1	2	3	4	5	6	7	8	9
Relation to the respondent									
Age									
Gender									
Education									
Occupation									
Contributes to household Income									

Note: (First member being the interviewee)

1. Livestock Yes/ No

2. Types of animals maintained Cow Buffalo Goat Hen Other

3. Number of animals maintained Cow Buffalo Goat Hen Other
4. Place of livestock grazing
5. Access to agricultural land Yes / No
6. Agricultural land holding owned (acres)
7. Number of times crops are grown in a year: Single-crop/Two-crops/Three
crops/More
8. Crops grown
9. Caste/Tribal group
10. Religion
11. Total number of workers in the household
12. Total number of non-workers in the household
13. Distance to road (in kms.)
14. Distance to forest (in kms.)
15. Household mode of transportation

16. Type of house

- a. Exterior
- b. Roof
- c. Interior

17. Top 3 concerns of your household: _____; _____; _____

18. How many people regularly eat in this house? _____

19. Has this number changed in the last five years? _____

20. Does anyone who is not a family member regularly eat or cook food in this house?

21. Do you receive benefits as part of any government program? Yes/ No

22. Describe the benefits

(Name the government programs, year and details)

II General Economics

a. Non Timber Forest Products

1. What do you collect?

NTFPs	Subsistence	Commercial	Uses
<i>Tendupatta</i>			
<i>Mahua</i> a. Flower b. Toli (fruit) c. Wood			
<i>Gond</i> (Gum) d. <i>Dhavda</i> ▪ Wood ▪ Gum e. <i>Kullu</i> ▪ Wood ▪ Gum			
Fuelwood			
<i>Belpatta</i>			

2. NTFPs collected without any restriction: _____

3. NTFPs that have restricted access: _____

4. Month- wise collection of NTFPs in a year

Month	Non-timber forest product collected / Actions performed	Amount of NTFPs collected	Time Spent in collection
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

5. Do you process any NTFPs that you collect? Yes /No

6. If yes, then name the particular NTFP and explain how you process it

7. How many units are produced after processing?

8. Sale of NTFPs (previous year)

NTFPs	Amount of NTFPs collected	Sold to	Price received for each sale
<i>Tendupatta</i>			
<i>Mahua</i> a. Flower b. Toli (fruit) c. Wood			
<i>Gond (Gum)</i> <i>d. Dhavda</i> ▪ Wood ▪ Gum <i>e. Kullu</i> ▪ Wood ▪ Gum			
Fuelwood			
Belpatta			

9. Different parts of trees used as NTFPs

NTFPs	Name the different parts of the tree that are collected
<i>Tendupatta</i>	
<i>Mahua</i>	
<i>Gond (Gum)</i> <i>a. Dhavda</i> <i>b. Kullu</i>	
Fuelwood	
Belpatta	

10. Different species of fuelwood collected

Species	Collect	Do not collect	Uses/ Benefits
Dhavda			
Sagon			
Kullu/ Kadhai			
Sagre			
Beeje			
Sejal			
Bille (billpatti wood)			
Anjan			
Khair			
Others			

11. Why do you use these particular species?

12. How often do go to collect fuelwood? Daily/ weekly / bi-weekly / monthly / other

13. Since how long have you been picking up the *tendupatta*?

14. How many family members are involved in picking *tendupatta*?

15. How many bundles are you and your family able to make in a season?

16. Have you been paid the entire sum that you have earned from *tendupatta* including cutting and picking? Yes/ No

a. If no, why not?

b. When was the last time you received the bonus?

17. Have your bundles been ever rejected by the *phadmunshi*? Yes/ No

a. How often? In last 5 years?

18. Have you ever worked as camping laborers? Yes/ No

a. If yes, did the contractor pay for your entire expense (accomo, food, travel)?

Yes/ No

i. If no, then who paid for your expenses?

ii. What difficulties did you encounter?

b. How much are you paid for your *tendu* picking services?

19. Do you feel you are correctly guided by the contractors and the forest officials about NTFPs collection? Yes/ No

a. If no, why not?

b. Agriculture

1. Do you cultivate for subsistence or commercial purposes?

Subsistence/Commercial/Both

2. Do you have irrigated land? Yes/ No

3. Sources of irrigation

4. Do you work as a laborer on another's agricultural land? Yes/No

a. Do you get work as an agricultural laborer throughout the year? Yes/No

b. If no, then list the months that you get work

c. How much are you paid each month if you work as a laborer?

5. Do you engage any laborers to work on your agricultural land? Yes/No

a. If yes, do the same laborers work on your agricultural land throughout the year?

Yes/No

i. How much do you pay them?

ii. Is this pay fixed throughout the year? Yes/No

iii. Do these laborers belong to your village? Yes/No

b. If no, then who works on your agricultural land?

c. Off-farm activities

1. For labor work, do you have to travel outside your village? Yes / No

2. How many times have you traveled outside to get work?

3. How do you get to know about such activities?

4. Do these activities compensate cash income of your household enough? Yes/ No

a. If not, why?

III. Household Cash Income

1. Average daily income per household:

2. Number of people with regular income in your household:

3. Sources of household income

Contribution from	Gross Annual Income
Agriculture a. Kharif b. Rabi c. Livestock	
Off- Farm activities a. Remittances b. Development activities • Forest department • Village Panchayat c. Trading activities d. Other services (sale of products)	
NTFPs a. <i>Tendupatta</i> b. <i>Mahua</i> c. Fuelwood d. Belpatta e. Gum • <i>Dhavda</i> • <i>Kullu</i>	

4. Average Monthly Income from NTFPs

Months	NTFPs						No income
	Fuelwood	<i>Mahua</i>	<i>Tendupatta</i>	<i>Dhavda gond</i>	<i>Kullu gond</i>	<i>Belpatta</i>	
January							
February							
March							
April							
May							
June							
July							
August							
September							
October							
November							
December							

5. Agricultural land size and income generated

Land size	Crop Income	Off-farm income	NTFPs income	Total Income
Landless / marginal (0 to 0.5 ha.)				
Small (0.5 to 2.5 ha.)				
Medium (2.5 to 5 ha.)				
Large (more than 5 ha.)				

6. Average Monthly Income from other activities

Months	Agriculture	Off- farm					No income
		Development by village Panchayat	Development by FD	Remittances	Trading	Other services	
January							
February							
March							
April							
May							
June							
July							
August							
September							
October							
November							
December							

IV Fuelwood

a. Cooking

1. On a typical day how many times do you cook?

2. If you cook fewer than 3 meals a day, which meal do you cook for?

3. How many hours in a day do you spend your time in cooking?

4. What type of fuel do you use generally for cooking?

- Wood
- Cowdung
- LPG
- Other alternative fuel

5. Since how many years have you been using - tick all that apply-

- Wood
- Cowdung
- LPG
- Kerosene Stove
- Other alternative fuel

6. From where do you collect the dung to prepare cowdung cakes?

7. Can you substitute cowdung with wood and use it as a fuel for cooking, heating water? Yes/ No

- If no, why not?

8. Does the quantity of wood used vary depending on the season? If yes, how much?

Seasons	Increase	Decrease
Summer		
Winter		
Monsoon		

9. Has the amount of wood you use to cook with has changed over time?

- Last week
- Last month
- Last year
- Last decade

10. Does the quantity of cowdung vary with seasons? Yes/ No

11. How much does it vary?

Seasons	Increase	Decrease
Summer		
Winter		
Monsoon		

12. Have you ever used LPG for cooking purposes? Yes/ No

13. Name species of wood that you prefer for cooking and why

14. Name species of wood that you do not prefer for cooking and why

15. If you use cow dung, how much time does it take for you to prepare one?

16. Does the taste of food change with wood and cowdung?

b. Heating water

1. Do you heat water? Yes / No

2. For what purposes do you heat water?

3. How many times a day do you heat water?

4. Do you use wood or cowdung to heat water? Wood/ Cowdung

i. If yes, then how does the proportion of each vary with seasons?

Seasons	Wood	Cowdung
Summer		
Winter		
Monsoon		

ii. How much amount of wood do you use in each season?

Seasons	Amount of wood used
Summer	
Winter	
Monsoon	

c. Lighting House

1. Do you have to light your house at night? Yes/ No

2. How do you light your house at night? Tick all that applies-

- Candles
- Kerosene Lamp
- Electricity
- Battery operated torch
- Other source

3. For how many hours do you light your house with fuels?

4. Has the type of fuel you use to heat your house changed in the last 2 years?

5. How much amount of candles/kerosene/batteries do you use in a week?

6. Do you buy them at your local shop? Yes/ No

7. At what price?

8. If no, then how much distance do you have to travel to secure them?

d. Fuel Types

1. What type of fuel do you prefer for daily purposes? Why?

2. If you gather wood –

i. From where do you gather the wood? _____

ii. Do you always gather wood from the same place or from different places everyday? _____

iii. How often do you have to change your search locations? (weeks/months)

iv. How many kilometers do you have to travel to gather wood?

v. Who gathers the wood? _____

vi. Do your children accompany you? _____

vii. How many people from your household are involved in gathering the wood?

viii. How many days in a week do you go to collect the wood?

ix. How many hours do you spend in a day to gather the wood?

x. How does it change over seasons?

Seasons	Increase	Decrease
Summer		
Winter		
Monsoon		

xi. Do you gather different species of wood for different daily purposes like cooking, heating, etc.? Specify. _____

xii. How do you normally collect the wood? Tick all that applies-

- Pick up the fallen wood from the ground
- Cut branches of a dead tree
- Cut branches of a living tree
- Cut down a whole tree
- Other

xiii. How different is the situation from your parent's village?

Criteria	Own village	Parent's village
Easy availability of wood		
Easy availability of preferred species		
Distance traveled		

xiv. Have the distances to site from where you collect the resources changed over last -

- Week
- Month
- One year
- More than five years

xv. You walk more or less 5 kms. everyday to collect the fuelwood, how does that change

- your life _____
- daily lifestyle _____

xvi. Has the quality of your preferred specie of wood changed over last 5 years?

xvii. Has the density of the preferred specie trees changed over the last 5 years?

xviii. Do other people collect wood from the same site as you do? Yes/ No

xix. Has the number of people who collect wood from this site changed in last 5 years? _____

xx. How has your collection activities changed in the last 5 years?

3. If you sell fuels:

i. Have you ever sold cowdung? Yes/ No

ii. Who do you sell it to? _____

iii. How often do you sell cowdung? _____

iv. How much do you sell it for? _____

4. Other fuels-

i. Have you ever used coal to cook or heat water?

- How much coal do you use in a week?
- From where do you buy it?
- How much does it cost?
- Has the price of changed with time? Say in last 5 years?

5. Do you borrow wood in case you are not able to go into the forest?
6. Who do you borrow the wood from?
 - Your neighbor
 - Your extended family
 - Nistaar depot
 - Other
7. How do you generally transport fuelwood from the forest to your house?
 - Tractor
 - Bicycle
 - Bullock Cart
 - Walking
8. Have you ever used any of the following to transport fuelwood from forest to your house?
 - Tractor
 - Bicycle
 - Bullock Cart
 - Walking
9. Any particular tree species that was available earlier in the forest but not now?

V Resource Security

1. Collection and amount of NTFPs

NTFPs	Men	Quantity collected	Women	Quantity collected	Children	Quantity collected	Others	Quantity collected
<i>Tendupatta</i>								
<i>Mahua</i>								
Gum a. <i>Dhavda</i> b. <i>Kullu</i>								
Fuelwood								
Belpatta								

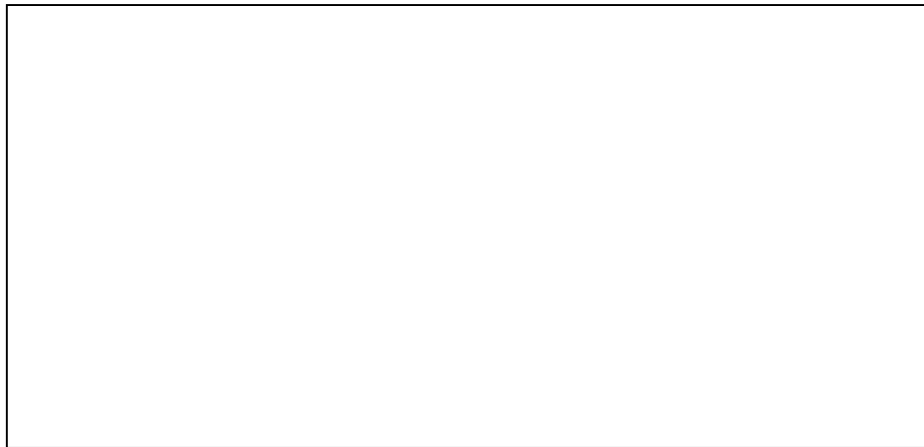
2. Distance traveled to collect these resources

NTFPs	Distance traveled(in kilometers)
<i>Tendupatta</i>	
<i>Mahua</i>	
Gum a. <i>Dhavda</i> b. <i>Kullu</i>	
Fuelwood	
Belpatta	

3. Do you collect the resources in groups? Yes/No
4. How do you organize the groups? _____
5. Has there been any conflict or social tensions within the group? Yes/No
a. If yes, please narrate the incidence. _____
6. Are you satisfied with the quality and the quantity of the resources collected?
Yes/ No
7. Have you ever used a nistaar depot? Yes/No

8. Do you have your own *mahua* trees? Yes/No
- a. How many? _____
- b. Do you visit the tree site every day for picking or stay there for entire time period? Visit everyday/ Stay
- c. Has there been any conflict concerning your *mahua* trees during collection season? Yes/No
- i. Narrate the incidence.
9. Was anyone from your household an officeholder in panchayat, cooperatives, forest protection committees, village protection committees? Yes/No
- a. Name the position. _____
- b. Who held this position? _____
- c. How many times? _____
10. How frequently do members of your household interact with-
- Forest guard (nakedaar)
 - Forest range officer
 - Forester
 - Other government officials

11. Benefits of JFM to your household
12. Your experience of forest –related conflicts
13. Do women from your household participate in JFM activities?
14. How often do you attend JFM meetings?
15. How often JFM meetings are held?
16. How many times have you proposed / opposed resolutions in the JFM meeting?
17. Your participation in the forest protection
18. In case of a problem, can you easily approach the forest officials? Yes/ No
 - a. Why not? _____
19. Draw a map based on your memory from your house to forest.



20. Are you concerned about obtaining fuelwood, *mahua*, *tendupatta* in the near future?
Yes/ No
 - a. If yes, why? _____
 - b. If no, why? _____

21. Resources for cultural use-

Activities	Resources collected from the forest	Uses/benefits
Festivals like Diwali, Holi		
Wedding ceremony		
Death ceremony		
Birth of a baby		

22. Tree species considered scared and why _____

23. Tree species considered evil and why _____

VILLAGE FORM

1. Name of Village: _____
2. Type of Village: Forest/ Revenue
3. Total tribes: _____
4. Name of the tribes: _____
5. Population of the village: _____
 - Total number of males: _____
 - Total number of females: _____
 - Total number of families: _____
 - Total number of households: _____
6. Total livestock:

Cow	
Goat	
Hen	
Bull	
Buffalo	
Others	

7. Total number of people literate:

- Total men: _____
- Total women: _____
- Total children: _____

8. Total number of people illiterate

- Total men: _____
- Total women: _____
- Total children: _____

9. Water supply: hand pump/well/other

10. Electricity supply: Yes/No

11. Primary school in village: Yes/No

12. Middle School: Yes/No

13. *Aanganwadi* (basic health worker): Yes/No

14. *Aasha karyakarta* (health worker): Yes/No (especially for pregnant women in village)

15. Number of households above poverty line: _____

16. Number of households below poverty line: _____

17. Number of active government policies (name them): _____

18. In past 10 years, how many government policies have been implemented? Name them. _____

19. How many families were benefited from these policies?

20. What were the benefits from each government policy?

Name of government policy	Benefits

21. Occupation detail

- Agricultural farmer: _____
- Laborer: agricultural/construction
- Dependent on forest resources: _____
- Families migrating to other places for work: _____