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Non-Financial Incentives for Pro-Social and Pro-Environmental Behaviour

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Non-Financial Incentives for Pro-Social and Pro-Environmental Behaviour

A Dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Environmental Science and Management

by

Karnamadakala Rahul Sharma

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June 2022

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Non-Financial Incentives for Pro-Social and Pro-Environmental Behaviour

For Gautam

because I started this to be more like you.

Acknowledgements

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ABSTRACT

Non-Financial Incentives for Pro-Social and Pro-Environmental Behaviour

by

Karnamadakala Rahul Sharma

In resourced-constrained countries like India, ambitions for environmental protection are often limited by the paucity of funds, and limited capacity within governments to implement transformational programs. But an excessive focus on funding and government action fails to account for several ways in which motivated individuals and communities voluntarily come together to solve environmental problems. Such initiatives might be small and dispersed but can be scaled-up by understanding the underlying structure of incentives and motivations that drive people towards contributing labour and finding collective solutions. My dissertation is motivated by the desire to develop practical insights for fostering greater citizen participation and collective action. In particular, my research is focused on understanding how low-cost and non-monetary incentives motivate individuals towards pro-social and pro-environmental behaviours.

The first project examines the factors that contribute to better performance on tasks that managers cannot easily observe. Here, I study frontline employees of an NGO in India who are responsible for improving social development outcomes for rural women. These employees perform two broad categories of tasks – some are observable by their managers and others are more difficult to observe or unobservable. Unobservable tasks like cajoling, convincing, dispute resolution, and emotional labour are critical for frontline work and meeting the NGO's organizational mission. However they remain unrewarded because they

are not observed. Why do frontline employees perform these tasks then? Through a survey of 15,000 rural women and 150 frontline employees, I find that pro-social motivation is associated with improved performance on all types of tasks. On the other hand, I find that monitoring is not associated with improved performance. I also find that understanding the broad principles for action are more important than knowing which specific tasks the management wants employees to execute. The results suggest that managers can improve performance at the frontlines by selecting motivated workers, and by allowing them autonomy to carry out their tasks by reducing the extent of monitoring and supervision.

The second project explores incentives for performance improvement in a national ranking program for cities in India. The *Swachh Survekshan* is an initiative by the Indian national government for ranking cities on their performance on waste management and sanitation outcomes. Since 2016, the program has scored and ranked cities to motivate performance by inducing the spirit of competition. However, the national government has also frequently changed the metrics by which cities are scored. Utilising this natural experiment, I ask two questions: a) what motivates national governments to engage in target-shifting?, and b) how to cities respond to target-shifting? I develop an original dataset of performance scores and ranks for over 400 cities, supplemented by data on revenue generated by 243 cities and qualitative insights from interviews with government officials and consultants. I find that target-shifting occurs to inflate scores and enhance the reputation of the program, as compared to an alternative scenario in which target-shifting occurs as a result of policy-learning. I also find that cities distort their data in response to target-shifting. However, these distortions are caused less by a conscious effort to "game" the rankings but result from the lack of data management capacity. The results suggest that ranking programs in the public sector are highly prone to distortions by both national and sub-national

governments. Instead of selecting winner and losers, alternative strategies for performance improvement that focus on self-assessment and capacity building might be more feasible for the public sector.

The third project examines how just and democratic India's solar energy policies are. Most commonly, decisions and policies for solar energy development are justified on the basis on mitigating climate change or cost-benefit analyses. Elements such as justice and democracy are relatively new considerations in the policy discourse. I presents a framework for analysis of these concepts grounded in the context of the Global South. With respect to this, I define the articulation of distributional and procedural goals in policy as two pillars of a just and democratic energy transition. Through an analysis of over 30 renewable energy policies, I find that in terms of distributional goals, most policies continue to exclude significant marginalized groups. Where groups are included, the focus is more on identifying them rather than recognizing their specific needs or the processes by which they can effectively transition to becoming full consumers of electricity. Further, distributional goals seeking to create equity beyond access are not substantiated by an allocation of policy-tools to foster the cross-sectoral collaboration required for their implementation. With respect to procedural goals, instruments that facilitate ownership and ease transactions were emphasized and elaborated on more than those that decentre legacy institutions or enhance just participation. Overall, the policies tend to keep the system in its current configuration and forego the opportunity solar provides to create transformative change beyond reducing emissions.

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Chapter 1

Pro-social motivation and employee agency improve performance in a multi-task work environment

Evidence from a large-scale survey of frontline NGO workers in India.

(With Mark Buntaine and Matthew Potoski)

Abstract

Public employees perform some tasks that are easier for their managers to observe and tasks that are more difficult for managers to observe, even while both are important for achieving public goals. Labour contracts can improve employee performance through provisions that allow managers to monitor the employees' task effort and reward superior performance. While such incentives may boost employees' effort on observable tasks, they may also compel employees to shift their efforts away from unobservable or difficult to observe tasks. We survey 146 frontline employees of a social development NGO in India and over 15,000 beneficiaries of their services to examine how perceptions of monitoring by managers, the employees' own pro-social motivation, and the perceptions of the managers' preferences for action influence employees' effort towards both observable and unobservable tasks. We find that performance on observable and unobservable tasks are highly correlated, and that employees' pro-social motivation predicts their performance across both task-types, while monitoring has no influence. On the communication of manager's preferences, employees perform better when they understand the broad principles for action compared to when they understand the exact unobservable tasks to be performed. In terms of practical implications for government and non-profit human resources management, our findings suggest that selecting employees based on their motivation and then regularly clarifying broad principles can sufficiently focus employees' efforts while enhancing autonomy at the frontlines.

Introduction

Employees in public service roles perform at least two types of tasks: observable tasks that can be easily monitored and measured by managers; and unobservable tasks that are more difficult to measure and monitor. While observable tasks are important for organizations, it is often the more complex, discretionary and unobservable tasks such as convincing reluctant clients, mediating conflict, or offering beneficiary-specific advice that help the organisation fully achieve their public service goals. Yet because these tasks are unobservable, it is difficult for managers to use standard practices like monitoring and performance-based incentives to ensure employee performance.

In this paper, we present evidence from a survey of over 15,000 members of self-help groups in India who evaluated 146 frontline employees of a non-profit organization on the quality of the observable and unobservable tasks that they performed for these groups. The survey allows us to obtain information about employee performance across a range of tasks that are typically difficult for managers to observe. We then use a linked survey of the frontline workers to measure their pro-social motivation, perceptions of monitoring by the management, and perceptions of the manager's task-preferences. We combined these to show that pro-social motivation predicts employees' performance, while their perceptions about the intensity of monitoring do not. Further, we also show that workers perform better when they understand the broad principles they must adhere to while executing various tasks, as compared to an over-specification of the exact unobservable tasks to be performed. Our results suggest that selecting motivated workers at the outset can benefit public and social sector organisations with a large

cadre of frontline workers who work at remote locations. Further, among such motivated

workers who are likely to engage in additional effort, learning, and experimentation on their

own, it is important for managers to emphasise the guiding principles for action over directing

workers towards specific unobserved tasks.

These findings have implications for human resource management. To incentivise

performance on unobservable tasks, managers have the option to either select and motivate

workers who are well-aligned with their objectives, or to increase monitoring and reporting

requirements for workers. Each of these approaches however has its own costs and benefits.

pro-social motivation and monitoring is notable because workers have to focus on observable

tasks rather than unobservable tasks in a two-task environment with strong performance-based

incentives and contracts (Holmstrom & Milgrom, 1991). Workers know that managers can

only observe and reward or punish performance on observable tasks.

As commonly presented in a principal-agent framework, managers can select employees

who are more motivated or whose preferences are already well-aligned with those of the

principal (Besley & Ghatak, 2005). We know for example that non-profit employees do more

unpaid, overtime work than their private sector counterparts because they are pro-socially

motivated (Gregg et al., 2011), and that altruistically motivated people sort themselves into

public sector jobs (Dur & Zoutenbier, 2014; Fehrler & Kosfeld, 2014). But relying on pro-

social motivations is a risky prospect for managers who must ascertain that employees have

similar preferences at the time of selection or will respond positively to motivational

management practices. Employees can misrepresent themselves leading to adverse selection, or their preferences and motivation can change over time.

Alternatively, managers can increase monitoring and supervision to increase employee effort and reduce shirking. This strategy does not rely on the employee's self-reported preference alignment or motivation. However, increased monitoring is only feasible when the outcomes of a task are observable and resources are available to contract on the performance of these tasks (Burgess & Ratto, 2003). Furthermore, increased monitoring can potentially crowd-out inherent motivation (Benabou & Tirole, 2003; Frey, 1993; Frey & Jegen, 2001; Sanders & Walia, 2012). Empirical studies have shown that more monitoring or oversight can improve performance (Bengtsson & Engström, 2014; Duflo & Hanna, 2005; Pedersen et al., 2018), but it can also crowd-out effort and motivation above a certain threshold (Dickinson & Villeval, 2008; Prendergast, 2001).

Managers therefore need to evaluate the trade-offs between selecting the best employees, reinforcing their motivation over time, and employing monitoring in ways that does not crowd out motivation among carefully selected employees. Studying both the effects of monitoring and incentives and pro-social motivations in the same study has been stymied by important measurement challenges. First, while measuring employee performance on observable tasks is relatively straightforward, it is significantly harder on tasks which by definition elude observation. Moreover, measuring pro-social motivation is not straightforward. Finally, just because managers attempt to implement monitoring and incentive programmes, employees may not perceive their presence. Furthermore, the interaction and differential relationship

between motivation and perceptions of monitoring on observable and unobservable tasks is seldom possible to compare in the same setting.

The data for this study focus on frontline workers of an NGO named MYRADA, located in the state of Karnataka in India. The organisation's head office in the state capital, Bengaluru, and smaller offices exist across six districts in which MYRADA is active. Frontline workers are hired locally, and work remotely from the head office. MYRADA's goals are to improve the incomes and quality of life of poor and vulnerable rural populations by building and strengthening local community institutions. To achieve these goals, MYRADA has formed a number of women's Self Help Groups (SHGs), which are collectives of 15-20 women who come together to create a pool of funds for security, asset creation and to enable borrowing. SHGs however have come to serve a much larger developmental function since they were first established by MYRADA in the 1960s. Today, SHGs function as local institutions that enable women's public and political participation and empowerment, information dissemination, and the implementation of government programmes. SHG members however require assistance in their day-to-day work and this critical support is provided by MYRADA's frontline workers.

MYRADA's frontline workers perform observable tasks which include basic services for financial inclusion such as maintaining accounts, organising regular meetings and completing loan applications, all of which can be monitored easily because of the paper trail available. A second set of tasks, such as providing encouragement, proactively offering beneficiary-specific advice, conflict resolution, convincing reluctant beneficiaries to undergo health check-ups, or convincing families to allow women to work, are not observed by MYRADA's

management but are considered critical for meeting the organisation's mission. Observable tasks helps MYRADA meet a baseline goal of financial inclusion, while unobservable tasks enable MYRADA to meet broader goals for human development for its beneficiaries, especially the more marginal individual, households and communities. The presence of similar multi-task environments has been widely recorded for workers across public service organisations. Research on frontline health workers (Mishra, 2014; Schaaf et al., 2018), food safety inspectors (Carter, 2017), and welfare workers (Nguyen & Velayutham, 2018) shows that only some, usually technical tasks are observable by supervisors and management. A large number of tasks such as building trust, providing information, cajoling, and encouragement are both unobservable and unrewarded. Frontline workers perform these tasks because of their on-ground understanding of what clients need and their commitment to creating public good (Lipsky, 1971; Tendler, 1997).

We report three results of interest. First, we find a strong correlation between employee performance on observable and unobservable tasks. While on average, the performance scores on observable tasks are higher than for unobservable tasks, the difference is less among workers with higher pro-social motivation. Second, employees' pro-social motivation is positively correlated with their performance on both types of tasks. Employees' perception of monitoring by the management, on the other hand, is not associated with performance on either type of task. We also do not find an association between the interaction of pro-social motivation and perception of monitoring on performance. And finally, we find that knowledge of the principles for action posited by management is positively correlated with performance on unobservable tasks.

Our study makes four contributions to the literature on how managers can improve employee performance. First, we offer a rare empirical examination of real-effort performance on different tasks-types, performed by the same individuals and in the same setting. This allows us to speak to the relative importance of pro-social motivation versus monitoring for a broader range of management objectives than have been previously considered. In particular, most studies to date have considered performance on short-term work assignments with easily monitored, piecemeal tasks where pro-social motivations that are central to public service are likely to play a marginal role in shaping performance (Belot & Schröder, 2015; Boly, 2011). While the evidence suggests that monitoring linked with financial incentives is generally powerful in shaping behaviour in short-term labour markets (Banerjee et al., 2008; Duflo & Hanna, 2005; Gosnell et al., 2020), it is important to extend work to multi-task domains where financial incentives may not be the most significant motivators of behaviour. Public service organizations have much to gain from recognising unobservable tasks and tailoring management practices towards supporting workers to perform them better.

Second, our findings suggest that pro-socially motivated workers are more productive regardless of the tasks being assigned, at least in public service settings. Our results show that a highly motivated worker is less likely to simply reallocate effort between observable and unobservable tasks as is expected in multi-task environments. In this study, performance by workers on observable and unobservable tasks are highly correlated, and pro-social motivation is positive associated with performance on both tasks. We also find that the difference in performance scores between observable and unobservable tasks reduces as pro-social

motivation increases. Motivated workers might be more concerned with meeting organisational and public service objectives, and less focused on whether the task is observable or not to the manager. This result extends related research showing that pro-social motivation is an important predictor of performance (Alonso & Lewis, 2001; Andersen et al., 2014; Banuri & Keefer, 2016; Grant et al., 2007) and shows that this holds for a wider range and type of task than has been analysed to date. In terms of practice, this suggests that managers might benefit by selecting on motivation as a rule.

Third, we do not find a relationship between performance and the perception of increased monitoring on either task type. The interaction between pro-social motivation and monitoring is also not associated with task performance on either task. In the absence of a causal design, it is difficult to ascertain whether monitoring could improve performance. However, our finding does contrast with a large body of research showing that monitoring is important for performance in labour markets. Taken together with related research that shows monitoring can crowd out effort in more public service oriented roles (Dickinson & Villeval, 2008; Prendergast, 2001), this study extends these results to both observable and unobservable tasks as compared to prior work that mainly considers the positive impact of monitoring on observable performance indicators such as outreach, expenditure and financial irregularities (Bengtsson & Engström, 2014), physical attendance (Duflo & Hanna, 2005), or on motivation itself (Jacobsen et al., 2014; Pedersen et al., 2018).

Finally, we find that employee knowledge of the principles underlying action is more important than knowing which specific tasks manager's want executed. This finding echoes

prior research on related concepts which demonstrate the importance of mission-valance and transformational leadership on improving performance in public service (Bellé, 2014; Caillier, 2014; Wright, 2007). Management is more likely to reap benefits from spending time and energy on reinforcing mission or broad guiding principles as compared to over-specifying the exact tasks to be performed especially when those tasks are complex and difficult-to-measure. As a potential mechanism, we discuss the negative impact of implicit monitoring through the over-specification of tasks. More broadly, our findings collectively speak to the need for practical job-design strategies that allow highly motivated frontline workers the autonomy to tailor their task-environment to achieve organisational objectives, and to seek opportunities for learning through experimentation and interactions with beneficiaries.

Theory

Pro-social motivation and monitoring across task-types

Public employees perform some tasks that are easier for their managers to observe and others that are more difficult for managers to observe, even while both types of tasks are important for achieving public goals. For example, frontline health workers not only observable tasks, but also expend considerable time on teamwork and building trust with the community, tasks that are not observed by their reporting authorities but are critical for achieving public health outcomes (Mishra, 2014; Schaaf et al., 2018). Similar observations have been made for frontline food safety inspectors who are likely to 'perceive multiple role orientations simultaneously' and engage not just in the observable tasks of regulation, but also in discretionary but unobservable tasks such as providing information, cajoling, or educating the people they meet (Carter, 2017). Frontline welfare workers have been widely documented

to exercise discretion and engage in unobservable tasks such as providing emotional labour which can be critical to effective welfare delivery and for minimising the punitive aspects of welfare policy (Nguyen & Velayutham, 2018). As Judith Tendler notes in her extensive research on grassroots governance, frontline workers carry out a larger variety of tasks than they receive formal recognition for, and often voluntarily, as a response to what they perceive clients need and with a vision to create public good (Tendler, 1997). In fact, these type of informal, everyday practices can have a positive effect on public service outcomes over the long term (Mangla, 2015).

Labour contracts seek to improve employee performance through provisions that allow managers to monitor or incentivise the employees' task effort and reward superior performance. While such incentives based may boost employees' effort, they may also compel employees to shift their efforts towards the observable tasks. In their seminal paper on multi-task principal-agent problems, Holmstrom and Milgrom (1991) demonstrate that for tasks that are complements at the margin of the principal's payoff function, high powered financial incentives for measurable tasks can lead to a reduction of effort towards more difficult to measure tasks. In other words, even if principals consider both tasks to be important, agents treat them as substitutes and are likely to allocate effort towards tasks associated with clear performance incentives. Because intrinsic motivation can be crowded out (Frey & Jegen, 2001; Georgellis et al., 2011), principals must carefully evaluate the trade-offs associated with monitoring and other external incentives in multi-task environments. If some important social goal can only be achieved through difficult to observe tasks, social value may suffer.

An alternative to monitoring and incentive management is to select and continue to motivate employees who already have higher levels of motivation to public goals, what an extensive literature refers to as 'pro-social motivation' (Besley & Ghatak, 2005; Grant, 2008). Pro-social motivation can be defined as 'the desire to expend effort to benefit other people' (Grant, 2008, p. 48) and a disposition towards empathy, helpfulness, and concern for others (Ritz et al., 2020). Pro-social motivation is distinct from the related concept of public service motivation (Perry and Wise 1990) in that it is more directed at a specific group rather than society at large, and is considered short and mid-term oriented (Ritz et al., 2020). Pro-social motivation therefore captures more precisely altruistic behaviours underlying the task environment of the frontline workers in our study because their target-group is a well-defined set of low-income beneficiaries.

In an environment with both observable and unobservable tasks, pro-social motivation is likely to be more positively correlated with performance on unobservable tasks. This is because motivated agents allocate additional effort towards tasks that significantly aid in meeting the organisational mission (Wright, 2007), increase their sense of contribution and self-efficacy (Schunk, 1995), and in turn, help the beneficiaries achieve better outcomes through improved performance. Following from this, our research tests three broad hypotheses. First, we test whether high levels of pro-social motivation are positively associated with improved performance by workers on both observable and unobservable tasks and if the association with unobservable tasks is more positive. Second, we test whether the perception of increased monitoring by management is negatively associated with improved performance on difficult

to measure tasks performed by workers. Third, we test whether the interaction between monitoring and motivation is negatively associated with performance.

Understanding management's preferences: principles versus task-specificity

Prior research has suggested that goal specificity can increase motivation by clarifying performance expectations and by focusing the employee's effort on the tasks most pertinent to achieving desired performance (Locke & Latham, 1990). This is particularly important when the tasks are ambiguous, as is the case with many unobservable tasks, because job specificity can increase self-efficacy by reducing uncertainty about job expectations (Wright, 2007).

We investigate two forms in which the manager's preferences can be communicated and then understood by workers. Managers can communicate the importance of completing unobservable tasks either by specifying the particular tasks in some detail, or by reinforcing the broader principles by which workers must decide on task-allocation. As an example, a manager in the case of a public service organisation might direct employees by specifying the precise unobservable tasks that are important to perform, for example, providing additional information on government programmes, motivating beneficiaries to join vocational training programmes or resolving disputes. Alternatively, the manager might simply communicate that employees should also focus attention on unobservable tasks that contribute to the goals of poverty alleviation.

Highly motivated workers respond positively to management communication that offers them more discretion in task execution. When managers do not over-specify tasks and grant some autonomy, workers are likely to experiment, engage in exploratory behaviour, (March,

1991), learn from beneficiaries and colleagues, and tailor their task environment in a manner that most effectively produces desired developmental outcomes for beneficiaries. Prior research has offered divergent views on discretion, some suggesting that discretion can improve outcomes (Coviello et al., 2017; Fernandez & Moldogaziev, 2011; Lipsky, 1971) and others cautioning that discretion can negatively impact outcomes such as social equity (Cárdenas & Ramírez de la Cruz, 2017). However, as compared to regulatory discretion, which has been the subject of many of these studies, our focus in this study is to understand whether workers perform better if they perceive their management is offering them more discretion. This facet of discretion is under-explored and of relevance to this study because it illustrates preference alignment within a principal-agent relationship. In line with this, we test the association between the workers' perceptions of management's preferences and performance.

Research Design

Setting

Our study takes place in six districts in the state of Karnataka in southern India. Our partner in this study is an NGO named MYRADA whose mission is to 'enable the poor and vulnerable, through building appropriate local level institutions, to exercise their rights for sustainable and effective strategies for improved livelihoods and quality of life.'[1] MYRADA pursues its mission by creating and strengthening local institutions, promoting opportunities for livelihood generation and skilling, imparting awareness on and implementing health programmes, advocating for policy change and acting as a bridge between the government and poor

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[1] MYRADA's mission and objectives. URL: https://myrada.org/mission-and-objectives/#:~:text=To%20enable%20the%20poor%20and,livelihoods%20and%20quality%20of%20life. (Accessed on 18 March 2022).

populations for the delivery of public programmes. There are two pillars to MYRADA's success in this regard: their work on establishing women's Self Help Groups (SHGs), and their large cadre of frontline workers.

An SHG is a collective of 15-20 women, often from the same village. The primary function of SHGs is to create opportunities for financial stability and empowerment. Specifically, women members of SHGs pool small amounts of money to create a corpus of funds from which individual women can take loans for financial emergencies, purchasing assets, or for funding small enterprises. Peer monitoring allows for both the steady accumulation of funds as well as timely repayment of loans taken. The SHG also serves as a financial intermediary between the women members and banks, who offer the group loans at reduced interest rates once the SHG has accumulated a corpus. This overcomes the challenge that poor individuals often have with securing a bank loan because they have no collateral to offer, making them a high risk prospects for banks. Figure 1depicts the spread of SHGs facilitated by MYRADA over several decades in the state of Karnataka. Our study included participant from all marked SHGs, spread across six districts, namely, Bellary, Bidar, Chamarajanagar, Chitradurga, Kolar and Gulbarga.

Given the number and wide distribution of SHGs, MYRADA's management in Bengaluru, the state capital of Karnataka, works through a large cadre of frontline workers who are hired locally. MYRADA has established Community Managed Resource Centres (CMRCs) at the level of blocks (a sub-unit of administration within a district) that serve as offices for the frontline workers and their manager, who is also local to the area. Each frontline worker is responsible for around 10 SHGs and visits them in rotation.

MYRADA's frontline workers perform two broad types of tasks. They play a critical role in creating awareness among rural populations about the SHG model, assisting women in creating them, managing the accounts books, ensuring regular meetings are scheduled, and liaising with banks. Frontline workers engaged by MYRADA are literate and are able to perform these tasks on behalf of SHG members who are often unfamiliar with accounting and are unable to engage in formal communication with banks. Because accounts books, loan documents, meeting attendance, meeting minutes are all recorded, MYRADA's management is able to verify that these tasks have been performed. In other words, these tasks are observed by management.
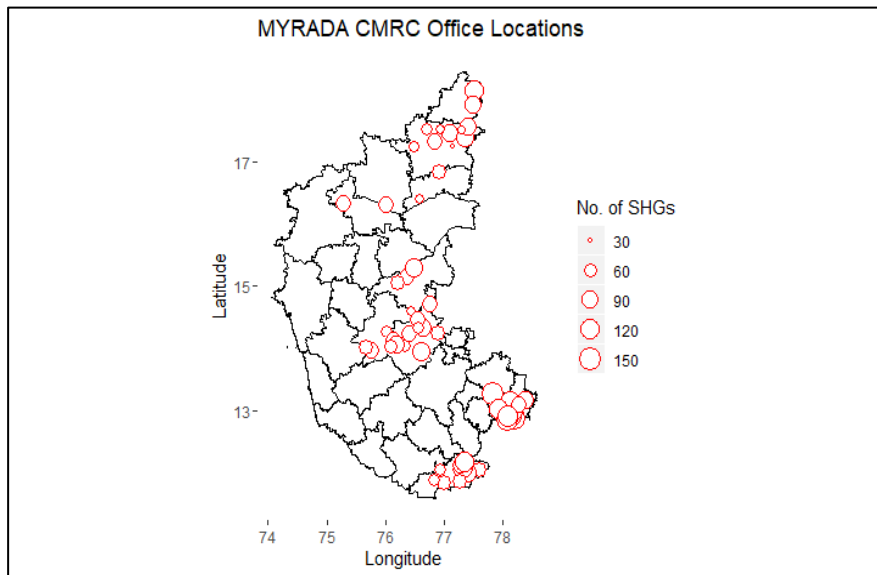
Figure 1: Presence of SHGs established by MYRADA in the state of Karnataka in India.

Over time, SHGs have become more than just a means towards financial empowerment. Just being part of a collective creates a new social network for members, and enables leadership development opportunities for women, who in rotation take on the role of SHG secretaries.

Further, SHGs become a channel through which other social and economic development goals can be achieved. For example, SHGs are convened to communicate information about best practices in health and nutrition, the need for educating children, and new vocational training opportunities. SHGs can also be utilised for communicating information about government programmes such as subsidies for agriculture, or direct benefit transfer schemes. Furthermore, SHGs also become platforms to organise politically and discuss more socially taboo topics such as alcoholism or certain illnesses. For MYRADA's management, SHGs are therefore a means to achieve broad-based social and economic development outcomes, above and beyond the narrower mandate for financial inclusion.

But just like with financial inclusion, SHGs need support to realise these outcomes. MYRADA's frontline workers play a critical role in ensuring that SHGs receive the right information and counselling to be able to participate in government programmes, or discuss and act on matters of social and political importance. Very few outputs of the work done to achieve these broader developmental outcomes by frontline workers are visible to MYRADA's management. For example, MYRADA's management can verify if an SHG member has received the benefit of a new government scheme by inspecting the documents submitted to the government or an acknowledgement receipt stamped by a government official. A large number of tasks performed by frontline workers are either difficult to observe or unobservable by management. They involve activities such as providing information, counselling, encouragement, cajoling or convincing SHG members or their families which remain unseen by management.

As part of the fieldwork for this study, we conducted focused group discussions with frontline workers and interviews with MYRADA's management to list the typical tasks performed by workers. Of the 17 tasks typically performed (See Table 1), 7 tasks are directly related to financial inclusion. The remaining 10 tasks target broader developmental outcomes. Within financial inclusion, while most (5) tasks are observable, 2 tasks, that is advice on managing personal (as opposed to group) finances and conflict resolution are unobservable. In the case of broader developmental outcomes, only 1 out of 10 tasks has easily observable outcomes. MYRADA's management would like frontline workers to perform well on both observable and unobservable tasks in order to meet multiple developmental objectives in the villages they work in. However, the incentives for frontline workers are skewed in the direction of observable tasks, most of which meet only the baseline goal for financial inclusion.

Table 1: List of tasks performed by MYRADA's frontline workers

Financial inclusion	Broader developmental outcomes
Observable	*Observable*
1. Advice on managing group (SHG) finances	8. Assistance in applying for government schemes like LPG and government ID like Aadhar
2. Conduct and convening of SHG meetings	
3. Maintenance of complete accounts of SHG savings and expenses	*Unobservable*
4. Recording and maintenance of SHG meeting minutes	9. Encouraging SHG household members to participate in awareness and training programmes
5. Tracking repayment of loans for the SHG	10. Recommending appropriate livelihood training programmes for members of SHG households
	11. Meeting and SHG member or their family member outside the SHG meeting to discuss a particular problem they are facing
Unobservable	12. Encouraging SHG member's family members
6. Conflict resolution between SHG members	to undergo check-up at a general health camp
	13. Encouraging and SHG member's family to undergo check-up at a cancer or HIV health camp

7. Advice on managing personal finances	14. Proactively bringing SHG members information on government schemes
	15. Providing SHG members information on the importance of using safe drinking water
	16. Convincing the male members of the household to allow an SHG member's participation in the SHG
	17. Convincing an SHG's family to allow young female adults to undergo vocational training

Outcomes: performance in a multi task-environment

While it is not possible for the management to observe all tasks, SHG members are able to assess how frontline workers perform on all these tasks. Data from a real task-environment in which workers have been performing tasks over a long term also allows beneficiaries to confidently distinguish between performance on different tasks. The workers in our sample have been serving in their positions for 7.9 year on average, with an organisation founded in 1968. Over this time period, the range of observable and unobservable tasks have become clearly defined. Further, we measure performance on tasks that are actually performed in a real-effort environment as compared to much of the prior research in which tasks are allotted by researchers. In our case therefore, frontline workers have spent a considerable amount of time evaluating the trade-offs between the two tasks types and understanding how unobservable tasks might help them achieve the objectives of the organisation.

We conducted a survey with 15,031 SHG members spread across all the six districts MYRADA is actively working in. Each SHG member interacts with a single frontline worker. Each survey asked the SHG member to identify the particular frontline worker they interact

with and rate their performance on the 17 tasks on a scale of 1 to 5, with 5 indicating the best performance. We compute z-scores for the performance of frontline workers on the two tasks-types by averaging the z-scores received on observed and unobserved tasks respectively. These performance scores are the key outcome variable of this study.

Frontline worker and beneficiary characteristics

We also asked SHG members to report their age, the number of years they had been active with an SHG and their monthly income, each of which is used as a covariate in the analysis. We conducted a linked survey among the 146 frontline workers to assess their levels of pro-social motivation, perceptions of monitoring by management, perceptions of the management's preferences for tasks, and demographic characteristics such as age, education and tenure at MYRADA. Pro-social motivation, perceptions of monitoring and management's preferences are composite indices constructed as described next.

Pro-social motivation: We measured pro-social motivation among employees. The clear focus of the work performed by MYRADA's frontline workers allowed us to construct a measure for pro-social motivation with strong relevance to the context, that is, social development work targeted at alleviating poverty and enhancing the living standards of poor rural populations. We asked frontline workers a bank of questions (with answers on a scale to 1 to 5 or strongly disagree to strongly agree) and computed a composite z-score for each worker's pro-social motivation levels. The following questions were included:

> 1. I feel good when I have a chance to help a SHG member, even when I am not recognized for it.
> 2. Helping an SHG member's family is as important to me as helping the member herself.
> 3. It is our responsibility to help poor people overcome their problems.
> 4. Poor people are responsible for their hardships.

> 5. SHG members and their families deserve our sympathy and support.

Perception of monitoring by the management: We measured how workers perceived the extent of management by the management, both at the level of the block level office (or CMRC) and MYRADA's headquarters located in the state capital of Bengaluru. We constructed a composite z-score using the responses to these two questions:

> 1. The MYRADA management in Bengaluru closely monitors my performance.
> 2. The CMRC manager routinely discusses my performance with management in Bengaluru.

Preference for action: Two composite variables capture the different ways in which management can communicate their preferences for performance of unobservable tasks. The first measure captures whether workers believe management required them to perform specific unobservable tasks and is computed as a composite z-score of three difficult to observe or unobservable tasks. These tasks are selected because they are representative of different sectors or thematic areas of development commonly pursued by MYRADA and the frontline workers on the field (financial inclusion, vocational training and health):

> 1. Conflict resolution between SHG members.
> 2. Encouraging SHG household members to participate in awareness and training programmes.
> 3. Encouraging SHG households to participate in cancer or HIV health camp.

The second variable captures whether workers believe that management is directing them towards the execution of unobservable tasks, but without specifying exactly which tasks to prioritise. We refer to this as the 'principles for action' by which workers are expected to allocate their effort in the field. We used two questions to compute a composite z-score:

> 1. The MYRADA management in Bengaluru believes I should dedicate time towards providing services in addition to financial inclusion
> 2. The MYRADA management in Bengaluru believes I should provide free advice to SHG members and their families

Summary statistics of all composite variables and demographic covariates are included in Appendices A, B and C.

Analysis

We estimate the following regression for each outcome, that is, the performance on observable and unobservable tasks.

$$Y_{ij} = \beta_0 + \beta_1 * X_i + \beta_2 * Z_{ij} + \epsilon_{ij}$$

Where Y_{ij} is the outcome of interest, β_1 is a vector of parameter estimates for SHG member covariates, X_i is a pre-specified list of covariates for each SHG member (includes age, income, level of education and the number of years a beneficiary has been engaged with an SHG), β_2 is a vector of parameter estimates for frontline worker covariates and Z_{ij} is a pre-specified list of covariates for each worker. For observable tasks, Z_{ij} includes measures of pro-social motivation, perception of monitoring by the management, tenure at MYRADA, and monthly income. For unobservable tasks, the model additionally includes composite metrics for perceptions of management's preferences for specific unobservable tasks versus broad principles for action. In both models, we include an interaction between pro-social motivation and perception of monitoring. ϵ_{ij} is an error term clustered that the level of the worker. Since the same worker is performing both types of tasks, we model the two regressions as Seemingly Unrelated Regressions (SURs), such that the errors are correlated across the two models. This

allows us to more accurately compare the coefficients for pro-social motivation and perceptions of monitoring across the two models.

Results

Task performance

Table 2 reports summary statistics for the composite measures of observable and unobservable task types. On average, observable tasks score higher than unobservable tasks. More interestingly, there is a high correlation between the two task-types (+0.85, p-value ~ 0). This suggests that workers who perform well on observable tasks, are also likely to perform well on unobservable tasks, although they might still focus attention on performing observed tasks better.

Table 2: Summary statistics for observable and unobservable tasks on a scale of 1-5.

	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
Observable Tasks	1.0	3.50	4.00	4.02	4.67	5.00
Unobservable Tasks	1.0	3.18	3.73	3.79	4.45	5.00

Pro-social motivation and monitoring

Pro-social motivation is positively associated with performance on both tasks types (Figure 2). For one standard deviation increase in pro-social motivation, performance improves by 0.08 standard deviations for observable tasks and by 0.095 standard deviations for unobservable tasks (see Appendix D for regression tables). We also compare the coefficients for pro-social motivation across the two models by performing a linear hypothesis test (X^2 (1, N = 13,637) = 1.16, p = 0.2). Contrary to our expectations, while the association between pro-social

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motivation and unobservable tasks is slightly higher, the difference is not statistically different from the association between pro-social motivation and observable tasks.

As a robustness check to our result, we ran another regression with the difference between the mean performance scores on observable and unobservable tasks and the same set of covariates (see Appendix E for regression tables). A larger difference between observable and unobservable tasks is indicative here of greater effort allocation towards observable tasks. On average, this difference is 0.23 points on a scale of 1-5 with minimum and maximum values being -1.52 and 3.38 respectively. We find that a standard deviation increase in pro-social motivation is associated with a 0.037 (p-value = 0.054) standard deviation decrease in the difference between performance scores on observable and unobservable tasks, however this result is only significant at the 90% confidence level. We do not find any association between the perception of monitoring or the interaction between monitoring and pro-social motivation and task performance on either task-type. In other words, motivation among workers is not crowded out if they perceive a higher degree of monitoring of the management in our case.
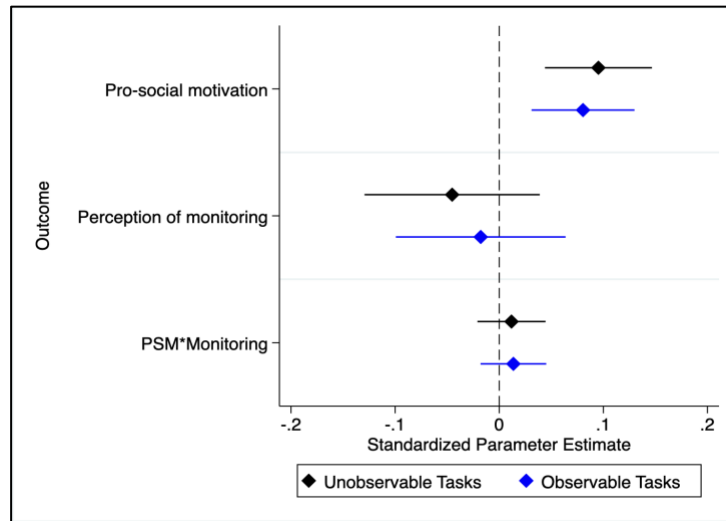
Figure 2: Association between pro-social motivation and perception of monitoring by the management on performance scores of observable and unobservable tasks performed by frontline workers. Notes: 95% confidence intervals derived from robust standard errors.

As a second robustness check, we conduct leave-on-out analyses for the composite indices for pro-social motivation and perceptions of monitoring included as independent variables in the regression. Since each composite index is comprised of multiple components, it is important to check if a single component is driving the result. To achieve this, we recompute each composite index by dropping one component at a time and re-run the regression model. We find that the main results are robust and can conclude that in no case does the main direction or substantive size of the effect hinge on a single component of the index.

Inframarginal Effects: Figure 3 depicts the inframarginal effects of pro-social motivation and the perception of monitoring on the performance on both observable and unobservable tasks. To construct these we create binary indicators for performance on tasks across quintiles and run regression with these binary indicators as the dependent variable and the same set of independent variables. For unobservable tasks, we find that a standard deviation increase in

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pro-social motivation increases the probability of an employee being a top performer (top row, left graph). In other words, a one standard deviation increase in pro-social motivation increases the probability that the employee will be in the top 40% of performers (that is, the top 2 quintiles). For observable tasks, a one standard deviation increase in pro-social motivation increases the likelihood of being a performer in the top 20% of the distribution. This demonstrates that pro-social motivation is associated with improving the performance on unobservable tasks across a broader range of the performance distribution.

The bottom row shows the effects for monitoring. No effects are observed in the case of observable tasks (bottom row, right). But for unobservable tasks, a one standard deviation increase in monitoring is associated with an increased probability that the employee will be a poor performer (first quintile) and with a decreased probability that they will be a better performer (fourth quintile). This result is of particular interest because it indicates that higher levels of monitoring are likely to crowd out the motivation to perform unobservable tasks. As we will discuss in the conclusion, one possible reason for this is need for agency among employees in the execution of such tasks.
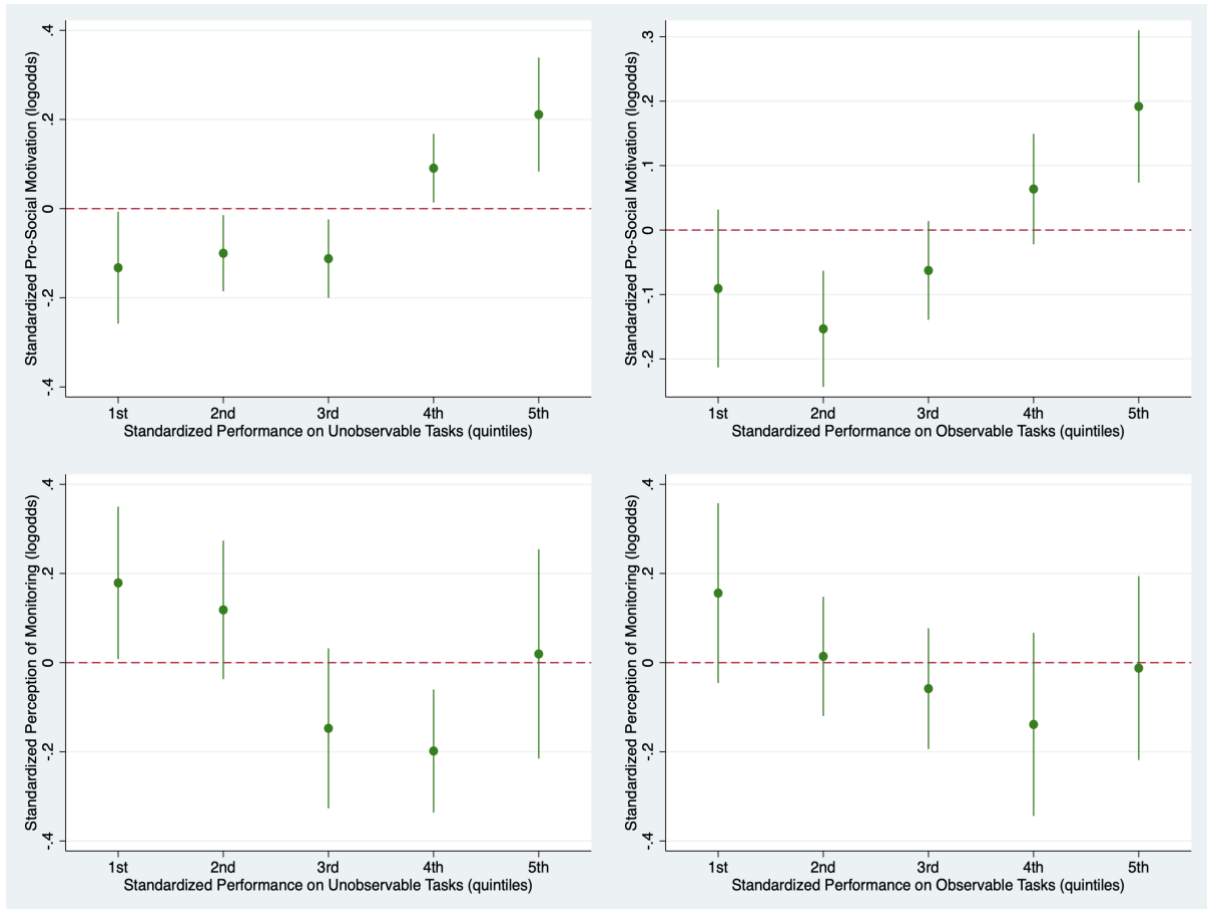
Figure 3: Inframarginal effects of pro-social motivation and the perception of monitoring on observable and unobservable tasks.

Communicating preference for unobservable tasks

We find a positive association between higher performance on unobservable tasks and management's preference stated in the form of principles for action, as compared to the specification of particular tasks with which no association is found (Figure 4). Specifically, a one standard deviation increase in knowledge about the management's principles for action is associated with a 0.12 standard deviation increase in performance on unobservable tasks. A linear hypothesis test between the coefficients for 'principles for action' and 'specification of unobservable tasks' indicates that the difference is significant (X^2 (1, N = 13,637) = 6.23, p < .05).
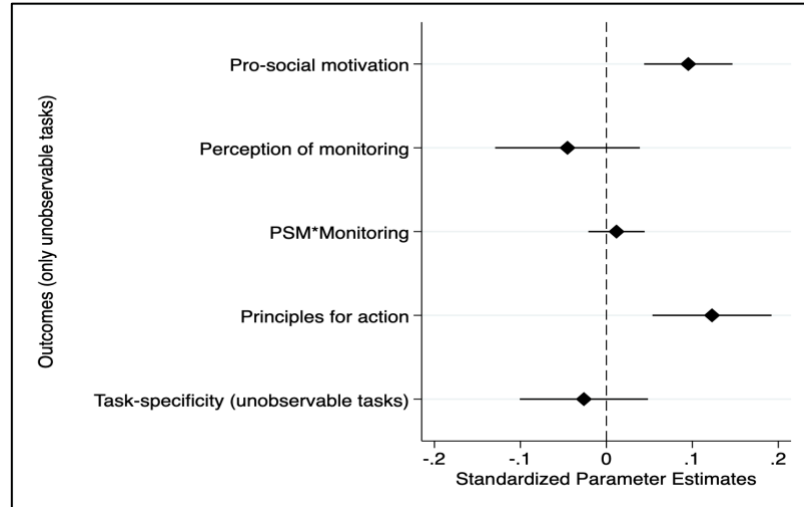
Figure 4: Association between pro-social motivation, perception of monitoring by the management, principles for action, and specification of unobservable tasks on performance scores of unobservable tasks performed by frontline workers. Notes: 95% confidence intervals derived from robust standard errors.

As a robustness check, we perform a secondary regressions using a) only the three unobservable tasks included in the composite index for task-specificity and b) all remaining unobservable tasks not included in the composite index for task-specificity (see Appendix F). Our result that principles for action are associated with performance on unobservable tasks remains robust to these alternative specifications.

As a second robustness check, we conduct leave-on-out analyses for the composite index for principles of action (Appendix G). We recompute each composite index by dropping one component at a time and re-run the regression model. We find that the results are robust, with a small loss of precision in just one case. However, in no case does the main direction or substantive size of the effect hinge on a single element of the index.

Inframarginal effects: Figure 5 depicts the inframarginal effects of the principles for action on performance on unobservable tasks. As an extension to the main result that principles for action are positively associated with performance on unobservable tasks, we find that while knowing the principles for action can decrease the probability of being a poor performer (1st and 2nd quintiles), increase the probability of being a mid-range performer (3rd and 4th quintiles), it is not associated with excellent performance (5th quintile). This is a notable result as well because reinforces the positive association between pro-social motivation and the highest levels of performance.
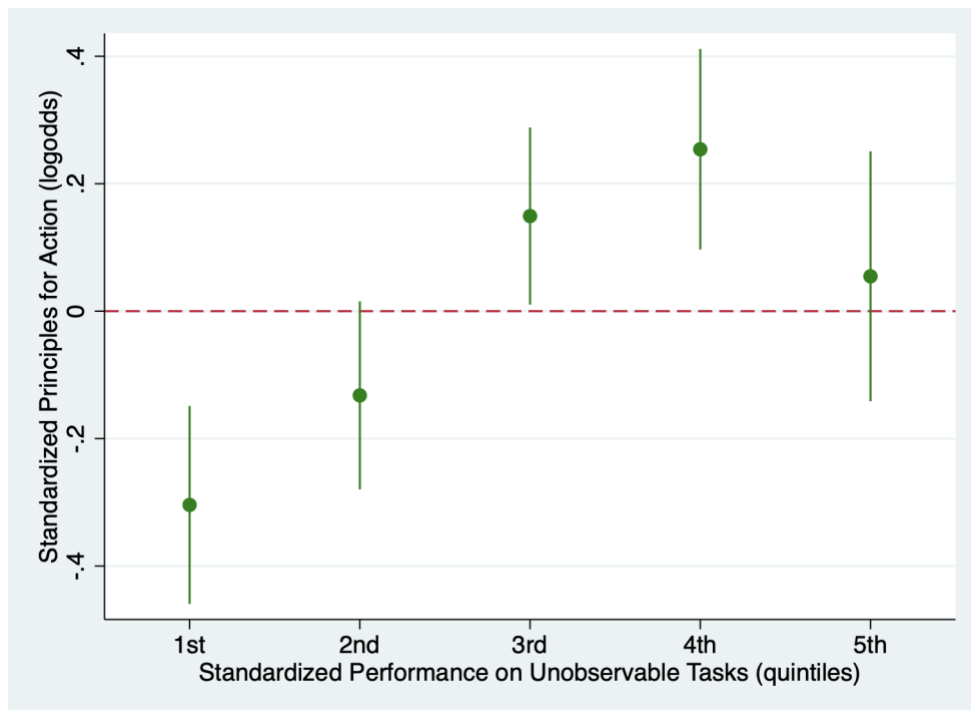
Figure 5: Inframarginal effects of principles for action on performance of unobservable tasks.

Discussion

This study demonstrates that pro-social motivation is an important factor in incentivising performance in the public sector and social service organisations in line with previous research. Crucially, the results show that pro-social motivation incentivises performance across all kinds of tasks. If workers are motivated to serve the population they are interacting with, they will perform a range of tasks to achieve desired outcomes, whether observable or unobservable by management. In terms of Human Resource strategy, managers are likely to benefit from hiring workers with high levels of pro-social motivation. However this can be challenging because workers can misrepresent themselves during the hiring process or their motivations can change over time. Fortunately, well-executed personality tests are largely able to predict good job performance, organisational fit and teamwork (Hough & Oswald, 2008). Management will also benefit from focusing on organisational practices that maintain and even enhance pro-social motivation. As an example, Grant et al. (2007) show that job performance in a fundraising organisation improved among workers who had structured contact with beneficiaries. In our case and other organisations involved in frontline work, beneficiary contact already exists but could be supplemented by more structured feedback sessions and formal beneficiary testimonies to enhance motivation. Further, job design strategies such as introducing varied and challenging new tasks that allows workers to showcase expertise and in turn cultivate higher self-efficacy, allowing autonomy in job design, conducting appropriate skilling and

training and creating an environment of learning and development can also sustain and enhance motivation (Parker, 2014).

It is also notable that the perception of increased monitoring does not predict performance nor crowd out the performance benefits of intrinsic motivation in our study. While we observe through inframarginal analysis that an increase in the perception of monitoring is associated with an increased probability that the employee will be a poor performer, our main result is in line with studies that demonstrate that incentive alignment is a more powerful mechanism than monitoring for job performance (Belot & Schröder, 2015; Tosi et al., 1997). At the same time, the result is also counter to a large body empirical work. Two points are worth emphasising here with respect to our measurement of monitoring and the result obtained. First, other research that demonstrates the positive impacts of monitoring on performance tends to link monitoring to either financial (Duflo & Hanna, 2005) or non-financial penalties (Pedersen et al., 2018). Our study on the other hand measures the perceptions that workers hold about how much management is monitoring their task-environment and involves no penalties. In this context, a possible pathway for the association between monitoring and performance is the extent of autonomy experienced by workers in carrying out their tasks, especially because the tasks are complex and require deep inter-personal relationships with beneficiaries that frontline workers understand better than management. This is supported by prior research which shows that marginal returns to delegation as compared to control are higher in uncertain environments (Prendergast 2002) and that job autonomy facilitates both the speed and quality of decision-making and is positively associated with well-being and job-satisfaction (Parker, 2014). Workers might also perceive excessive managerial control as a sign of distrust leading to

reduced performance (Ellingsen & Johannesson, 2008; Falk & Kosfeld, 2006). Second, it is worth thinking about alternative arrangements in similar contexts where managerial monitoring is less viable because it either requires high organisational capacity that is often not available (Drolc & Keiser, 2021) or investments in monitoring systems that are too expensive for many public and social service organisations (Burgess & Ratto, 2003). Instead, in contexts with low-powered incentive structures, proximity to beneficiaries, and distance from the management, empowering beneficiaries themselves to monitor frontline workers could lead to improved performance as shown by the literature on citizen monitoring and accountability (Freire et al., 2020; Goetz & Jenkins, 2010).

The third significant outcome of this study concerns how managers communicate their preferences for the execution of unobservable tasks. We tested two strategies - a broad based form of communication that emphasises the principles for action, and a second more task-specific method of communication. The study shows that clarifying principles for action is positively associated with performance on unobservable tasks. We do not test mechanisms underlying this result, but prior research on job-autonomy is relevant for understanding this result as well. Highly motivated workers are likely to construct an optimal task environment for achieving desired outcomes through experimentation, conversations with beneficiaries and colleagues, or by learning from other sources once they have understood the principles by which they must act. Over-specification of tasks can crowd-out this intrinsic motivation by limiting the scope of tasks performed, and by imposing managerial constraints on the autonomy and sense of self-efficacy of workers.

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Appendices

A. Summary statistics: Performance scores of all 17 tasks

Tasks	n	mean	sd	median	1st Qu.	3rd Qu.
Advice on managing group (SHG) finances	14433	4.18	0.92	4	4	5
Advice on managing personal finances	14347	3.71	1.06	4	3	5
Conduct and convening of SHG meetings	14408	3.95	1.03	4	3	5
Maintenance of complete accounts of SHG savings and expenses	14427	4.04	0.97	4	3	5
Recording and maintenance of SHG meeting minutes	14405	3.95	1.04	4	3	5
Conflict resolution between SHG members	14182	3.67	1.08	4	3	5
Tracking repayment of loans for the SHG	14315	3.88	1.04	4	3	5
Assistance in applying for government schemes like LPG and government ID like Aadhar	14164	4.02	1.03	4	3	5
Encouraging SHG household members to participate in awareness and training programmes	14357	3.82	1.05	4	3	5
Recommending appropriate livelihood training programmes for members of SHG households	14361	3.71	1.07	4	3	5
Meeting and SHG member or their family member outside the	14375	3.79	1.05	4	3	5

SHG meeting to discuss a particular problem they are facing

Encouraging SHG member's family members to undergo check-up at a general health camp	14208	3.79	1.06	4	3	5
Encouraging and SHG member's family to undergo check-up at a cancer or HIV health camp	13923	3.72	1.13	4	3	5
Proactively bringing SHG members information on government schemes	14286	3.70	1.07	4	3	5
Providing SHG members information on the importance of using safe drinking water	14300	3.75	1.09	4	3	5
Convincing the male members of the household to allow an SHG member's participation in the SHG	14231	3.79	1.03	4	3	5
Convincing an SHG's family to allow young female adults to undergo vocational training	14281	3.76	1.06	4	3	5

B. Summary statistics: SHG members covariates

Covariate	n	mean	sd	median	Q0.25	Q0.75
Age	14403	41.12	10.61	40	34	48
No. of years as member of SHG	14057	9.50	6.04	8	5	14
Monthly income	14468	7861.46	8277.56	5000	2500	10000
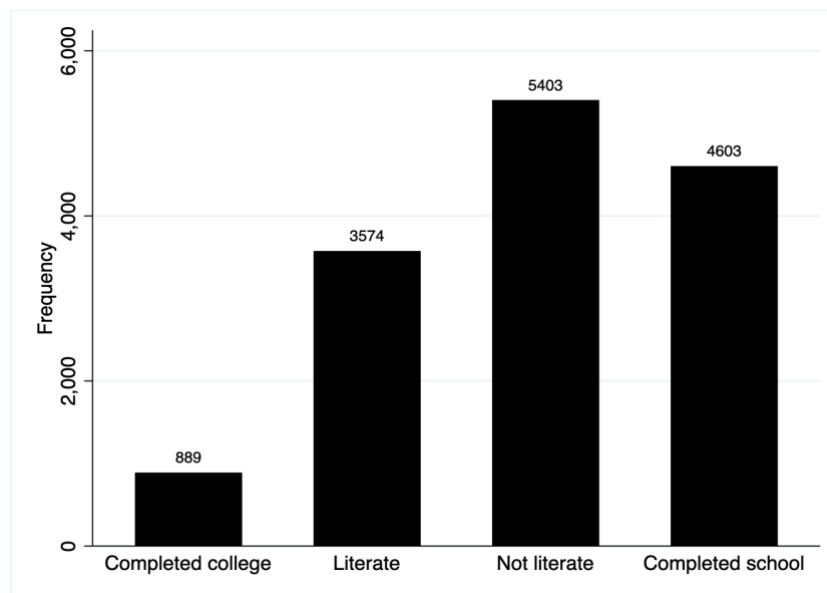
Figure 6: Histogram of SHG members' educational attainment.
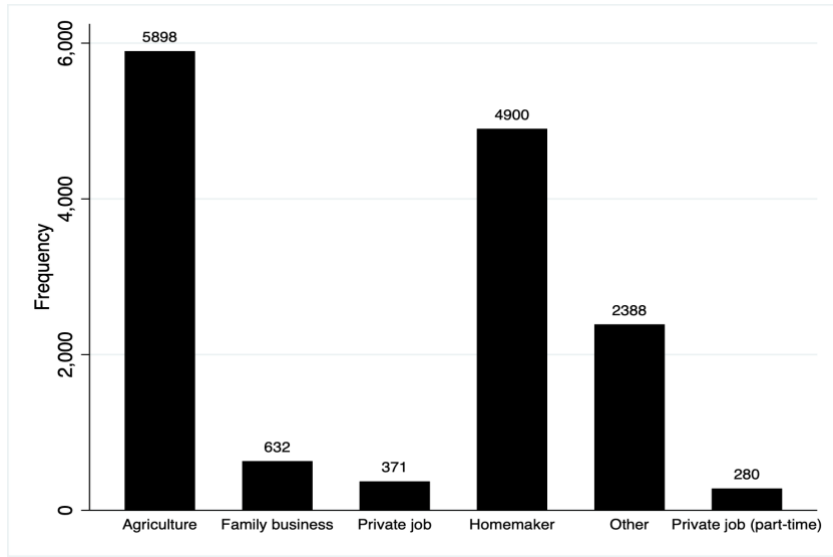
Figure 7: Histogram of SHG members' main occupation

C. Summary statistics: Frontline worker covariates

Covariate	n	mean	sd	median	Q0.25	Q0.75
Age	146	37.12	8.55	38.00	30.00	42.00
Tenure at MYRADA (years)	146	7.86	5.47	7.00	3.25	12.00
Monthly income	146	8688.92	8176.02	6000.00	3000.00	11000.00
Pro-social motivation (z-score)	146	-0.00	2.43	-0.06	-1.67	1.42
Perception of monitoring by the management (z-score)	146	0.00	1.55	-0.35	-0.43	0.78
Management communication: principles (z-score)	146	-0.00	1.57	-0.14	-1.10	0.82
Management communication: specific tasks (z-score)	146	0.00	2.20	0.41	-1.67	2.34

D. Main result: SURs for observable and unobservable tasks.

	(1) Unobservable Tasks	(2) Observable Tasks
SHG member's age	-0.000857	0.000217
	(0.00223)	(0.00227)
Tenure at SHG (years)	0.0124	0.0158*
	(0.00732)	(0.00717)
SHG member educ: Literate	-0.0454	0.0250
	(0.161)	(0.162)
SHG member educ: School		0.0429
	0.0505	(0.161)
	(0.163)	
SHG member educ: College	0.154	0.137
	(0.139)	(0.138)
SHG member income	0.00000530	-0.00000434
	0.00000426)	(0.00000437)
Worker pro-social motiv.	**0.0953***	**0.0805**
	(0.0260)	**(0.0250)**
Perception of monitoring	-0.0452	-0.0178
	(0.0426)	(0.0412)
Motiv.*Monitoring	0.0118	0.0136
	(0.0165)	(0.0160)
Principles for action	**0.123***	-
	0.0350)	
Task-specificity	-0.0261	-
	(0.0377)	
Worker tenure (log)		-0.0359
	0.0532	(0.0693)
	(0.0673)	
Worker income (log)	0.0256	0.0122
	(0.0486)	(0.0465)
_cons	-0.424	-0.230
	(0.441)	(0.422)
N	14106	13637

Standard errors in parentheses
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

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E. Robustness check (for the result on pro-social motivation and monitoring): Regression with difference between performance scores on both task types as the outcome variable

```
----------------------------------------------------------------------
DV: Difference between observable and unobservable scores

----------------------------------------------------------------------------
-

SHG member's age                                    0.00182
                                                   (0.00186)

Tenure at SHG (years)                               0.00137
                                                    (0.00498)

SHG member educ: Literate                           0.0667
                                                    (0.181)

SHG member educ: School                            -0.0552
                                                   (0.185)

SHG member educ: College                           -0.107
                                                   (0.141)

SHG member income                                  -0.00000346
                                                   (0.00000407)

Worker pro-social motiv.                           -0.0364*
                                                   (0.0180)

Perception of monitoring                           -0.0535
                                                   (0.0334)

Motiv.*Monitoring                                   0.00664
                                                   (0.00879)

Worker tenure (log)                                -0.0696
                                                   (0.0604)

Worker income (log)                                -0.0111
                                                   (0.0310)

_cons                                               0.200
                                                   (0.329)
---------------------------------------------------------------
N                                                   12568
---------------------------------------------------------------
Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001
```

F. Robustness check (for the result on principles for action): Regressions on the 1) performance on the 3 specific unobservable tasks included in the composite index for task-specificity and 2) the remaining unobservable tasks not included in the composite index for task-specificity

	DV: unobservable tasks included in index	Remaining unobservable tasks
SHG member's age	-0.000331	-0.00128
	(0.00208)	(0.00218)
Tenure at SHG (years)	0.0144*	0.0117
	(0.00686)	(0.00708)
SHG member educ: Literate	-0.0339	-0.0130
	(0.150)	(0.161)
SHG member educ: School	0.0463	0.0557
	(0.155)	(0.162)
SHG member educ: College	0.155	0.163
	(0.132)	(0.139)
SHG member income	-0.00000435	-0.00000427
	(0.00000361)	(0.00000410)
Worker pro-social motiv.	0.0898***	0.0924***
	(0.0242)	(0.0250)
Perception of monitoring	-0.0262	-0.0382
	(0.0408)	(0.0395)
Motiv.*Monitoring	0.00659	0.0118
	(0.0154)	(0.0157)
Principles for action	0.119***	0.129***
	(0.0334)	(0.0337)
Task-specificity	-0.0217	-0.0262
	(0.0367)	(0.0365)
Worker tenure (log)	0.0608	0.0710
	(0.0629)	(0.0653)
Worker income (log)	0.0361	0.0183
	(0.0420)	(0.0496)
_cons	-0.573	-0.383
	(0.385)	(0.453)
N	13186	13138

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

G. Robustness check (for the result on principles for action): Leave one out analysis for the composite index for principles for action.

a. **Principles for Action:** is a composite index comprised of z-scores for questions 34 and 35. Each of these is excluded one by one and the main regression result is computed. In the model outputs below (for SURs), the unobservable tasks are m1 and observable tasks are m2. This variable is only included in m1.

Questions

34.   The MYRADA management in Bengaluru believes I should dedicate time towards

providing services in addition to financial inclusion

35.   The MYRADA management in Bengaluru believes I should provide free advice to

SHG members and their families

Summary of Results: Results are robust to alternative specifications. On leaving out Q35 (The MYRADA management in Bengaluru believes I should provide free advice to SHG members and their families), the result is now significant only p=0.06, indicating a small loss in precision. However, in no case does the main direction or substantive size of the effect hinge on a single element of the index.

Leave out Q34

```
Simultaneous results for m1, m2
```

(Std. Err. adjusted for 144 clusters in crp_name)

```
------------------------------------------------------------------------------
                     |               Robust
                     |     Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------------+--------------------------------------------------------
m1_mean              |
     SHG member's age | -.0011708   .0023547    -0.50   0.619    -.0057858    .0034443
Tenure at SHG (years) |  .0118414   .0071588     1.65   0.098    -.0021897    .0258724
       Educ: Literate | -.0627968   .1602566    -0.39   0.695     -.376894    .2513004
         Educ: School |  .0405497   .1619848     0.25   0.802    -.2769347    .3580342
        Educ: College |   .141499   .1393392     1.02   0.310    -.1316009    .4145988
          SHG: income | -4.85e-06   4.23e-06    -1.15   0.251    -.0000131    3.44e-06
 Pro-social motivation |  .0911904   .0262478     3.47   0.001     .0397457    .1426351
           Monitoring | -.0287715   .0407217    -0.71   0.480    -.1085845    .0510415
                     |
         Motiv*Monitor |   .012367   .0154154     0.80   0.422    -.0178465    .0425806
                     |
 Principles_leaveout34 |  .1523596   .0594049     2.56   0.010      .035928    .2687912
      Task preference | -.0166102   .0353756    -0.47   0.639    -.0859451    .0527247
          Agent tenure |  .0406248   .0687189     0.59   0.554    -.0940617    .1753114
          Agent income |  .0222756   .0457779     0.49   0.627    -.0674475    .1119986
                 _cons |  -.341717   .4176794    -0.82   0.413    -1.160353    .4769195
---------------------+--------------------------------------------------------
m1_lnvar             |
                 _cons | -.0806349   .0672378    -1.20   0.230    -.2124185    .0511486
---------------------+--------------------------------------------------------
m2_mean              |
     SHG member's age |  .0002169   .0022668     0.10   0.924     -.004226    .0046598
Tenure at SHG (years) |  .0158465   .0071715     2.21   0.027     .0017905    .0299024
       Educ: Literate |  .0250203   .1621303     0.15   0.877    -.2927492    .3427897
         Educ: School |  .0428845   .1614201     0.27   0.790     -.273493     .359262
        Educ: College |  .1369325   .1381587     0.99   0.322    -.1338535    .4077185
          SHG: income | -4.34e-06   4.37e-06    -0.99   0.321    -.0000129
4.23e-06
```

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```
Pro-social motivation |   .0804867    .025012     3.22   0.001     .0314641    .1295092

            Monitoring |  -.0177868   .0412279    -0.43   0.666    -.0985921    .0630185

                       |

          Motiv*Monitor |   .0135999   .0159535     0.85   0.394    -.0176683    .0448681

                       |

           Agent tenure |  -.0359432   .0693432    -0.52   0.604    -.1718534     .099967

           Agent income |     .01221   .0464997     0.26   0.793    -.0789278    .1033477

                  _cons |  -.2301645   .4221328    -0.55   0.586     -1.05753    .5972006

---------------------+----------------------------------------------------------------

m2_lnvar             |

                  _cons |  -.0436259    .070223    -0.62   0.534    -.1812605    .0940087

----------------------------------------------------------------------------------------
```

Leave out Q35

```
Simultaneous results for m1, m2


                                      Number of obs    =       13,637


                                      (Std. Err. adjusted for 144 clusters in crp_name)
----------------------------------------------------------------------------------------
                     |             Robust

                     |    Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]

---------------------+----------------------------------------------------------------

m1_mean              |

      SHG member's age |  -.0004946   .0022748    -0.22   0.828    -.0049532    .0039639

Tenure at SHG (years) |   .0143224   .0073939     1.94   0.053    -.0001694    .0288143

         Educ: Literate |  -.0317249   .1626191    -0.20   0.845    -.3504526    .2870027

          Educ: School |    .044859   .1648828     0.27   0.786    -.2783054    .3680234

         Educ: College |    .160897   .1413829     1.14   0.255    -.1162083    .4380023

           SHG: income |  -4.54e-06   4.25e-06    -1.07   0.286    -.0000129    3.80e-06

Pro-social motivation |   .0994336   .0267979     3.71   0.000     .0469107    .1519566

            Monitoring |  -.0278041   .0424963    -0.65   0.513    -.1110954    .0554872

                       |

          Motiv*Monitor |    .010698   .0186288     0.57   0.566    -.0258138    .0472098
```

```
                     |
 Principles_leaveout35 |   .1106262   .0590769     1.87   0.061    -.0051625    .2264149
      Task preference |  -.0168832   .0384986    -0.44   0.661    -.0923391    .0585727
         Agent tenure |   .0266661   .0677399     0.39   0.694    -.1061016    .1594338
         Agent income |   .0163533   .0477899     0.34   0.732    -.0773131    .1100197
                _cons |  -.3374598   .4336527    -0.78   0.436    -1.187403    .5124839
---------------------+----------------------------------------------------------------
m1_lnvar             |
                _cons |  -.0700124   .0691173    -1.01   0.311    -.2054799    .0654551
---------------------+----------------------------------------------------------------
m2_mean              |
      SHG member's age |   .0002169   .0022668     0.10   0.924     -.004226    .0046598
 Tenure at SHG (years) |   .0158465   .0071715     2.21   0.027     .0017905    .0299024
        Educ: Literate |   .0250203   .1621303     0.15   0.877    -.2927492    .3427897
         Educ: School |   .0428845   .1614201     0.27   0.790     -.273493     .359262
        Educ: College |   .1369325   .1381587     0.99   0.322    -.1338535    .4077185
           SHG: income |  -4.34e-06   4.37e-06    -0.99   0.321    -.0000129    4.23e-06
 Pro-social motivation |   .0804867    .025012     3.22   0.001     .0314641    .1295092
            Monitoring |  -.0177868   .0412279    -0.43   0.666    -.0985921    .0630185
                      |
         Motiv*Monitor |   .0135999   .0159535     0.85   0.394    -.0176683    .0448681
                      |
          Agent tenure |  -.0359432   .0693432    -0.52   0.604    -.1718534     .099967
          Agent income |     .01221   .0464997     0.26   0.793    -.0789278    .1033477
                _cons |  -.2301645   .4221328    -0.55   0.586     -1.05753    .5972006
---------------------+----------------------------------------------------------------
m2_lnvar             |
                _cons |  -.0436259    .070223    -0.62   0.534    -.1812605    .0940087
----------------------------------------------------------------------------------------
```

Chapter 2

Target-shifting in public sector performance management

Reputation management and policy-learning in government-to-government rankings

Abstract

Target-shifting in public sector performance management occurs when governments change measurement strategies, drop certain targets, or introduce new ones. These changes can be motivated by the desire to manage their reputations, or alternatively, can reflect a process of policy-learning about more appropriate targets. I analyse these divergent motivations for target-shifting for a national ranking program on waste management and sanitation outcomes for cities in India. In this case, target-shifting by the national government is reputation management when it leads to an artificial inflation of scores received by cities. Alternatively, target-shifting is learning when it emerges from a realisation of the data management challenges faced by less-resourced cities, and as a means to limit gaming. I utilise a novel dataset of city performance from 2016-2020, supplemented by interviews with government officials and consultants to test for different outcomes under these two scenarios. I find stronger evidence for reputation management as compared to the policy learning scenario. Additionally, I also find that target-shifting by the national government leads to the over-reporting of performance by participating cities. The study contributes to our understanding of government-to-government performance management by centring the influence of federal politics and state capacity. The findings suggest that government-to government ranking programs are highly prone to distortions in contexts with low administrative capacity. Crucially, I find that distortions in self-reporting result less from an active intention to game the system, but from the highly demanding and frequent data submission requirements imposed by the program on cities. In terms of practical implications, the study suggests that governments must recognise the challenges faced by less-resourced participants and tailor performance management and capacity building initiatives appropriately to maximise public good.

Introduction

Target-shifting is a common practice in public sector performance management. It occurs when governments diverge from their initial targets to introduce new indicators (Döhler, 2018; Pierre & de Fine Licht, 2021; Van Dooren et al., 2015), selectively omit targets (Hood, 2006), or devise new methods of measuring performance (Pierre & de Fine Licht, 2021). Most often, target-shifting in performance management systems has been understood as "gaming", defined as 'strategic behaviour in relation to target systems' (Hood, 2006). Gaming is seen to be counterproductive to achieving outcomes because it is "behaviour that consumes real resources but produces no genuine performance improvement" (Kelman & Friedman, 2009).

Within gaming, principal-agent explanations suggest that governments have incentives to mis-represent their performance to their principals, that is, citizens, civil society, or external observers such as other governments (Pierre & de Fine Licht, 2021). While this is a powerful model for understanding certain behaviours such as gaming, principals when they are governments might also engage in target-shifting with motives informed by federal politics or lessons from program implementation that extant frameworks do not adequately capture. I advance and test two alternative explanations to target-shifting by governments: reputation management and policy learning.

I do so by looking at target-shifting within a specific example of public sector performance management, i.e. the use of rankings and scorecards in government-to-government rankings. Government to government ranking programs are distinct from independent or third-party ranking programs that are more common, such as the rankings of

Universities. When a national government ranks a sub-national government, both governments have stakes in the outcomes of the program. If the performance of sub-national governments is not incentivised through ranking, the national government will be unable to create public good in the form of better outcomes for citizens. Further, unlike an independent ranking program, the relationship between governments is structured by politics and the federal compact, making it difficult for national governments to act as a neutral third-party. These particular features of government-to-government ranking allow us to explore alternative explanations for target-shifting behaviour among national governments.

I locate my analysis by looking at target-shifting in the *Swachh Survekshan* ("cleanliness survey" in Hindi), a large annual ranking program on waste management and sanitation outcomes in India implemented by the national government with cities as participating governments. Each city is ranked based on both self-reported and externally assessed scores. Cities compile and report their scores through a government portal and third-party organisations are engaged by the national government to conduct an external assessment. The national government has engaged in target-shifting over the period 2016-2020 by re-weighting the key score components each year. Over time, the weight of externally assessed scores has increased from an initial 25% to 50% while the weight of the self-reported score has dropped from 50% to 25%. This offers a valuable opportunity to learn about both the motivations for target-shifting by the national government, and the response to target-shifting by participating city governments.

I first examine *reputation management*. The reputations of both the national and participating sub-national governments are linked in a ranking program. While ranks are simply re-allocated among cities, the scores on which ranks are based can inform observers if

average performance is improving each year. If the scores of cities do not improve, observers are likely to hold both governments responsible for poor outcomes. Target-shifting to inflate performance offers the national government one way to manage reputation.

Alternatively, national governments might engage in target-shifting after learning about the adverse impacts of ranking programs, what I am calling *policy learning*. Ranking programs are often biased towards participants with stronger baseline levels of resources, and can therefore demotivate "losing" participants (Frederickson & Stazyk, 2010; Hood, 2006). If many sub-national governments underperform because the ranking methodology disregards their particular challenges and demotivates them, the national government's program will fail to meet its intended outcome of creating public good in the form of better outcomes for citizens. The national government would then 'learn' and shift targets to correct towards better outcomes. Underperformance may not be the only cause of learning. National governments, unlike third party or private ranking agencies, are often responsible for creating equity among sub-national governments. They are also driven to support poor performers given that they cannot simply replace a low-performing sub-national government. In this context, national governments have an incentive to engage in target-shifting by correcting the ranking methodology to motivate participants who might otherwise perform poorly, drop out, or contest the ranking program's methodology.

To test whether policy learning and reputation management are indeed part of target-shifting by a national government, I construct an original dataset of performance scores and ranks obtained by over 400 cities in the *Swachh Survekshan* over the period 2016-2020. This main dataset is supplemented by data on revenue generated by 243 cities, interviews with government officials and solid waste management (SWM) consultants, and analysis of

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parliamentary questions as well as media coverage of the *Swachh Survekshan* over this period. To examine the motivations of the national government, I conduct trend analyses of the broad outcomes of the program in terms of performance scores against the counterfactual scenario in which target-shifting had not occurred. I supplement trend analysis with multivariate regression of the scores and ranks obtained against indicators of a city's previous performance, size and revenue. Broadly, if target-shifting is aimed at reputation management, the total scores obtained by cities should increase over the years as compared to the counterfactual no-target-shifting scenario. On the other hand, if the national government's objective is to improve the ranking programme so less capacitated participants can benefit from it, smaller and less-resourced cities with limited capacity for data collection, management and reporting should perform better due to target-shifting. Additionally, I test how cities respond to target shifting using regression modelling and a novel identification strategy to isolate causal pathways.

I find stronger evidence for reputation management as compared to policy-learning. I show that target-shifting leads to score inflation as compared to the counterfactual scenario in which no target-shifting occurs. On the other hand, there is less evidence to support policy learning given that the performance of smaller cities declines over time even as targets shift. Additionally, I find that target-shifting can create over-reporting of performance by cities, and examine why this is the case. Qualitative evidence presented shows that as compared to conscious efforts at gaming, over-reporting results from frequent and demanding requirements for data submission from cities with low data management capacities.

The study makes four contributions to the literature on performance management in the public sector. First, the study offers a novel empirical illustration of the behaviours of both

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principals and agents in performance management programs by using a large dataset of performance measures Prior research has made important contributions towards identifying the problem of target-shifting or gaming and illustrating the behaviour of principals and agents through case studies and before and after analyses (Bevan & Hood, 2006; Döhler, 2018). This paper extends the methodological diversity of the literature by employing counterfactual and model based analyses to examine the behaviours of both principals and agents. Second, the study contributes to performance management theory by offering a broader set of explanations for the motivations behind target-shifting and gaming practices in the public sector. Here, the paper specifically considers the role of federal politics and state capacity. Third, the result on agent behaviour offers new insights into how capacity gaps, information sharing between governments, and the design of the performance management systems create incentives for data distortion among agents. Contrary to active, self-interested gaming behaviour, I show that data distortions result from the lack of data management capacity among less-resourced participants. Finally, the results have implications for public policy. Ranking systems are designed for a specific purpose - to induce competition and select winners. These fundamental features of ranking systems align poorly with the goals that governments often set out to achieve and the political context within which they implement such programmes. When governments try to distort the system in line with their objectives, it is ultimately the public that loses. It follows that we must look for alternatives. As compared to selection-focused systems such as ranks that pick winners and losers, governments might be more likely to achieve success in motivating, measuring and monitoring progress by adopting a development-focused approach to assessment. The conclusion of this paper outlines each contribution in more detail.

Theory and Hypotheses

Governments might engage in target-shifting because they have learnt they need better indicators, or alternatively, because they want to suppress poor performance. But governments aren't often transparent about why they shift targets, and are unlikely to openly admit their motivations for doing so. Here I discuss two alternative motivations for target-shifting for the case of government-to-government performance management and propose a set of hypothesis that can allow us to make inferences about motivations by only observing and testing measures of performance.

Gaming and Reputation management

Performance management can result in a number of unintended and adverse consequences such as tunnel vision, measure-fixation, and mis-representation (Espeland & Sauder, 2007; Propper, 2003; van Thiel & Leeuw, 2002). Ranks, the focus of this paper for example, are easily manipulated as has been most widely documented in the case of Universities (Bush & Peterson, 2012; Johnes, 2018; Mussard & James, 2018). Manipulation can occur in several forms: the misreporting of what Mussard and James (2018) refer to as "highly corruptible parameters" such as student-faculty ratios or institutional income that are typically self-reported; or sub-optimization; the channelling of resources towards specific activities that improve rankings, even at the cost of more desirable outcomes. For example, Universities might provide monetary incentives to increase publication counts, promote low quality research, or encourage self-citation to secure points from quantity over quality. These strategies are most often referred to as gaming, a general problem in performance management systems of which ranks are one example.

Government-led manipulation of scorecards and rankings have been documented in the case of international metrics such as the World Bank's Ease of Doing Business Index (Broome, 2021; Doshi et al., 2019). Such indices influence government behaviour because their comparative nature stimulates competition and "engages the reputations and status concerns of relevant bureaucrats and politicians" (Doshi et al., 2019, p. 614). Similarly, governments are today concerned about their reputations in the context of climate change and are increasingly invested in demonstrating leadership (Gore & Robinson, 2009). Good performance on a national program such as *Swachh Survekshan* can demonstrate that the country is making progress on sustainable waste management. In a multi-level performance management systems such as government-to-government ranking, the outcomes of the program are shared by both national and sub-national governments. The performance of sub-national governments in aggregate reflects the performance and leadership of the national government. In such a context, it is important to national governments to signal collective success to continue to attract political support for their programs locally and enhance reputation globally. Based on this, my first hypothesis is:

H1: If target-shifting is motivated by reputation management, the average scores obtained by agents should increase annually as compared to the counterfactual no target-shifting scenario.

Policy learning

Policy learning is a process that "leads to alterations in behaviour reflected in changed social policies and new policy innovations." (May, 1992, p. 332). Policy learning is

considered a desirable trait in governments and occurs more commonly through trial and error in search of more feasible solutions based on new understandings of resources and objectives (Lindblom, 1959). Target-shifting is one such form of trial and error that can lead policymakers towards constructing a more appropriate performance management system. In the case of ranking programs, one critical form of learning centres on the impacts of ranking programs on less-resourced participants. A review of the literature on rankings supports this argument.

There is mixed evidence on whether ranks can improve performance. On the one hand, research shows that the performance of high school students improves when they are presented with their grades relative to the class average (Azmat & Iriberri, 2010). Similarly, Blanes i Vidal and Nossol (2011) use a quasi- experimental study to show that worker productivity is increased over the long-term when they are given feedback on their performance relative to others. On the other hand, studies also demonstrate adverse impacts. An experiment in which employees are given feedback about how they rank compared to others doing the same task finds that employees in the ranked-feedback treatment were both less productive and also less likely to return to work (Barankay, 2011).

Crucially, ranks can demotivate "losing" participants instead of encouraging them to compare, compete and then improve their performance. For example, the use of league tables in Norwegian schools led to poor performing schools being publicly shamed by the media. This led to cases of some improvement but also hostility towards the rankings and knee-jerk changes within schools (Elstad, 2009). Another study by Barankay (2012) finds that rank incentives decrease performance in a multi-task environment because employees switch their efforts to other tasks when their rank on the measured task is low. In sum, ranks are unique

among performance management measures because they create winner and losers. Unlike individual scorecards and targets, ranks have the potential to create strong demotivational effects through peer comparison. These are likely heightened in the public policy context in which the ranks are openly available and can result in naming-and-shaming.

The negative impact of ranks on less-resourced participants might motivate the principal in government-to-government rankings programs to target-shift in favour of such participants. On the surface, this appears to be similar to gaming. But gaming must also result is some aggregate loss for the program. If by shifting targets towards less-resourced cities, the national government is able to improve aggregate performance, target-shifting leads to the creation of more public good and therefore benefits citizens.

But what might motivate governments to pursue this strategy when we don't expect similar behaviour in ranking programs implemented by third-party or independent agencies? Fundamentally, national governments have certain obligations under the federal compact. The relationship between national and sub-national governments is structured by a hierarchy of power that allows the national government to divert specific resources to member units. While in theory the relationship between the union and each member government is assumed to be equal, this is often not the case in practice (Rao & Singh, 2004). National governments, both formally and informally engage in asymmetric relationships with member units as a result of political (Dixit & Londregan, 1998; Golden & Min, 2013) and fiscal contingencies (Buchanan, 1950) or identity politics (Tillin, 2016). The underlying goal in all such cases is to establish, or signal progress towards equity (Porter & Porter, 1974) or distributive justice among member states (Follesdal, 2018).

The special treatment of member units may be de jure (Rao & Singh, 2004), that is,

enshrined in the constitution, or established by tradition such as in the Constitution of

Germany which explicitly requires equalization of living conditions among the member

units. Or the case of India in which states in the North East have received asymmetric

treatment to compensate them for baseline conditions of inequality (Tillin, 2016). In other

cases, special treatment might be de facto, either used for building a common national

identity, or to meet short-term political goals. The common occurrence of asymmetrical

relationships is one reason why government-to-government performance might be prone to

target-shifting through a process of learning about how such programs impact participants in

unequal ways.

The structure of government also influences the motivations of principals. Principals in

manager-employee relationships have the option to replace a low ranking worker with

another higher ranked worker or to dismiss them. However in relationships between different

levels of government, as in the case of city rankings, such decisions are more difficult to

make. First, because service rules that govern the employment of bureaucrats who run local

governments typically limit the possibilities of dismissal. Unlike the case of individuals in

manager-employee relationships, replacing entire governments and bureaucracies for poor

performance is virtually impossible. And finally, outcomes in the public sector are complex,

difficult to measure, and result from actions taken over a long period of time, especially at

large scales such as cities. National governments can therefore find it challenging to attribute

blame or enforce punishment. These fundamental features of public policy and

implementation suggest that principal-governments operate within constraints regarding

dismissal and attribution of blame and are more likely to resort to strategies that motivate existing agents. Based on this, my third hypothesis is:

H2: If target-shifting is motivated by policy learning about impacts on less-resourced participants, the performance of less-resourced participants should improve over time in both absolute and relative terms.

A second form of learning closely related to *H3* is concerned with reducing instances of possible gaming by participants. When the weight assigned of self-reporting is high, participants who mis-report or game are more likely to do better. Gaming might be a conscious act of distortion that leads to inflated scores, or could stem from the lack of resources to collect, report and manage data appropriately. In either case, the principal has incentives to limit gaming to improve the validity of the ranking program.

H3: If target-shifting is motivated by policy learning about agent-gaming, a shift towards more external assessment should reduce instances of agent-gaming.

Agent response

Agents have multiple reasons to game the system in their favour irrespective of what the principal's motivations to shift targets are. First, agents might game purely to out of self-interest and in order to safeguard their positions. Second, target-shifting offers agents an additional reason to engage in gaming. Agents whose performance declines due to target shifting might game to retain their rankings. Agents also act as "reactive gamers" (Bevan & Hood, 2006) if they perceive that principals are gaming by target-shifting.

Further, agents might be socially primed to game even if they believe the principal is engaging is target-shifting with the intention of enhancing public good. Here, the environment within which agents operate and the type of performance management system can generate sufficient incentives for gaming. Processes of social norming can create an implicit consensus that gaming is appropriate (Taylor, 2021). This effect can be heightened in a competitive ranking system. Because some agents lose and others gain in rankings, winning-agents might opt to overlook gaming on part of losing-agents to prevent them from outright challenging the system. Over time, these minor adjustments allowing all agents to benefit from the program can result in an implicit consensus that gaming is the norm. Agents can then freely engage in gaming without concern for the costs that other agents might impose on them for doing so. To summarise, the sum of self-interested action, perceptions of gaming by the principal, and the nature of ranking programs create high incentives for gaming by agent. My fifth hypothesis tests how target-shifting impacts the extent of over-reporting by agents.

H4: Agents most negatively impacted by target-shifting will engage in over-reporting.

Case: Target-shifting in the *Swachh Survekshan*

The *Swachh Survekshan* is a national program implemented by the Government of India for scoring and ranking Indian cities that began with 73 cities in 2016 and scaled up to 4242 cities by 2020. The "world's largest cleanliness survey" (Ministry of Housing and Urban Affairs, 2019), the program has ambitious goals: to build city capacity, create awareness, and generate large scale citizen participation. At the heart of this ambition is a survey tool that scores cities on a number of facets of waste management and sanitation and then produces an

annual ranking. The *Swachh Survekshan* provides scores on 3 main components from 2016 to 2020: Service Level Progress (a self-reported score by the city on a range of performance criteria), Independent Observation by assessors deployed for the survey, and Citizen Feedback through face-to-face interviews, outbound calling, or online surveys. Certification, consisting of a Star Rating of Garbage Free Cities and Open Defecation Free Protocols was introduced in 2019 and continued into 2020. An additional scoring component, the *Swachh Survekshan* League, was introduced in 2020. The *Swachh Survekshan* League requires quarterly assessment with an aim to sustain momentum throughout the year, as compared to previous years in which the survey was conducted at a single point in time.

The national government has engaged in target-shifting because the weights of these different components have changed over the years as depicted in Table 1. Notably, the weightage accorded to self-reporting (green cells in Table 1) was the highest in 2016 when the program first started at 50% of the total score. Over time, the weight assigned to this component has reduced and the extent of external assessment (a combination of the scores for Independent Observation and Certification, blue cells in Table 1) has increased to 50%. A number of other score sub-components have also been altered over the years. However, these changes are more limited and granular data on the sub-components is not publicly released by the *Swachh Survekshan*. Therefore the focus of the current analysis is on the major components presented in Table 1.

Table 3: Target-shifting in the *Swachh Survekshan*. Numbers in parenthesis represent the percent contribution of a score component to the score in that year.

Score Components	Year				
	2016	*2017*	*2018*	*2019*	*2020*
Service Level Progress	1000 (50%)	900 (45%)	1,400 (35%)	1,250 (25%)	1,500 (25%)
Independent Observation	500 (25%)	500 (25%)	1,200 (30%)	1,250 (25%)	1,500 (25%)
Citizen Feedback	500 (25%)	600 (30%)	1,400 (35%)	1,250 (25%)	1,500 (25%)
Certification	NA			1,250 (25%)	1,500 (25%)

While no official justification has been offered for re-weighting, media reports and interviews conducted for this study offer some insights into the government's motivation for doing so. First, the national government has learnt that mainly well-resourced cities and state capitals are performing well. Responding to a media question about the city of Indore[2] which has ranked first five years in a row, a senior government official has stated, "It seems that *Swachh Survekshan's* code was cracked by Indore, and this prompted for change in [the] pattern of [the] survey," and that "the Centre has included additional components in the *Survekshan* for 2020 and Urban Local Bodies be it Indore, Dewas, Ujjain etc. which excelled in [the] last *Survekshan*, should not be overconfident about their performance". The previous Municipal Commissioner of one of the top ranked cities echoes this viewpoint:

"*Swachh Survekshan* is skewed in the favour of better performing cities so there is some biasedness in the process, no denying about this point. But definitely in something so large, a lot of decisions need to be made that need to cover all cities. [I3]"

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[2] Indore is the largest city in the state of Madhya Pradesh and the largest metropolitan area in all of central India.

The specific shift towards external assessment and a reduction is self-reporting could also have resulted from the realisation that a large class of cities were finding it challenging to self-report accurately. City governments of Urban Local Bodies (ULBs) in India are fiscally constrained and have low manpower capacity (Vaidya, 2009). These problems are heightened in smaller cities that can generate only limited local revenue through taxation. They also feature low on the priority list of state governments for allocation of resources to develop manpower and infrastructure as compared to capital and larger cities. A senior official in the national government who worked in the Ministry of Housing and Urban Development told me:

"The weightage was shifted towards more external assessment because many cities were unable to, or were not reporting data properly" [I9].

City officials and consultants interviewed for this study identify the data collection challenges quite precisely:

"When we are asked for data from our corporation, it is very difficult to produce data. When asked to enter data within these timelines, there are always delays in entering data since the corporation does not have the data or the people to collect and manage data properly. You see, the people in the corporation are very busy already. Their hands are full. I felt that data was entered incorrectly, because the city did not have it in the format that the parameters have been developed." [I1]

"It becomes excessively stressful for the municipality staff. The reason is not every city has decent staff. Consider cities with 300,000 populations. A city like [redacted for confidentiality] has 4-5 environmental engineers for this. [redacted for confidentiality] may have 1 and [redacted for confidentiality] has likely none. There are no people, even comparing cities of the same size! They have a lot to do - fixing potholes, attending meetings, multiple charges. You are supposed to implement things. And on top of all this you have to send data for *Survekshan*. I have to attend meetings all the time, how will I do my work, including building toilets, operating the waste management plant? When this happens it becomes demotivating." [I2]

The challenge is not just one of an over-stretched bureaucracy with limited data management capacity. Another official flagged the problem of fragmented governance (Sivaramakrishnan, 2014) of urban areas in which key functions are spread across multiple actors who are unable to coordinate to share data in a timely manner.

In this context of low data collection and management capacity, shifting towards more external assessment would create some parity among cities. Instead of the cities themselves, a well-resourced and expert external assessor would provide an accurate measure of performance. Question and answer sessions in Parliament offer some clues that the national government is motivated to act in favour of less-resourced cities, if not direct evidence for the re-weighting. For example, a Parliamentary question[3] directed at the Ministry of Housing

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[3] Unstarred Question Number 859, Seventeenth Lok Sabha.

http://164.100.47.194/Loksabha/Questions/QResult15.aspx?qref=17088lsno=17

and Urban Affairs in September 2020 asks whether the government "proposes to provide assistance to the cities that have failed to figure in the said rankings". The Minister for Housing and Urban Affairs responds, "Cities which fail to get high ranks are provided assistance to improve their ranks through workshops, advisories, guidelines etc.". A similar question[4] was raised in March 2016 at the outset of the program to which the then Minister responded, "Based on the gaps identified in the survey, [the] Government of India is planning various capacity building initiatives and peer learning with top performing cities in the survey to address the gaps for these cities in the area of sanitation and solid waste management to improve their scores/ratings in the next survey." However, interview respondents from less-resourced cities suggested that capacity building in the current form is both too long-term and insufficient if they are unable to hire more people. A shift towards external assessment is more suitable for meeting the shortfalls of self-reporting.

The national government has other good reasons to address the concerns of losing cities. Participants in ranking programs often the believe the outcomes are determined by the characteristics of dominant and well-resourced participants and biased in their favour (Benz, 2012). They might respond to a ranking system by refusing to participate in the program or raising objectives to the methodology used. Cities in West Bengal, a state in East India have boycotted the program[5]. Similarly, several cities have raised objections to the program

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[4] Unstarred Question Number 2038, Sixteenth Lok Sabha.
http://164.100.47.194/Loksabha/Questions/QResult15.aspx?qref=30858lsno=16
[5] West Bengal government boycotts Centre's Swachhata Survekshan, Hindustan Times, 16 March 2017.
https://www.hindustantimes.com/india-news/west-bengal-government-boycotts-centre-s-swachhata-survekshan/story-jFI6vjBOLCwkHRJZO5iDjM.html

methodology[6,7,8] and their objections are supported by analyses by respected[9] environmental think tanks and even a petition filed in the High Court of Madhya Pradesh arguing that the methodology is discriminatory[10]. Two government officials, one from a high raking and another from a low ranking city said:

We are sitting in a top ranked city, from our perspective we feel motivated. We are 6th now and last year we were 8th. But when our colleagues see that their city is constantly at the bottom, then they don't feel motivated. If you see who's active in terms of cities and states, it is the same set of cities. Cities in [names of 3 states redacted for confidentiality] don't really participate in *Swachh Survekshan* - those cities never ranked in the top and so they don't feel motivated at all. [I3]

If you always at the bottom, whatever you do is not being recognised. Let the rankings go to hell. Some cities have said they will not participate and these rankings. There is probably a

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[6] Cities ranking poorly in Swachh Survekshan 2020 say unhappy with metrics used for survey. The Print, 21 August 2020.
https://theprint.in/india/cities-ranking-poorly-in-swachh-survekshan-2020-say-unhappy-with-metrics-used-for-survey/486466/
[7] Swachh survey is unfair to Kerala cities. Deccan Chronicle, 26 January 2019.
https://www.deccanchronicle.com/nation/current-affairs/260119/swachh-survey-is-unfair-to-kerala-cities.html
[8] Civic body questions Swachh Survekshan rankings. The Hindu, 21 August 2020.
https://www.thehindu.com/news/national/kerala/civic-body-questions-swachh-survekshan-rankings/article32413767.ece
[9] CSE assessment of Swachh Survekshan 2019 finds loopholes in the survey and its rankings. Centre for Science and Environment, New Delhi, 12 March 2019. https://www.cseindia.org/cse-assessment-of-swachh-survekshan-2019-finds-loopholes-in-the-survey-and-its-rankings-9321
[10] Sandeep Sharma vs Union of India. In the High Court of Madhya Pradesh, 27th September 2019. https://indiankanoon.org/doc/21387413/

huge demotivational cost. When you are at the bottom there are a lot of constraints as to why you are not able to obtain a good rank. It is a capacity problem [I1].

And finally, target-shifting towards more external assessment could be driven by learning about gaming behaviour among participants. Gaming in this instance might be conscious self-interested behaviour to enhance ones scores. On the other hand, as the qualitative evidence presented shows, distortions that appear to be gaming, might also result from the lack of data management capacity among cities. City government employees must enter information into the portals on the orders of senior city officials. Without good quality data, employees resort to extrapolation or manipulation to complete their tasks. Two quotes help understand this issue:

They know that ULBs [Urban Local Bodies] generally do some sugar-coating. So, the next year you increase the amount of external reporting. This is a trust issue. Increasing external observation is about trust. That's how India works, lots of verification [I2].

"Who are the officials filling the data? They are the draftsmen or the lowermost clerks. They probably fudge the data. They don't have the data and the person filling it in does not know the objective! So he does not understand why he is filling in the data. It's not their responsibility and they are not equipped to handle this kind of data. We are forcing them to participate in the ranking." [I4]

To sum, reputation management is one possible reason for target-shifting, but there is also evidence that the national government is learning about the particular challenges faced

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by smaller cities. While we can't fully know their exact motivations, we can still assess how these two different motivations will impact program outcomes as described next.

Research Design

Data

The analysis draws on the *Swachh Survekshan* annual reports and online dashboards from 2016 to 2020, which include scores, ranks and other relevant information such as population and the number of wards in each city (Ministry of Housing and Urban Affairs, 2018, 2019, 2020; Ministry of Urban Development, 2016, 2017). The analysis uses data for cities with populations above 1,00,000. Cities with populations below 1,00,000 have also been included in the *Swachh Survekshan* survey, however it is expected that data quality will be higher within the subset used for analysis. The sample consists of 70 cities in 2016, and 406, 462, 416 and 412 cities in 2017 to 2020 respectively (a total of 1766 observations). To ensure that only cities that have participated in two consecutive years are included, pair-wise datasets were created and then merged to arrive at a total of 1,353 observations. Since the total score on which each component is marked changes each year, scores have been normalized to a 100-point scale to facilitate comparison across years.

The second source of data for this study are the individual websites of city governments. Most city government's maintain a very rudimentary website, with annual budget, income and expenditure data in the form of PDFs, or in many cases this data is missing. Collating data on revenue therefore involved the manual search of revenue data on the website of each city in the dataset. While the statement of income and expenditure was the preferred source

for data as it reflects the income actually earned by the city, budgetary data was used in some cases due to non-availability of income data. If at least two out of five years of revenue data were available for a city, the revenue for the remaining years was imputed by considering the mean percentage increase or decrease in revenue for the whole dataset. This dataset itself is novel and includes 1215 observations, or revenue data from 243 Indian cities.

And the third source of data comprises of interviews with government officials who have occupied salient positions at both the national and city levels, solid waste management experts who have consulted on government projects, newspaper reports, analyses by environmental think-tanks in India and other media coverage. Consultants typically work with several cities and can offer diverse perspectives. More crucially, they often speak more freely than government officials who might be reluctant to share information. A convenience sample of officials and consultants was taken, while ensuring that both large and small cities were represented in the interviews. Interviews were conducted in a semi-structured format and transcribed verbatim. The list of structured questions and interviews conducted are included in Appendices A and B.

Analysis

To test *Hypothesis 1*, I plot total scores obtained by cities over the period 2017-2020, excluding 2016 because re-weighting has no impact on the scores obtained in 2016. I construct a counterfactual trend using the weights from 2016 which depicts a scenario in which no target-shifting had occurred. To construct this counterfactual, I re-weighted the scores obtained between 2017-2020 as per the weightage assigned in 2016. The trends are disaggregated by city size with cities with populations between 1,00,000-300,0000 , 300,000-

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10,00,000 and 10,00,000+ are considered small, medium and large cities, as per the cut offs used by the *Swachh Survekshan*.

To test *Hypothesis 2*, I present a trend analysis of total scores disaggregated by city size across the top and bottom quintiles of data. The purpose of this analysis is to assess whether the performance of smaller cities has improved over time. This analysis is supplemented by regression models with the change in ranks and scores as the dependent variables and the self-reported scores submitted by cities in previous years as the main independent variable. This analysis tests whether cities with low self-reported scores were positively impacted by a shift towards greater external assessment.

To test *Hypothesis 3*, I plot the movement of self-reported and externally observed scores over the years 2016-2020. If target-shifting is aimed at reducing gaming among participants, we should observe a consistent reduction in the difference between the two scores over time.

To test *Hypothesis 4*, I conduct regression analysis with the dependent variable as the difference between self-reported and externally assessed scores, depicting the extent of over-reporting of self-reported data. The main independent variable is the difference between the total score obtained by a city in a year *t*, and the total score the city would have obtained had the previous year's (*t-1*) weights been used. The independent variable depicts the loss or gain experienced by a city due to target shifting. Standard tests for normality of errors, heteroscedasticity and multicollinearity have been applied across all regressions.

Qualitative insights have been critical to understanding the lack of communication from the national government on the rationale for target-shifting, the challenges faced by cities in reporting data, the particular challenges of smaller cities, and the significant differences

between the frequency of reporting required for *Swachh Survekshan* and the real timelines of implementation of infrastructure projects. The final point is central to the identification strategy underlying the analysis presented in this paper, which is explained next.

Identification Strategy

A novel identification strategy is utilised to model agent behaviour and make causal claims across results presented in this study - that the re-weighting of score components acts as an exogenous shock due to which scores change in response to the new reporting requirements rather than improvements or lapses in performance. The scoring system is announced at the beginning of the year and the announcement is followed by a series of workshops informing the cities about data requirements. But due to changes in the weighting, cities have to modify their data collection, reporting and implementation strategies in line with the new metrics. The frequency of data collection has increased from once in 2016, to monthly data submission by 2020. Further, a time period of a month or even one year is extremely short given the timelines involved in planning, tendering, procuring, implementing and then realising the outcomes of complex infrastructure projects required for waste management. In other words, the data submitted is unlikely to demonstrate real performance change.

All the interviews I conducted highlighted the challenge with reporting. A couple of interviews cited below point to the specific reasons behind this: the changing nature of data demands and the limited manpower at in city governments.

When we get a data request, we don't know what format it will be. We just try to fit the data. The parameters have changed from last year . So if the questions remain the same, we

will be able to put in the data easily and on time. This time the dataset is completely different. Now this year again the questions might change. So we try to turn around and somehow include those answers by extrapolation. Help cities develop data capacity. We have jumped to rankings without building the ability to generate data [I1].

They have a record of procurement data. So when it comes to existing equipment and resources, they can furnish that data. But the effort involved in putting into the right format, putting into the portal, fetching information from different files… how many bins? how much is the area of the site? It's work. People are stressed and are unable to do it. People who are responsible for SS are the engineers or health inspectors. People above that cadre like commissioners are just signing authorities. People below them are clerks and don't know or are not authorised to do such work. So [there is] no dedicated data manager [I7].

One city in Western India that has consistently ranked in the top 10 has hired a team of four consultants dedicated to collecting and submitting data for the *Swachh Survekshan*. This team reflected on their work and said:

[In terms of capacity building] there are toolkits and guidelines and there are state and national level workshops where they train the nodal officers. But there are many capacity issues at the city level. Some cities can afford consultants, most can't. Some cities are performing well, but are unable to get recognised because they don't know how to enter data, or how you can induce the reforms in the day to day activities. Right now it's only about submission of

data. You need a dedicated team for *Swachh Survekshan*, otherwise it is very difficult to comply with all requirements. We have to submit the monthly MIS by the 5th of every month and we have to collect data from a number of departments. Once you see the portal you will understand what kind of data is being captured and how difficult it is for a city who is unable to hire a consultant. It is very difficult, the compliance is enormous [I8].

The long timelines required for completion of public projects creates another source of mismatch between submitted data and on-ground implementation. Public procurement is often delayed due to multiple modifications to tender documents (Roy & Sharma, 2020). Public procurement is a very complex process requiring multiple stages of bidding and approvals. There is limited capacity and skill to manage these processes within public organisations in India and especially in city governments (Hazarika & Jena, 2017). At a macro level, reviews by the Ministry of Statistics and Programme Implementation suggests that a large number of infrastructure projects in India are mired by delays and cost overruns, resulting from delays in tendering, ordering and equipment supply, project financing, finalisation of detailed engineering plans, changes in scope, delay in tendering, ordering and equipment supply, land acquisition among other challenges[11]. Two interview respondents noted:

You know how implementation happens. Implementation is always slow. Actually it is not very feasible to respond in such a short time-frame. One can do it for smaller projects maybe. Otherwise, the DPR [Detailed Project Report] takes 1-2 months and so the total tendering time

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[11] Infrastructure and Project Management Division. Ministry of Statistics and Programme Implementation. Government of India. http://www.cspm.gov.in/english/publication.html

is about 5 months before a project is awarded. Most projects are usually 6-7 month beyond timelines. A building construction project is much easier, but we should assume about 2-3 years from conceptualisation to completion even for that. [I4]

Door to door collection has long been part of the Solid Waste Management Rules. But it took more than a decade for all cities to do door to door collection. And this is just a single indicator in the *Swachh Survekshan*. Now imagine adopting all the 40 indicators in the *Swachh Survekshan* suddenly! They are firefighting already, this cannot be done. [I8]

Another interview highlights why projects might take even longer because of changes in government or key personnel within the bureaucracy.

For example, the SWM [Solid Waste Management] project report took 2-3 years to get approved and then the money was given to ULBs. But by then people have changed and the priorities change so there were further delays. [I2]

Some aspects of waste management can be executed more quickly, such as the procurement of dustbins or waste compactors . But collection and disposal of waste is also very expensive for resource poor cities and are implemented as and when resources are available. Other critical infrastructure for waste processing such as waste management facilities, material recovery facilities, sanitary landfills, waste to energy power plants, or decentralised composting units need time for design and implementation. Such complex projects have long implementation

timelines and take even longer to demonstrate an impact on outcomes. These challenges are exacerbated in cities because they have even more limited professional capacity, funding, and markets for procurement as compared to state and union government departments. Therefore with limited capacities and opportunities to actually change on-ground implementation, it cities are more likely to report in response to the changing scoring requirements rather than actual progress. This allows for a causal interpretation of the impacts of target-shifting on the scores.

Results

Trends in total scores obtained (Hypothesis 1)

Plotting the progression of total scores shows that in percentage terms (Figure 1, blue line), cities are actually scoring lower on average over the years. We should reasonably expect that cities are gradually improving their performance each year in line with best practices in waste management and sanitation, and observe a slow increase in the percentage score they obtain. Many cities might show no progress and a few might even regress, but a drastic backsliding is unexpected unless a city's entire waste management infrastructure has been compromised. Contrary to this, there is a significant decline in percentage scored, indicating that something other than actual performance, and possibly the shifting of targets is responsible for the scores obtained by cities. As evident from result 4 below, the reduction in scores is largely caused by drops in self-reported scores.

Figure 1 also depicts the counterfactual, no target-shifting scenario in which the 2016 weights were utilised to compute total scores (red line). Here, the trend is similarly

downwards, but notably, all cities would have performed much worse had the national government retained the 2016 weights. At its widest in 2018, the difference between the actual average score and the counterfactual average score is 6.44 points out of 100, a significant shift caused just by re-weighting.
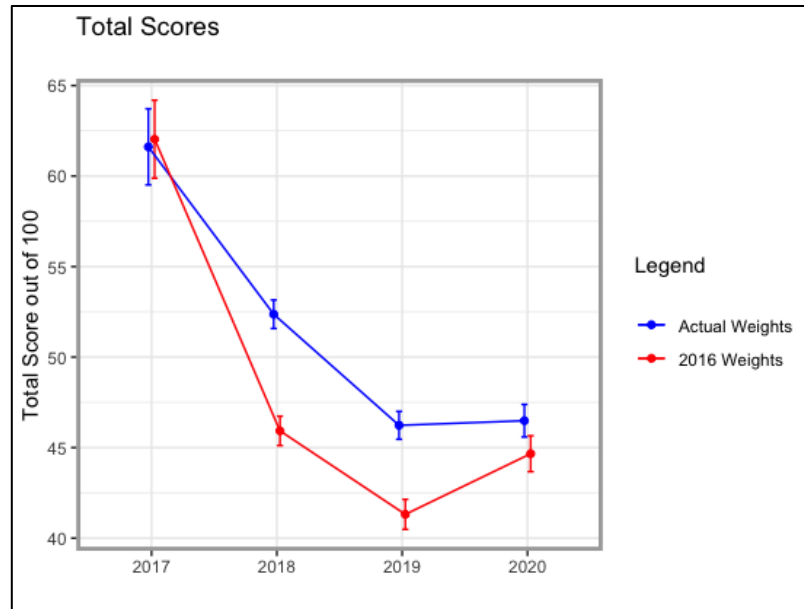
Figure 8: Total scores obtained by cities in actual and counterfactual scenarios. Scores have been normalised to a scale of 100 for comparability across years. Error bars represent standard errors.

Disaggregating by city size reveals a clearer picture of the relative performance of small, medium and large cities (Figure 2). On average, smaller cities (black lines) see the strongest decline in total scores over the years. Further, the difference between actual and counterfactual weights is also most significant for smaller cities and next for medium sized (red lines) cities. For larger cities (blue lines), while actual scores are still higher on average as compared to counterfactual scores, the overlap in errors is indicative of less significant differences.
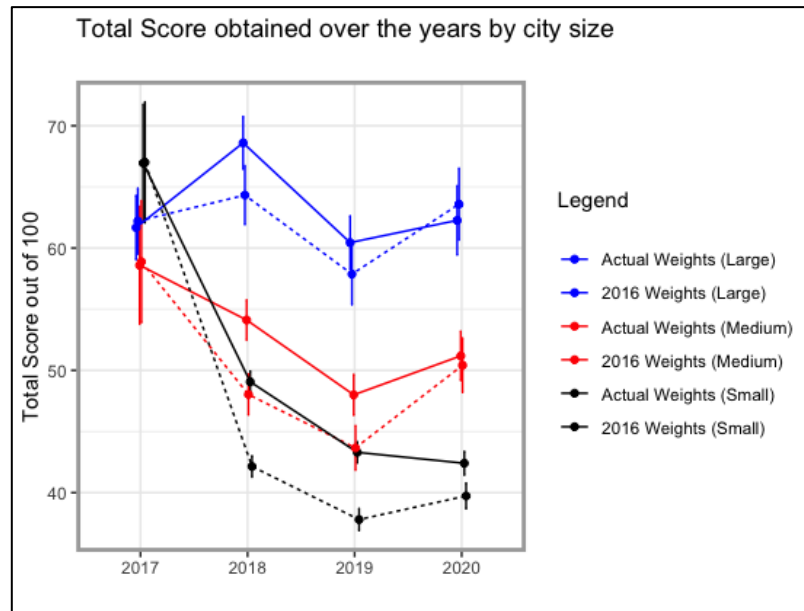
Figure 9:Total scores obtained by cities in actual and counterfactual scenarios, disaggregated by city size. Scores have been normalised to a scale of 100 for comparability across years. Error bars represent standard errors.

Movement of city scores across quintiles (Hypothesis 2)

Figures 4 and 5 depict the percentage of cities from each size category in the top and bottom quintiles of the scores obtained by cities. We observe here that the percentage of smaller cities in the top quintile has dropped over the years and target-shifting has done little to change that distribution (Figure 4, black solid and dashed lines). Smaller cities have, and would have performed worse in both scenarios. Large and medium sized cities are found in more or less the same proportions in the top quintile through the years. Figure 5 shows the same trends for the bottom quintile. We observe that the percentage of smaller cities in the bottom quintile increases each year and the counterfactual weights would have not changed this scenario (black solid and dashed lines).

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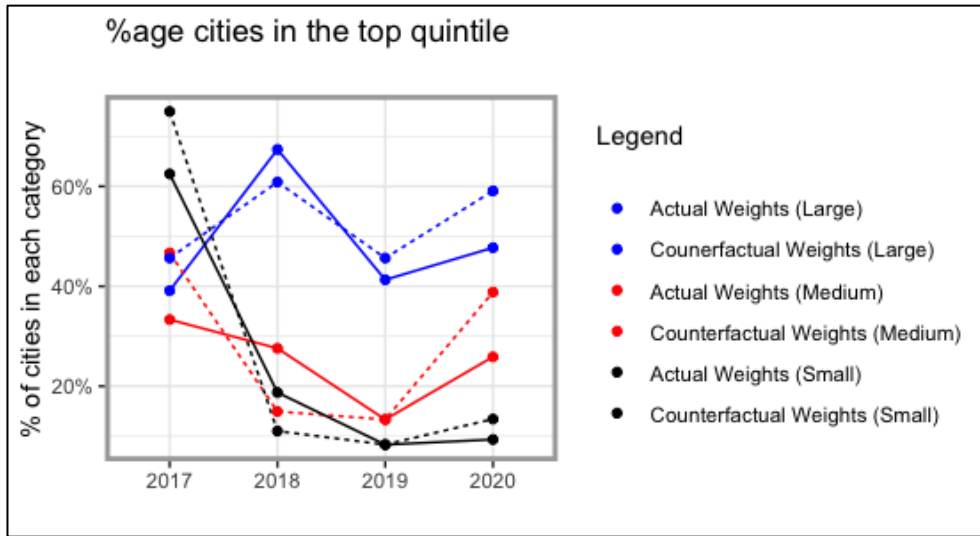
Figure 10: Percentage of cities in the top quintile of scores, disaggregated by city-size
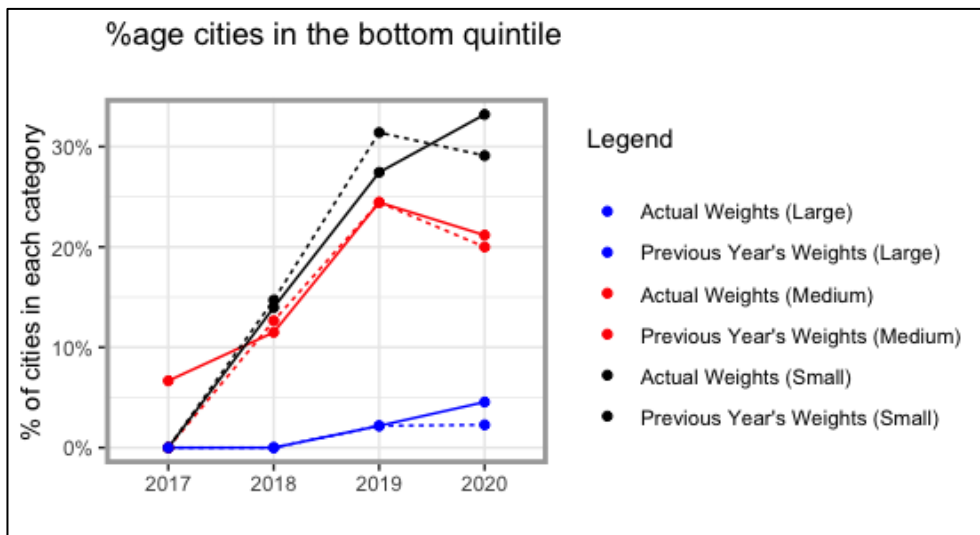
Figure 11:Percentage of cities in the bottom quintile of scores, disaggregated by city-size

Impact of target-shifting on cities with low self-reported scores (hypothesis 2)

If target-shifting towards more external assessment was intended to help cities with low self-reported scores, we should find that cities at the lower quantiles of self-reported scores are positively impacted. Figure 6 shows this not to be the case. Only cities in the topmost quintile of self-reported scores in the previous year show a positive movement in ranks. Cities in the bottom-most quintile continue to perform poorly.
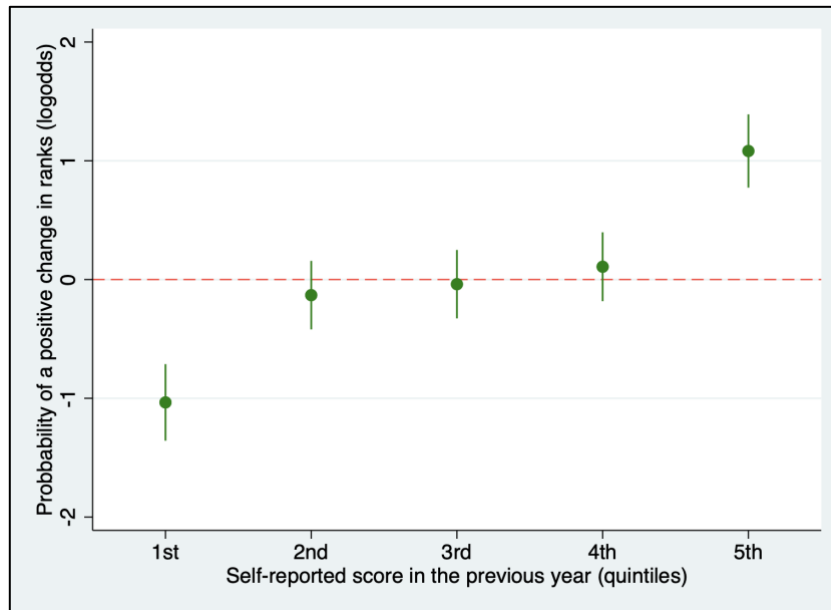
Figure 12: Probabilities of a positive shift in ranks across quintiles of self-reported scores for the previous year.

Trend analysis of the discrepancy between externally observed and self-reported scores (hypothesis 3)

Figures 7 and 8 show the discrepancy between self-reported and externally observed scores over time, for all cities and then disaggregated by city size. While there is a significant divergence between the two scores in 2018, the scores begin to converge in subsequent years

when the weight of externally observed scores are at their highest at 50%. There are two possible reasons for the divergence in 2018. On the one hand, high externally observed scores could be a result of score inflation. The number of cities participating in the *Swachh Survekshan* increased from around 400 to more than 4200 and the national government might have inflated scores to motivate these new cities Alternatively, the low self-reported scores observed in 2018 possibly result from the introduction of a large set of new indicators that cities were unable to satisfactorily respond to. Conversations with officials suggest that several new indicators for sanitation, waste segregation at source, and the efficiency of waste processing were added in 2018. Many cities either did not have the data, or had not yet progressed to implementing these new measures.

But more crucially, we observe that the inflation of self-reported scores was not a problem to begin with. Externally observed scores have always been higher, suggesting significant agent-gaming has not occurred. In fact, the disaggregated data in Figure 9 shows that the discrepancy between self-reported and externally observed data is the largest among smaller cities. This offers further evidence to support the core argument that smaller cities have been unable to respond adequately to the demands of the ranking program in terms of data or actual implementation.
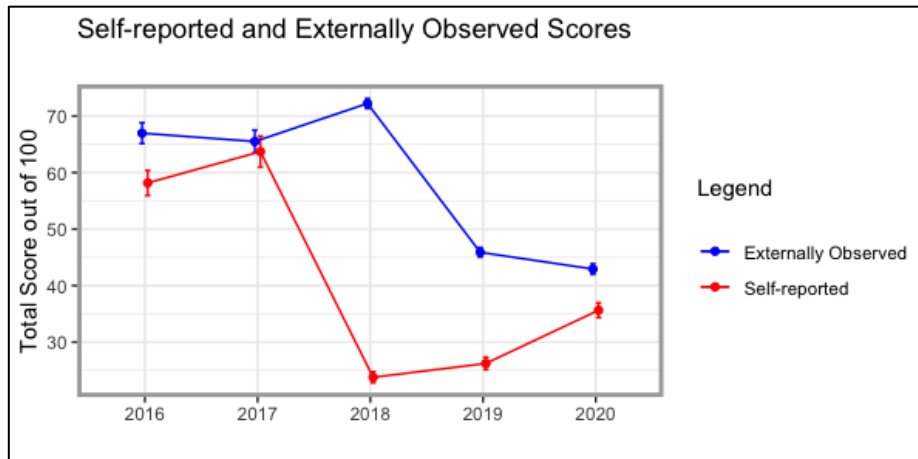
Figure 13: Discrepancy between self-reported and externally observed scores
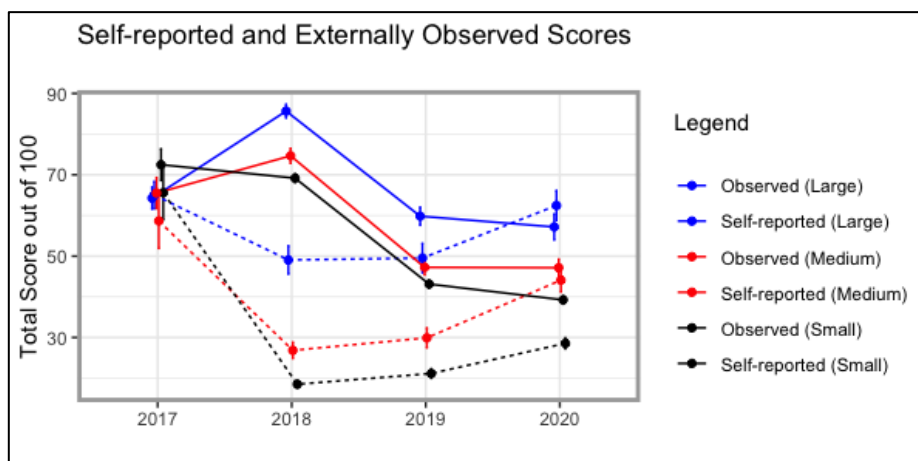
Figure 14: Discrepancy between self-reported and externally observed scores (disaggregated by city size)

Summary of results on the motivations for target-shifting

We need to read these various results holistically to understand how different motivations for target-shifting impact outcomes. Interpretation is limited to observing the outcomes of the principal's actions rather than the motivations themselves. It is therefore important to not over-interpret the results. Overall, re-weighting seems to have boosted total performance scores over the years as compared to the counterfactual no target-shifting scenario. This is important because high aggregate scores suggest that all cities are performing well, as

compared to ranks which are simply reallocated between cities based on relative performance. While the trends for actual scores is downwards, the results would have been worse had the national government not engaged in target-shifting. Further, the downtrend trend is driven by the lowering of self-reported scores rather than externally observed scores.

With respect to policy learning, I do not observe better performance among smaller cities in both absolute and relative terms. The scores of smaller cities drop most significantly and the proportion of smaller cities in the top quantile has reduced, while the their proportions have increased over time in the bottom quantile. A cross-tabulation of the shift in ranks across city-types reveals that over 43.8% of smaller cities have seen a positive shift in ranks was compared to medium (37.8%) and larger (32.4%) cities. However the progression in ranks occurs largely within the subset of smaller cities, rather in comparison to medium and larger cities. Further, if the shift towards external assessment was intended to aid less-resourced cities (of any size), we should observe some positive change for cities that had previously received a low score on the self-reported component. We do not observe this and in fact, only cities with previously high self-reported scores are able to secure a positive movement in ranks. Finally, we also observe that agent-gaming has not been significant problem for this program. Rather, externally observed scores have always been higher than self-reported scores, suggesting possible score inflation by the national government. Overall, I find stronger evidence for *H1*, that target-shifting is inflating overall scores, and limited evidence for *H2* and *H3*, that target-shifting has occurred as a result of policy-learning about the challenges faced by smaller cities or as a response to gaming by cities.

Response to target shifting by agents (hypothesis 4)

Finally, I ran regressions to test the association between the extent of over-reporting and the impact of the new weighting scheme on cities' total scores. The dependent variable is the difference between self-reported and observed score in a year. The main independent variable is the difference between the total score cities would have received had the previous year's weighting scheme been applicable and the score they actually received. The results (Table 2, model 1) show that for every 1 point (out of 100) that a city loses due to re-weighting, they are likely to submit self-reported scores over 10.1 points (out of 100) higher than the externally observed scores. Medium and smaller sized cities over-reporting by 8 and 7 points respectively. Results do not change when an additional control for revenue generated per capita is added to the model (Table 2, model 2). The results are robust to alternative specifications in which binary indicators for over-reporting and the impact of re-weighting are used (appendix D). The marginal effects plot (Figure 9) for predicted values of over-reporting shows that over-reporting increases in the positive direction mainly for cities that are most impacted by re-weighting (x axis>0).

Table 4: Impact of target-shifting on over-reporting

```
================================================================
                                 Dependent variable:
                            ----------------------------------
                                      Over-reporting
                                (1)                 (2)
----------------------------------------------------------------
Impact of Re-weighting         10.092***           10.105***
                               (0.420)             (0.504)

Size:medium                    -7.151***           -6.827***
                               (1.554)             (1.856)

Size:small                     -11.580***          -10.443***
                               (1.397)             (1.696)

No. of wards                    0.010               0.028
```

88

```
                                       (0.016)                    (0.019)

Revenue per capita                                               0.00003**
                                                                 (0.00002)


Impact of re-weighting*medium         -1.955***                  -1.760***
                                       (0.509)                    (0.621)


Impact of re-weighting*small          -2.933***                  -2.759***
                                       (0.443)                    (0.545)


Intercept                             -5.384***                  -7.592***
                                       (1.667)                    (1.978)


-----------------------------------------------------------------
Observations                           1,284                       591
R2                                     0.735                       0.769
Adjusted R2                            0.734                       0.766
Residual Std. Error           12.134 (df = 1277) 11.735 (df = 583)
=================================================================
Note:                                          *p<0.1; **p<0.05; ***p<0.01
```
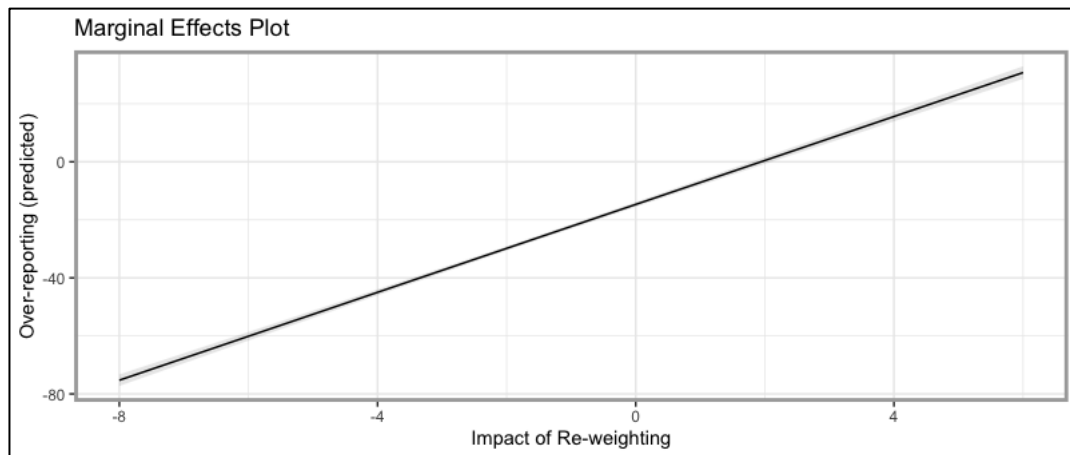

Figure 15: Marginal effects plot for re-weighting on over-reporting

Discussion

The paper contributes to the study of performance management systems by offering a

broader set of explanations for the motivations behind target-shifting practices in the public

sector. This extends what we know currently about the incentives for target-shifting in

performance management systems by explicitly considering the role of federal politics.

Extant work has largely drawn on the principal-agent framework to suggest that agent-gaming occurs because of the divergent preferences held by principals and agents (McCubbins, 1999); principal-gaming occurs because motivated principals are able to pass the cost of "deficient contracts and sloppy monitoring" to the citizen (Döhler, 2018, p. 192); and at times, collaborative gaming occurs because the public as the ultimate principal in representative democracies has limited means to monitor governments' performance (Pierre & de Fine Licht, 2021). Adding to these explanations, this paper centres federal politics and the role of everyday practices in government to suggest that in some cases, principals might engage in target-shifting as a positive process of policy-learning.

Contrary to expectations, I find less evidence to support policy learning, and more evidence to suggest that target-shifting occurs in order to inflate the scores cities have received. As cities receive higher scores, it signals that irrespective of their ranks, cities on average are doing more to manage waste and sanitation better. The public, media, political opposition and the international community may view the program as a success even if actual outcomes are stagnant or worsening. This creates a loss in the public good produced by the program for citizens because they receive incorrect signals about the performance of their cities.

That said, without real data on waste management and sanitation outcomes, it is difficult to conclude that on average cities in India are not cleaner because of the program. After all, "what gets measured gets done", and just measurement of outcomes not previously recorded can function as an incentive towards making actual progress. Governments might perceive measurement as a form of monitoring and begin the process of implementation (Willing,

2016), but fail to report it accurately given the frequency of data submission required.

Although they mainly focused on the problems with ranking, interview respondents also

mentioned that measurement was leading to some improvements (additional qualitative

evidence in Appendix E). And while this study demonstrates score inflation, there is

evidence that the programme has continued to attract widespread support because citizen

participation in the form of feedback (from approximately 1,00,000 in 2016 to 19,000,000 by

2020 recorded feedback forms) has increased significantly over the years (Ministry of

Housing and Urban Affairs, 2020).

While this leaves us with some uncertainty, it is also one of the main contributions of the

paper. The actions of both principal and agent governments are driven by multiple

consideration and ground-realities. Target-shifting need not automatically amount to gaming.

More so, even if there is evidence for gaming for one set of outcomes, target-shifting might

benefit other outcomes. The design of the performance management system itself can create

distortions even if the very act of measurement is leading to improvements. The perspectives

presented in this paper are strongly informed by an attention to the politics underlying

government decision-making, the capacities of participating governments, and the design of

target-systems. Incorporating these alongside a principal-agent framing can significantly

enhance our understanding of target-shifting and gaming behaviour.

I also find that cities impacted negatively by target-shifting are more likely to over-report

performance. This echoes much of the previous literature on agent-gaming. But contrary to

active, self-interested gaming behaviour, qualitative evidence presented in this paper suggests

that the lack of data and data management capacity among less-resourced cities contributes to data distortions. While some governments might engage in active gaming by consciously mis-reporting or allocating resources towards activities that are highly weighted in performance measurement, a large number of local governments around the world might not have the personnel or financial resources to collect, clean, analyse, and report data accurately. In these contexts, over-reporting could emerge as response to new reporting requirements that "force" the hand of cities to extrapolate data. This is an important nuance about the everyday lives of performance management systems that prior work does not adequately capture. Future work in this field will benefit from deeper qualitative and ethnographic studies that unearth motivations and practices more directly informative of gaming. Further, the case of the *Swachh Survekshan* suggests that data distortions are more likely to occur when principals engage in frequent target-shifting while offering limited support to agents to adapt to new targets. This should compel governments to think about the parallel development of data management capacities among participants while implementing new performance management systems. And finally, gaming might be more likely when the performance management system is designed to be competitive such as a ranking programme as compared to others that focus on individual targets or self-assessment. Overall, in addition to the right metrics, the design of performance management systems needs to consider the resources held by agents, program design, and relationships of trust between principals and agents.

The work presented in this paper suggests the need for three further pathways of future research. First, more analyses are needed on the relationship between target systems

and actual outcomes. This will require new forms of fieldwork and datasets on outcomes beyond the scores and ranks themselves, but will help establish stronger links between targets and gaming. Second, future work should consider different government-to-government relationships and a variety of sectors of the economy. This paper focuses on government-to-government rankings involving a national government ranking city governments. Yet, across different structures of federalism, the relationships between national and different sub-national scales of government will differ, thereby altering the social and political framework in which gaming occurs. With respect to sectors, it will be important to consider policy salience as well as outcome-visibility. While waste management and sanitation are important in some contexts, health or education might be more salient in the political discourse in other cases. Understanding whether distortions or gaming occur in all cases, or whether they are heightened in the case of more salient sectors, can offer practical guidance on the design of performance management systems. Outcome-visibility is important because more visible outcomes are better monitored by citizens. As a result, governments might be less likely to game the system because they also need to be more accountable.

The results presented in this paper also have implications for performance management in the public sector more generally. Performance management needs to account for the variation in capacities among participating units. And if government's seek to create equity, they must emerge not just through tweaking measurements, but through investments that allow less-resourced units to participate to their fullest potential. Performance systems need to be complemented with investments in capacity building to improve the measurement, data collection, and reporting capacities of participants. Second, specifically on ranks as

performance management - ranking programs work because they induce competition and incentivise participating units towards better performance. We learn from the case presented here that this function is lost in practice because of the high likelihood of distortions. It is therefore important to explore alternatives to ranking. Here it is useful to distinguish between forms of evaluation focused on selection versus development. Organisations are increasingly moving towards adopting evaluation processes that forego an emphasis on selection using top-down and metrics such as scores and ranks to select the best candidates. Instead, they use what are understood as developmental approaches involving frequent feedback, mutual goal setting and leadership development (Capelli & Tavis, 2016). Frameworks for leadership development, and the adoption of critical thinking and complex problem solving approaches have also been crafted for the public sector and offer an alternative to target-based approaches (Andrews et al., 2013). To close, a comment by a senior government official captures this broader imagination of the way forward for performance management:

"In the current scenario, there is quite a top-down approach. People are reporting, they are not really solving a problem. We need to be thinking more structurally about real outcome change. The approach must be about building local leadership for problem-solving. Not just reporting data." [I5]

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Appendices

Appendix A: Questions for semi-structured interviews conducted with city officials and consultants

Q: Please describe your role in the Swachh Survekshan (SS) for your city. What are the various activities you and your teams performed?

Q: What in your opinion has worked best about the SS? Which metrics would you say we should be looking at to really understand its success?

Q: Some cities have consistently performed well. What do you think they are doing right? What motivates city governments to do well even though there are no specific financial incentives for ranking high in SS?

Q: Some cities have expressed unhappiness with the methods or raised objections to the methodology. What in your opinion is the reason behind this? What could SS do to address some of the concerns raised?

Q: The scoring method of the SS has changed year on year. What do you think is the rationale behind the change in weights? Is it helping the cities?

Q: Over the long term, if some cities keep scoring at the bottom, they might get demotivated. What do you think can be done about this?

Q: A lot of parallel capacity building has occurred - for example, presentations on the metrics, how to respond etc. What else could be done in terms of capacity building for cities? Where do you think they lack the most skills and resources to do well in the Swachh Survekshan?

Q: How long does it typically take for large scale SWM projects to get implemented (from the conception to implementation stage). How much longer would it take for results to become visible?

Appendix B: List of in-depth interviews and shorter conversations on Swachh Survekshan

(All interviews conducted between February and April 2022)

I1 – In-depth interview with the a city government official from a mid-sized city in the state of Kerala

I2 – In-depth interview with a solid waste management consultant who has worked with over 60 cities on their waste management plans

I3 – In-depth interview with a former Municipal Commissioner of a large city in the state of Madhya Pradesh

I4 – In-depth interview with a solid waste management consultant who has worked with over 30 cities on their waste management plans

I5 – Short conversation with a senior government official from the state of Meghalaya

I6 – Short conversation with a retired senior government official from the state of Himachal Pradesh

I7 – In-depth interview with an in-house consultant responsible for Swachh Survekshan from a city in the state of Gujarat

I8 - In-depth interview with an in-house consultant responsible for Swachh Survekshan from a city in the state of Gujarat

I9 – In-depth interview with a senior official who worked at the Ministry of Housing and Urban Affairs during the *Swachh Survekshan*

Appendix C: Change in Salient Variable

```
================================================================================
                                             Dependent variable:
                                  ----------------------------------------
                                   Ranks     Scores    Ranks     Scores
                                    (1)       (2)       (3)        (4)
--------------------------------------------------------------------------------
Change in Externally Observed Scores (EOS) -0.029*** 0.091***  -0.022**  0.104***
                                   (0.008)   (0.013)   (0.009)   (0.019)


Size:medium                        -0.207    -0.105     0.097    -0.240
                                   (0.232)   (0.271)   (0.293)   (0.359)


Size:small                         -0.048    -0.345     0.318    -0.592
                                   (0.223)   (0.268)   (0.285)   (0.362)


No. of wards                        0.001    -0.003     0.002    -0.005
                                   (0.003)   (0.003)   (0.003)   (0.004)


Revenue per capita                                    -0.00000   0.00001
                                                     (0.00000) (0.00000)


Change in EOS*medium               -0.012    -0.019    -0.017    -0.035
                                   (0.010)   (0.016)   (0.013)   (0.022)


Change in EOS*small                -0.009    -0.012    -0.012    -0.026
                                   (0.009)   (0.015)   (0.011)   (0.021)


Intercept                          -0.450     0.435    -0.610*    0.699
                                   (0.276)   (0.332)   (0.351)   (0.450)


--------------------------------------------------------------------------------
```

Observations	1,284	1,284	591	591
Log Likelihood	-783.212	-613.769	-369.888	-276.612
Akaike Inf. Crit.	1,580.424	1,241.538	755.777	569.224

==

Note: *p<0.1; **p<0.05; ***p<0.01

Appendix D: Additional results for the response of agents to target-shifting.

Impact of re-weighting as a binary independent variable

```
===================================================================
                                        Dependent variable:
                                   --------------------------------
                                           Over-reporting
                                        (1)              (2)
-------------------------------------------------------------------
Impact of Re-weighting (binary)      23.046***         23.398***
                                      (2.691)           (3.085)

Size:medium                          -9.577***        -10.419***
                                      (3.066)           (3.939)

Size:small                          -11.978***        -11.193***
                                      (2.723)           (3.490)

No. of wards                          0.014             0.035
                                     (0.023)           (0.027)

Revenue per capita                                     0.0001***
                                                       (0.00002)

Impact of re-weighting*medium         2.012             3.676
                                     (3.526)           (4.326)

Impact of re-weighting*small         -2.752            -0.469
                                     (2.946)           (3.758)

Intercept                           -21.330***        -24.134***
                                     (2.952)           (3.664)

-------------------------------------------------------------------
Observations                          1,284              591
R2                                    0.244             0.306
Adjusted R2                           0.240             0.298
Residual Std. Error      20.494 (df = 1277) 20.340 (df = 583)
===================================================================
Note:                             *p<0.1; **p<0.05; ***p<0.01
```

Impact of re-weighting with over-reporting as a binary outcome variable

```
===========================================================
                                    Dependent variable:
                               ----------------------------
                                       Over-reporting
                                    (1)           (2)
-----------------------------------------------------------
Impact of Re-weighting            1.089***      1.320***
                                  (0.207)       (0.300)

Size:medium                      -0.918***     -1.125***
                                  (0.273)       (0.376)

Size:small                       -1.603***     -1.405***
                                  (0.275)       (0.380)

No. of wards                      0.002         0.005
                                  (0.003)       (0.004)

Revenue per capita                              0.00000
                                                (0.00000)

Impact of re-weighting*medium    -0.543**      -0.726**
                                  (0.231)       (0.340)

Impact of re-weighting*small     -0.585***     -0.707**
                                  (0.218)       (0.324)

Intercept                        -0.486        -0.777*
                                  (0.334)       (0.447)

-----------------------------------------------------------
Observations                      1,284         591
Log Likelihood                   -427.719      -196.726
Akaike Inf. Crit.                 869.437       409.452
===========================================================
Note:                       *p<0.1; **p<0.05; ***p<0.01
```

Appendix E: Additional qualitative evidence on the impacts of the *Swachh Survekshan*

Some interviews also highlighted positive aspects of the *Swachh Survekshan*. Because at its core, *Swachh Survekshan* is setting targets and measuring performance, it has played a role in shifting behaviours of city governments in line with existing Solid Waste Management Rules (SWM Rules 2016) notified by the Government of India. However, the positive use of metrics for target-setting have been overwhelmed by the more adverse outcomes from using metrics for ranking.

"There are some positive points about the *Swachh Survekshan*. It has induced reforms in a different way. These reforms started in [names of previous government programs that did not have an explicit measurement and ranking component]. But the level of change induced through SS is different. If they add just one new indicator, that activity will definitely be taken up in the city. It will start at least, even if it doesn't finish." [I8]

"The *Swachh Survekshan* asks that informal waste pickers should be engaged into the mainstream – recognise them and provide livelihood. So some cities have started mapping informal waste pickers and giving them ID cards and have engaged them in processing plants. Another indicator is on ICT monitoring systems, 150-200 additional marks. So some cities started thinking about technology solutions. Home composting is another new thing that was not part of SWM Rules. In the Swachh Survekshan, if 10% households do home composting, then the city gets 150-200 marks extra. So cities have started encouraging cities

to practice home composting. Indore has distributed home composting to every household."

[I7]

"There was now a template to do things systematically – the areas to work on, the indicators to achieve. This gives cities a direction, a sense of how to get from A to B. It also gave solid waste management a larger structure. Earlier SWM was just a municipal governance issue. But now structurally the larger system was gearing up. The SWM Rules were there earlier, but implementation depended on individual motivation. The *Swachh Survekshan* decoded the SWM Rules and converted the Rules into a program. The bureaucracy does better with implementing programs." [I9]

Chapter 3

How Just and Democratic Is India's Solar Energy Transition?

An Analysis of State Solar Policies in India

(with Parth Bhatia)

Abstract

Energy democracy and energy justice are powerful tools that aim to enhance procedural and distributional justice and democratic control in the planning, implementation and use of energy. Solar energy technologies create opportunities for just and democratic energy transitions because their modularity and falling costs allow for decentralisation and new forms of ownership and management. Successive Indian governments have actively promoted solar energy, both at utility and decentralized scales since the launch of the National Solar Mission in 2010. However, policies meant as an enabler for transformative and emancipatory change for all sections of society must do more than rely on solar energy's technical or environmental advantages. In this chapter, we examine 28 solar energy policies at the state level in India for their potential to create a more just and democratic electricity system. We discuss three key findings: first, while policies do target certain under-served communities for redistribution, they fail to recognise their specific electricity needs. Second, policies do not adequately integrate across sectors, an important requirement for meeting the goals of distributive justice. Third, policies are largely focused on facilitating exchange with the legacy electricity system and devote less attention to new forms of ownership, and participation. We conclude that government solar policy has thus far paid little attention to questions of distributive and procedural justice, thus risking the reproduction of existing inequities in India's 21st century renewable energy infrastructure.

Introduction[12]

In our warming world, energy provision is not simply about technology but also politics (Hughes & Lipscy 2013). Energy systems are the result of intensely contested political battles in the domains of technology selection, ownership of capital, environmental externalities, access, and siting. The geographical reach, terms of access, and forms of ownership of electricity infrastructures reflect the prevailing distribution of political and economic power (Bridge *et al.* 2018). Consequently, this gives rise to injustices such as uneven electricity access, displacement, and voicelessness among marginalized communities. Control over energy infrastructure is not just the result, but often also the source of political and social power (Amin 2014; Larkin 2013)—that is, energy shapes politics just as much as politics shape energy.

India is facing the twin imperatives of tackling historic energy poverty through an expansion of its energy system on the one hand and pursuing climate mitigation on the other. India's electricity sector is dominated by coal-fired thermal power, which in turn drives the country's carbon emissions. The energy sector as a whole contributed around 74% of India's total greenhouse gas (GHG) emissions in 2015, of which 38% was from public electricity generation (Secretariat 2016). On the other hand, India's average monthly residential electricity consumption is only 90kWh, which is one-third of the global average and one-tenth of that of the US (Chunekar & Sreenivas 2019). Despite official estimates of 100%

electrification, many households still receive poor quality electricity for only a few hours each day (D'Souza 2019b). The growing feasibility of renewable energy (RE) indicates a potential opportunity to address both climate mitigation and energy poverty challenges. India announced a target of 450 GW of RE by 2030 as against a total installed capacity of 370 GW in April 2020 (PMO India 2019). As we progress towards a low-carbon system, what are the implications of this transition given existing patterns of injustice and the prospects of their reproduction in our twenty-first-century energy infrastructure?

India's electricity system can be characterized by its gigantic scale; the primary state ownership of its generation, transmission, and distribution infrastructure; cross-subsidization from commercial and industrial consumers to agricultural consumers; and its federal nature. Due to the unique technical characteristics of solar photovoltaics (PV)—modularity, intermittency, and fuel-free generation —solar PV offers an opportunity to fundamentally disrupt the political, financial, and institutional arrangements associated with the existing system[13] (Dubash *et al.* 2019; Stephens 2019). These potential disruptions include attracting high-paying industrial consumers away from the grid, allowing new players (individuals, co-operatives, high-risk fast capital) to compete for energy ownership, and shifting the federal balance of power as the Centre's monopoly over coal loses salience.

By disrupting the existing equilibrium of power, the rise of renewables offers an opportunity to link energy choices to broader social justice goals and to redistribute power and wealth within societies (Angel 2016; Stephens 2019). Whether the ultimate beneficiary of a

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[13] Modularity is a feature of PV technology, which means that the constituent unit is small in scale, but many such modules can be combined to create a system of any size. In contrast, conventional power systems have many sub-components and only become economically feasible at large scales.

RE-based society is the common energy user instead of the elite will be contingent on how new energy infrastructures are specifically structured and will not be simply determined by the choice of technology. It will hinge upon whether the RE-based system incorporates the concerns of the marginalized, compensates the losers of this transition (such as coal workers), shares benefits inclusively, and creates participatory forms of governance. This is where the critical lenses of energy democracy and energy justice gain salience in India.

This chapter explores the extent to which India's state-level solar energy policies embody the goals of a democratic and just energy transition. We first define and contrast energy justice and democracy. Second, we examine how these conceptual lenses have been applied in India and present a framework for analysis. Third, we explain our methodology and then discuss findings from an analysis of key state solar policies. Fourth, we conclude by contextualizing the insights from the energy system by locating it within the broader theme of climate justice and by offering avenues for further research in this field. Before delving further, it is worth highlighting that our chapter focuses primarily on the policy discourse surrounding practices of RE deployment and does not engage directly with the growing literature on the impact of energy transitions on the coal sector. Our focus on RE serves to complement the coal-focused chapter in this volume by Vasudha Chhotray (Chapter 6).

Understanding energy democracy and energy justice

Energy justice is a conceptual agenda that aims to evaluate "where injustices emerge, which affected sections of society are ignored and which processes exist for their remediation in order to reveal, and reduce such injustices" (Jenkins *et al.* 2016 p. 175). The literature on energy justice provides the conceptual and analytical guidance needed to assess and resolve energy-related dilemmas, both in terms of outcomes and procedures (Sovacool & Dworkin 2015).

The three main constituent elements of energy justice are—procedural, distributive, and recognition justice (McCauley *et al.* 2013). A fourth tenet, restorative justice, has also been proposed by scholars as a way to repair the harm done to people (and/or society/nature) in the past (Heffron & McCauley 2017). Another important framework of energy justice is the eight principle decision-making framework, which provides tools for policy-makers to operationalize energy justice in policy frameworks (Sovacool & Dworkin 2015). The focus has historically been on incorporating procedural and distributional justice into policy frameworks, while recognition concerns have received more limited attention.

The concept of energy democracy emerged at a trade union roundtable organized by the Global Labour Institute at Cornell University in 2012 (Stephens 2019). Energy democracy was framed in terms of three objectives: *resist* the agenda of fossil fuels corporations, *reclaim* to the public sphere parts of the energy economy that have been privatized or marketized, and *restructure* the global energy system to massively scale up RE and other safe low-carbon options, implement energy conservation, and ensure job creation and true sustainability (Sweeney 2012). Burke and Stephens (2017 p. 35) defined it as "an emergent social movement advancing RE transitions by resisting the fossil-fuel-dominant energy agenda while reclaiming and democratically restructuring energy regimes." Szulecki (2018 p. 35) defines it as a quasi-utopian "political goal, in which citizens are the recipients, stakeholders and accountholders of the entire energy sector policy." While there are disparate conceptualizations of energy democracy, one of the core demands of this movement is for publicly owned and democratically managed energy systems (Burke 2018).

In contrast, discussions in the Global South have historically centred on questions of energy access, energy poverty, institutional distortions (corruption), and enhancing recognition of the needs of marginalized communities including women (Guruswamy 2011; Lacey-Barnacle *et al.* 2020). Of the two, energy justice has found greater resonance in the Global South, whereas energy democracy is still primarily centred in the Global North (Lacey-Barnacle *et al.* 2020). We speculate that countries that have a tradition of civic engagement in utility management are more likely to provide fertile ground for energy democracy ideas to take root. For instance, rural electricity distribution in most of the United States is organized through consumer-owned rural electric co-operatives (RECs), over 800 of which continue to deliver ~11% of the total units of electricity sold in the US (University of Wisconsin Center for Cooperatives 2020).

More broadly, the discursive and political context in India is fundamentally different from that of the West (Angel 2016). Here, the justice conversation is dominated by the challenge of access, which is not a major concern in developed countries (Malakar *et al.* 2019). Moreover, these discussions assume that the energy system is controlled by a democratic state that presumably supports decentralized RE as part of its developmental discourse. Such assumptions are rarely borne out in the varied contexts of the developing world.

The Indian context

In India, electricity is largely generated using conventional sources of energy such as coal, large hydropower, gas, and nuclear, and a fraction comes from utility-scale solar and wind. Consumers largely play a passive role in this system—they receive electricity, pay a recurring bill, and have limited avenues to participate in electricity planning. Where participation does exist, it usually concerns land acquisition and is often very limited in scope. Decision-making and implementation are carried out by central and state regulators; the ministries dealing with

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power, coal, and RE; large, corporatized utilities (state-owned or private); grid operators; and frontline staff engaged in billing and maintenance. There are not many avenues for consumers to exercise their voice beyond inefficient consumer grievance channels and sparsely attended public hearings.

The thrust of the RE policy is driven by factors such as energy security, attracting private investment, and domestic political signalling (Shidore & Busby 2019). A vast majority of RE capacity is privately owned as opposed to conventional sources, due to the general push towards privatization in the energy sector since the 2000s (Moallemi *et al.* 2017). In this sense, the broader public has lesser control over India's RE capacity base than it has over the thermal capacity base, which largely involves public sector undertakings (PSUs). Given this institutional context, the transition to a democratic energy system might seem unlikely.

Nevertheless, energy democracy has entered the discourse on energy transitions in recent years in India, and most notably from the labour movement. Dominic Mathews *et al.* (2016 p. 2), writing under the banner of Trade Unions for Energy Democracy, lay out a "core labour perspective" for a just energy transition. The two key political battlegrounds identified by them include the lessening of labour's bargaining power due to a RE policy that favours the private sector and securing democratic rights for communities being displaced by large-scale solar parks. Their vision of energy democracy includes four key demands: 1) rehabilitation of coal areas, 2) redeployment and retraining of the coal sector workforce, 3) ensuring financing for the transition, and 4) public-sector-led and municipalities-controlled RE development. Further, they call for participatory spaces "where mass organisations and trade unions democratically engage and shape industrial policy" (Mathews *et al. 2016* p. 13).

As a complement to the focus on the coal-sector articulated above, our chapter explores the opportunities for democratic transitions using RE. While doing so, it is important to critically assess the normative value attached to all forms of RE and not unequivocally equate RE penetration with advancing energy justice and democracy in the Global South. First, justice effects are not inherent to the expansion of RE, but depend on choices concerning scale, siting, and ownership of RE (Banerjee *et al.* 2017). Second, a normative preference for renewables over traditional sources like biomass and charcoal has been characterized as an "elitist interpretation of modernist development ideology" resulting from the lack of a nuanced understanding of traditional sources (Munro *et al.* 2017 p. 640). Third, the Global North has been accused of "energy bullying" or promoting RE development that would benefit corporations based there (Monyei *et al.* 2018, 2019; Todd *et al.* 2019).

In sum, energy justice and energy democracy are powerful tools for any country in the process of finalizing its energy trajectory, but they need to be applied carefully in the context of developing countries. This includes adapting key frameworks to suit the local context as we seek to do in the following section.

Analytical approach and research methods

While energy justice and democracy have their own unique histories, they are interrelated, and policy instruments that contribute to one can reinforce the other. Policies play an important role in establishing the direction of change and the rules of the game. To the best of our knowledge, no other work to date has examined energy justice and democracy from the perspective of state policies in India. We analyse both concepts in this study through the identification of policy clauses that move us towards fair distribution and more democratic procedures.

Energy is a concurrent subject in the Indian federal system. While the Centre sets the overall trajectory through planning and financing, it is at the state level that policy implementation and distribution of electricity occurs. The financial support provided by the Centre and its priorities provide structure to the overall electricity system's transition. However, states control important levers that influence the realization of distributional and procedural goals. States also vary in their approach to governance (such as the extent of decentralization), which can influence and inform their approach to electricity governance (Dubash *et al.* 2018). Identifying the creative ways in which some states have accommodated justice concerns within the federal framework demonstrates the feasibility of achieving a more just policy framework.

Our analysis is rooted in this context and reads these policies using an Indian, and more broadly, Southern lens. Our reading of distributional justice begins with the question of access since this continues to be a dominant challenge in the Indian context. Cross-sectoral initiatives that distribute the benefits of electrification through employment and increased economic activity are central to our interpretation of distributional justice. With respect to more democratic procedures, our analysis accounts for the low purchasing power among domestic consumers of electricity and the low levels of financial and personnel capacity required for decentralized management. The elements of our framework are detailed below.

First, with respect to access (distributional goals), we look for both the *identification* of underserved groups and the *recognition* of their specific electrification needs. Identification

occurs when a target group is mentioned in the policy as a potential beneficiary of better electricity access. Recognition pushes the conversation beyond connectivity and asks whether these underserved communities can afford and use electricity over the long term. For example, electrification of poor rural households needs to recognize their particular spending patterns and prior experience with metering systems. Kilowatt-hour (kWh) based metering and monthly billing cycles impose informational and financial burdens on the poor (Winkler *et al.* 2011). On the other hand, service-based charges or fixed daily payments mimic existing expenditure patterns on energy services in poor households (Sharma *et al.* 2016). Due to their modularity and zero fuel cost, distributed and decentralized solar energy offer more opportunities than the legacy system for restructuring business models to ease access for the poor. Several alternative models of service provisioning have been attempted by the private and non-profit sectors and can offer guidance on how to transition poor consumers to cleaner sources of electricity (Bhattacharyya 2013). In our review of state policies, we identify specific instances where state policies on RE move from simple identification to the recognition of consumers' needs.

Second, a truly distributive system must aim to not just redistribute electricity access but the developmental benefits accruing from electricity. The strong relationship between energy and development is well established in the literature (Alstone *et al.* 2015). However, small quantities of electricity supplied at the household level do little to improve socioeconomic outcomes (Aklin *et al.* 2017). In addition, rural enterprises require several important non-electricity inputs to achieve growth and financial sustainability (Ganguly *et al.* 2020, Willcox *et al.* 2015). Policies seeking to distribute the benefits of electrification more fairly therefore need to do more than just focus on electricity supply and should actively seek cross-sectoral integrations. This would require coordination and integration across multiple domains such as

skilling, human resource development, enterprise development, and education. However, such overarching strategies and goals for integration are often not supported by instruments that increase coordination and convergence through the provisioning of governing resources such as funds, legislative orders, and interdepartmental working groups or the explicit integration with existing government programmes (Candel & Biesbroek 2016; Candel 2019). In our analysis, we explore the strength of and variation in coordination mechanisms across states.

Thirdly and finally, we discuss democratic procedures that allow for wider, more inclusive, and fair public participation in RE deployment. Based on a review of the literature, we identify three sets of instruments to meet procedural goals: instruments that a) facilitate ownership and ease transactions, b) decentralize legacy institutions, and c) enhance just participation. The primary goal of instruments that facilitate ownership and ease transactions is to increase the amount of RE used by consumers or fed into the grid. Net-metering policies link individuals and the grid by allowing users to consume as well as sell the electricity generated by their solar power systems. These instruments aim to create *prosumers*—individuals or groups that both produce and consume energy. In certain business models, ownership is transferred to new market participants who can either save money on utility bills or earn an income by selling excess electricity to the grid. While existing literature considers net and gross metering to be "key policies for energy democracy", they might only mark an incremental step towards democratization in certain contexts (Burke & Stephens 2017 p. 39). For example, if the rights and responsibilities of rooftop owners, tariffs, and regulations are all strongly controlled by central and state regulators, these instruments can end up only facilitating exchange/transactions but not ownership. In our analysis, we seek to highlight policies that go

beyond just offering metering options and create opportunities for more consumer participation.

Our second set of instruments include those that decentre legacy institutions and pave the way for decentralized institutions to manage electricity. Co-operatives, farmers associations, and self-help groups are commonly recognized as institutions of decentralized governance in the extant literature and policy discourse. These institutions can facilitate a transition towards a more democratic energy system because they are already built on the idea of community participation. However, there are three reasons why they might not aid a democratic transition at scale. First, managing complex infrastructure such as electricity will require a significant amount of capacity-building. Experience with rural electrification projects involving village energy committees (VECs) or voluntary groups constituted for the management of decentralized solar energy systems, has been mixed (Chaurey *et al.* 2012; Palit *et al.* 2013). VECs often do not have the manpower or technical capacity for managing local energy systems and need support from technical partners over the long term (Sharma *et al.* 2014, Sharma and Palit 2020). Second, these groups are largely membership-driven organizations without an electoral mandate. This raises questions about their representation and their accountability toward the larger community. There is also the possibility of elite capture, which makes them an ineffective partner in the transition to more democratic systems. Third, these groups do not have the same status as the government departments that they have to engage with during the implementation and management of decentralized electricity systems. They are likely to face significant hurdles in transacting with the government machinery given their unequal share of power in governance processes. This is where existing, *elected* institutions of decentralized

governance such as village panchayats and urban local bodies (ULBs) are likely to be better candidates for facilitating a democratic electricity transition. While short-term implementation goals might be achieved by transferring ownership to community groups a longer-term vision for democratic transition must consider the involvement of elected institutions of governance. In our analysis, we will identify cases where policies have looked beyond voluntary groups and associations and have sought to empower elected institutions of governance by involving them in decision-making regarding energy production and management.

The third set of instruments promotes just participation. In the Indian context, displacement and loss of livelihoods resulting from infrastructure development are well documented. Development induced displacement has been studied in the case of the Sardar Sarovar Dam on the Narmada river, the displacement of residents of urban informal settlements during the Delhi Commonwealth Games and in mining among other sectors (Baviskar 1995, Baviskar 2013, Kohli 2013). On similar lines, Yenneti and Day (2015) offer in-depth case studies of the lack of procedural justice in the Charanka Solar Park project in Gujarat, which led to the displacement of local communities and loss of livelihoods. In this study, we seek to identify instruments that foster a participatory approach that considers the livelihoods of local communities in solar energy transitions.

Finally, Indian scholarship on RE has highlighted the emancipatory potential of decentralized electricity systems (D'Souza 2019a). In 1960, D.D. Kosambi argued for decentralized solar energy managed by communities without any aid from the government. For him, this was the only form of technology that would realize a truly socialist energy system

"without the stifling effects of bureaucracy and heavy initial investment" (p. 42). Amulya Reddy was another influential advocate for democratizing energy who advocated for the self-reliance of villages through employment-generating, community-owned, off-grid energy systems. This vision has shaped the RE debate in India for many years, until recently. Since the Electricity Act 2003, the thrust of electricity policy has been towards liberalizing electricity generation, adding capacity primarily through large thermal powerplants and expanding grid based access. The final section of our analysis gives a big picture view of the current status of centralized and decentralized electricity systems and India's progress towards a just and democratic electricity system.

Methods

We analysed the latest versions of the notified solar energy policies of each state, as uploaded on the RE departments' websites. There is wide variation in the formats of these policies—some states have a single document while others have two or three different documents for large-scale solar power plants (grid-connected, utility-scale solar power) and decentralized solar power (also referred to as distributed generation, mini-grids, or decentralized distributed generation) or rooftop systems. Further, some states have an RE policy covering multiple sources and no individual solar energy policies while some have both. If the RE policy was the only available policy, we only reviewed the solar energy section within it. If both RE and solar policies exist, we reviewed only the solar policy in cases where the RE policy was ratified earlier. Some states also have solar-hybrid policies and, where available, these have been included for review. Any amendments to the latest version of the solar or RE policies have also been included.

Our analysis involved a close reading of the policy documents to identify from the preamble, objectives, and clauses the references made to the *distributional and procedural goals* of the proposed solar energy transition. Clauses within policies that mention such goals were manually highlighted and coded into a worksheet along with the clause and page numbers. We then examined the occurrence and objectives of such clauses across policies by employing the lens of interpretive policy analysis (Yanow 2007).

The distribution of different types of policy documents across states is depicted in Table 1.

Table 1: Source of solar power policies across states

State	Single State Solar Policy	RE Policy	Multiple Policies	Hybrid Policies	Amendments
Andhra Pradesh	■			■	■
Arunachal Pradesh					
Assam	■				
Bihar		■			
Chhattisgarh	■				
Goa	■				
Gujarat	■			■	■
Haryana	■	■			■
Himachal Pradesh	■				
Jharkhand	■		■		
Karnataka	■				■
Kerala	■	■			
Madhya Pradesh	■				
Maharashtra		■	■		
Manipur	■				
Meghalaya		■			
Mizoram	■	■			
Nagaland					

State					
Odisha	■	■			
Punjab		■			■
Rajasthan	■			■	■
Sikkim	■				
Tamil Nadu	■				
Telangana	■				
Tripura	■				
Uttar Pradesh	■		■		
Uttarakhand	■				■
West Bengal		■			
J&K	■		■		
Delhi	■				

Note: The black boxes represent the policy documents included in the analysis.[14]

Analysis and discussion

In terms of distributional goals, we find that most policies continue to exclude significant marginalized groups. Where groups are included, the focus is more on identifying them rather than recognizing their specific needs or the processes by which they can effectively transition to becoming full consumers of electricity. We also noticed that distributional goals beyond simple access are mentioned in the preambles of policies but are not substantiated by an allocation of tools to foster the cross-sectoral collaboration required for their implementation.

Among the three sets of procedural instruments, instruments that facilitate ownership and ease transactions were emphasized and elaborated on more than those that decentre legacy institutions or enhance just participation. With the exception of invoking urban municipal bodies to amend by-laws to facilitate rooftop solar, the limited attention given to new institutional arrangements and just processes of participation reflects the norms of the legacy

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[14] Two states (Maharashtra and Chhattisgarh) had policy documents only available in regional languages and have thus been excluded from our analysis.

electricity system. Overall, the policies tend to keep the system in its current configuration and forego the opportunity solar provides to create transformative change beyond reducing emissions.

In Sections 5.1 to 5.3, we have used examples from different states to elucidate the various sets of instruments for operationalizing energy justice in Indian solar policies. We have also conducted a comprehensive assessment of state policies, using the methods described in Section 3, to identify the presence of policy instruments for achieving energy justice goals. These results are synthesized in Table 2 below.

Table 2: Presence of policy instruments for energy justice in state solar policy documents

	Distributional goals		Procedural goals		
	Recognition beyond identification	Cross-sectoral integration for justice	Facilitation of ownership and easing transition	Decentring of legacy institutions	Enhancement of just participation
Andhra Pradesh			*		
Arunachal Pradesh					
Assam	*			**	
Bihar	*	**		**	
Chhattisgarh					
Goa					
Gujarat	*	**			

Haryana	*			*	
Himachal Pradesh	*		**		**
Jharkhand	*	*	**	**	
Karnataka	**	**	*	**	
Kerala	**			**	**
Madhya Pradesh	*				
Maharashtra		*			
Manipur					
Meghalaya					
Mizoram	*	**	*		*
Nagaland					
Odisha	*	*		**	
Punjab			**		
Rajasthan	*	**	*	**	**
Sikkim	*	**	**	*	
Tamil Nadu			**	**	*
Telangana				**	**
Tripura					
Uttar Pradesh	*	**			

Uttarakhand					
West Bengal	*			**	**
Jammu & Kashmir					**
Delhi		**	**	**	

Note: ** (double asterisks) represents a clear or strong occurrence and * (single asterisk) represents a partial or weak presence of policy instruments in the relevant category. Grey cells imply that the policy or translation was unavailable. The empty cells represent 'gaps' or a lack of any instruments for the category.

Distributional goals: identification versus recognition

All the reviewed solar policies include provisions for greater distribution. The most commonly identified target groups are farmers and residents of remote and rural areas who are not connected to the national electricity grid. Policies suggest standalone solar pumps for farmers and either standalone solar home systems or community-level mini-grids for remote and rural locations.

This is a straightforward concern about distribution—farmers and remote communities are indeed important groups from a distribution perspective. However, the policies fail to mention women, residents of urban informal settlements, and nomadic and pastoral groups. There is evidence of gender-based disparity in electricity access and use and lack of access in urban informal settlements and among pastoralist groups (Baruah 2015; Debnath *et al.* 2020). Given the nature of their electricity demands, mobility, and low-paying capacities, these groups can be particularly well-served by decentralized and small-scale solar power.

The reviewed policies also fall short of recognizing the specific needs of the populations they wish to serve through solar energy transitions, with two exceptions. The Kerala 2013 Solar Energy Policy takes a step towards recognition by stating that "for consumers with monthly consumption of 30 units and below efforts shall be made involving welfare departments of Government and LSGIs (Local Self Government Institutions) to solar enable them and in such cases, a special feed-in-tariff scheme shall be notified" (Government of Kerala 2013 p. 7). While there is insufficient information to draw any conclusions about outcomes, in terms of intent, this provision suggests that consumers with very low loads of below 30 units a month need to be given special tariff considerations. The Karnataka Solar Policy 2014–21 provides exceptional financial assistance of INR 1 crore for small solar parks (but >100 acre in size) located in "backward districts" (Government of Karnataka 2014 p. 10). Similar to Kerala, there is insufficient information on whether the needs of these districts are recognized beyond mentioning that the solar parks must be small.

Our findings bring up the question of whether we should expect policy documents to go into such detail; after all, they are meant to offer broad guidance. Here, we point to the discrepancy in the extent of detail provided for policy clauses relevant to underserved populations and those relevant to wealthier urban residents or corporations. Most policies focus on promoting new business models and strategies to increase the penetration of utility-scale and rooftop solar power plants, none of which embody distributional goals. These include multiple business models for solar rooftop power plants, detailed net and gross metering policies, bidding guidelines, and land acquisition procedures among other enabling policy

mechanisms. A more holistic vision of a just transition needs to look beyond replicating the metrics of the legacy electricity system and move towards recognizing the specific needs, spending patterns, information asymmetries, and transaction costs associated with different target groups in accessing electricity.

Distributional goals: cross-sectoral integration for justice beyond access

Across all policies, the preamble and objectives emphasize a) transitioning the electricity system towards cleaner sources of energy, b) energy security, and c) serving marginalized populations. Several policies, however, aim to extend the scope of their goals beyond the electricity sector and mention sustainable development, jobs, and creating rural enterprises. This second set of policy goals are fundamentally distributive in nature as they seek to provide the developmental benefits accruing from electrification to previously underserved populations. Referring to our framework, however, we find little evidence that such goals are supported by instruments to enable cross-sectoral collaboration, with a few exceptions.

Some state policies refer to a mechanism for training and absorbing unemployed youth into the solar industry mentioned in India's national solar energy programme—the Jawaharlal Nehru National Solar Mission. While it has been mentioned in the policies, there is no indication of policy integration at the state level. Two state policies stand out in terms of seeking explicit convergence with non-electricity sector policies that could lead to employment generation. Bihar's Renewable Energy Policy of 2017 aims to forge partnerships for skill development and capacity-building with the existing Bihar Rural Livelihoods Project, JEEViKA, to "reach out to local youth especially women to support entrepreneurship at the grass-root level, to improve socioeconomic conditions of financially underprivileged"

(Government of Bihar 2017 p. 16). On similar lines, Gujarat's Solar Policy from 2015 (Government of Gujarat 2015) explicitly makes linkages to existing industrial development programmes to enable convergence, specifically with the Gujarat Industrial Policy of 2015 and the Electronics Policy for the State of Gujarat (2014–2019), both of which extend state-level incentives for the development of RE and semiconductors (Government of Gujarat 2015 p. 21).[15] Besides programme convergence, creating institutional structures to coordinate cross-sectoral activities is also important. A few states, such as Delhi, Karnataka, Rajasthan, and Mizoram, have constituted empowered committees consisting of officials from departments such as power, urban development, PWD, environment, and finance, typically under the chairmanship of the Chief Secretary. In summary, while some exceptions exist, there are limited instruments across states to enable the much-needed cross-sectoral collaboration for meeting broader distributional goals.

Procedural goals

Instruments that facilitate ownership and ease transactions

All the reviewed policies focus extensively on instruments such as net and gross metering. The term *prosumer* is used across policies in sections describing solar rooftop systems and a range of business models to support uptake are described. However, as we argue in our

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[15] Several states have provisions to ensure convergence between building codes and solar energy use. West Bengal proposes mandatory installation of Solar PV rooftop systems. Other policies such as those from Delhi, Rajasthan, Odisha, Sikkim, and Jharkhand also propose reframing building codes for facilitating solar energy installations. We mention this as a footnote since this convergence, while important, does not directly address our point on framing convergence as a means to achieve greater justice.

analytical framework, while such instruments play a role in re-distribution, they might only make an incremental shift towards more democratic ownership.

A few policies imagine metering beyond facilitating transactions. The policies of Delhi, Jharkhand, and Sikkim include virtual metering in addition to net and gross metering (Government of Jharkhand 2018 p. 4; Government of NCT of Delhi 2016 p. 7; Government of Sikkim 2019 p. 6). Virtual net metering allows potential prosumers without rooftops to invest in community rooftop systems, either within their neighbourhoods or outside them. While the exchange of electricity with the grid remains the same as with net metering, this policy innovation deepens participation in two ways: first, consumers who would otherwise be unable to install a rooftop system now can. This would be particularly relevant in dense urban areas. Second, this can in turn increase the size of the community investing in decentralized systems, leading to a greater potential for bargaining power.

Instruments that decentre legacy institutions

Co-operatives, farmers' associations, and self-help groups are commonly recognized as new institutions of decentralized governance. However, as argued earlier, their limited capacity to manage complex infrastructure, non-representativeness, and lower status compared to government departments limit the scope of their contribution in the transition to a democratic energy future at scale. Instead, elected institutions of decentralized governance must also be considered. Some policies move us in this direction by indicating that panchayats and municipalities can play a role in managing and implementing solar power plants. Bihar's Renewable Energy Policy 2017, for example, notes the role of "registered companies,

government entities, partnership companies/firms, individuals, consortia, *Panchayat Raj Institutions, Urban Local Bodies*, Co-operative or registered society (sic)" (Government of Bihar 2017 p. 3). Kerala's Solar Energy Policy 2013 similarly emphasizes the role of local self-governments in power production and proposes introducing "incentive[s] for people's representatives/panchayats [to promote] solar installations and street light optimization", making a rare reference to representative government entities (Government of Kerala 2013 p. 6). The West Bengal RE Policy 2012 explicitly states that "urban local bodies will form an essential part of the comprehensive solar policy for cities" (Government of West Bengal 2012 p. 17). Some states like Assam and Jharkhand go a step further by proposing the amendment of municipal by-laws to facilitate the adoption of solar rooftop systems (Government of Assam 2018; Government of Jharkhand 2018).

Instruments that enhance just participation

In 2017, the Ministry of New and Renewable Energy relaxed the requirements for environmental and social impact assessments (EIA/SIA) for utility-scale solar power project, including solar parks. This is reflected in the state solar policies released subsequently. Some state policies, however, do take steps to ensure fair compensation for communities whose land is being acquired for solar energy projects. Himachal Pradesh's policy states that "1% of the total cost of the project, as fixed by HPERC (Himachal Pradesh Electricity Regulatory Commission)", will be paid to the Local Area Development Fund for "community development works," for government land on which people have community rights (Government of Himachal Pradesh 2016 p. 12). Similarly, Telangana's policy states that "development charges and layout fee of INR 25,000 per acre basis shall be levied payable to the respective Panchayat," in the section on "Ease of Business: Enabling Provisions" (Govt of

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Telangana 2015 p. 11). Rajasthan's policy also mentions that the solar power producer shall contribute a sum of INR 25,000 per MW towards the Local Area Development Fund on a one-time basis (Government of Rajasthan 2019 p.16). Among the remedial measures, there is an overwhelming emphasis on monetary compensation, while rehabilitation and resettlement are not explicitly mentioned. Monetary compensation can be inadequate because it does not account for appreciation in land value, the importance of land as a source of employment and its role in the socio-cultural dimension of people's lives (Maitra 2009; Yenneti & Day 2015). In simpler terms, one-time compensations cannot substitute for long-term losses of livelihood, and while compensatory processes involve some community consent and participation, they are far from just.

A few policies make bolder attempts to protect the rights of communities. Kerala's policy makes several provisions for the use of tribal lands, such as: "The willingness of the land owner is mandatory"; "The land ownership rights shall continue to fully vest with the original owner. The developer shall have only rights to setup and operate the project. The landowner will have the right to use land for agricultural purpose"; and "Revenue (not profit) sharing based on the power generated, possibly in the range not below of 5% is envisaged" (p. 8). The West Bengal policy is one of the few offering specific guidance on earmarking compensation for rehabilitation and resettlement purposes through the clause, "Developer acquiring land must provide money (1% of project cost) to rehabilitate and resettle displaced people, for local development activities like building schools" (Government of West Bengal 2012 p. 32). The West Bengal and Jammu and Kashmir policies are notable for having a separate section on

social and environmental issues (Department of Science and Technology 2013). Most policies, however, limit themselves to the technical and financial details of implementation.

The bigger picture

India's 100GW grid-connected solar target consists of sub-targets for large- or medium-scale solar (60GW) and distributed solar (40GW). In practice, the vast majority of realized capacity is in the form of large-scale plants. By the end of 2019, India had 35.7GW of solar capacity, of which only 4.4GW was rooftop solar (Sanjay 2020). This suggests that India is swiftly moving towards a system configuration where utility-scale solar (and wind) will replace large thermal generators while retaining the existing institutional and political structure of the energy system. Decentralized energy systems, and their potentially emancipatory politics, are likely to get side-lined if these trends continue.

Most states resort to presenting large-scale solar parks and decentralized solar as different options, modes, models, or categories of projects. Some states present MW targets for decentralized capacity. However, on the whole, policy documents shy away from choosing between centralized and decentralized typologies. This 'all-of-the-above' approach reveals that the key priority for states is rapidly increasing deployment, irrespective of how it happens. Delhi stands out by framing its solar policy explicitly around rooftop solar, but this is perhaps only because of the limited space available for utility-scale solar in Delhi.

Further, decentralization alone is not sufficient to ensure community ownership as envisioned by energy democracy scholars. Within the rooftop segment, for example, the renewable energy service company (RESCO) model, where the developer retains ownership of the solar installation, constitutes 35% of the rooftop capacity and is gaining steam (Bridge to India 2019; CII 2019). While some state policies, like Punjab, Jharkhand, Odisha, and West

Bengal, mention increasing community participation in the electricity sector, none of them provides a mechanism to ensure increased *public ownership* of energy infrastructure (Government of Odisha 2013; Government of Punjab 2012). This question is partly engaged with in the Kerala policy, which states that "a wider community ownership model with direct financial stake by the public shall be encouraged" for a niche segment—floating solar plants and public place installations (Government of Kerala 2013 p. 6).

Our survey of state RE plans, alongside the installed capacity numbers, suggests that India is in the process of reconfiguring its energy system—in terms of scale, ownership, and spatial spread—in line with the existing system. A push to ensure community ownership and control is almost completely missing from political discourse. While we do not wish to uncritically advance decentralized systems as the normative choice for India, we do intend to highlight that a monumental political process is underway right now without much public deliberation. The outcome of this process may lock in institutional effects that limit a just and democratic energy transition.

Conclusion

Our analysis focuses on solar power policies at the state level, given the salience of solar energy in India's current drive to realize an energy transition. We find that while energy justice concerns are not the core of state solar policies, there are innovative provisions in some of them that could create a more fair and participatory system if scaled widely. While this is a critical first step, research on questions of energy justice and democracy is nascent in India and several opportunities for further work exist. Future work in this space can develop in two directions.

First, from an empirical perspective, our analysis is limited to the solar energy transition given the significance of this resource in India's current RE discourse. Similar distributive and

procedural justice frames can be applied to other energy sources and forms of energy use (transportation, heating, cooking). Other sources and uses vary in their levels of complexity, organizational and institutional architecture, and resources required for their uptake. This could yield more nuanced insights on planning for just and democratic transitions. Second, more fundamental processes of democratic participation in the Global South need to be theoretically explored in the context of energy. Our framework largely refers to policy processes but makes some fundamental assumptions about how and why people participate in democratic processes and the co-production of public services. The literature on coproduction is still nascent in the Global South and has the potential to offer insights into whether and under what conditions individuals and groups will be willing to own and manage complex public infrastructure.

The goal of our analysis has been to bring into focus the broader injustices and political visions for India's RE transition. This is by no means discounting the historic impetus of increasing energy access and sufficiency. Rather, we wish to reframe what radical success looks like in the Indian energy sector, both from a developmental and a climate mitigation point of view. Achieving multiple objectives (access, social justice, job creation, and affordable power) simultaneously is the only way to develop sustainably. This requires critically evaluating whether our energy politics, especially our RE politics, can truly achieve our stated developmental and social goals beyond decarbonization. Bringing in greater justice and democracy in the energy discourse serves as an entry point for this exercise.

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