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**Title:** Understanding India’s forest bureaucracy: a review

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**Abstract**

Forest administrators play a crucial role in translating conservation and development policies into action, yet policy reformers and scholars rarely examine how these administrators make decisions about the implementation of conservation and development policy in India. In this paper, I address this gap. I begin by developing a framework that draws on western policy implementation studies and Ostrom’s Institutional Analysis and Development framework, and then apply this framework to a review of published studies that examine the role of forest officials in implementing public policies in India. The framework differentiates between formal and informal institutions and between institutions which are developed within an agency and those that are directed from outside the agency. I find that forester behavior varies significantly across space and time, and has an important influence on the outcome of forestry programs. Innovations and excellent program implementation appear related to foresters’ desire to demonstrate professional efficacy. On the other hand, many failings can be traced either to external direction, or to foresters developing internal institutions that are poorly suited to the problems they are tasked with solving. Existing research is limited in its geographic and temporal scope, and leaves many questions unanswered, and thus the review concludes with a brief outline of future research needs.

**Keywords**:

Forest policy, India, policy implementation, public administration, Institutional Analysis and Development

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1. Introduction

Government agencies play key roles in carrying out conservation and development programs, policing forest boundaries, enforcing regulations, and approving projects prepared by local governments or NGOs. In India, state forest departments have been widely blamed for forest degradation, biodiversity loss, the poverty of forest dependent peoples, and the shortcomings of a diversity of forestry programs – from protected areas to Joint Forest Management (JFM) (for recent examples, see [Springate-Baginski and Blaikie 2007](#_ENREF_97); [Saxena et al. 2010](#_ENREF_91); [Lele and Menon 2014](#_ENREF_48)). Unfortunately, existing research on conservation and development in India offers little explanation of why the performance of state forest departments is perceived to be disappointing, nor guidance on what can be done to address the problem. This paper utilizes a theoretical framework drawing on the Institutional Analysis and Development (IAD) framework and studies of policy implementation to organize a review of published reports of forest official behavior and propose directions for further research.

This review demonstrates that the behavior of forest officials affects the outcome of conservation and development programs. At the same time, the review highlights substantial knowledge gaps. Although written forest laws, policies, and programs have been widely analyzed and critiqued, we know relatively little about the implementation process. The high level of heterogeneity reported in different studies implies that rather than a monolithic Forest Department, local contexts are important in driving forester behavior. In order to utilize our knowledge of forester behavior to develop improved policy, we will need to develop studies that more explicitly examine how local contexts influence implementation, and thus drive forest outcomes.

2. Theory & Methods

One reason that existing research on conservation and development offers little guidance about the role of forest officials is that the dominant theoretical frameworks used to understand Indian forestry have little to say about the dynamics of government agencies. For example, conservation biologists focus primarily on the biological needs of species ([Singh and Bagchi 2013](#_ENREF_94)), while political ecologists highlight the impact of conservation on rural populations ([Springate-Baginski and Blaikie 2007](#_ENREF_97); [Sivaramakrishnan 2009](#_ENREF_95)). Government agencies have also been neglected in Indian political science, which tends to focus on elections and the dynamics of political parties ([Kohli and Singh 2012](#_ENREF_44)), while the academic study of public administration in India is underdeveloped ([Sharma 2008](#_ENREF_93)). The study of conservation and development across the tropics has also paid little attention to government officials, and does not provide readily made theoretical frameworks. Thus addressing this subject requires the development of a theoretical framework for understanding the behavior of government officials that is relevant to the context of Indian public administration & tropical conservation.

In this paper I utilize a theoretical framework drawn from the study of western policy implementation ([Pressman and Wildavsky 1973](#_ENREF_80); [Hill and Hupe 2009](#_ENREF_33)) and the IAD Framework ([Ostrom 2005](#_ENREF_69); [McGinnis 2011](#_ENREF_58)) to organize disparate reports about government officials in the forest policy implementation process in India. These well-developed literatures are synergistic: theories developed from four decades of policy implementation studies in western democracies provide a plethora of ideas about what *might* be important, but this literature lacks structure ([Matland 1995](#_ENREF_56); [Meier 1999](#_ENREF_59)), and has rarely been applied to the problems of developing countries. The IAD framework provides a coherent framework for thinking about how human decision-making across multiple levels affects social and ecological outcomes, and is thus an ideal complement to the policy implementation literature ([O'Toole 2000](#_ENREF_65); [Arnold and Fleischman 2013](#_ENREF_1)). While it has been widely applied to conservation and development policy (for example, see [Ostrom 1992](#_ENREF_68); [Ostrom et al. 1993](#_ENREF_70); [Gibson et al. 2005](#_ENREF_20); [Rastogi et al. 2014](#_ENREF_82)), it has rarely been systematically applied to studying government agencies’ role in tropical conservation.

The IAD framework directs the analyst’s attention to the action situation: a conceptual space in which individuals make decisions and take action. Action situations are shaped by institutions, which are understood to include rules, social norms, and strategies ([Ostrom 2005](#_ENREF_69)). Although influenced by the incentives these institutions place on individual behavior, people may react differently to institutions depending on their individual preferences, which can in turn be shaped by prior social experiences. Ostrom’s ([1990](#_ENREF_67)) work with common pool resource management highlighted the importance of paying attention to distinctions between formal (written) institutions and informal rules, norms and strategies which are not written down but nonetheless shape behavior. She also found that rules developed by the people within a given village, community, or organization often had very different impacts from rules imposed from the outside.

[Arnold and Fleischman (2013)](#_ENREF_1) draw on the distinctions between formal and informal rules and internal and external direction, as well as a synthesis of policy implementation literature, to develop a four-cell typology (see figure 1), which they find particularly useful for explaining how government agencies implement policies. Externally directed, formal institutions are called “imposed”, internally directed formal institutions are called “adopted,” informal, externally directed institutions are called “sly” and informal, internally directed institutions are called “tacit.” Figure 1 includes examples of the role of each of these institutions drawn from the account that follows.

**Fig. 1:** A typology of Institutions Developed Within Organizations (after Arnold & Fleischman 2013).

I structure this review around the four types of institutions developed within organizations, as represented in figure 1. This framework is useful because it draws on distinctions that are well established in theoretical literature drawn from other contexts, and draws attention to the sources of influence on forest officials (i.e. external versus internal direction), as well as the method of translating this direction into practice (i.e. formal versus informal institutional arrangements). Focusing on institutions, as opposed to examining the implementation of individual programs, allows me to highlight commonalities faced by forest officials across policy arenas. Much of the research discussed below is framed in terms of evaluations of particular policies, but a focus on institutional structure implies that forest officials may act similarly, regardless of the law they are implementing, if the structure of incentives within the organization is similar. Furthermore, the preferences of foresters, shaped by a uniform organizational structure, may also flow from one policy arena to another. In short, this framework gives us a method of thinking about the agency, as opposed to the policy.

The evidence presented here is drawn primarily from published studies of forest policy. A few of these studies focus specifically on the variables of interest in the review, but many other studies mention the decision-making of foresters only in passing. Thus the contribution of this paper is not only to synthesize research about Indian foresters, but also to add to this body of knowledge contributions made by scholars who have observed Indian foresters, but have not focused on analyzing them in their own writings.

3. Results

3.1 The structure of India’s forest bureaucracy

The vast majority of India’s forests – approximately 20% of its land area – are managed by state forest departments. These departments have their origins in 19th century British colonial governments. The Government of India Act of 1935 made forests a state subject, dissolving the centrally run Indian Forest Service (IFS) ([Forest Research Institute Dehra Dun 1961](#_ENREF_17)). Since 1935, each state has had a separate department – it is thus inaccurate to speak of a single “Indian Forest Department.” Central control began to be reasserted in 1965, with recreation of the IFS as an All-India service, although IFS officers serve in individual states. A series of laws passed in the 1970s and early 1980s – including wildlife protection laws, a constitutional amendment making forestry a “joint” subject (i.e. allowing the central government to legislate on forestry matters), and the 1980 Forest Conservation Act all increased central power over forestry matters, as have more recent grants-in-aid ([Chaturvedi 2012](#_ENREF_10)).

The actual structure of the state forest departments is not well documented in scholarly literature ([but see Fleischman 2012, for more detail](#_ENREF_15)). A representative organizational chart of a state forest department is included as figure 2. Each state’s forest department is headed by a Principal Chief Conservator of Forests (PCCF), assisted by senior staff, drawn from the senior-most IFS officers in that state. State forest departments are under the control of ministries led by a minister who is a member of the state legislative assembly, and staffed by senior bureaucrats who are not foresters. Most forest department staff work in the territorial wing of the state departments, which are organized in descending order into circles, divisions, ranges, sections, and beats. The size of these units varies somewhat between states. Circles are headed by a Conservator or Chief Conservator of Forests, generally an IFS officer with a minimum of 16 years’ service, and often encompass several districts. The circle primarily serves as an administrative linkage between the head office and the smaller divisions, but also contains staff specialized in the preparation of working plans. Divisions are headed by divisional forest officers (DFO), junior IFS officers or promotees from the lower ranks, and have primary responsibility for personnel management and administration. Divisions are often coterminous with districts, although densely forested districts may contain multiple forest divisions. The Range Forest Officer (RFO) is the lowest level official in the department whose job requires a college education, and they are often referred to as the “backbone” of the department, since it is ultimately their job to insure that field staff follow directives from above. While the DFO spends much of his time at his desk, the RFO is expected to be in the field, supervising his staff most of the day.[[1]](#footnote-1) His staff consist of forest section officers (also called round officers, block officers, or foresters), and forest guards, who live in remote forest areas or villages, and have daily responsibility for law enforcement patrols, as well as for supervising any projects or programs going on in the field.

**Fig. 2:** Organization Chart for the Andhra Pradesh Forest Department. Adapted from a chart downloaded from the AP Forest Department Website, http://forest.ap.nic.in/pdf/chart.pdf, May 22, 2012 and dated accurate as of 1st September 2009. Note that each Additional Principal Chief Conservator in a specialized functional post has a large staff of lower officials, typically including one or two Chief Conservators or Conservators and several divisional forest officers with specialized roles, who are not depicted here for ease of presentation.  
  
In addition to the territorial wing, a number of more specialized units follow the same hierarchical structure. The wildlife wing, headed by the Chief Wildlife Warden and responsible for the management of protected areas and the enforcement of wildlife law, contains circles and divisions (often corresponding to larger and smaller protected areas), as well as ranges, sections, and beats. There are also smaller wings responsible for specialized areas such as research & education, with all of these wings reporting directly to the head office, although in practice there is also substantial coordination between wings at the field level, with offices and official residences of the different forest department wings often located in the same compounds in district headquarter towns.

In spite of the modest degree of specialization in function, there is no particular specialization in staff titles or training. A forest guard – or a chief conservator of forests – might serve a few years in the territorial wing, then be transferred to work in a protected area, and then be transferred to another specialized job. The training of officers of the rank of RFO and above is extensive, so the presumption is that any forester should be capable of undertaking any job in the department.

3.2 Formal External Direction: Imposed institution and intergovernmental relations

Studies of policy implementation in the west have found there are many barriers to effective policy implementation (for reviews of this literature see [Pressman and Wildavsky 1973](#_ENREF_80); [Sabatier 1986](#_ENREF_87); [O'Toole 2000](#_ENREF_65); [Hill and Hupe 2009](#_ENREF_33); [Hupe 2014](#_ENREF_34)). Foremost among these are poorly designed policies: the nature of political compromise in legislatures often leads to contradictory or inherently impractical policy designs ([Moe 1990](#_ENREF_64)). These are examples of what [Arnold and Fleischman (2013)](#_ENREF_1) call “imposed” institutions. There is now a vast literature pointing to flaws in the overall policy setup of forest management in India. India’s forest estate was created through a process of colonial dispossession ([Guha 1983](#_ENREF_26); [Gadgil and Guha 1992](#_ENREF_18); [Sivaramakrishnan 2009](#_ENREF_95)). Formal policy changes in the 1980s that paid lip service to conservation and development interests were contradictory and failed to re-write underlying laws, such as the colonially minded Forest Act of 1927, such that the actual policy framework often continues to favor the interests of industrial and commercial elites ([Pathak 1994](#_ENREF_73); [Gadgil and Guha 1995](#_ENREF_19); [Springate-Baginski and Blaikie 2007](#_ENREF_97); [Suykens 2009](#_ENREF_103)). In light of such formal policy direction, it should not be surprising that officials often fail to achieve the goals of the national forest policy ([Ministry of Environment and Forests 1988](#_ENREF_62)) of fostering rural development while conserving natural resources and biodiversity.

Although the formal direction embodied in forestry law has been a major subject of study for decades, much less attention has been focused on how other aspects of the formal structure imposed on the departments affect policy implementation. Financial decisions made by the central and state governments exert a significant influence on the decision-making of state and local forest officers, allowing the central government considerable leeway to reshape policy implementation without changing laws ([Chaturvedi 2012](#_ENREF_10)). Formal relationships at the district level between the district collector, the highest ranking government official in the district, and the local forest department may play an important role in re-shaping policy implementation at local levels ([Potter 1964](#_ENREF_77)), yet there is no published documentation of the nature of the relationships between forest officials and other district level officials. Similarly, as in all bureaucracies, the internal structure of government agencies is imposed through rules governing the operation of civil service and the day-to-day functioning of government offices. Abundant evidence from other contexts indicates that these rules make a difference in how programs are carried out ([Bekke et al. 1996](#_ENREF_6)). This represents a major gap in our understanding of forest policy – and public administration – in India.

3.3 Internally directed formal institutions: Adopted Institutions, intra-governmental relationships, NGOs, and local people.

Although they attract the lion’s share of attention, formal institutions imposed on forest departments represent a relatively small share of the formal institutions governing forester behavior in the field. In order to implement laws, policies, and programs that are imposed on forest departments, head offices develop extensive plans and procedures which are communicated to lower level offices, which in turn develop their own plans and procedures to carry out those rulings. As is the case in government agencies throughout the world ([Kerwin 2003](#_ENREF_43)), it is probably these government regulations, circulars, and planning documents which play the most important role in organizing forester behavior, and not the high profile laws and policy documents produced in the state and national capitals. Unfortunately, few studies have examined how these adopted institutions function.

For an example of the importance of adopted institutions, consider Fleischman’s ([2014](#_ENREF_16)) argument about the drivers of tree planting in Maharashtra and Andhra Pradesh. Tree planting is one of numerous activities which forest officers are responsible for, yet one of the few that is actually implemented effectively. Fleischman argues that a major reason for this is that the day-to-day protocols forest officers have adopted for monitoring their subordinates enable them to monitor tree planting activities far better than they can monitor law enforcement or JFM related activities. He also argues that forester education shapes forester attitudes in ways that favor tree planting over other activities. Like monitoring protocols, forest departments have historically designed their own training curriculum, perpetuating a colonial, production-oriented mindset ([Hannam 2000](#_ENREF_31)).

Forest departments also adopt institutions that determine how they interact with actors including NGOs and forest-fringe villagers, and these adopted institutions have attracted more attention than those within the department itself. [Daftary (2014)](#_ENREF_14) documents how India government agencies are increasingly reliant on NGOs to carry out tasks that involve relationships with local people. This technique has been widely used in the forest sector in both social forestry and joint forest management programs ([for a well-documented example, see Saigal 2011](#_ENREF_88)). Some activists suggest a distinction between professionalized NGOs which carry out programs for government departments and conflictive “social movement organizations” which challenge the power of the state. In practice scholars have found a great diversity of relationships between NGOs and forest departments that does not neatly fit this narrative, and which often blends formal funding relationships with more complex tacit institutions ([Kashwan 2011](#_ENREF_40); [Barnes and Van Laerhoven 2013](#_ENREF_3), [in press](#_ENREF_4)). Distrust between NGOs and government officials remain high in many situations in spite of their formal cooperation ([Verma 2004](#_ENREF_106); [Kumar 2014](#_ENREF_46)).

The relations of local people with forest departments are the most studied aspect of forest administration. Forest-dependent people in India are among the nation’s poorest ([Gundimeda and Shyamsundar 2012](#_ENREF_27)), and the forest departments run many programs that affect them. Since the 1970s, national governments have imposed on state forest departments a series of laws and programs aimed at ameliorating conflict , including social forestry in the 1970s and 1980s ([Saxena 1994](#_ENREF_89); [Saxena and Ballabh 1995](#_ENREF_90)), JFM in the 1990s and 2000s ([Sundar et al. 2001](#_ENREF_99); [Springate-Baginski and Blaikie 2007](#_ENREF_97); [Lele and Menon 2014](#_ENREF_48)), and more recently the Forest Rights Act of 2006 ([Kumar and Kerr 2012](#_ENREF_45)). These in turn have led forest departments to adopt state-level formal procedures, as well as tacit institutions, discussed below, which restructured the relations between local people and forest departments.

There are two strains in the literature examining the institutions adopted to implement these new policies. In both cases, these strains focus almost exclusively on JFM. The first strain examines what foresters think of JFM and related policies, and how this affects their implementation behavior. This literature is problematic because in most cases, no measures of behavior are collected, so it is difficult to know whether attitudes towards JFM have any meaningful relationship with outcomes ([Meier and O’Toole 2013](#_ENREF_60)). Furthermore, the focus on JFM means that only a small percentage of foresters’ work is studied - [Verma (2004)](#_ENREF_106) reports that at its height in Madhya Pradesh, JFM represented no more than 10% of field officials’ work.

Several surveys conducted during the early implementation of JFM found that many foresters were initially resistant to the idea of JFM, and that elements of organizational structure and culture inhibited the implementation of JFM (Verma 2004; Matta 2003; Matta et al. 2005b; Matta et al. 2005a; Matta and Kerr 2007; S. Kumar and Kant 2005, 2006; S. Kumar et al. 2007). This was consistent with earlier predictions that the new program went against the historical norms of the department ([Vira 1997](#_ENREF_107); [Schug 2000](#_ENREF_92); [Hannam 1999](#_ENREF_30)). In particular, surveyed foresters reported that the hierarchical structure of the department inhibited the upward flow of information, which was perceived as essential to running participatory programs. In addition, many foresters were focused on timber production, and viewed work with communities as a distraction.

At the same time, these studies highlighted substantial heterogeneity within forest departments, contradicting stereotypes of foresters as uniformly captured by industrial interests and hostile to the poor ([Gadgil and Guha 1995](#_ENREF_19)). According to Verma (2004), in Madhya Pradesh range officers and their subordinates typically objected to JFM because they felt saddled with additional work without receiving rewards or training. In contrast, senior officers were strongly supportive. These senior officers were among the first trained in the newly constituted Indian Forest Service in the late 1960s. In contrast to the arguments of Hannam (2000b) and Schug (2000), which assume that the Indian Forest Service inherited colonial biases against involvement by local people, Verma found that these officers were strongly motivated to distinguish themselves through adopting innovative practices. They saw JFM as a way towards lower cost and more effective prevention of large-scale timber smuggling. The focus on forest protection led the department to largely neglect other aspects of JFM that were perceived by outsiders as important: actual participation, insuring that forests met villager needs, and dealing with issues of caste and gender inequity.

Verma’s findings are in contrast to Joshi (1999, 2000), who examined the early adoption of JFM’s precursors in West Bengal. While a DFO was a key innovator, much of the experimentation was driven by lower level forest officers – including forest guards – who saw increased cooperation with villagers as a method for alleviating conflicts that led to lower-level officers being harassed or killed. Verma argues that this was less important in Madhya Pradesh because field-level officers did not face the same level of threat in their daily work. This implies that forest conditions may partially explain the type of politics present: Madhya Pradesh may have lacked intense conflict because it had more good quality forest present than West Bengal. Matta (2007) reports that foresters in Tamil Nadu struggled to implement JFM at all, in part because villagers were not interested in collaborating in the management of the highly degraded, economically worthless, forests identified for joint management.

3.4 Internally directed, informal institutions: Tacit institutions and field-level implementation.

A second strain of literature on the relationship of foresters to villagers examines the ways that policies are actually implemented in the field. Much of this literature focuses on what [Arnold and Fleischman (2013)](#_ENREF_1) call tacit institutions: rules developed informally inside of a government agency as the agency works to carry out its mission. Arnold and Fleischman found that these tacit institutions play a crucial role in determining how policies are carried out in US environmental policy, and the evidence from India indicates a similarly important role for tacit institutions.

The importance of tacit institutions is illustrated by how JFM and the FRA are carried out in the field. JFM is supposed to involve villagers in active decision-making about the management of forests near their homes, however in the vast majority of reported cases, foresters dictate to villagers what projects will be carried out and how they will be carried out. Priority is given to meeting centrally planned targets for tree planting or other activities ([Sundar et al. 2001](#_ENREF_99); [Verma 2004](#_ENREF_106); [Lélé 2005](#_ENREF_49); [Reddy et al. 2007](#_ENREF_83); [Bandi 2009](#_ENREF_2); [Fleischman 2014](#_ENREF_16)), or to distributing benefits in ways that enhances the patronage that foresters deliver to local political allies ([Kashwan 2015](#_ENREF_42)). Similarly, there are frequent reports that foresters misrepresent the nature of rights available to villagers under the FRA in ways that enhance forest departments’ power ([Bose 2010](#_ENREF_8); [Saxena et al. 2010](#_ENREF_91); [Kashwan 2013](#_ENREF_41); [Kumar and Kerr 2012](#_ENREF_45)). Villagers are frequently hesitant to challenge foresters both because foresters are powerful across multiple political arenas, and because they effectively build patronage relationships with powerful local leaders ([Baviskar 1995](#_ENREF_5); [Robbins et al. 2009](#_ENREF_86); [Kashwan 2011](#_ENREF_40), [2013](#_ENREF_41), [2015](#_ENREF_42)).

Ethnographic studies of forest policy at the village level also emphasize the importance of tacit institutions. Vasan ([2002](#_ENREF_105)) highlights the difficult positions of the department’s lowest level workers in Himachal Pradesh, who are caught between the demands of their job – including the enforcement of laws that restrict the use of forest products – and their position as temporary members of village communities in which subsistence is dependent on illegal harvests of forest products. Although forest officials were described above as exercising power over villagers, Vasan found that forest guards were frequently beholden to local political leaders who could secure their transfers or subject them to extralegal punishments. In contrast, Robbins’ found that Rajasthani forest officials were more closely aligned with local power structures, and were often unaware of the needs of poor rural people due to their urban and/or high caste upbringing. Field-level officials – including both forest guards and range officers – shared ethnic (Rajput) backgrounds with local elites, and the officials and elites cooperated in illicit resource extraction activity to the detriment of poorer villagers ([Robbins 2000a](#_ENREF_84), [b](#_ENREF_85); [Robbins et al. 2009](#_ENREF_86)). These differences in local power structures imply that generalizations about “iron triangles” existing between forest officials and extractive interests ([as in Gadgil and Guha 1995](#_ENREF_19)) need to be qualified at the local level.

3.5 Informal External Direction: “Sly” Institutions and Corruption

Popular accounts of bureaucracy in India focus on corruption, which is viewed as systematically disrupting proper functioning of government ([Gupta 1995](#_ENREF_28); [Parry 2000](#_ENREF_72)). Corruption is almost by definition informal. Most accounts of corruption in India’s bureaucracy –including the forest sector – also emphasize that corruption is typically driven by actors external to the agency, making it an example of what [Arnold and Fleischman (2013)](#_ENREF_1) call a “sly” institution. Arnold and Fleischman did not observe any sly institutions in the case of wetlands regulation in the US, but note that this kind of institution may play an important role in developing countries, and recent accounts of corruption in natural resource agencies in other developing countries also emphasize the importance of external direction ([Sundström 2013](#_ENREF_100), [2015a](#_ENREF_101), [b](#_ENREF_102)).

Two forms of corruption appear to be particularly important in Indian forest management: retail corruption and embezzlement ([see Sukhtankar and Vaishnav 2014 for a description of the varieties of corruption](#_ENREF_98)). Retail corruption refers to bribery in exchange for services or to escape punishment, and is widely reported across sectors and regions of India (e.g. [Gupta 2012](#_ENREF_29); [Bertrand et al. 2007](#_ENREF_7); [Wade 1982b](#_ENREF_109)). [Robbins (2000b)](#_ENREF_85) shows how bribery has the potential to reshape forest landscapes. Most forest users in a Rajasthan wildlife sanctuary pay bribes, but the bribes vary with the type of material extracted and the relative social status of the bribe giver and taker. Caste ties and wealth mediate long-term bribery relationships, effectively excluding poor people from accessing the wealth of the forest ([for a similar argument from the standpoint of agriculture in Uttar Pradesh, see Jeffrey 2002](#_ENREF_36)). While most materials in the forest could be harvested illegally by arranging an appropriate bribe, certain rare tree species, harvesting technologies (e.g. such as the branch coppicing widely practiced in surrounding villages), and the hunting of certain animals (such as nilgai and leopards) were strictly prevented. This resulted in a reconfiguration of the landscape with, for example, a much lower ratio of wild pig, which is hunted illegally, to less hunted nilgai antelopes than would be expected if neither were hunted.

While the bribes reported by Robbins represented small percentages of the value of the products harvested, [Corbridge and Kumar (2002)](#_ENREF_12) report that a farmer who wished to sell jackfruit timber off of his private land in Jharkhand received only 1/5 of the value of his timber, with approximately ¼ paid to a broker, and the remainder paid as bribes to forest and police officials. According to Corbridge & Kumar, the necessity of paying such enormous bribes has hindered the planting of jackfruit since the 1940s, crippling the potential for the development of a vibrant agroforestry sector in the state ([Similar hindrances plague the development of private-land forestry and the development of forest-based industries throughout India – see Milne et al. 2005](#_ENREF_61)). There are scattered reports that lower level positions in the department are available only to those willing to pay a large bribe to secure the position ([and then pay off the bribe with the bribes they receive in payment for illegal harvests – see Fleischman 2012](#_ENREF_15)).

A separate form of corruption occurs in the diversion of government funds from intended purposes. Reports of various forms of embezzlement and kickbacks have become widespread in the Indian press, but I am aware of no peer-reviewed publications reporting on the levels of embezzlement in any forest department. Wade’s ([1982b](#_ENREF_109)) detailed analysis of embezzlement in the Andhra Pradesh irrigation department is, however, suggestive. Wade reported that 8.5% of the “works” budget was immediately kicked back to the middle level managers responsible for overseeing the works, while additional money squeezed out from on-the-ground cost savings (by, for example, removing less silt than called for on a contract for maintenance of an irrigation canal), were negotiated between the contractors and the managers. The total diversion of funds ranged from 25 to 50% of the budget, and the resulting infrastructure was of poor quality and subject to irregular maintenance.

Forest departments have less infrastructure funding than irrigation departments, and it is not clear if similar scale diversions of money occur outside of infrastructure spending. There are widespread reports, for example, that money allocated to the National Rural Employment Guarantee Program is embezzled, but little solid documentation ([Corbridge and Srivastava 2013](#_ENREF_13)). There are no scholarly publications on timber theft in India, but the subject is widely discussed in the press and among observers of the forest sector.

Where does the money from these corrupt transactions go? The limited information on how bureaucrats use money from corruption indicates that much of their earnings are not in Swiss bank accounts ([Kanth 2014](#_ENREF_39)), but instead are recycled into searches for individual advantage and political power, notably through the system of politicized transfers (for more detailed accounts and data on this phenomena, see [Wade 1982a](#_ENREF_108), [b](#_ENREF_109), [1985](#_ENREF_110), [1988](#_ENREF_111); [Zwart 1994](#_ENREF_112); [Iyer and Mani 2011](#_ENREF_35); [Potter 1987](#_ENREF_78), [1988](#_ENREF_79)). Although civil service tenure in India is strongly protected, positions within forest departments vary greatly in their desirability. Some postings are less desirable because they require more work, are more dangerous, or are located farther from officers’ families. Because most forest officers are transferred every 2-3 years, officers spend considerable time and money securing favorable postings. By the same token, politicians use transfers to discipline officers by removing them from jobs where they obstruct political priorities, by sending them to undesirable postings, or simply by demanding money to guarantee a desirable job.

The transfer system enables a flow of money upward from bureaucrats to politicians, who use money to finance election campaigns. The movement of money is reportedly accomplished through collaboration with contractors who would hold money on the behalf of bureaucrats, creating a tightly knit system which Robbins ([2000b](#_ENREF_85)) describes as being dependent on trust and social capital in the form of networks. Verma ([2004](#_ENREF_106)), an IFS officer from Madhya Pradesh, reports that this kind of “politicized” transfer was rare in the Madhya Pradesh forest department prior to the 1980s, but became more common when an influx of donor funds made that state’s forest department more attractive as a source of patronage. Frequent transfers also insure that bureaucrats rarely serve in a single post long enough to develop local ecological knowledge ([Cook et al. 2009](#_ENREF_11)) or carry out complete programs, and are posted based on parochial, rather than programmatic concerns, with crippling impacts on the departments’ implementation capacity.

It is difficult to assess the overall impact of corruption on program delivery, or to know what might decrease corruption. Much of our knowledge is in the form of rumors but corrupt officials and middlemen have strong incentives to exaggerate the extent of corruption in order to enhance the potential bribes they can collect ([Wade 1982b](#_ENREF_109); [Oldenburg 1987](#_ENREF_66)). National proposals to create a lokpal (ombudsman) seem unlikely to have a direct impact on the small scale corruption which afflicts forest administration. Several authors have suggested liberalizing trade in forest products as a means both to enhance private land forestry and reduce opportunities forest officials have to serve as monopoly providers of forest goods ([Corbridge and Kumar 2002](#_ENREF_12); [Milne et al. 2005](#_ENREF_61)). However Wade’s studies demonstrated that bureaucrats were skillful at subverting formal designs aimed at increasing transparency, while Robbins showed how corruption was embedded within broader networks of disadvantage, and thus might more productively be seen as an issue of collective action rather than individual failing (see also [Persson et al. 2013](#_ENREF_76); [Sundström 2015a](#_ENREF_101)). The substantial upward flow of money from bureaucrats into the political system ([Zwart 1994](#_ENREF_112); [Kanth 2014](#_ENREF_39)) implies that treating corruption may require addressing failings of the broader political system.

4.0 Discussion: Knowledge and Knowledge gaps in understanding forest administration

The main findings of this paper are summarized in figure 3. Research on the role of government officials in the implementation of forest policy in India remains in its infancy, however the research I have reviewed here contradicts widely held assumptions about Indian forest management. Indian forestry is shaped by a diversity of institutional arrangements beyond the formal policies that have been the focus of past analysis, and Indian foresters have diverse motivations and influences on their work. Verma (2004) argues that foresters are motivated by professional opportunities, personal advancement, and a feeling of personal efficacy, while Fleischman (2014) emphasizes the role of targets and organizational compliance, along with ideology learned in training. These variables have been largely ignored by forest department critics, who have instead focused on reforming the formal laws imposed on forest departments and then blamed the departments for failing to enforce these laws. These critics would do well to learn from the studies described in this review, which emphasize the importance of a diversity of institutional arrangements in determining the outcomes of forest policy implementation.

**Fig. 3.** Summary of the major findings of this review.

The studies reviewed here illustrate that both imposed and adopted formal institutions influence forester behavior. Verma (2004) and Joshi (1999;2000) show that forest officials can be innovative and effective implementers of policy if institutional incentives are favorable – and that these innovations are often through internally adopted formal institutions. At the same time, given the high visibility of formal imposed institutions, it is surprising that some of the largest knowledge gaps identified in this paper relate to this kind of institution: We know little about how civil service policies and district level governance influence policy implementation in India. Several states have instituted innovative reforms designed to repair the problems caused by frequent transfers in the bureaucracy and provide greater incentives for high performance (e.g. [Government of Andhra Pradesh 2001](#_ENREF_21); [Raj 2011](#_ENREF_81); [Maharashtra General Administration Department 2006](#_ENREF_55)), yet we have no evaluation of their effectiveness.

Informal institutions necessarily fill the gap between formal institutions, as they do in all organizations, but the literature I cite here associates informal institutions almost exclusively with corruption and mismanagement. This is in contrast to [Ostrom (1990)](#_ENREF_67), who associates informal institutions created within communities with sustainable resource use, and [Arnold and Fleischman (2013)](#_ENREF_1), who associate internally driven, informal tacit institutions with organizational and policy stability, but find no examples of “sly” externally driven informal institutions. Additional study is needed to understand whether the tacit institutions developed in India’s forest bureaucracy are fundamentally weaker than those developed in other locations, or whether productive, stability inducing tacit institutions in Indian forestry have not yet attracted researcher attention. While many accounts blame bureaucrats for corruption ([e.g. Gupta 2012](#_ENREF_29)), the accounts here emphasize corruption as an institution that derives from foresters’ external environment. The informal institutions developed by foresters, while not necessarily productive, are more aimed at maintaining political power or reinforcing foresters’ preferred means of working, as opposed to earning illegal money per se. Research on corruption, however, remains limited and unsystematic.

There are several important areas of forest policy implementation and bureaucratic behavior that have received very little attention from scholars, in spite of their potential importance. Although some scholars have described forest departments as operating in close tandem with extractive industries, the studies reviewed here make no mention of larger industrial interests. Similarly, there is little study of the use of science in forest policy. Foresters like to claim that they are technically trained officials practicing scientific forestry, but the meaning of science in this context is unclear. Several studies have found that foresters continue to rely on outdated forestry models from the early 20th century (Fleischman, 2014; Hannam, 2000a, 2000e). Training curricula support this concern ([Goyal 2004b](#_ENREF_23), [a](#_ENREF_22), [d](#_ENREF_25), [c](#_ENREF_24)), but a recently revised working plan code ([Ministry of Environment and Forests 2014](#_ENREF_63)) seems to indicate some change. Other studies report outright hostility between ecological researchers and forest officials ([Lewis 2002](#_ENREF_50), [2003](#_ENREF_51), [2004](#_ENREF_52), [2005](#_ENREF_53); [Madhusudan et al. 2006](#_ENREF_54)), yet we know little of the dynamics of this relationship.

We also know very little about how the department has changed over time. Most histories of colonial forestry end before the 1930s ([Sivaramakrishnan 2009](#_ENREF_95)), while studies of the contemporary operations of forest departments only began to appear in any number in the late 1980s. During this 50 year gap India’s forest departments were decentralized, decolonized, politicized, and recentralized, while India’s forest estate nearly doubled in size and a number of new forest laws were introduced. Improved roads and the spread of motorcycles and cars fundamentally altered the remoteness of forest villages. More recently, communications have been transformed by cell phones and satellite based remote sensing, forest departments have hired far more women, and have attempted various internal organizational reforms. Yet we know little about the impact of these changes on forester behavior. Many contemporary writers seem to believe that Indian foresters today can be understood by reading accounts of the late 19th century (e.g. [Gadgil and Guha 1992](#_ENREF_18), [1995](#_ENREF_19)). Several authors cited in this paper suggest that the attitudes of individual foresters matter ([Fleischman 2014](#_ENREF_16); [Vasan 2002](#_ENREF_105); [Robbins 2000a](#_ENREF_84)), may change over time ([Verma 2004](#_ENREF_106); [Matta et al. 2005](#_ENREF_57); [Kumar and Kant 2005](#_ENREF_47)), and may be shaped by training programs ([Hannam 2000](#_ENREF_31); [Fleischman 2014](#_ENREF_16)), but we do not know how this process works. Interstate heterogeneity appears to be high across several of the dimensions that have been studied, but we don’t know why.

Conclusion: Implications for developing conservation and development policy

Government officials are crucial actors in the public policy process, and an understanding of their behavior is essential to understanding how policy outcomes are produced. Important moments in the history of forest policy in India, such as the implementation of project tiger ([Panwar 1982](#_ENREF_71)) or early experiments with JFM ([Joshi 1999](#_ENREF_37), [2000](#_ENREF_38)) are clearly creditable to the innovative efforts of forest officers. There are many reports of how forest officers hinder effective implementation or abuse their power for personal gain. The studies reviewed here offer significant insight into the causes of forest department failures: they point to contradictions in policies, corruption driven by the broader political system, and foresters’ own preferences for certain kinds of activities as crucial drivers of forest policy failure. They also point to foresters’ professional motivations and attitudes as potential sources of policy effectiveness and innovation.

These insights point to ways to improve policy outcomes. If foresters are motivated by professional rewards such as a feeling of expertise or personal efficacy, as has been found in studies of public officials in both developed ([Brehm and Gates 1997](#_ENREF_9); [Perry et al. 2010](#_ENREF_75)) and developing ([Tendler 1997](#_ENREF_104)) democracies, the current focus of Indian public service reformers on performance pay ([Sixth Central Pay Commission 2008](#_ENREF_96)) may be misplaced (in any case, this is a reform that has not generated consistent results in other contexts - see [Perry et al. 2009](#_ENREF_74); [Hasnain et al. 2014](#_ENREF_32)). Instead, there might be a focus on improving foresters’ professional knowledge and experience. Some evidence in the review points to an important role for forester attitudes in determining outcomes, indicating that efforts to alter the outdated content of training programs may have some beneficial effects. Furthermore, the review indicates that informal institutions often inhibit effective implementation. Providing clearer enforceable direction for forest officials in formal policies may alleviate some of this problem, but informal institutions are essential components of all policy environments, and finding ways to help foresters develop more productive informal institutions will be necessary.

At the same time, this review points to significant limitations in our knowledge of forest officials. None of the studies referenced here link any forest or development outcome to specific behaviors or sets of behaviors of individuals or groups of forest officials. Future research should link administrative behaviors with independent measures of forestry outcomes. Careful sampling designs are needed to understand how local contexts influence policy implementation – and to insure that the results reported here are not the result of the past haphazard selection of study sites. Studies drawing on documents from recent history – since 1935 – are needed to understand how forest departments have transformed in the post-independence era. Perhaps more importantly, we need studies designed to answer practical questions about forest administrative practice and policy implementation: How can forest officials be motivated to do their jobs more effectively? How are their attitudes about forestry formed, and how do these influence their behavior in the field? How can departments be structured to encourage innovation and experimentation and prevent the negative effects of corruption? And how can administrative reforms work in tandem with policy changes to support improved conservation and development outcomes? More focused research on these topics should come not only from the occasional academic with an interest in from administration, but also from the many scholars who study other aspects of Indian forests, and thus observe the administration of forests. Forest officials are in a unique position both to observe processes as well as to experiment, and thus they may be the most able to facilitate improved knowledge and foster innovation.

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1. I use the male pronoun here because the vast majority of officers are men. In recent years there has been increasing recruitment of women into the forest department at all ranks, yet they remain a small minority. [↑](#footnote-ref-1)