



DELHI CITIZENS' HANDBOOK 2017

Government to Citizen Services

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Government to Citizen Services



CENTRE FOR CIVIL SOCIETY
Social Change Through Public Policy

Friedrich Naumann
STIFTUNG

FÜR DIE FREIHEIT

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Introduction

The Delhi Citizens' Handbook 2017 is a project undertaken by Centre for Civil Society. This handbook features research papers assessing the impact and relevance of policies that shape the lives of ordinary citizens in the national capital on eight core areas of urban governance: Administration, Education, Food and Civil Supplies, Healthcare, Infrastructure, Labour and Employment, Transport, and Water and Sewage. The handbook is designed to serve as a resource for informed discussion on achieving effective and accountable governance – specifically focusing on the efficiency of government to citizen services. Each of these eight themes was studied over six weeks, processes in service delivery were mapped, and through field research, gaps were identified. Key findings are presented here, along with a detailed analysis and policy recommendations.

In Administration, the group analysed **the implementation and outreach of the e-District Delhi Project under the National e-Governance Plan**. A study of the online application procedure at Sub Divisional Magistrate (SDM) offices was conducted, to assess the extent to which the e-District Project has been able to reach its envisioned goals.

The accessibility, inclusivity and efficiency of provisions under Section 12(1)(c) of the Right to Education Act has been analysed by the team working on Education. Despite the Right to Education (RTE) Act mandating 25% reservation in private unaided schools for students from Economically Weaker Sections (EWS) and Disadvantaged Groups, social inclusivity continues to remain a challenge today. This paper examines private unaided schools across Delhi to gauge the level of social inclusivity as mandated under RTE, through an Inclusivity Index.

The leakages that abound in Delhi's Public Distribution System (PDS)—where subsidised food is sold to beneficiaries through Fair Price Shops—pose a significant threat to the food security. **The effectiveness of the Public Distribution System and efficacy of Fair Price Shops** is examined in the paper on Food and Civil Supplies. These leakages, along with the feasibility of the Direct Benefit Transfer (DBT) scheme as a measure for plugging the leakages, have been surveyed herein.

The World Health Organisation underscores 'quality' and 'accessibility' as the two key elements of a good healthcare system. In this context, this research paper on Public Healthcare seeks to examine the **extent to which Delhi government hospitals and mohalla clinics provide convenient entry into the healthcare system whilst ensuring proper services to patients**.

The Infrastructure paper looks at **the extent to which affordable housing is made available to the urban poor in Delhi by the government**. It addresses various problems associated with the provision of affordable housing by explicating the very concept of affordable

housing and all that it entails in context of national-level policies, schemes carried out by governmental and autonomous authorities in Delhi, and the efforts made by the DDA.

In Labour and Employment, the focus is on **the implementation and effectiveness of the Minimum Wages Act**. This paper investigates the implementation of the 37% hike in minimum wages enacted by the Delhi Government. Security guards and construction workers, who form a part of the informal sector which is vulnerable to exploitation and non-payment of minimum wages, have been interviewed as stakeholders.

The paper on Transport examines challenges faced by women service providers in the transport industry. Women conductors and drivers within the Delhi Transport Corporation (DTC) at present face major challenges due to the absence of a formal policy for safety and security at the workplace, inefficiency of existing grievance redressal mechanisms, and a lack of appropriate infrastructure. This research paper takes a closer look at these challenges.

With the issue of the alarming levels of pollution in the River Yamuna as its main premise, the paper on Water and Sewage reviews **the effectiveness of pollution control and wastewater management systems** and the faults in the centralised approach that has been followed till date to clean up the river. It suggests a decentralised sewage and wastewater management system as a sustainable, more feasible way forward.

The objective of this Delhi Citizens' Handbook is to place first and foremost, the perspectives of ordinary citizens in the discourse on public policy, and provide roadmaps for increasing efficiency and accountability in delivery of government services to citizens.



ADMINISTRATION

Implementation and Outreach of e-District Delhi Project at SDM Offices

Aashi Srivastava, Naman Jain and Rashmi Muraleedhar

EXECUTIVE SUMMARY

The e-District Project is a Mission Mode Programme envisaged by the Union Government under the National e-Governance Plan. It is being implemented by the Government of the National Capital Territory (GNCT) in Delhi. The e-District Project was conceptualised to improve citizens' experience of availing front-end government services. Additionally, the e-District Project seeks to enhance the efficiencies of the various government departments at the district-level to enable seamless service delivery to the citizens.

This research paper assesses the implementation and the outreach of the e-District Delhi Project. The research follows the four-fold approach based on Detailed Project Report (DPR) Guidelines. Approach 1 maps the process flow of online and offline applications through e-District, while Approaches 2 and 3 analyse the transaction volumes of the portal and collate experiences of citizens with regard to availing services respectively. Approach 4 gives an analysis of the variations in SDM offices with respect to e-District.

The paper analyses the online application procedure for both front-end and back-end process involved, attempts to ascertain the reasons behind the successful and failed aspects of the project, and provides statistical proofs for the same based on the data collected from the SDM offices and from interviews conducted with various stakeholders. The aim has been to determine the efficiency and implementation process of the e-District Project at various SDM offices and understand the extent to which it has been able to reach its envisioned goals.

KEY FINDINGS

1. All applications for concerned Government to Citizen services are processed through the e-District Portal regardless of whether the application was made through the Common Service Centre (CSC) or Citizen mode.
2. CSCs are not functional in Delhi except for those operating as facilitation counters at the Certificate Branch within the SDM office complex.
3. e-District has not been able to help shorten the queues at the SDM offices.
4. 54% of the applicants had to make only one visit to the SDM office. This is in compliance with the goals set by the e-District Project.
5. The CSC staff working at SDM offices is proportional to the workload that the subdivision receives. Implementation of e-District has not reduced the work load. The workforce in offices comprises government employees, civil defence volunteers and private workers employed on a contract-basis.

6. With an increase in the number of CSCs i.e., offline transactions, number of online transactions also increase and vice versa.
7. Issuance of OBC, SC, or INCOME certificates is the most highly demanded service amongst those provided under Revenue Department in e-District. These services have the highest rejection rates among all services offered in all the sub-divisions.
8. District Administration is not involved at all in promoting e-District. Outreach programs and awareness campaigns don't fall under the Revenue Department, but rather come under the purview of the Directorate of Information and Publicity (DIPR). DIPR has not taken any steps in the past two years to promote the e-District Project among citizens.
9. The e-District website is user-friendly but the process of documentation is lengthy and the time limit may vary due to server problems or power outage.
10. The Grievance Redressal System available at the e-District portal is defunct.

Introduction

The government plays an important part in delivering essential services to the citizens. Citizens judge the quality of governance based on their experiences in interacting with front-end offices whilst availing such services. Hence, the government needs to constantly improve its service-delivery mechanisms. The e-District Project is one such endeavour taken up by the Government of the NCT of Delhi. The objective of this research project is to assess the implementation and the outreach of the e-District Project in the NCT of Delhi by the State Government.

Given time constraints, the scope of the research conducted and subsequent assessment is limited to the services provided by the Revenue Department under the e-District Project at seven selected SDM

offices. In order to make a holistic assessment, several strands of investigation were incorporated, which look into the processing of applications through the e-District system, the experience of the district administration, the experience of the citizens, the volume of transactions taking place through the portal, and the working of SDM offices in implementing the e-District Project. These approaches lead to findings that can be tied together to reveal a common theme about the working of this initiative.

Stakeholder Analysis

Understanding who the primary stakeholders are and what roles they play is of utmost significance to make the policy effective. The table below highlights the stakeholders involved in the working of this project (Detailed Project Report for Implementation of e-District in Delhi 2013).

Table 1: Stakeholder Mapping for e-District Project

Stakeholder Group	Role	Influence	Modus Operandi
Department of Information Technology (DIT), Government of India	Frames and issues guidelines based on the Schemes approved by the State	High	Regular meetings with State Government involved
State Government of Delhi	Provide resources to implement the project, i.e., infrastructure and finances	High	Forms a dedicated special unit
DIT, Government of NCT of Delhi	Assistance in inter-departmental guidelines, security guidelines, training	High	Coordinates with DIT, Government of India in implementing the project to district administration
National Informatics Centre (NIC)	System Integrator	High	Coordinates with DIT, Government of NCT of Delhi in implementing the project to district administration
District Administration	District Magistrate and Sub-Divisional Magistrate provide leadership at district and sub-divisional level respectively	High	Conducting sessions with the officials involved
District e-Governance Society	Propagation of the awareness of the e-District Project	High	Society meetings

Literature Review

Governance has been described as a "process whereby societies or organisations make important decisions, determining whom they involve in the process and how they render account" (Graham, Amos and Plumptre 2003). Good Governance, as a concept has received much attention from politicians, policy-makers, scholars and academicians, and its principles have been debated upon extensively. There is a large consensus on the fundamental necessity of improving the delivery of government

services to the respective country's citizens. Kofi Annan, former Secretary General of the UN, has said, "good governance is perhaps the single most important factor in eradicating poverty and promoting development" (Graham, Amos and Plumptre 2003). Available technology has greatly improved governments' capacities to adopt good governance. Through greater focus on e-Governance, governments can "harness potentialities of information and communication technologies (ICTs) at various levels for the purpose of enhancing Good Governance" (Okot-Uma 2000).

In India, the union government has realised the importance of these potentialities and rolled out an ambitious National e-Governance Plan (NeGP). This process of rolling out e-Governance in India began with computerisation of government departments and is now focusing towards 'finer points of governance' such as citizen-centricity, service orientation, and transparency (Ministry of Electronics & Information Technology 2017). NeGP seeks to speed up e-Governance implementation across the various arms of the government at the national, state and local levels and provide an overarching framework to guide efforts under a common vision and strategy (Ministry of Electronics & Information Technology 2017). In this effort, NeGP comprises of multiple Mission Mode Projects (MMP) that individually focus on one aspect of electronic governance. The e-District Project is one such MMP under the NeGP that is meant to be implemented by state governments over their respective jurisdictions.

The Ministry of Electronics and Information Technology has also laid down a framework of assessment that helps evaluate the working of e-Governance initiatives undertaken by various departments. Accordingly, the success of e-Governance projects should be evaluated based on the various dimensions of impact as listed below (Ministry of Electronics and Information Technology 2014):

- Cost dimension including all costs incurred by citizens in availing services such as number of trips made, cost of making each trip, waiting time, estimated wages lost in due course, amounts paid informally as bribe or to third party agents
- Preference for online mode over offline modes of availing service

- Quality of service including interaction with staff, handling of complaints
- Quality of governance including elements like transparency, participation, accountability

The elements in the Assessment Framework as specified above have informed the methodology of this research project to evaluate the working of the e-District Project in Delhi. One aspect of the methodology followed in this project involves evaluating the effectiveness of the e-District Portal itself. This investigation has been informed by the report published by the Department of Administrative Reforms and Public Grievances under the Union Government (Policy Guidelines on Web-site Development, Hosting and Maintenance 2003). This report lists certain aims and objectives that departments of Central, State and local governments must keep in mind while developing web-enabled processes for the delivery of services to citizens (Policy Guidelines on Web-site Development, Hosting and Maintenance 2003). Guidelines to this effect include aspects of accessibility, convenience, transparency, accountability, and responsiveness that are necessary to improve the citizens' online experience of availing government services.

e-District Project

The e-District Mission Mode Project (MMP)

The e-District Portal is a comprehensive web-enabled service portal through which citizens can access various services provided by the state government. It provides an end-to-end integrated solution to various services offered.

The ultimate objective is to maximise citizen comfort, enhance operational efficiency, improve quality standard, and provide time-bound and hassle-free services to the citizens.

The district is the 'de facto front-end of the government where most Government to Citizen (G2C) interaction takes place' (e-District Ministry of Electronics and Information Technology 2015). Front-end services are understood to include those that are rendered to citizens at the district, tehsil, sub-division, and block levels. Examples of such services include issuance of certificates (birth, caste, domicile, income), social security (ration cards, old age pension, support to disabled persons), and utility payments (electricity, water) (e-District Ministry of Electronics and Information Technology 2015).

The e-District Project was conceptualised to improve this experience and enhance the efficiencies of the various departments at the district level to enable seamless service delivery to the citizens. The e-District Project has digitised the processing of services provided under different departments of the implementing government (Satyanarayana 2012).

The e-District MMP was proposed with the objective of making e-District projects in respective states service-oriented and transaction-oriented. In order to ensure the optimal use of infrastructure, State Data Centre, State Wide Area Network, State Services Delivery Gateway, Common Service Centre, and other information communication technology have been created by the State under various initiatives, harmonising it with the e-District MMP (Satyanarayana 2012).

The quality of the services provided under e-District can be assessed by the following factors (Satyanarayana 2012):

- Number of trips needed to be made to the government office to avail the service
- Service delivery time
- Dependency on the age-old back-end processing, use of discretion, avoidable inspections etc.
- Whether service is available over the internet, mobile, on a self-service basis and on a 24x7 basis
- Whether the service can be availed 'across the counter' in any designated kiosk
- Whether the service can be availed with complete certainty on the delivery time
- Whether the service can be availed equivalently at a number of delivery points like service centres, kiosks etc.

The working of the e-District Project involves back end computerisation of district and tehsil level offices to ensure electronic delivery of a high volume of citizen-centric services at the district level. Reducing the human interface in availing G2C services is correlated with greater convenience and satisfaction for the citizen. Setting up an e-District Portal is based on encouraging greater 'e-interaction' and efficient communication between citizens and the Government. Reforming the citizens' perception and image of the Government and its constituent departments is one of the primary agendas (Satyanarayana 2012).

The e-District Project – Delhi

The e-District Portal for Delhi residents was launched on 30 November 2015. It enabled residents of the NCT of Delhi to access the Delhi Government's services

online. The objective was to provide citizens ‘time-bound, hassle-free, comfortable and transparent services on a 24x7 basis’ (Launch of e-District Project and Simplified Processes for Issuance of Certificates 2015). When it was launched, 13 government services under the Revenue Department were covered. This list of available services has since expanded in phases across departments. Currently, e-District Delhi provides 64 services across more than five departments under the Delhi government to citizens.

The most notable aspect of the administrative reforms was the simplification of procedures that accompanied the launch of e-District in Delhi. For several of the services provided, the requirement of affidavits and certification by a gazetted officer/councillor/MP/MLA has been done away with and has been replaced with that of a ‘self-declaration’ (Launch of e-District Project and Simplified Processes for Issuance of Certificates 2015). Minimising field verification by reserving it for rare cases is another measure to accentuate ease of use. The simplification of processes and streamlining of services through the unified e-District Portal has led to significant achievements in reducing the time taken for successful delivery of services (Mukherjee 2015). In fact, it is notable that current service levels have considerably improved in relation to the actual targets set when the e-District Project was being envisioned for Delhi (Detailed Project Report for Implementation of e-District in Delhi 2013).

The DPR has clearly listed the envisioned project outcomes for district administration with the implementation of e-District in Delhi (provided below). These envisioned outcomes form the basis of this research investigation into the efficacy of the project. After following

through the four levels of investigations involved in this research, the subsequent findings will help understand how many of these outcomes have been realised. These project outcomes are particularly relevant in evaluating how successful the implementation of e-District has been.

Envisaged Project Outcomes for the District Administration

As per the Detailed Project Report for Implementation of e-District in Delhi 2013, envisaged outcomes are:

- Generation of an efficient MIS for better and fast decision-making
- Fast delivery of services through retrieving of records from computerised database network of various departments/offices
- e-District model based on sustainable operations through application of the user charges for provision of services
- Improvement in efficiency of the employees and reduction in workload
- Post-project evaluation could provide feedback for further improvements
- Better monitoring system
- Bring transparency in the delivery system
- Faster processing of files and information resulting in efficient working of the district administration
- Feedback analysis through grievances
- Reducing the inter-dependency among various sections of district & state administration in providing service to citizens
- A holistic citizen centric approach

The DPR has also listed the envisioned project outcomes for citizens. These envisioned project outcomes are relevant in evaluating how successful e-District has been in bringing citizens closer to public

services. The following list of envisioned outcomes has informed the approach of this research in gauging citizens' experiences with respect to e-District services.

Envisioned Project Outcomes for the Citizens

As per the Detailed Project Report for Implementation of e-District in Delhi 2013

- The service delivery is faster to the citizens
- Issue of certificates in stipulated time frame
- Reducing the cost to citizen such as travel cost, wages lost, etc.
- Reducing the time in availing the services such as travel time, waiting time
- SMS to the citizens at various points to bring transparency
- Reducing the visits by citizens to government departments for availing services
- Status of application at Citizen Facilitation Counter/Common Service Centre
- Status of application on website
- Resolution of citizen grievances within a stipulated time frame
- Access to information easily with service delivery counters within reach
- High level of convenience
- Facility of payment at convenient points and extended hours
- Negligible queuing
- All the above services provided over the counter

Methodology

Scope

The scope of this study has been clearly defined within a selected segment of the total

domain over which the e-District Project operates. The Project has been implemented for several departments under the Government of the NCT of Delhi (GNCT). The portal makes 64 services available to citizens under

- Department of Revenue
- Department of Social Welfare
- Department of Food and Supply
- Department of Welfare of SC/ST
- Higher Education Directorate
- Labour Department
- BSES Yamuna Power Ltd.
- BSES Rajdhani Power Ltd.

Front-end G2C services fall under various government departments. Consequently, in availing various G2C services, the citizen needs to visit the front-end office of the respective government department. In this study, the implementation of e-District with respect to the services provided by the Revenue Department under the GNCT has been assessed. The front-end office at which the citizen avails Revenue Department services is located at the SDM office – Sub divisional Magistrate office.

The Revenue Department plays a critical role in the e-District Project. It is the department which provides the largest number of services to citizens. Under its services, citizens are issued very important certificates that are mandatory to avail secondary services in education, healthcare, and social security. The Revenue Department also acts as the nodal agency which maintains and administers the e-District Portal as a whole.

The Revenue Department provides 26 services as listed under the e-District Portal. Many of these services were not available initially when

the portal was launched in 2015 and were added later in phases. This study looks into services that have been available under e-District since January 2016. These services include:

- Issuance of Caste (OBC) Certificate
- Issuance of Caste (SC) Certificate
- Issuance of Caste (ST) Certificate
- Issuance of Delayed Birth Order
- Issuance of Delayed Death Order
- Issuance of Domicile Certificate
- Issuance of Income Certificate
- Issuance of Permanent Identity Card to the Disabled Person
- Issuance of Surviving Member Certificate
- Registration of Marriage

NCT of Delhi consists of 11 revenue districts. Each district is further divided into three sub-divisional units. In this study, seven particular sub-divisional units have been focussed upon. These subdivisions include:

- Saket
- Sarita Vihar
- Defence Colony
- Kalkaji
- Chanakyapuri
- Vasant Vihar
- Delhi Cantonment

Of these, Sarita Vihar, Defence Colony and Kalkaji together make the South-East revenue district and Chanakyapuri, Vasant Vihar and Delhi Cantonment together make the New Delhi revenue district. Saket falls under the South revenue district.

The e-District Portal was formally launched on 30 November 2015. However, a period of 17 months, starting from January 2016 to May 2017, was chosen to observe transaction

volumes of applications processed under e-District in the seven SDM offices selected for the purpose of this study.

Research Method

Four levels of investigation were taken up in assessing the e-District Project. In this study, these levels shall be referred to as 'approaches'. Each approach addresses one aspect of the e-District Project. The motive behind conducting the research along the lines of these approaches was to arrive at a more holistic assessment of the working of e-District. The approaches have been fleshed out below.

Approach 1

The two modes of making applications for services provided under the e-District Project – online and offline – were studied. Officially, the online mode is called the 'CITIZEN' mode while the offline mode is called the 'CSC' mode. Hereafter, in this study, this official terminology shall be used to refer to online and offline modes of making applications. To understand the 'CITIZEN' mode of applying for services, the researchers registered themselves with the e-District Portal and went through the application processes for the services listed under the Revenue Department. The features of the e-District Portal were thoroughly examined and potential trouble spots were noted down. To understand the CSC mode of making applications, SDM offices were visited and interviews with the SDM, CSC operators, Tehsildars and District Information Officers (DIOs) were conducted. The questions included in the interview are attached in Appendix 2.

Approach 2

Requests were filed with SDM officers for access to records regarding the applications processed through e-District for the period of January 2016 to May 2017. This required field visits to each of the SDM offices under study and access to specific application status reports. We sought information regarding the number of applications made through the CSC and CITIZEN route, along with the number of successful certificate issuances and the number of rejected applications, on a month-wise basis. This information was sought for all the services available under the Revenue Department under the e-District Project for the SDM office.

Approach 3

To gauge the citizens' response regarding the application process and delivery of services, a field survey was conducted among the citizens who came to the SDM offices. Our target was to interview at least ten citizens at the SDM office who had come to avail the services being examined in this study. The citizens surveyed were asked about their experience in availing services, their awareness of the online application process, general digital capabilities, their reasons for availing particular services, and their complaints with the system among others. The specific questions asked in the citizen interviews are included in the Appendices A and B.

Approach 4

The fourth strand of investigation is comparative. The SDM offices were visited and the variations in each office's implementation of e-District were observed. Several features in

SDM office operations that were understood to be important elements in improved implementation of the e-District Project in Delhi were listed. Inferences were drawn by linking the performance of SDM offices from investigations under Approach 2 with the observed *modus operandi* particular to each SDM office in implementing e-District. Accordingly, practices particular to better-performing SDM offices has been included in a list of 'best practices'. It is the objective of this study to draw up a list of easily implementable changes in SDM offices to improve the working of the e-District Project in the realm of the Revenue Department services.

Findings

Approach 1:

Mapping out the application process through the e-District Portal (CITIZEN and CSC mode), involving interviews with district administration – SDM, DIO, CSC Operators

- CSCs are not functional except as facilitation counters as part of the SDM office complex. At the complex, forms are filled online.
- The SDM office has no budget allocated for awareness campaigns or promotion of e-District Portal facilities. The onus of any promotional campaigns falls on the Directorate of Information and Publicity (DIPR).
- The SDM office has two sets of e-Governance-related service counters. The first set facilitates the issuance of Aadhaar

Card only. The second set consists of CSC operators who undertake the responsibility of processing applications for services rendered by the Revenue Department.

- The workload is proportional to the staff available and since the initiation of e-District, the workload has increased. The back-end processing is not fully automated, especially for the CSC mode of applications. The tedious system of having to scan and upload documents one by one and feed details from paper-based applications to

online forms has meant that workload on district administration has not decreased.

- The exclusion criteria allotted for OBC Certificate is in accordance with laws laid down by the Parliament, and is of statutory significance. The three-step verification (photocopy, original and self-declaration) is needed to avoid issuance of fraudulent certificates.
- At the Certification Branch in the SDM office complexes, processing of applications involves a four-step procedure as shown below:

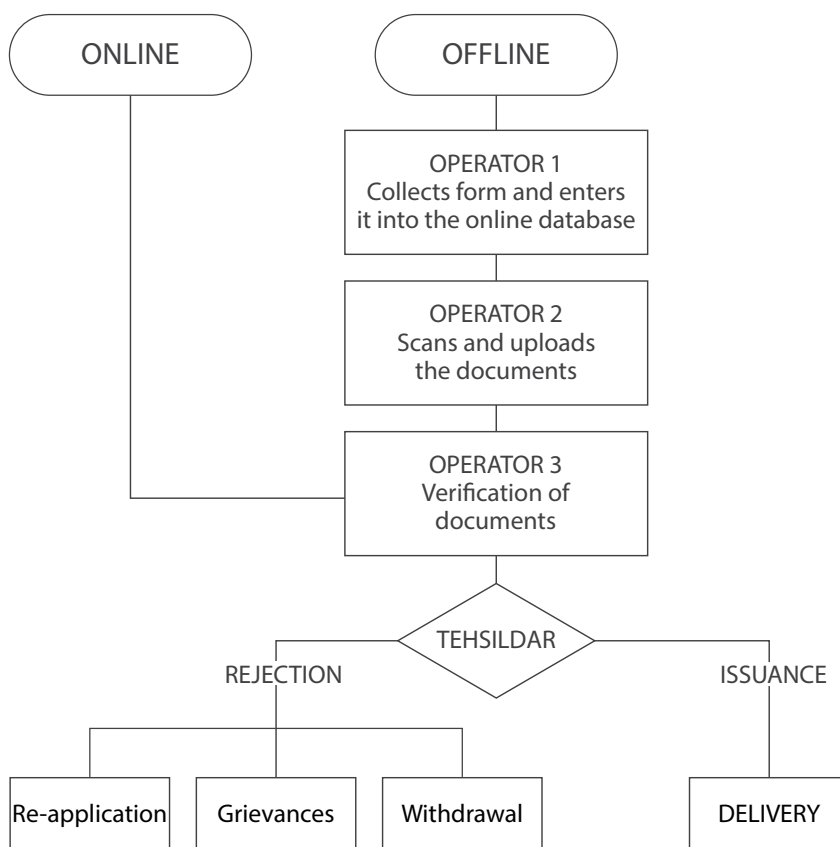


Fig 1: Procedure for processing of applications at Certification Branch

- The website is user-friendly but the process of scanning and uploading documents is lengthy and tedious. Processing of applications by CSC counters can be hindered by server issues, internet connectivity problems, or power outages. Since the application is saved on the portal only once, all parts have to be completely inputted, and untimely disruptions lead to loss of data and repetition of work.
- Documents to be uploaded are required to measure up to 100 KB only. This is often restrictive and leads to poor quality of uploaded documents.
- An auto generated SMS is received by the applicant once the application is submitted.
- All CSC operators have access to all the steps of an application processing.

Approach 2:

Transaction Volumes

- Whenever CITIZEN transactions increase in volume, it is accompanied by a significant increase in CSC transactions and whenever CSC transactions decrease in volume, CITIZEN transactions also decrease significantly.
- There is sudden spike in the need of services during certain months. Request for income certificate has seen a spike in the month of January each year, in all sub-divisions. Similarly, applications for Civil Defense Volunteers see a spike in November-December, while applications for SC certificate see a spike in April-May.
- The most needed service is the issuance of OBC, SC, and income certificates. These highly demanded services also have high rejection rates in all sub-divisions.
- e-district has been really successful for some services, in the sense that the number of applications received online far exceeds the number of applications received offline. Such services are: Civil Defense Volunteer Application, Surviving Member Certificate, and Registration of Marriage.
- The rejection rate of applications varies with the total number of CITIZEN and CSC applications as well as the type of service. When CSC applications increase, rejection rates decrease, and vice-versa. While on the other hand, with increase in number of CITIZEN applications, the rejection rate also increases, and vice-versa.
- Due to paucity of data, rejection rate is calculated as a proportion of 'Total rejected applications' to the 'Applications issued or rejected'. And hence, the above-mentioned relations are affected by each other. Upon adjusting for the number of CITIZEN applications, the link between CSC transactions and rejection rate weakens, while if the link between CITIZEN transactions and rejection rate is adjusted for the number of CSC transactions, it becomes stronger (See: Actual Correlation Coefficients attached in Appendix 3).

Figs 2-8: Demand for income certificate via different mediums in research areas seven sub division

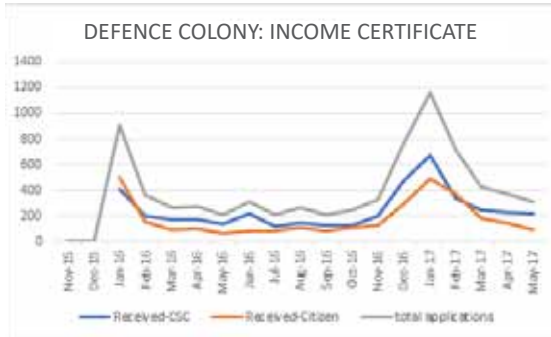


Fig 2



Fig 3

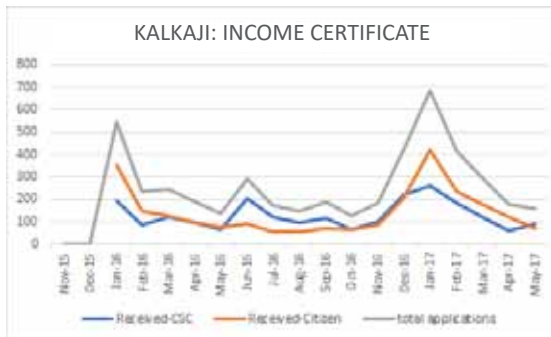


Fig 4



Fig 5

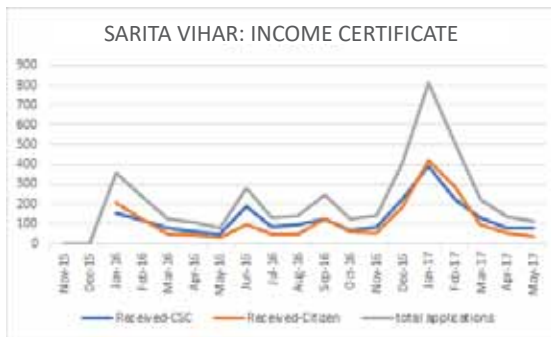


Fig 6

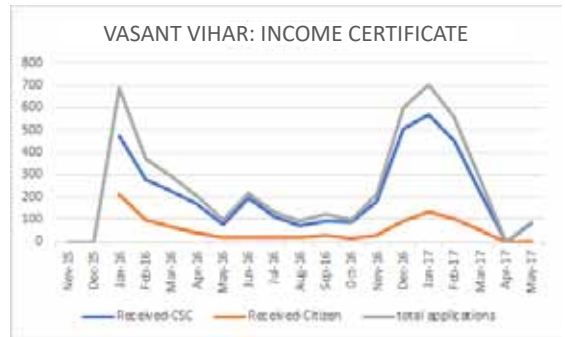


Fig 7

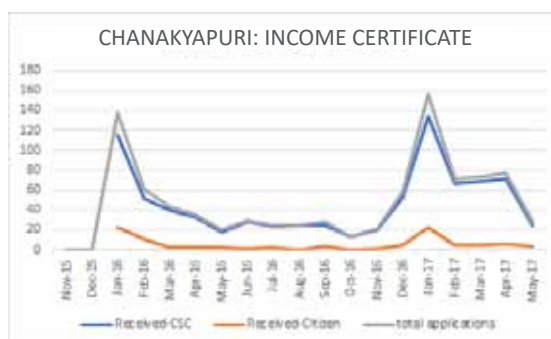


Fig 8

Approach 3:

Field surveys of citizens at SDM offices, documenting their experience in availing services, questions, digital capabilities, awareness of e-District, and complaints with the system.

- Awareness about the existence of the e-District Portal is low at institutions that cater to the welfare of vulnerable groups, such as old age homes or NGOs for disabled persons. Interviews suggest that such institutions still rely on sending interested parties to respective MLAs' offices for assistance in pushing through applications for government services.
- The sub-division offices have considerably long queues of people waiting to successfully submit their applications, to avail other G2C services, to make a query or even to meet the SDM regarding their grievances.
- 76% of the applicants out of the total applicants surveyed were aware of the online facility to file applications through the e-District portal.
- Only 13% of the applicants surveyed applied through the CITIZEN mode as they harboured doubts and misgivings regarding the success rate of online applications. On further inquiry, applicants referred to examples of frequent rejections of online applications as the source of this distrust. District administration was also found to openly encourage citizens to submit applications through the CSC mode due to the same reason.
- Maximum number of applications filed were those demanding the issuance of SC, OBC, and income certificates. The need for fulfilment of job/school/university application requirements was the major reason behind applying for these certificates.
- Among the citizens surveyed, 76% were aware of the CITIZEN mode of application for services. None of these people however, credited government advertisements, websites, or promotional campaigns as the source of their awareness.
- The major sources of awareness were cyber cafés and word of mouth.

- 54% of the applicants had to make only one visit to the SDM office. This is in compliance with the goals set by the e-District Project.
- The average (one-way) travel time incurred by applicants surveyed varied from 15 minutes to two hours. The average (one-way) travel costs incurred varied from 15 rupees to 100 rupees.

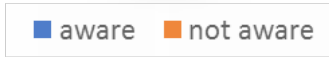
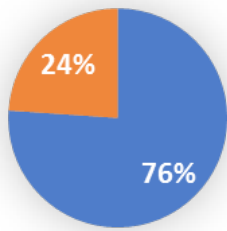


Fig 9: Awareness of e-District Portal

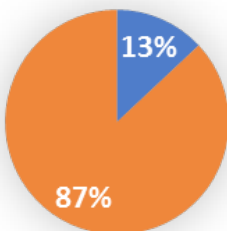


Fig 10: Mode of Application

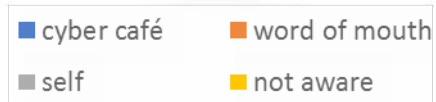
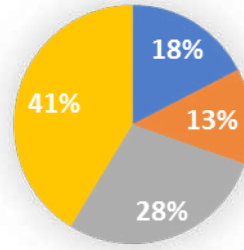


Fig 11: Awareness Source

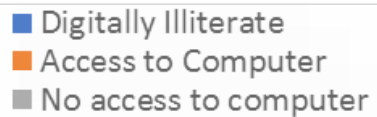
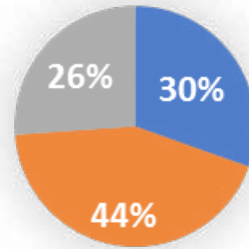


Fig 12: Digital Capability

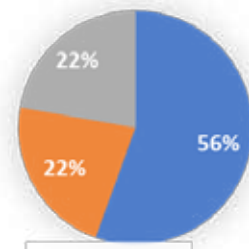


Fig 13: Number of Trips made to SDM Office

Approach 4:

Observing variations in SDM operations in different SDM offices with regard to implementation of e-District to develop criteria for comparison.

- All the sub divisions except those in Kalkaji and Hauz Khas had at least three CSC Operators.
- A dedicated helpdesk could be found only at SDMs in Defence Colony, Sarita Vihar, Civil Lines and Vasant Vihar.
- e-District posters and information regarding documents required were found at every SDM office except the ones in Kalkaji and Mehrauli.
- There was a separate time slot for online applications at SDMs in Defence Colony, Sarita Vihar and Civil Lines, whereas other SDM offices had no system of dealing with offline and online applicants separately.
- Token system at the Mehrauli SDM made application procedure easy and less time-consuming.
- Only two out of the eight SDM offices visited displayed the list of beneficiaries publicly.
- To check the grievance-redressal mechanism available online, an appointment was made at the South district. However, upon reaching the office at the scheduled time, it was observed that no information had been received regarding the appointment.

Table 2: Comparison of SDM officies in Eight Sub Divisions

SDM Office	No. of CSC Counters	Dedicated Helpdesk	e-District Poster	Information on Documents required	Online Time Slot	Token System
Saket	4	✗	✓	✓	✗	✗
Defence Colony	3	✓	✓	✓	✓	✗
Sarita Vihar	3	✓	✓	✓	✓	✗
Kalkaji	2	✗	✗	✗	✗	✗
Hauz Khas	1	✗	✓	✓	✗	✗
Mehrauli	3	✗	✗	✓	✗	✓
Civil Lines	3	✓	✓	✓	✓	✗
Vasant Vihar	3	✓	✓	✓	✗	✗

Analysis and Discussion

This section collates the findings of all four approaches and discusses the possible reasons behind the results. The section concludes with evaluation of envisioned outcomes (Detailed Project Report for Implementation of e-District in Delhi 2013).

General Discussion

Most of the basic objectives have been achieved, but a few significant ones still have not been realised completely and require attention. The 'Simplified Standard of Procedure' (Mukherjee 2015) asks SDM offices to publicly display the list of beneficiaries in their offices and the same list is also supposed to be available on the official website. Such recommendations have been made to enhance the community's involvement. The shift towards 'self-declaration' based applications has given rise to accountability concerns, and greater community involvement was expected to check fraudulent applications. Publicly displaying the names of beneficiaries helps in keeping a check on corruption, as it increases the chances of a fraudulent certificate holder being reported. This mandate, however, has not been implemented to satisfaction.

Furthermore, the Government of the NCT of Delhi does not publish monthly or annual reports describing the working of the e-District Project (reply sought through RTI). This has made evaluating efficacy of such e-Governance initiatives difficult. The lack of transparency in the entire e-District Project makes it difficult to monitor and compare the performances of SDMs in the various districts and subdivisions of Delhi. These problems are due to the fact that there are not

regular inspections by the central authority to check whether the guidelines have been followed or not. Hence, there is no pressure or incentive for different SDM offices to bring transparency. 'Data Quality Assurance Team' (Ministry of Electronics and Information Technology 2012) has not been setup to keep a regular check on the data being fed into the system, hence the data once fed into the system is generally not looked into again.

Technological up-gradation hasn't led to a reduction in workload. More labour hours are required to fill in the details online, scan the documents, and upload them. Efficiency level differs across the offices, depending upon the respective implementation methods.

There is a significant reduction in the time taken to avail the services as citizens who have applied through the portal need only come once to the SDM office for verification of documents. However, the maximum time taken for delivery of a caste certificate has been increasing over time and is higher in applications received online (reply sought through RTI). Although 76% of the respondents were aware of the e-District Portal, only 13% of them actually availed the service online. This shows that people still prefer the offline mode of application over the online one, primarily because the applicant has to come to the SDM office for verification of documents at least once, even in case of an online application.

There is also a higher probability of CITIZEN applications being rejected, as discussed previously in Approach 2. This high rejection rate is a result of various factors. According to a CSC operator of the Mehrauli Sub division, the primary reason behind the huge

rejection rate of online applications is that the applicant does not show up within the given time-frame to get his/her documents verified. Additionally, the website uses the English language, making it inaccessible to many, and the questions are not uniform in nature i.e. in some forms, all questions are not in the same language. Moreover, some questions are ambiguous and subjective in terms of interpretation which leads to confusion and increases the probability of the application being rejected. The size limit for uploading required documents is only 100 KB, which is a big hindrance. Although the web-portal offers a guide on compressing the size of documents, it only recommends particular software, which may or may not be installed in the applicant's computer. Also, the quality and size of the documents are compromised — the compressed 100 KB sized documents aren't easy to read and hence lead to the application being rejected. None of the SDM offices surveyed had taken any steps to promote awareness in their region. As shown in Graph 10, 57% of the people got to know about the online mode on their own, mainly through search engines such as Google.

One of the major concerns is that, much more authority has been provided to CSC operators than is required for the e-District MMP to function smoothly. All CSC operators have access to all the steps of the back-end processing of an application. This provides an open window to a number of fraudulent activities like such as preference of one application over the other, acceptance of an application without actual verification of the relevant original documents.

The portal provides a facility for fixing appointments with the concerned District

Magistrate (DM) in cases where citizens would like to register their grievances in person. However, this provision exists only on paper. In reality, the DM office is unaware of such a facility and receives no record of appointments made through the e-District Portal. This is perhaps due to the fact that a single DM heads three sub divisions and has a lot of other work to attend to, leaving little or no time to focus upon certificate-related grievances.

Evaluating Implementation of Envisioned Outcomes for the Administration

As per the Detailed Project Report for Implementation of e-District in Delhi 2013:

- ✓ Generation of an efficient MIS for better and fast decision-making
- ✓ Better monitoring system
- ✓ Fast delivery of services through retrieving of records from computerised database network of various departments/offices
- ✓ e-District model based on sustainable operations through application of the user charges for provision of services
- ✓ Faster processing of files and information resulting in efficient working of the district administration
- ✓ Reducing the inter-dependency among various sections of district & state administration in providing service to citizens
- ✓ A holistic citizen-centric approach
- ✗ Improvement in efficiency of the employees and reduction in workload
- ✗ Bring transparency in the delivery system
- ✗ Feedback analysis through grievances
- ✗ Post-project evaluation could provide feedback for further improvements

Evaluating Implementation of Envisioned Outcomes for the Citizens

As per the Detailed Project Report for Implementation of e-District in Delhi 2013:

- ✓ The service delivery is faster to the citizens
- ✓ Issue of certificates in stipulated time frame
- ✓ Reducing the time in availing the services such as travel time, waiting time
- ✓ SMS to the citizens at various points to bring transparency
- ✓ Reducing the visits by citizens to government departments for availing services
- ✓ Status of application on website
- ✓ High level of convenience
- ✓ Facility of payment at convenient points and extended hours
- ✓ All the above services over the counter
- ✗ Reducing the cost to citizen such as travel cost, wages lost etc.
- ✗ Status of application at Citizen Facilitation Counter/Common Service Centre
- ✗ Resolution of citizen grievances within a stipulated time frame
- ✗ Access to information easily with service delivery counters within reach
- ✗ Negligible queuing

Recommendations

SDM Offices

As mentioned in the findings in Approach 4, all SDM offices implement the MMP in their own way. After due observation and analysis involving field visits and interviews, the researchers offer the following recommendations for ensuring smooth and efficient functioning of SDM offices:

1. DEDICATED HELPDESK, WITH TOKEN SYSTEM

Generally, citizens who come to avail the service aren't certain about the processes and steps involved and have limited knowledge, based on what they hear from friends and family. Moreover, they are also unclear about the eligibility criteria and the required certificates. To counter this, offices in Delhi could follow the process adopted by the office at the Hansi sub division of the Hissar District (Haryana).

The following diagram explains the structure of the Hansi SDM office:



The Hansi office has a dedicated reception/helpdesk from where the citizens can seek knowledge and help regarding the processes and steps involved. The receptionist also checks the form for any errors, after which he/she takes the file and issues a token. The file is then passed on to the CSC operators who then call the applicants one by one for verification of documents.

The waiting hall displays boards and posters elucidating and illustrating the services offered and has an air-conditioned waiting area.

The same structure can be followed at sub-divisions in Delhi, Dedicated helpdesk will ensure smooth filling up of forms and

eliminate the queues. The token system will help in ensuring that no person is prioritised at the expense of others. Furthermore, the token system will also free up the citizens, as they will have an idea as to the expected time of their application processing.

2. CSC OPERATORS

There should be at least three CSC operators in the offices — one for accepting offline applications and feeding them into the system, one for assisting the first operator by scanning and uploading the relevant documents, and a third for verifying the relevant documents for both online and offline applications.

3. INFORMATION POSTERS

All SDM offices should put up information boards in English and in Hindi about the e-District portal, the services offered online, the documents required for each service and the Delhi (Right of Citizens to time bound delivery of services) Act, 2011.

Policy Recommendations

The following policy recommendations can be adopted to enhance the working of the e-District Project:

1. CSC OPERATORS

Each CSC should perform a fixed task, instead of being involved in multiple ones. For example, a CSC operator who collects the forms and feeds the data into the system should not be given the task of verifying the documents.

This distribution of responsibilities will help avoid concentration of power and will bring down the chances of certificates being issued without due verification of documents. It will also ensure that CSC operators don't privilege one application over others for monetary or non-monetary incentives.

2. BIO-METRIC SYSTEM

The current system of maintaining a register in which the applicant enters his/her details is not reliable as the identity is not verified at any point. This increases the chances of fraud as a CSC operator can tie up with the notaries to process the applications faster. To counter this, bio-metric scanners should be installed for verification of citizens who apply using the Aadhaar Card. For applicants using other identity proofs, web cameras should be installed at the verification desks in offices.

3. AWARENESS

To make awareness program more effective, unions and institutions should be targeted. For example, organisations working for disabled and elderly people are well connected to each other and to the affiliated citizens and so information regarding new schemes can be shared easily.

4. PUBLICATION OF REPORTS

All SDM Offices should be asked to publicly publish reports on the e-District Project. These reports should contain data about the number of online and offline transactions conducted for each service as well as the measures taken by the offices to increase the outreach of the project and improve its efficiency.

Website Related Recommendations

1. MULTIPLE LANGUAGES

The website should be available in Hindi and regional languages too. This will increase the usability of the website.

2. CLEAR QUESTIONS

The questions should be clear enough for all applicants to understand and shouldn't have any ambiguity (as discussed previously in the findings section).

3. DOCUMENTS

The size-limit on documents to be uploaded should be increased from the current 100 KB limit. Normal printers (printers on normal settings) scan and save documents with sizes over 3 MB. People generally do not know how to reduce the size, and even if they do, compressing the documents reduces the quality to a great extent, again increasing the probability of rejection of the application. For offline applications, CSC operators have to scan the documents, split and save them in various files, and finally upload them to the system. This can be altered by integrating an option to directly scan the document onto the web page, so that the time taken to split and save the documents is saved.

4. GRIEVANCES WITH SDMS

The website should offer an option to fix up meetings with SDMs instead of DMs, as doing so would distribute the work of one DM to

three SDMS. Moreover, SDMs are relatively closer to the citizens living in the respective sub divisions and therefore can solve the grievances more efficiently.

5. DOORSTEP DELIVERY

Various private companies today offer doorstep-delivery of services to the consumers. In case of private banks, employees personally visit the homes of the applicants with the relevant documents, fill out the documents themselves, collect the required photocopies and verify the original documents at the same time. For issuing SIM cards, all the relevant information is extracted from the applicants' Aadhaar Cards, with their permission. Similar methods can be adopted by the Delhi Government to increase the outreach of the e-District Project. Doorstep-delivery of certificates can be initiated. Citizens can book time slots/appointments with the CSC through a website/phone. A CSC operator can then visit the citizen at his home at the scheduled time with the required electronic devices (even a smartphone with fingerprint scanner can be used if a dedicated app for CSC log-ins is created). The CSC can then fill out the form for the applicant and upload the photographs of relevant original documents, taken through a webcam or the smartphone camera (QR codes can also be used to link and verify the documents). In this way, citizens will not be required to visit SDM offices for verification of documents. Furthermore, the provision of uploading a picture of the original document will reduce the chances of collusion of the CSC operator with middlemen or the citizen directly for any fraudulent certification.

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Appendix

Appendix 1: Field Surveys Questionnaire

QUESTIONNAIRE – CITIZENS AT SDM OFFICES

Name:

District:

Age:

Sub division:

Sex:

Area:

1. Are you aware of the e-District portal?
2. If yes, how did you get to know about e-District?
3. What service/s have you applied for?
4. Did you apply for it online or offline?
5. Why are you applying for this service?
6. What was the total time taken to fill the application form?
7. How much did the application form cost you?
8. Did you pay any cost while submitting the form?
9. How many trips did you have to make to the office?
10. How much time did it take to get your certificate issued?
11. Do you know how to use Android smartphones and computers?
12. Do you have access to a computer?
13. What is the approximate. time you take to reach the SDM office and what is the conveyance charge for the same?

Appendix 2: SDM Offices Questionnaire

QUESTIONNAIRE – STAKEHOLDERS AT SDM OFFICES (SDMs, CSC OPERATORS, TEHSILDARS)

COMMON SERVICE CENTRES

1. Have you set up a CSC within the SDM office complex? A SDM Facilitation Counter?
2. What are the other delivery mechanisms used for public services?
3. What are the private sector agents/intermediaries Involved? What are their incentives? What problems does the administration face while dealing with them?
4. How do CSCs and SDAs coordinate at different levels?
5. By what regulatory structure is the CSC governed – statute, by-law etc?
6. Has the integration of Jeevan Centres and Jan Seva Kendra with Digital Seva Branding been rolled out, and what is the progress? How will Digital Seva Branding help meet

e-District program objectives?

ABOUT THE SERVICES PROVIDED:

7. We went through the process of application of some services and found some duplicity, can you please tell us their significance? Do you think some of the inspections can be avoided? (DOCUMENTATION AND AVOIDABLE STEPS, how does the digitisation of the uploaded documents take place? Is there a separate database developed for the services like Ration Card Holders, SC/ST/OBC population in Delhi and others?)
8. How does Online Verification of documents process take place? How is an application is processed, after the filling up of the form? In the back-end process are there any human touch points involved?
9. How does the digitisation of the offline applications take place? Is there a separate database developed for them?
10. What is the level of workload/pressure on the department to function efficiently and does the workload lead to delays in provisioning of services?
11. Which services require more back-end processing time? Why?
12. Are there delays? What is the process after the time-limit exceeds?
13. Has the Dehi Act, 2011 (Right of Consumers to time-bound delivery of services), been implemented? Have the officials been charged for the delay in the provisioning of services, if any?
14. What are the major heads of expenses and how is the revenue distributed among the different levels? What is the shortfall in budgetary provision?
15. What has been the progress till now? What are the future plans to deliver a platter of more than 300 services as discussed in the meeting on 20 June 2016?

AWARENESS ABOUT e-DISTRICT

16. How are you promoting awareness of this program? Are there workshops or other sessions?
17. Has there been any initiative to reach the digitally illiterate section of the population? What were the results?
18. How do you measure impact/outputs?
19. e-District programme is supposed to be outcome-oriented. So which are the parameters you use to assess the quality of outcomes?
20. From whom and what kind of grievances are received? (DM) Please tell us entire procedure.
21. If verification of documents is to be done outside the state, are the digitisation programs implemented by other states a factor to be taken account of?
22. How does back-end process for offline differ from online process?
23. Is there a Data Quality Assurance Team (Yes/No)?

Appendix 3: Correlation Coefficients

The following tables (Table 1 to Table 4) show correlation and partial correlation between various variables.

Correlation between CSC Transaction Volumes and Rejection Rate

Service Name	Cantt	Chanakyapuri	Defence Colony	Kalkaji	Saket	Sarita Vihar	Vasant Vihar
CD	-0.796			-0.672	-0.448	0.000	
OBC	-0.181	0.406	-0.051	-0.244	0.147	-0.782	-0.263
SC	0.301	-0.051	-0.114	-0.061	0.216	-0.401	-0.028
ST	-0.157	-0.429	-0.235	-0.220	-0.285	-0.487	0.126
DBO	-0.232	0.010	-0.262	-0.305	0.263	-0.527	0.445
DDO	-0.153	-0.044	0.033	-0.266	0.122	-0.576	-0.553
DOMICILE	-0.191	-0.059	-0.370	-0.702	-0.450	0.136	-0.227
INCOME	-0.263	0.501	-0.048	0.065	-0.377	0.432	0.254
DISABLED ID	-0.088	0.075	-0.128	-0.454	0.379	-0.301	-0.448
SM	0.231	0.016	-0.685	0.071	0.006	-0.327	-0.469
MARRIAGE			0.153	0.373		0.305	

Correlation between CITIZEN Transaction Volumes and Rejection Rate

Service Name	Cantt	Chanakyapuri	Defence Colony	Kalkaji	Saket	Sarita Vihar	Vasant Vihar
CD	-0.700			-0.793	0.006	0.000	
OBC	0.154	0.225	0.301	-0.202	0.806	-0.514	-0.263
SC	0.508	0.247	0.506	0.099	0.491	0.267	-0.028
ST	0.544	0.230	0.602	0.102	-0.045	0.180	0.126
DBO	0.579	0.621	-0.078	0.201	0.385	0.085	0.445
DDO	0.144	-0.064	0.293	-0.168	-0.174	0.621	-0.553
DOMICILE	0.540	0.594	-0.192	-0.228	0.335	-0.062	-0.227
INCOME	0.009	0.625	0.152	0.468	0.067	0.588	0.254
DISABLED ID	0.015	0.024	0.440	0.424	0.264	0.684	-0.448
SM	0.140	0.178	0.588	-0.292	0.512	0.776	-0.469
MARRIAGE			-0.027	-0.415		-0.380	

Correlation between CSC Transaction Volumes and Rejection Rate, adjusted for CITIZEN Transaction Volumes

Service Name	Cantt	Chanakyapuri	Defence Colony	Kalkaji	Saket	Sarita Vihar	Vasant Vihar
CD	-0.535			-0.781	-0.463	0.000	
OBC	-0.339	0.383	-0.144	-0.186	-0.105	-0.690	-0.583
SC	-0.063	-0.133	-0.436	-0.095	-0.276	-0.636	-0.306
ST	-0.195	-0.495	-0.319	-0.295	-0.309	-0.488	-0.037
DBO	-0.667	-0.521	-0.318	-0.236	0.115	-0.697	-0.256
DDO	-0.218	0.006	-0.097	-0.267	0.078	-0.411	-0.490
DOMICILE	-0.772	-0.807	-0.361	-0.684	-0.634	0.138	-0.860
INCOME	-0.544	-0.227	-0.413	-0.521	-0.824	-0.444	-0.885
DISABLED ID	-0.087	0.082	-0.347	-0.610	0.355	-0.199	-0.450
SM	0.188	0.031	-0.747	-0.014	0.032	0.314	-0.466
MARRIAGE			0.157	0.282		0.226	

Between CITIZEN Transaction Volumes and Rejection Rate, adjusted for CSC Transaction Volumes

Service Name	Cantt	Chanakyapuri	Defence Colony	Kalkaji	Saket	Sarita Vihar	Vasant Vihar
CD	0.072			-0.858	0.133	0.000	0.000
OBC	0.327	0.173	0.327	-0.124	0.803	-0.072	0.672
SC	0.432	0.275	0.624	0.123	0.514	0.583	0.590
ST	0.553	0.352	0.627	0.225	0.133	0.184	0.438
DBO	0.781	0.743	0.202	0.022	0.311	0.542	0.868
DDO	0.212	-0.047	0.306	-0.170	-0.147	0.486	0.231
DOMICILE	0.838	0.880	0.172	0.072	0.578	-0.066	0.873
INCOME	0.493	0.478	0.433	0.655	0.793	0.595	0.934
DISABLED ID	-0.009	0.040	0.528	0.593	0.225	0.662	0.056
SM	0.032	0.180	0.674	-0.285	0.513	0.774	0.398
MARRIAGE			0.043	-0.339		-0.324	

Difference between correlation and partial correlation between CSC Transaction Volumes and Rejection Rate

Service Name	Cantt	Chanakyapuri	Defence Colony	Kalkaji	Saket	Sarita Vihar	Vasant Vihar
CD	-0.261			0.108	0.016	0.000	
OBC	0.159	0.023	0.093	-0.058	0.253	-0.093	0.320
SC	0.364	0.082	0.323	0.035	0.493	0.235	0.278
ST	0.038	0.066	0.084	0.075	0.024	0.001	0.163
DBO	0.435	0.531	0.056	-0.069	0.148	0.171	0.701
DDO	0.065	-0.051	0.129	0.001	0.044	-0.166	-0.063
DOMICILE	0.581	0.749	-0.009	-0.018	0.184	-0.002	0.633
INCOME	0.281	0.728	0.364	0.586	0.447	0.876	1.138
DISABLED ID	-0.001	-0.007	0.218	0.156	0.024	-0.101	0.002
SM	0.043	-0.015	0.062	0.085	-0.026	-0.641	-0.003
MARRIAGE			-0.004	0.091		0.079	

Difference between correlation and partial correlation between CITIZEN Transaction Volumes and Rejection Rate

Service Name	Cantt	Chanakyapuri	Defence Colony	Kalkaji	Saket	Sarita Vihar	Vasant Vihar
CD	-0.772			0.065	-0.128	0.000	
OBC	-0.173	0.052	-0.026	-0.078	0.002	-0.443	-0.195
SC	0.075	-0.027	-0.118	-0.024	-0.023	-0.317	-0.060
ST	-0.009	-0.121	-0.026	-0.123	-0.178	-0.004	0.013
DBO	-0.202	-0.122	-0.280	0.179	0.074	-0.457	0.020
DDO	-0.068	-0.017	-0.013	0.002	-0.027	0.136	0.137
DOMICILE	-0.299	-0.285	-0.364	-0.300	-0.243	0.004	-0.508
INCOME	-0.484	0.147	-0.281	-0.187	-0.725	-0.007	-0.264
DISABLED ID	0.024	-0.016	-0.088	-0.168	0.039	0.022	-0.019
SM	0.108	-0.002	-0.087	-0.008	-0.001	0.002	0.004
MARRIAGE			-0.070	-0.076		-0.057	



EDUCATION

Social Inclusivity under Section 12(1)(c) of the Right to Education Act, 2009

Anubhuti Kakati, Sarda Sinde and Srishti Sharma

EXECUTIVE SUMMARY

Section 12(1)(c) of the Right to Education (RTE) Act became a landmark legislation in India by including private entities in the process of achieving the goal of free and compulsory education. This was meant to make quality education accessible and create a socially inclusive schooling system. This specific section enforced 25% reservation in private unaided schools for students belonging to Economically Weaker Sections and Disadvantaged Groups (EWS/DG).

Since the enactment of RTE, a number of challenges have been tackled, especially in the process of application for admissions and data collection from schools. The former is proved by the increase in applications under the Section amounting to nearly 1.25 lakh unique applications in the Academic Year of 2015-16. However, gaps in implementation, specifically of inclusivity, remain. Further, there have been no specific regulations or provisions dealing solely with inclusivity. It is however, understood that these gaps in implementation can only be filled when the potential of all the stakeholders in question is put to use in the best possible way. Thus, the aspect of inclusivity is prioritised in this brief because it is one of the few aspects in the RTE in whose implementation all stakeholders have a crucial role to play. In addition, number it is interconnected with the challenges posed in reimbursement and accessibility. While a lot of factors may incentivise private entities – schools and teachers – to work towards a more inclusive classroom, one of the crucial factors is timely reimbursement of fees to schools.

While there is a lot of literature on inclusivity under this Section, this brief aims to add to that literature by examining it across private unaided schools, specifically categorising these schools into Budget Private Schools (BPS) and Other Private Unaided Schools (or Non Budget Private Schools – Non BPS). Furthermore, to adopt a holistic approach towards the Section, this brief focuses on two other aspects, namely accessibility and efficiency. These three aspects together paint a clear picture of where the implementation of the Section stands in three districts of Delhi – South Delhi, South-West Delhi and West Delhi.

For this purpose, apart from secondary research, interviews were conducted with parents (both EWS/DG and General Category), BPS and Non BPS school principals and teachers as well as two civil society organisations. The data collected from this was both quantitatively and qualitatively analysed. In quantitative analysis, tools of descriptive statistics were used to compare across different private unaided schools. Furthermore, a comprehensive Inclusivity Index was created for the sample eight schools and its variation was analysed across the school fees charged by schools. Qualitative Analysis included a comparative study of the school management of the sample eight schools and highlighted the best practices adopted by one of the model schools of South Delhi: The Mother's International School.

Six major challenges have been identified after analysis: lack of awareness, gaps in application process, fake admissions, delay in reimbursement, inadequate support mechanisms and weak grievance redressal system. The major recommendations of this paper, thus, include: the

engagement of communities, the need for government to contract out to CSO the responsibility of managing the helpline aiding in the application process, and the comprehensive grading of schools by CSOs determining Progressive Reimbursement for schools.

KEY FINDINGS

1. Seven out of 25 private unaided schools that came up in household survey of South Delhi have not yet implemented the scheme.
2. 83% of General Category families from the BPS sample had an overall positive attitude towards EWS inclusion, as compared to just 64% in the Non BPS sample.
3. Though the General Category parents expressed positive views on the scheme, yet the Non BPS sample were strongly against EWS Category inclusion citing negative influences they bring owing to their different upbringing, belief and value systems.
4. The interaction between the groups was found to be low, both at the students' and the parents' level.
5. BPS section felt a transfer of financial burden due to this scheme, highlighting the need for reviewing the government reimbursement process.
6. EWS Category faced challenges in terms of lack of awareness and burden of extra payments. This burden was borne more (both in terms of strength and magnitude of items) by parents sending children to Non Budget Private Schools.
7. Government/Media accounted for the lowest share of source of awareness (7% and 18% in BPS and Non BPS category respectively) stressing the need to redesign awareness campaigns and strategy.
8. 83% of EWS Category families sending children to BPS have a conducive learning environment and as compared to 71% in Non BPS sample. This is reflected by (also corroborated by teachers and school principals) their regular attendance of Parents-Teacher Meetings (PTM), hiring extra help for language barriers, and presence of at least one teaching support within the family.
9. Barring exceptions, the Inclusivity Index decreased with an increase in fees charged by school (an indicator of type of school). The lower inclusivity score of Non BPS was contributed to by the low score on understanding language and content, and teachers' perception.
10. Although the Non BPS were found to adopt extra measures to accommodate the needs of EWS Category children, yet the segregation inside classrooms was more prevalent in Non BPS schools.

Introduction

Background

Access to education gained legislative backing as a fundamental right in India under Article 21A when The Right of Children to Free and Compulsory Education Act or Right to Education Act (RTE) was enforced on 1 April 2010. This was crucial to ensure the right to elementary education for all children aged 6 to 14 years.

Even before the RTE came into force, the Government of India's efforts were towards universalisation of elementary education in the country; these efforts were intensified in the 1980s and 1990s, the latest of which is the *Sarva Siksha Abhiyaan* (SSA)¹. Since these efforts could not directly counter the problems of illiteracy, poor quality infrastructure and learning levels in the elementary education sector, the RTE was introduced and SSA made the main implementation vehicle for it. For this, the Implementation Framework of the SSA was revised to coordinate with the provisions of the RTE Act².

The Act, in order to ensure that quality education becomes more accessible, included private unaided recognised schools in its purview. The rationale for the same was the creation of a socially inclusive schooling system implying that all schools, whether supported by government funds or not, would have to assume a part of the burden as their

social responsibility (State of the Nation RTE Section 12(1)(c) 2014).

Furthermore, according to a report by Vidhi Centre for Legal Policy, the basis for regulating private schools is informed by three legal constraints, namely international commitments, constitutional obligations, and judicial decisions on unaided private schools (Ambast, Gaur and Sangai 2017).

In the international context, Education for All – a global movement led by UNESCO, and subsequent international initiatives, have been based on the assumption that private education should be seen as complementary to government efforts to cope with the ever growing demand for quality education. (Kitaev 2007). Also, the International Covenant on Economic, Social and Cultural Rights (1979) enjoins state parties to recognise the fundamental right to education of all people as well as the right of parents to send their children to schools, other than those run by the state³.

Further, the enactment of RTE has meant spreading of the net of fundamental rights across private citizens and corporations, thereby adopting the 'horizontal' application of rights alongside the traditional state-citizen based 'vertical' application (Ambast, Gaur and Sangai 2017). However, this expansion of rights has not remained uncontested. On one side of the spectrum, it is argued that the faster growth of private schools and the increased withdrawal of students from

¹ The goals of the SSA are (a) enrolment of all children in schools, Education Guarantee Scheme (EGS) centers, alternate schools, 'back-to-school' camps, (b) retention of all children till the upper primary stage, (c) bridging of gender and social category gaps in enrolment, retention and learning, and (d) ensuring significant enhancement in the learning achievement levels of children at the primary and upper primary stages. (Sarkar 2012).

² The revised SSA Framework for Implementation is derived from the recommendations of the Committee on Implementation of RTE Act and the Resultant Revamp of SSA, and is intended to demonstrate the harmonisation of SSA with the RTE Act. It is also based on child-centric assumptions emerging from the National Policy on Education, 1986/92 and the National Curriculum Framework (NCF), 2005. The revised SSA Framework for Implementation provides a broad outline of approaches and implementation strategies, within which States can frame more detailed guidelines keeping in view their specific social, economic and institutional contexts. (Department of School Education and Literacy 2011).

³ Article 13, para 3

government schools have led to private schools being crucial stakeholders in achieving the objective of universalising elementary education.⁴ On the other end, it is argued that government is shirking off its constitutional obligation to provide quality education by making private stakeholders responsible and that the Act infringes on the rights of private schools, makes them vulnerable to the bureaucratic capriciousness and unfairly imposes the burden of reducing segregation in the schooling system on them (State of the Nation RTE Section 12(1)(c) 2015).

Keeping the debate aside, under RTE, the role of the private schools is established through reservations; 25% of the seats in these schools are reserved under Section 12(1)(c) of the Act for children belonging to Economically Weaker Sections and Disadvantaged Groups. In Delhi, the former is defined as families with the earning of less than one lakh per annum and the latter includes the categories of Scheduled Classes, Scheduled Tribes, Other Backward Classes (Non-Creamy Layer); children with special needs and suffering from disabilities as defined under the Persons with Disabilities Act; and orphans and transgender people. Admissions under the Section at entry-level classes are based on the neighborhood criteria⁵.

Furthermore, the enactment of the RTE requires addressing social equity in keeping with the principles laid out by the Report of the Committee on Implementation of RTE Act and the Resultant Revamp of SSA. This

would mean the requirement for a framework to assess private schools and monitoring the implementation of the provisions of the RTE Act. In Delhi, this primarily falls under the jurisdiction of the Directorate of Education bestowed with certain powers and functions, including regulation of education under The Delhi School Education Act, 1973 and The Delhi School Education Rules, 1973. Apart from that, the role of civil society organisations in aiding implementation has been crucial (Indus Action 2015). This has been proven by the very transformations in the admission procedures in Delhi.

In the initial years after enactment of RTE in Delhi, the implementation design followed a decentralised system, where each school was individually responsible for inviting applications, conducting lottery, and granting admissions for the seats reserved through this clause. Some of the problems faced by the applicants include children being denied admission into the school, schools demanding extra fees for certain activities from the parents, and parents applying through this Section being treated poorly by the administration. This led to the shift to the online system of admission and reimbursements in 2015-16, seeking to address and reduce the grievances experienced by the applicants in the decentralised system (State of the Nation RTE Section 12(1)(c) 2015). This shift was a result of advocacy by civil society organisations, the most important one being Indus Action which launched a program, Project Eklavya,

⁴ Analysis of official DISE data by Geeta Gandhi Kingdon demonstrates that despite the anecdotal evidence of government school enrolments being exaggerated in school-returns data, government schools have been rapidly emptying and, correspondingly, private schools have been growing fast in the period 2010 to 2014. (Kingdon 2016). Recent estimates of enrollment suggest that in 2012 over 35% of all children are in private schools and that the annual growth rates in recent years has been around 10 percent (ASER, 2013).

⁵ The age limit of children to be admitted at the entry level classes is: Between 3-4 years (For Nursery/Pre-School), Between 4-5 years (For KG/Pre-Primary) and Between 5-6 years (For Class I). Admission shall first be offered to eligible students residing within 1 km of the specific school, followed by 3 kilometers and 6 kilometers in case vacancies remain unfilled after admitting all students who had applied.

to create awareness and help the intended beneficiaries of the policy throughout the application process.

Thus, the State of Nation Report 2015 has highlighted these key roles for civil society organisations:

1. Disseminating information and creating awareness about this policy amongst the stakeholders and beneficiaries.
2. Exchanging ideas, generating knowledge and sharing resources among other similar organizations through hubs and networks.
3. Supporting the intended beneficiaries in the grievance redressal process.
4. Advocating for changes in the policy through collaboration with the state bureaucracy, and public interest litigations.

Literature Review

The significant provisions of the Act need to be looked at, in tandem with the stakeholders involved; and challenges posed in implementation. There has been a considerable amount of pre-existing literature, including studies and reports on the same.

In case of the implementation of the Section in Delhi, a problem often discussed has been the formula to determine the amount of reimbursement sent by the government to private schools. As per Section 12(2) of the Act, the government is mandated to reimburse private unaided schools to the extent of per-child expenditure incurred by the State, or the actual amount charged from the child, whichever is less. In Delhi, the former amounts to INR 1,600.

In this context, the State of the Nation Report, in its assessment, has marked irregularities

in the frequency of calculation of per-child expenditure, lack of transparency in the method of calculating reimbursement, and schools being held responsible for providing uniforms and books with no financial responsibility being assigned (State of the Nation RTE Section 12(1)(c) 2014). While the latter is to change, with the Delhi Government taking measures to ensure reimbursement for the same from the next academic year (2017-18); the lack of frequent assessment of expenditure and lack of transparency in reimbursement remains.

Apart from reimbursement, the issue of ensuring inclusion in schools is another complex challenge to be tackled. Here, reports by civil society organisations like Indus Action have left a significant mark. The Indus Action Report on Social Inclusion argues that one of the major principles behind the Section was that schools must be sites for social integration, sites where the dialogue between the haves and have-nots creates a richer learning atmosphere. (Indus Action 2015). However, this goal has been difficult to achieve.

This is because a culture of inclusion and what it might look like in a classroom can be debated. Kiran Bir Sethi, founder of Design for Change, states “Inclusion means bringing people together, by the means of communication and collaborative actions. So creating a culture of inclusion with respect to Section 12(1)(c) involves creating platforms where parents and students from different backgrounds can interact with each other.” (State of the Nation RTE Section 12(1)(c) 2015). Inclusive measures can lead to equal opportunities for all by aiding those with disadvantages. This will require developing inclusive pedagogical and social strategies for children as they progress beyond the

pre-primary and elementary classes and can include support mechanisms ranging from bilingual teaching to remedial classes.

It is understood that there is a range of mechanisms and strategies to ensure inclusion within classrooms; however, they make sense only when enforced. And there is still a lack of specific provisions of the Section which deal solely with inclusion in spite of so many studies arguing its importance.

For instance, a report by Vidhi Centre for Legal Policy attempts to contextualise the World Bank SABER-EPS Framework, customising its indicators to the Indian context. The SABER-EPA, or Systems Approach for Better Education Results – Engaging the Private Sector is premised on the effective use of resources depending on proper incentives and accountability mechanisms for the key stakeholders in the sector. The four important policy goals (Ambast, Gaur and Sangai 2017) of SABER are:

1. Encouraging innovation by providers (local decision-making and fiscal decentralisation, autonomy over managing resources, personnel, and educational content).
2. Holding schools accountable (autonomy over process counterbalanced by accountability for outcomes, parameters for quality and access, equally applicable standards for all service providers).
3. Empowering all parents, students and communities (informed parents and communities could also enhance accountability and demand better quality of education).
4. Promoting diversity of supply (by facilitating entry for more diverse set of

providers the government could increase responsibility for results).

Moreover, there are models and examples in India and other parts of the world where efforts at structural inclusion have been successful, one of the most remarkable examples in India being that of the Loreto School in Kolkata. While classes at Loreto have a mix of the very rich and the very poor, all study under the same roof without any distinction between the two classes. According to Sister Cyril, Principal, Loreto Sealdah, “Parents over the years are realizing how much more well-educated our children are because they know how to relate to anyone in society.” (Kolkata’s model of inclusive education 2011).

However, in case of RTE, the legislation came into force without meeting certain pre-requisite requirements of consulting and preparing all stakeholders to work towards its goal. Furthermore, the variety of private unaided schools in Delhi, especially in terms of the fees charged and the sections they cater to, makes it near impossible to reach common guidelines for implementation across schools. While there have been many studies on inclusive education, this variety has hardly been considered a component or factor determining inclusiveness at school. This is where this policy brief becomes relevant.

About the Project

This policy brief aims to investigate the implementation of Section 12(1)(c) of RTE Act in terms of three basic but overlapping aspects of accessibility, inclusivity and efficiency, at both pre and post-entry levels (during and after admissions of students), focusing specifically on the latter.

These aspects have been studied through comparative analysis across private unaided schools, divided into two categories of Budget Private Schools and Non Budget Private Schools. Budget Private Schools can be defined as the schools which charge fees equal to or lesser than the per child expenditure made by the government. In case of Delhi, this expenditure amounts to INR 1600, therefore all schools charging less than INR 1600 as monthly fees are categorised as Budget Private Schools. In this paper, it was attempted to study Non Budget Private Schools across a wide spectrum on the fee scale, including both elite and high-fee schools as well as medium-fee private schools.

The rationale for choosing these three aspects is that they allowed a comprehensive evaluation of the Section and they have been defined as follows:

Accessibility is broadly defined in terms of the physical and social access to private unaided schools by the EWS and DG sections at both pre and post-entry (admissions) levels. Before admissions, accessibility is determined by the factors of awareness among target groups, challenges in application for admissions (including the neighborhood criteria, lack of documents, etc.). After admissions, this is determined by the student's (those admitted under quota) access to the facilities offered by the private unaided schools as well as access to grievance redressal systems monitored by the Directorate of Education.

Inclusivity is measured on a few parameters, which include the level of engagement of parents from EWS/DG Categories, medium of instruction in class, perception of teachers, participation in Extra Curricular Activities

(ECAs), and difference in treatment (if any) of EWS/DG Category students by their peers and teachers. We will also look at the participation and influence of their parents in forums such as the PTA. Here, perceptions hold importance as it was assumed that they might reflect in how teachers act towards EWS/DG Category students.

Efficiency refers to whether the rationale behind Section 12(1)(c) (based on the premise that private unaided schools provide quality education) is realized at the ground level. This means evaluating if the quality education provided by these schools reaches the EWS and DG Category sections and if there are pitfalls in the same. Thus, the brief deals with the challenges posed by implementation and design gap which might lead to fake applications, issues in reimbursement, processes of monitoring, etc.

Based on the above-mentioned aspects, the following objectives were set for the policy brief:

1. Examine the regulatory mechanisms provided by the government to support EWS/DG Category students and analyse if these mechanisms are in place and are adequate.
2. Assess the challenges faced by parents and students from EWS/DG Categories during admissions and post- admissions under the quota reserved for them, specifically of challenges in getting admission, finances (expenditure apart from tuition fee), and in ensuring that their children are treated equally.
3. Enquire into the level of inclusivity of classrooms and school activities and assess the role played by teachers and school

management in making private unaided schools inclusive spaces.

4. Compare the levels of inclusion across private unaided recognised schools (on the basis of fees charged).
5. Examine the role of civil society organisations in aiding implementation of Section 12(1)(c).

Methodology

In order to accomplish the stated objective, primary research was conducted, that was guided by secondary research into literature in this field.

Secondary Research

In terms of secondary research, an examination of government circulars and information uploaded on the website of Directorate of Education was crucial to gain an understanding of the provisions of the Act within Delhi. Furthermore, reports by ASER, Centre for Civil Society, Indus Action and State of the Nation Reports were studied to understand the developments within RTE and the status of its implementation.

Primary Research

The data collection was conducted in two phases: Household Survey (interviewing Non-EWS/DG Category Students and EWS/DG Category Students) and sessions in private unaided schools (interviewing school principals, teachers and students).

In PHASE I, the districts of South, South-West and West Delhi were surveyed. These districts were selected to ensure that

regional differences do not pose a challenge in making comparisons across private unaided schools.

In the above-mentioned districts, 30 parents from EWS/DG and 32 parents from General Category were interviewed. These parents were selected through the snowball sampling method. For comparative purposes, across private unaided schools, a conscious effort was made to have an equitable representation of students going to both Budget and Non Budget Private Schools. Out of these 62 parents, 27 parents send their children to Budget Private Schools while the remaining 35 send their children to Non Budget Private Schools.

In PHASE II, eight schools (four BPS and four Non BPS) from these three districts were selected for data collection. The school principal and one teacher each from these schools were interviewed. This form of data collection was important to understand the challenges faced by these stakeholders, while checking for extra measures being taken at a school level and extent of inclusivity to support students admitted under EWS/DG quota.

In one BPS and Non BPS each within these schools, students from fourth standard were surveyed. The data collected from this process was used for the comparative case study on inclusion between the two randomly selected schools.

In order to obtain qualitative data on intervention measures, members of civil society organisations involved in the implementation of the Act – viz. Indus Action and Aarohan, were also interviewed.

Table 1: Data Collection Methodology

Stakeholder	Sample	Tools Employed	Research Question Addressed	Key Questions/Parameters
EWS/DG Category Parents	30 (14 BPS, 16 Non BPS)	Questionnaire + Semi-structured Interviews	What challenges do parents from EWS/DG Category face during and after admissions of their children?	<ul style="list-style-type: none"> - Whether any challenges were faced during admissions - If they have to make extra payments over the year for their child's education - Whether their child can understand what is taught in school and has any issue with the medium of instruction - If their home environment is conducive to their child's learning - If they are aware of grievance redressal systems - Participation level in classroom and ECA
General Category Parents	32 (16 BPS, 16 Non BPS)	Questionnaire + Semi-structured Interviews	What is the perception of General Category parents towards Quota and EWS/DG Category and does it affect inclusivity within private unaided schools?	<ul style="list-style-type: none"> - What are their views on 25% Quota - Whether parents from EWS/DG Category share the same value systems as they do - The kind of impact students from EWS/DG Category have on their children and the quality of education at school - If their children are friends with students from EWS/DG Category - Their interaction level with EWS/DG Category Parents
School Principals	8 (4 BPS, 4 Non BPS)	Questionnaire + Semi-structured Interviews	Are there any pitfalls challenging administrative processes in the implementation of Section 12(1) (c)?	<ul style="list-style-type: none"> - Whether reimbursement is made on time - If implementation was given enough time, or was sudden, and whether any pre-requisite measures were taken - Whether there is a lack of specific provisions to ensure inclusion
School Principals	8 (4 BPS, 4 Non BPS)	Questionnaire + Semi-structured Interviews	Which factors affect the attitude of school management and teachers towards Section 12(1) (c) and the measures they take for students of EWS/DG category?	<ul style="list-style-type: none"> - If any pressure from PTA is involved - If extra measures are affected by reimbursements or the fees taken by a school
Teachers	8 (4 BPS, 4 Non BPS)	Questionnaire + Semi-structured Interviews	Which factors determine the level of inclusion of EWS/DG Category students in comparison to General Category across private unaided schools?	<ul style="list-style-type: none"> - The role played by teachers in ensuring inclusion - The relation between teachers' perception and the measures they take - The level of participation of students from EWS/DG Category in classroom activities and ECA - The academic performance of students from EWS/DG Category - Whether EWS/DG Category students are neglected
Civil Society Organisations	2: Indus Action, Aarohan	Questionnaire + Semi-structured Interviews	What is the role played by civil society organisations in facilitating the implementation of Section 12(1) (c)?	<ul style="list-style-type: none"> - Role in increasing awareness about existing mechanisms - Field observations on inclusivity in classrooms - The measure which can be taken to make classrooms more inclusive, for instance, bilingual teaching - The possibility of partnership with government to improve implementation

Data Analysis Methodology

Based on the type of data collected (quantitative and qualitative), analysis was done by the following three approaches:

Quantitative Comparative Analysis between BPS and Non BPS Category:

Quantitative data collected by household surveys of EWS and General Category parents was analysed by employing tools of descriptive statistics. The purpose was to compare the implementation status across various private unaided schools from the lens of parents.

Comparison of Inclusivity Index across private unaided schools:

An index of inclusion was created using data collected from Teacher's Survey. The analysis comprised of investigating how this index varied with fees charged by school and searching for a definitive trend in this regard.

Qualitative Analysis :

The qualitative data collected from school principals was analysed on the above mentioned parameters and compared across BPS and Non BPS.

2. Students' understanding of language and content
3. Student participation in classroom and ECA Activities
4. Spatial division
5. Freedom to express
6. Peer-to-peer interaction
7. EWS/DG Category Students' Overall performance

Teachers of each school were asked a few questions addressing each parameter, wherein all questions were given equal importance. Their responses were given scores out of 1 (1 indicating highest level of inclusion, 0.5 a moderate level, and 0 indicating the least). In total, 17 questions were asked. The individual scores were then summed across all questions for each parameter to get the parameter score. Then this score was normalised to arrive at an index value for each parameter.

To calculate the overall inclusivity score, the normalized parameter score were summed across all the seven mentioned parameters. Here, each parameter is given an equal weightage of 1. This index was then compared across schools. Thus, the formula of score is

$$S^j = \sum_{i=1}^7 P_i^j$$

where,

j denotes school number.

i denotes parameter number.

P_i thenormalized score on each parameter (from 0 to 1).

S^j the index score of each school (from 0 to 7)

Creation of Inclusivity Index ⁸

To construct the index⁹, seven parameters were chosen and in total 17 questions were asked which determine the extent of inclusion within school. Following were the broad parameters for questions:

1. Teachers' perception of EWS/DG Category students and scheme

⁸ The detailed table of questions and codes used for construction is given in the Annexure.

⁹ This methodology of index creation is inspired by the Inclusive Classroom Profile (ICP) measure created by University of North Carolina. (Inclusive Classroom Profile: Handout n.d.)

Index was calculated by normalising these scores i.e. by dividing the score by 7 for each school. Also, schools were compared on the individual scores they received on each parameter.

Analysis and Findings

Quantitative Analysis

GENERAL CATEGORY PARENTS

Overall Implication: General Category Parents largely expressed positive views on scheme. The Non BPS sample was cynical about the EWS integration with their wards, owing to their notion of negative influences and varied value systems. This resulted in very low levels of interaction within both categories by children as well as parents. BPS sample felt a shift of financial burden towards them owing to this scheme.

Perception towards Quota

While most families believed that this scheme provided the EWS an equal opportunity to quality education, a few parents, especially from Non BPS category were also of the opinion that education must be merit-based. However, almost everybody was cynical about the scheme benefitting its targeted beneficiaries. Most seemed to be concerned about fake admissions.

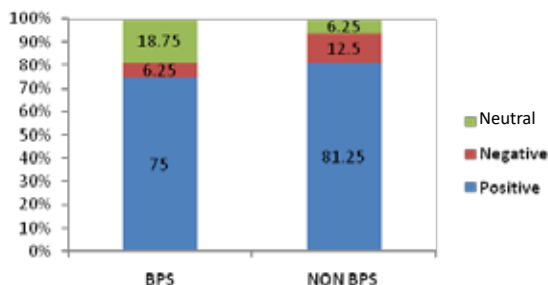


Fig 1: Perception of General Category parents towards quota.

- Majority of the parents (75% in BPS and 81.25% in Non BPS) have a positive view on 25% reservation scheme.

PERCEPTION TOWARDS EWS/DG CATEGORY

The perception score on the Inclusivity Index across BPS (0.833) is significantly higher than Non BPS category (0.643) i.e. 83% of families from BPS sample had an overall positive attitude towards EWS inclusion as compared to just 64% in Non BPS sample. This can be attributed to the fact that there are no major economic and social differences in EWS and General Category parents sending students to BPS. It is reflective of how economic status of families strongly determines perceived class differences.

- 69% of parents from Non BPS category agreed that EWS/DG Category do not share same values and beliefs systems as they do, while around 31% agreed from BPS Category.

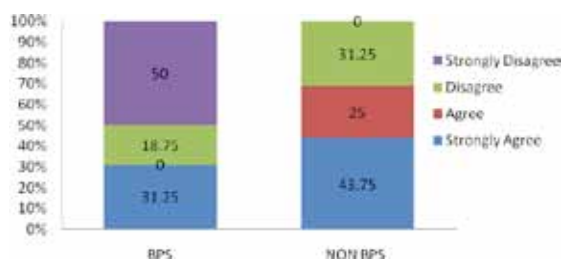


Fig 2: Comparison between BPS and Non BPS of views on EWS Category values

- 38% of parents surveyed from Non BPS category felt that EWS category students negatively affect General Category students, while this figure is only 18.75% for BPS category. 57% families from BPS reported that they do not feel that their children are affected in any way.

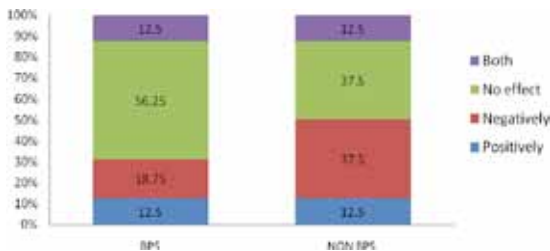


Fig 3: Comparison between BPS and Non BPS on views on how general category students are affected

- 100% of the sample felt that EWS category students do not impact the quality of education. All felt that the quality depends only on teaching methodology.
- Ironically, parents in BPS category feel that the presence of EWS/DG Category students does bring about additional financial burden on them in the form of abrupt fee hike (57% BPS parents reported an abrupt change as compared to just 6% in Non BPS category). This may be because even small monetary amounts matter to them, or possibly because BPS hike their fees to match the reimbursement amount to get more funds from government.

INTERACTION WITH EWS/DG CATEGORY

Interaction levels of General Category students was found to be low, especially in case of Non BPS as ensured by their parents who were concerned that they might be negatively affected.

- 38% from Non BPS Category reported that their children are not friends with EWS Category. Out of these 38%, 5 out of 13 families reported that they have forbidden their children from forging such a friendship and strongly believe that these students must be segregated.

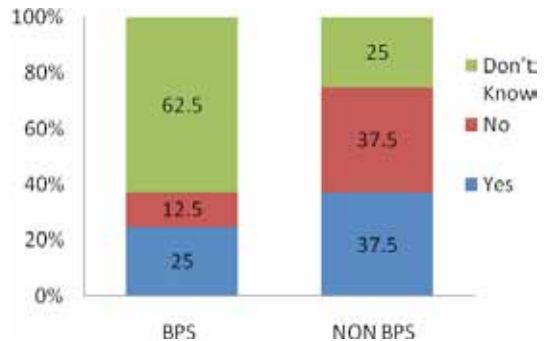


Fig 4: Comparison between BPS and Non BPS on status of friendship with EWS Category Students

- The category “Don’t Know” is interesting because it is contributed to by the fact that parents are unaware of their child’s friend circle’s background because of the school’s policy of “No Tagging”.
- 90% of the families reported that EWS Parents attend the Parent-Teacher Meetings and participate in them but they rarely interact with them. Rest reported that they could never identify such parents.

EWS CATEGORY PARENTS

Overall Implication: EWS/DG Category parents face challenges in terms of lack of awareness and burden of extra payments (more in Non BPS sample), they still provide a learning atmosphere at home and play a proactive role in ensuring quality education for their children.

Awareness Level

Low level of awareness is still a primary concern, especially in low income areas without any NGO interventions. Even though the Government strengthened their awareness campaign over the years, yet the Government/ Media accounted for the lowest share of

source of awareness which highlights the urgent need of improvement, or a possible shift in approach to fix this issue.

- Families were unaware not only of the existence of the Act, but also about the process of application and grievance redressal systems.
- Government/Media received the lowest share as the source of awareness (7% in BPS Category and 18% in Non BPS).
- In BPS Category, awareness by school had the biggest share with 43%. In Non BPS Category, personal contacts with 43.5% accounted for the biggest source of awareness.

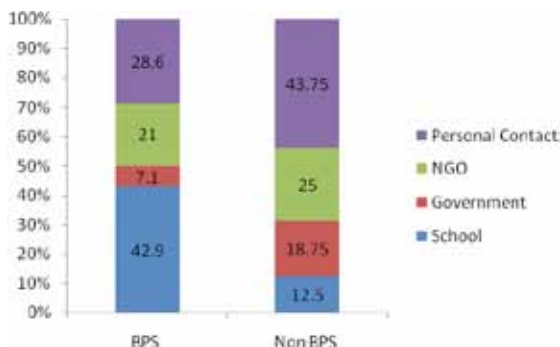


Fig 5: Comparison between BPS and Non BPS of source of awareness of scheme for EWS Category

Extra Payments

Despite the objective of providing free education to deprived sections, EWS/DG Category Parents have extra financial burden of books, uniform, stationary and other ECA. This extra burden is more for parents sending their children to Non BPS Category. Both the strength and magnitude of such items is relatively large for Non BPS category.

- 94% of Non BPS parents admitted that they have to pay extra while this figure is comparatively very low (35 %) for BPS category.

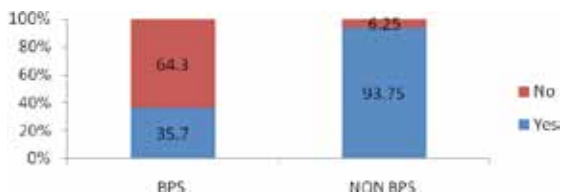


Fig 6: Comparison between BPS and Non BPS sample of whether EWS Category make extra payments

- In BPS Category, uniform and stationary were the major sources, while in Non BPS, apart from uniform and stationary, ECA accounted for 30% share of the total.

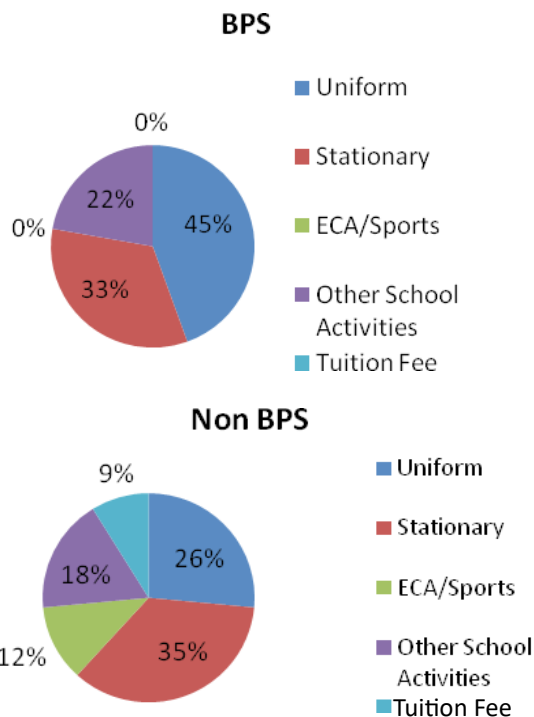


Fig 7: Comparison between BPS and Non BPS of share of items of extra payments made by EWS Category

Home Environment and Parents' Participation

The aggregate score on home environment and parent participation on the Inclusivity Index was high in both categories (0.836 and 0.71 respectively) though higher in BPS sample. Thus, contrary to beliefs, the home environment of EWS/DG category was conducive for learning and such parents were proactive and were more involved in their child's education (also corroborated by teachers).

- In both the sample groups, percentage of parents who never attended the Parent-Teacher Meetings is very low (7% and 6% respectively).

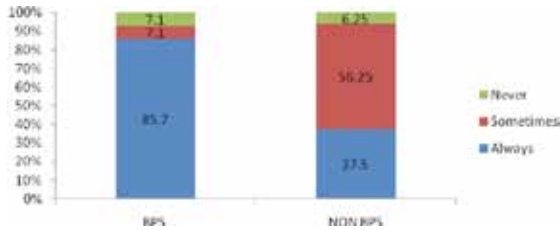


Fig 8: Comparison between BPS and Non BPS of how often EWS Category Parents attend PTM

- When asked whether the child has teaching support of someone at home, 72% from BPS category said yes, while this figure is around 44% from Non BPS category.

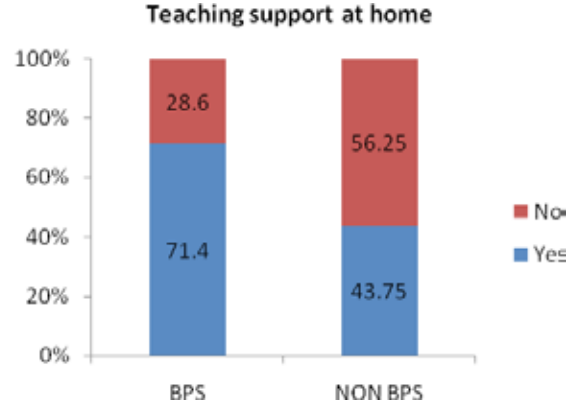


Fig 9: Comparison between BPS and Non BPS on status of teaching support at home for EWS Category students

- Majority of students take extra tuitions (86% from BPS category and 75% from Non BPS category) especially in English. This puts more financial burden on EWS/DG Category parents above the extra payments they make to school.
- Each student participated in some or other kind of extra-curricular activity.

COMPARISON OF INCLUSION ACROSS PRIVATE SCHOOLS

The Inclusivity Index was calculated for eight schools (explained in methodology section) of our sample using data provided by teachers.

Overall Implication: The Inclusivity Index is generally lower for private schools with high fees owing to language barriers, teachers' attitude, school management perceptions, gap due to differences in learning at home and parents' opinions. Despite extra measures taken by Non BPS, segregation in classrooms is more prevalent

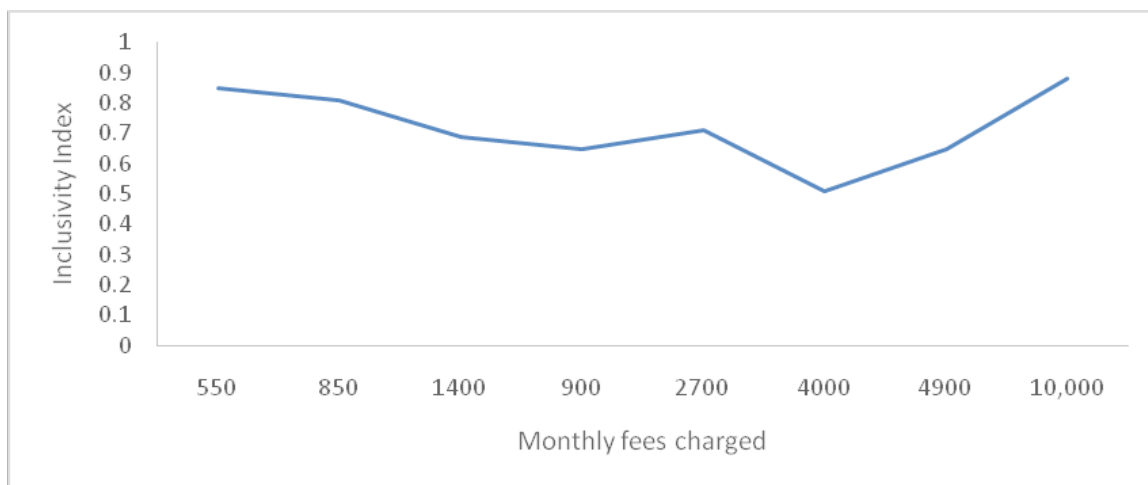


Fig 10: Variation in Inclusivity Index with monthly fees charged

Table 2: Overall Inclusivity Index Scores of schools with fees charged

SCHOOL	TYPE OF SCHOOL	TOTAL SCORE (OUT OF 7)	INDEX (Normalised score)	MONTHLY FEES CHARGED (INR)
SCHOOL A	BPS	5.96	0.85	550
SCHOOL B	BPS	5.6725	0.81	850
SCHOOL C	BPS	4.8925	0.69	1,400
SCHOOL D	BPS	4.55	0.65	900
SCHOOL E	NON BPS	5.01	0.71	2,700
SCHOOL F	NON BPS	3.6355	0.51	4,000
SCHOOL G	NON BPS	4.56	0.65	4,900
SCHOOL H	NON BPS	6.1675	0.88	10,000

in such schools driven by the apparent differences in the conduct of students of different categories based on their economic well-being

Moreover, low scores of Non BPS is majorly due to low scores in teacher's perception and understanding of language and content.

There is no Index particular trend of scores on the Inclusivity with the increase in the

monthly fees charged by school. Although keeping School H (Best Practices Case Study) out of the sample, one can see a decrease in the Index score with increase in fees charged.

The individual scores across the seven parameters showed different trend with respect to monthly fees. The table below records the scores across all parameters for each school.

Table 3: Individual Scores of each school on every parameter*.

School	Teacher Perception (Out of 2)	Understanding content and language (Out of 4)	Participation in class and competitions (Out of 2)	Freedom to Express (Out of 1)	Spatial division (Out of 1)	Peer interaction (Out of 5)	Student Performance (Out of 2)
A	2(1)	1(0.25)	1.67(0.835)	1(1)	1(1)	5(1)	1.75(0.875)
B	2(1)	2.33(0.5825)	2(1)	0.67(0.67)	0.67(0.67)	5(1)	1.5(0.75)
C	1.5(0.75)	2.67(0.6675)	1.67(0.835)	0.67(0.67)	0.67(0.67)	4(0.8)	1(0.5)
D	0.75(0.375)	2(0.5)	1.67(0.835)	0.67(0.67)	0.67(0.67)	5(1)	1(0.5)
E	1(0.5)	2.34(0.585)	1.67(0.835)	0.67(0.67)	0.67(0.67)	5(1)	1.5(0.75)
F	0(0)	1.67(0.4175)	1.67(0.835)	0.67(0.67)	0.67(0.67)	3.34(0.668)	0.75(0.375)
G	1.25(0.625)	2(0.5)	1.34(0.67)	0.67(0.67)	0.67(0.67)	4(0.8)	1.25(0.625)
H	2(1)	2.33(0.5825)	1.67(0.835)	1(1)	1(1)	5(1)	1.5(0.75)

*The figures in parenthesis indicate normalised parameter score used in calculation of overall Inclusivity Index.

Keeping School H aside, The teacher perception showed a downward trend with increase in school fees



Fig 11: Variation in score on teacher perception with monthly fees charged (type of school)

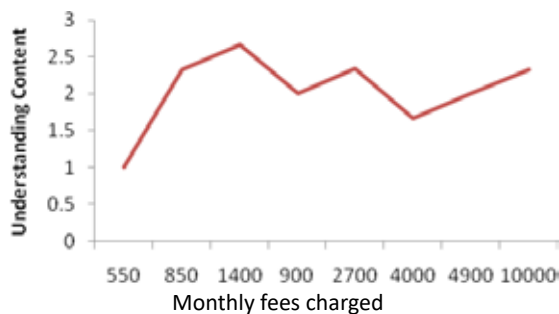


Fig 12: Variation in score on understanding language and content with monthly fees charged (type of school)



Fig 13: Variation in participation score with monthly fees charged (type of school)



Fig 14: Variation in peer to peer interaction score with monthly fees charged (type of school)

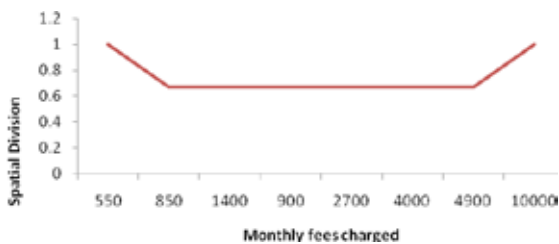


Fig 15: Variation in spatial division score with monthly fees charged (type of school)



Fig 16: Variation in student overall performance score with monthly fees charged (type of school)

- Participation Score in Classrooms and Competition remained high and fairly constant. Each school scored in the range of 1.5-2.0 (out of total score of 2).
- Student Performance scores showed a continuous decline among BPS (score reduced with increase in fee) but the trend became irregular for Non BPS.
- Each school scored high on Spatial Division (0.67 out of 1). The score remained constant across all kinds of schools.
- Scores on Peer-to-peer Interaction were high and irregular across schools.
- Scores on Understanding of Language and Content were quite scattered. This can be attributed to the fact that there is more weightage given to other factors such as Teaching Methodology, Curriculum etc.

Qualitative Analysis

Based on the semi-structured interviews with school principals, the following table summarises the qualitative comparative findings on the mentioned parameters. (The annexure records the questions asked on each parameter). The inferences are reached after analysing their answers and aggregating their views.

Table 4: Findings for BPS and Non BPS on Section 12 (1) (c)

	BPS	NON BPS
VIEWS ON 12(1)(c)	Important scheme in the Indian context but lacks implementation, mainly due to lack of awareness among the target group of beneficiaries and its sudden implementation without thorough consultation	Only reserving seats is not enough, there needs to be additional financial help to provide them with adequate support systems
CHALLENGES FACED DURING ADMISSION	<ul style="list-style-type: none"> • Fake admissions • Seats under quota remain unfilled especially after centralised online system • Lack of awareness and low level of literacy among EWS/DG Category parents 	<ul style="list-style-type: none"> • Admission process goes on till Oct-Nov • School campus being used for government activities • Lack of resources to ensure authenticity of applicants' background
EXTRA MEASURES TAKEN	<ul style="list-style-type: none"> • Books, uniform and stationery are provided for free • Counselling sessions for all students 	<ul style="list-style-type: none"> • ECA subsidised • Orientation sessions for parents are held • Remedial classes to bridge the gap
INCLUSION	<ul style="list-style-type: none"> • No fear expressed by Non EWS Category parents • No segregation • Quality education is not affected • Not a major concern since economic backgrounds of students do not vary much 	<ul style="list-style-type: none"> • Complaints by General Category parents received • Academic Performance is good but suffers from lack of confidence • Inclusion is fostered by encouraging values of simplicity and sharing • 'No tagging' policy
CHALLENGES FACED IN ADMINISTRATIVE PROCESSES	<ul style="list-style-type: none"> • Delay in reimbursement • Repetitive demand of data from schools • Financial burden is being transferred to general category students 	<ul style="list-style-type: none"> • Delay in reimbursement • Financial burden is being transferred to General Category students • Data needs to be filled in every 15 days • The portal suffers from technical glitches
SUGGESTION	<ul style="list-style-type: none"> • Proper guidelines for EWS Category parents • Increase public awareness • A single system for data • Counselling for General Category parents and students. • Voucher system • Advance payment for the seats they have and if seats remain unfilled then they will return that amount. • Payments should be on time for books, stationery by Government • Financial support should be provided to schools taking extra measures like counselling sessions, training programs 	<ul style="list-style-type: none"> • Orientation for EWS/DG Category parents • Support EWS/DG Category students by organising workshops/training sessions, conducting remedial classes and giving them more opportunity to participate in class and school • Sensitivity sessions for General Category students • Redesign reimbursement structure • Reconsider EWS baseline every four years to account for change in economic conditions

LESSONS LEARNT: CASE STUDY

BEST PRACTICES

In the study of private unaided schools, The Mother's International School emerged as a school with the best practices. While the school, like a few other schools across the country, had been working towards inclusivity before the enactment of RTE; it has also taken certain extra measures since the Act was enforced.

Mother's International is one of the few elite schools in Delhi, however, most of the measures it has taken can be implemented elsewhere with minimal costs. These include:

1. Remedial classes conducted for students from EWS/DG Category every day by volunteers, alumni, and retired teachers. The teachers of remedial classes are regularly updated by teachers who teach in regular classes so as to ensure that the challenges faced by students can be understood and tackled.
2. Money for excursions, picnics, etc. is not collected from students of EWS/DG Category.
3. After VII Standard, every measure is taken to not collect fees from students of EWS/DG Category. This is done by engaging with alumni or teachers who could sponsor them till they graduate.
4. Engaging with parents from EWS/DG and conducting special meetings with them regularly.
5. Simplicity is upheld as a value such that students learn to look beyond material possessions. A culture of not differentiating between the haves and have-nots is created.

Recommendations

Based on the above findings, the following recommendations are suggested on the premise of the ways in which the government can use the medium of Regulatory Mechanisms to:

1. Smoothen out the implementation gaps during admission process and improve their monitoring and grievance redressal system.
2. Incentivise the private unaided schools to take measures to promote inclusive learning environment within their schools and cater to the needs of EWS/DG Category students.

These are guided by employing the role of civil society organisations and local communities in this regard keeping economic feasibility in mind and ensuring active citizen participation.

Issue 1: Lack of awareness

Only 14% of the respondents (EWS/DG Category Parents) reported Government/Media as the source of awareness of the Act. Although the number of applications has increased by a fair amount from last academic year, this area still needs a lot of work. Even among those who do know about the act, there is lack of awareness about the process of application and securing admission thereafter.

RECOMMENDATION

- Information penetration can best be effectuated by the locals, who are well aware of the actual circumstances and knowledge set of the potential beneficiaries. CSOs should help set up local community centers and strengthen them to disseminate the information and assist families in the process of admission.
- Indus Action has an efficient helpline in place to assist EWS Category families in the process of admission. Till now, they have addressed 80,000 families. CSOs (like Indus Action) should be contracted out to by the Government to establish and manage a helpline for the families in all of the 27 sub-districts of Delhi. This would make the process of managing helplines and addressing concerns more efficient.
- Within the application process, the government needs to ensure that information regarding the status of seats available under the quota for eligible schools is made easily accessible.

Issue 2: Gap areas in application process/delay in admission

The intent of Centralised Online Admission system was to reduce the incidence of fake admissions. An unfortunate effect of this measure is that it has limited the access to this scheme for a number of beneficiaries, owing to the digital illiteracy level of EWS Category parents. Also, from the advent of this scheme, the number of unfilled seats has gone up especially in Budget Private Schools and there have been significant delays in admission. In many instances, the third list comes out in the month of September or October.

RECOMMENDATION

- Applications should be accepted through both online and offline mode (although the online system of lottery and allotment of seats should continue). The procedure must start early in the month of September to ensure that the whole process is completed by March and students do not miss out on the school.
- There is an urgent need to improve the online admission platform to make it more user-friendly. Minor changes in online portal like provision to families to send a notification of rejection to the schools when confronted with school choices will speed up the admission process although this will cost them extra trips to the cyber café.

Issue 3: Fake Admissions

85% of the interviewed General Category parents felt strongly that there is prevalence of fake admissions. The School Management is also aware of the fact but has no power or incentive to act on it. When asked about the level of inclusion, one of the school's principal quoted "Inclusion in classrooms is not a major issue because many students getting admission through this Act do not actually belong to EWS, they are the smart ones who could get a fake income certificate; but since their papers are complete we cannot deny them admission by law". Still, a significant proportion of genuine EWS Category families surveyed are either sending their children to government schools or not sending them to school at all.

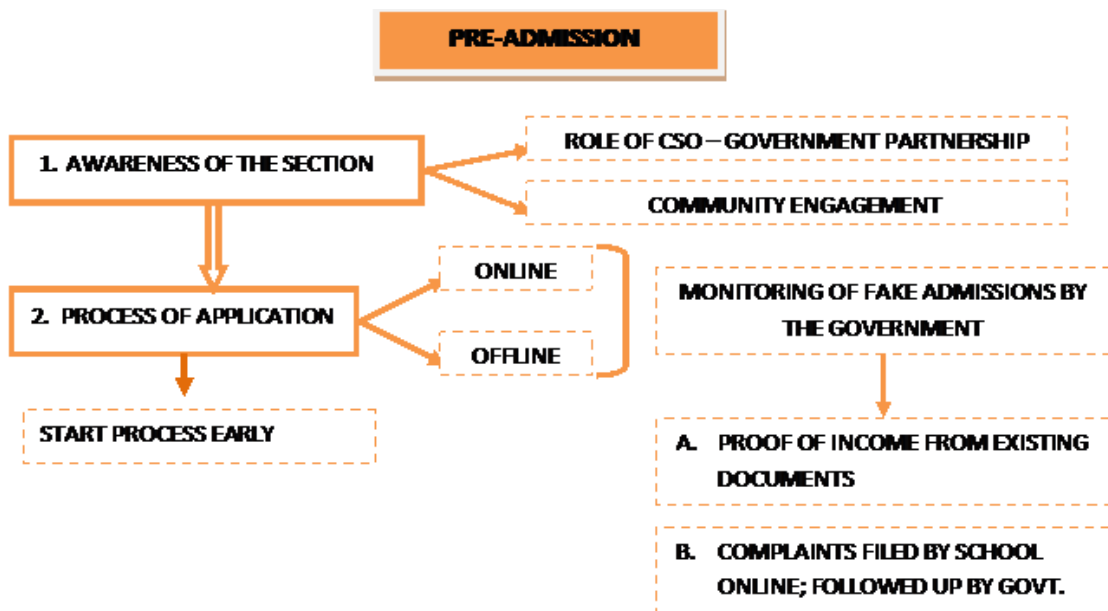


Fig 18: Recommended procedure for pre-admission

RECOMMENDATION

- Government can discontinue the requirement of income certificate as the income proof (since they can be easily faked). The existing documents of proof of economic status that are being demanded to avail benefits of other government schemes must be asked for instead.
- The lengthy procedure of reporting and inspecting a possible fake admission, needs to be changed by school, considering all schools especially BPS, have neither the resources, not the intent to do so. Schools should be able to instantly file an online complaint with some preliminary evidence, and the Government should follow up on the complaint doing the inspection checks themselves.

Issue 4: Delay in reimbursement and extra payments

All private unaided schools by law are supposed to be reimbursed an amount equal to per child expenditure incurred on a government school student or their own tuition fee; whichever is less. All schools in our sample reported having not received the reimbursement for two to three years. This poses serious concerns, especially for Non Budget Private Schools. The schools with fees varying from INR 2,000 to 10,000 per month charge EWS/DG Category parents for books, uniform and stationery items. This is a huge financial burden on EWS Category parents and poses threat to the claim of free education. Moreover, since they are already operating in losses, they lack the incentive to engage more resources and take up extra measures to establish support systems and to

promote inclusion in their schools (wherein the social exclusion is seen more).

RECOMMENDATION

- The formula of calculating per-child expenditure should be made transparent. There is a need to review it to include capital costs as well.
- Reimbursement should be timely and must include costs of school uniform, books and stationery items.
- A system of Progressive Reimbursement depending on the ranking of schools can be established to provide enough incentives and financial support to schools to take up inclusion practices and ensure better learning outcomes for the students.

Issue 5: Level of inclusion and inadequate support mechanisms

As research suggests, schools are not yet centres of appropriate inclusive environments which promote collaborative learning across students of diverse backgrounds. There are no regulatory mechanisms in place to provide these students with appropriate support systems. Even if a handful of schools do take certain measures, there is some level of social exclusion inside the classrooms. All teachers from Non BPS surveyed reported that these students have inferiority complex and lack self-confidence. Perception of General Category parents and orientation of teacher plays a crucial role.

RECOMMENDATION

- Government can contract out to CSOs like Adhyayan to construct the comprehensive grading system of schools with special focus

on inclusivity. This grading will determine the progressive reimbursement plan and would provide enough motivation to schools to take up the following recommendations (in collaboration with NGOs and youth societies):

- Before the session begins, schools must conduct an induction programme for EWS/DG Category parents about their school rules and regulations, their role, hygiene requirements etc.
- Sensitivity sessions for General Category parents should be organised.
- There should be a dialogue between parents of all the categories periodically. The School Management Committee must be compulsory for unaided private schools. EWS/DG Category parents must have a representation in this committee.
- Teacher Training is required to equip them with innovative pedagogies and practices to ensure better learning environment and atmosphere for all students. They should use this as an opportunity wherein General students learn from the great knowledge of informal sector that EWS Category students bring in. CSOs can facilitate such sessions and teacher programs.
- Half-yearly workshops must be conducted to engage various schools in a dialogue. This would create a platform for information sharing of best practices. Schools can share their adopted measures and challenges faced in their implementation. One of the schools can become a representative for all the schools in its respective sub-district (like Mother's International in South Delhi).

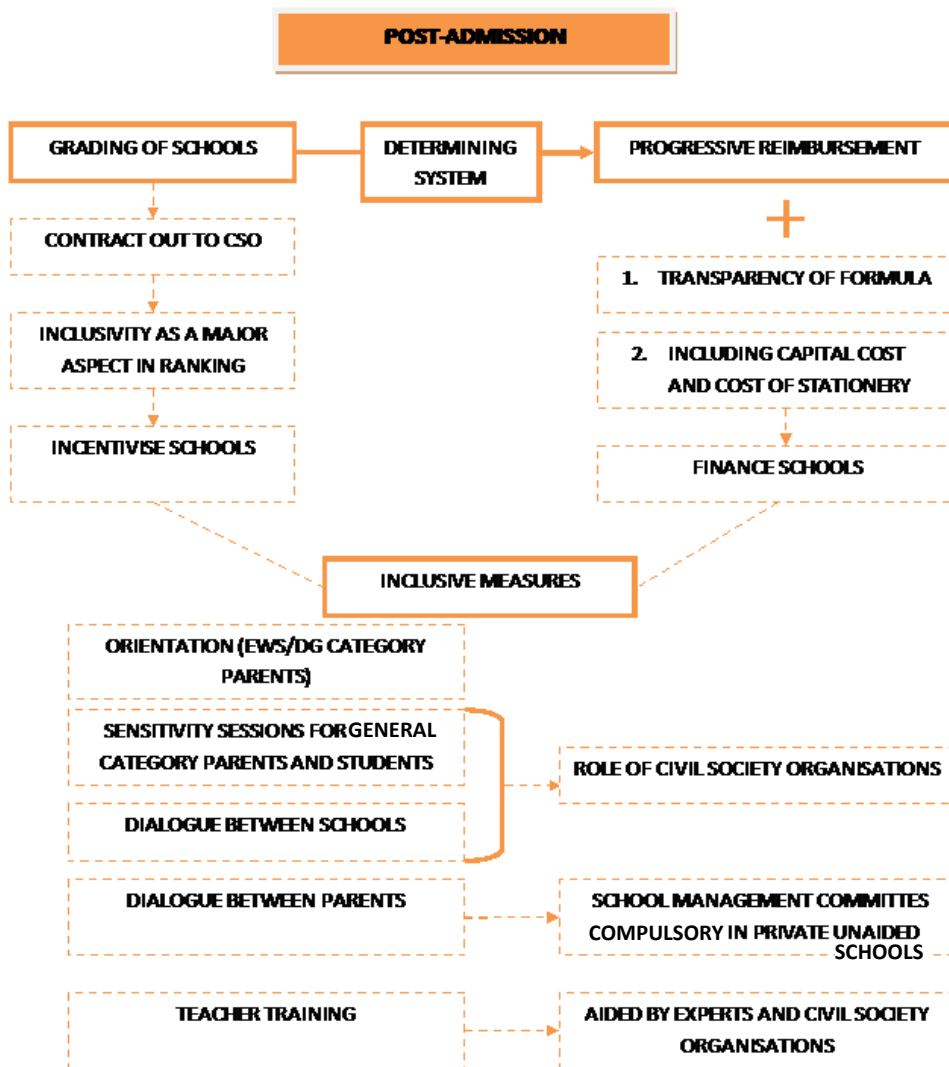


Fig 18: Recommended procedure for post-admission

These recommendations are guided by an effort to establish schools as sites of Social Integration. The rationale is that the presence of these 25% of EWS Category children should alter the pedagogical nature of the classroom so that the knowledge base of informal sector these students bring reaches to the 75% also.

This calls for interactive learning that facilitates greater interaction among children of different socio-economic and caste backgrounds. The practices, if adopted, can help create a school which possesses all the components of inclusive schools: engaged parents, bilingual teaching, ethos of respect, culturally inclusive

curriculum, response positive to diversity, and collaborative learning (Indus Action 2015).

Issue 6: Weak monitoring and grievance redressal system

The school participation rate (schools admitting RTE 25% students) in Delhi is still low and is increasing at a very slow rate. From 2013-2014 to 2014-2015, the rate increased marginally from 51.55% to 51.84%. The filling rate is still less than 50% even though all private unaided schools are mandated to offer seats. Moreover, the grievance redressal system managed by DAMC is not efficient in its working. 89% of the EWS Category parents we interviewed had no knowledge of Grievance Redressal Mechanism or location of the nearest DAMC center.

RECOMMENDATION

- Helplines managed by CSOs in different sub districts must run for a significant time after admission process officially ends to address their residual issues.
- DAMC centres must be made more accessible to the public. Every sub-district must have a well-functioning DAMC centre with a helpdesk which reports the DAMC center of their district.
- The Government is functioning well in its role of regular inspections and collecting information of EWS Category students online from schools who admit students under this section but it needs to tighten its monitoring to ensure 100% participation rate of schools, from the current participation rate of around 52%.

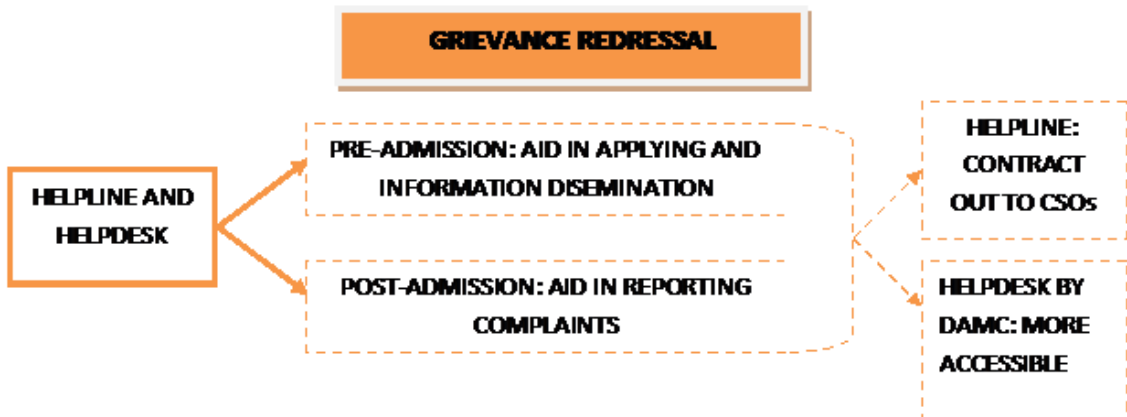


Fig 19: Recommended procedure for grievance redressal

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Appendix

Appendix 1 - Questionnaires

QUESTIONNAIRE – PARENTS (EWS/DG CATEGORY)

1. What was the source of awareness regarding 25% reservation?
2. Do you have to make extra payments over the year for your child's education? Yes/No
 - A. If YES, which activities/aspects do you need to pay for:
 - ECA/Sports
 - Other School Activities
 - Stationery
 - Uniform
 - Tuition
 - Others
3. Does your child feel included at school? Yes/No
 - A. Can your child understand what is being taught in class? Yes/No
 - B. Language taught in - _____
 - C. Are any extra measures like extra classes being taken by the teachers/school management to make him/her feel included? Yes/No
 - D. Is he/she ever neglected by his/her teacher? Yes/No
 - E. Does he/she participate in school activities and competitions? Specify.
4. Do you attend PTA meetings?
 - Always
 - Sometimes
 - Rarely
 - Never
 - A. If YES, what has been the teacher's remark on your child? Positive/Negative/Neutral Specify.
5. Home Environment
 - A. Do you encourage your child to study at home? Yes/No
 - B. Do you or any other family member help your child with homework and projects? Yes/No
 - C. Does your child take extra tuition classes? Yes/No
6. Any suggestions.

QUESTIONNAIRE – PARENTS (GENERAL CATEGORY)

- BASIC INFORMATION

1. Family Income
2. Were any abrupt changes in fees made in the last 3-4 years?

- OPINION AND PERCEPTION

1. What is your view on the 25% reservation in private unaided schools?
Positive/Negative/Neutral
 - A. If positive, what have been the positive changes brought by the Act?
 - B. If negative, what are the problems with it?
2. Education in private school should be:
Merit based
Status Quo
3. EWS/DG Category students do not share the same value systems and beliefs as you do
Strongly Agree/Agree/Disagree/Strongly Disagree
4. How do their values and behaviour affect your child?
Positively/Negatively/Both positive and negative/No effect
5. Does their presence affect the quality of education provided by the school? Yes/No

- INCLUSION

1. Is your child friends with students from EWS/DG Category? Yes/No/Don't know
2. Does the school take any extra measures to cater to the needs of these students?
Yes/No (If yes, specify)
3. How does the teacher make groups for projects?
 - According to students' wishes
 - Randomly makes mixed groups with children from diverse backgrounds
 - Separate groups for General and EWS/DG students
 - Any other
4. Do you think these students should be segregated? Yes/No
5. Do the parents of EWS/DG Categories come for PTA meetings? Yes/No/Didn't notice

If, YES, please score their participation on a scale from 1-3 on two metrics:
(Tick one option each)

SCORE	PARTICIPATION	SCORE	TURNOUT
1	Do not participate at all	1	Hardly turn up
2	Participate sometimes	2	Some parents turn up
3	Always participate	3	All parents turn up

QUESTIONNAIRE - TEACHERS

1. Do you think they EWS/DG Category students need special attention or support systems?
Yes/No
If yes, what could be the measures the government or school can take to accommodate the needs of these students?
If no, Why do you think so?
- CLASSROOM ACTIVITIES
2. Do the students of EWS/DG Category understand the language you speak in? Always/ Sometimes/Rarely/ Never
3. Do they face difficulty in completing their class work? Always/ Sometimes/Rarely/ Never
4. How often do they commit errors in their classwork and homework? Always/ Sometimes/ Rarely/ Never
5. Are they able to answer questions asked by you? Always/ Sometimes/ Rarely/ Never
6. Do the students of EWS/DG Category hesitate to take your help to solve their educational problems? Always/ Sometimes/ Rarely/ Never
7. Do you think the classroom environment motivates EWS/DG Category students and they find the classroom activities interesting? Always/ Sometimes/ Rarely/ Never
- EXTENT OF INCLUSIVITY
8. Do you think EWS/DG Category students are being neglected or hurt by their classmates? Yes/No
9. Do you think EWS /DG Category students feel alienated? Yes/No
If yes, how?
 - a) They are neglected during recess, plays and regular classes
 - b) They lack confidence or have inferiority complex
 - c) They have difficulty adjusting with the students of general category
 - d) All of the above
10. How often are EWS/DG Category students made to do assignment/projects with students of General Category? Always/ Sometimes/Rarely/ Never
11. Do Non EWS Category students involve students admitted under quota in sports activities? Always/ Sometimes/Rarely/ Never
12. How often do they voluntarily participate in inter-class competitions? Always/ Sometimes/Rarely/ Never
13. What measures can be taken to create more inclusive class atmosphere?

- STUDENT'S PERFORMANCE

14. Do the EWS/DG Category students understand what is being taught in class? Always/ Sometimes/Rarely/Never
15. On an average, how would you grade their academic performance? Excellent/Very Good/ Good/Average/Poor
16. What is their participation level in sports and Extra Curricular Activities? Excellent/Very Good/Good/Average/Poor
17. Have you witnessed any qualitative change (improvement) in these students since they were admitted? Yes/No
18. How can teachers improve the overall performance of these EWS/DG students?
 - a) By attending training sessions/workshops
 - b) By conducting remedial classes for them
 - c) Give them more participation in classroom activities
 - d) Regularly monitoring their performance
 - e) Any other

QUESTIONNAIRE – CIVIL SOCIETY ORGNISATIONSS

1. What according to you is the current level of awareness of target groups regarding 25% reservation?
2. What government measures would be required to increase awareness regarding the EWS/ DG quota?
3. Where do you think the government is lacking in terms of grievance redressal?
4. Please mention your observations of the schools to which the students you have worked with go.
 - A. How inclusive are they? Have any discriminatory practices been reported?
 - B. Are any extra measures being taken by any of these schools to improve inclusivity within classrooms – Please give examples
 - C. How crucial is the use of mixed languages to making these students feel included and encourage diversity?
5. What regulatory mechanisms would you suggest to monitor schools post admission under the quota? Specifically in terms of inclusion.
6. Is there a way of reducing the extra costs parents are incurring while ensuring that it is a feasible move for the government?
7. Is there any possibility to have CSO-government partnerships to fill in the implementation gaps of Section 12? Explain.

QUESTIONNAIRE – SCHOOL MANAGEMENT

1. When was Section 12 of RTE applied in the elementary section?
2. What were the policy challenges faced in its implementation?
 - a. Reimbursement/Finances
 - Is there a lack of reimbursement? (Not equal to fees charged per general student) Yes/No
 - Are the following charges covered under it? – Uniform, Stationery, ECA/Other activities
 - What are the challenges faced in this regard?
 - b. Sudden implementation of the Section – Yes/No
 - Without clear and proper guidelines from the Education Department – Yes/No
 - Were any pre-requisite measures taken by the government before implementation? Yes/No
 - A decision made without consulting education experts – Yes/No
 - Other reasons
 - c. Were there any design gaps?
 - d. What other kind of problems was faced in dealing with government officials during implementation?
3. Are there any regulatory mechanisms proposed by the government for execution of the scheme? Yes/No
If yes, what are these mechanisms?
4. Were there any fears expressed by the PTA (and parents of General Category students) in terms of execution? Yes/No
 - a. If yes, from which factors/fears does this pressure stem?
 - b. If no, please mention if there are any other pressures/factors
 - c. What were the measures taken to mitigate these fears?
5. Has Section 12 overburdened teachers in the primary section? Yes/No
6. Would you like to give suggestions for the successful implementation of the Section?
What would be the hurdles to implementing these suggestions?
7. Were any extra measures taken to increase inclusivity or reduce the extra payments made by EWS/DG Category parents?
If yes, what was the annual cost incurred for the same?

Appendix 2 - Inclusivity Index

The Inclusivity Index, as mentioned in methodology, is based on the responses taken from teachers on seven parameters defined (their views, perceptions and observations of EWS/DG Category students and student interaction with their peers as well as their performance).

TEACHER'S PERCEPTION

School	Should Admissions be based on merit?	Does the 25% Quota negatively influence class performance?
	No:1 Yes: 0	Strongly Disagree : 1 Partially Disagree : 0.75 Neutral : 0.5 Partially Agree : 0.25 Strongly Agree : 0
School A	1	1
School B	1	1
School C	1	0.5
School D	0	0.75
School E	0	1
School F	0	0
School G	1	0.25
School H	1	1

UNDERSTANDING LANGUAGE AND CONTENT

School	Do students understand the language used for teaching?	Do students face difficulty in completing classwork?	Do students understand what is being taught (subject content) in class?	How often do they commit errors in their classwork and homework?
	Always: 1 Sometimes: 0.67 Rarely: 0.33 Never: 0	Never: 1 Rarely: 0.67 Sometimes: 0.33 Always : 0	Always:1 Sometimes: 0.67 Rarely:0.33 Never:0	Never: 1 Rarely: 0.67 Sometimes:0.33 Always :0
School A	0	0	1	0
School B	0.67	0.33	1	0.33
School C	0.67	0.33	1	0.67
School D	0.67	0.33	0.67	0.33
School E	0.67	0.67	0.67	0.33
School F	0.67	0.33	0.67	0
School G	0.67	0.33	0.67	0.33
School H	1	0.33	0.67	0.33

PARTICIPATION IN CLASS, SEEKING HELP AND SPATIAL DIVISION OF CLASSROOM

School	Are they able to answer the questions asked by you?	How often do they voluntarily participate in inter-class competitions?	Do students hesitate to ask for your help whenever they have problems?	How does their seating arrangement work?
	Always: 1 Sometimes: 0.67 Rarely:0.33 Never:0	Always: 1 Sometimes: 0.67 Rarely:0.33 Never:0	Never: 1 Rarely: 0.67 Sometimes:0.33 Always :0	Mixed seating in rotation:1 Mixed seating but fixed:0.67 Separate seating in rotation: 0.33 Separate seating and fixed:0
School A	0.67	1	1	1
School B	1	1	0.67	1
School C	1	0.67	0.67	1
School D	0.67	1	0.67	1
School E	0.67	1	0.67	1
School F	0.67	1	0.67	1
School G	0.67	0.67	0.67	1
School H	1	0.67	1	0.67

PEER-TO-PEER INTERACTION AND STUDENT'S PERFORMANCE (2 TABLES)

Table I

School	Are EWS/DG Category students being neglected or hurt by their classmates?	Have you seen them sitting/mingling/ talking with students of General Category?	Do EWS/DG Category students feel alienated?	How often do you do assignments/ projects with other classmates?
	No:1 Yes:0	Yes:1 No:0	No:1 Yes:0	Always: 1 Sometimes: 0.67 Rarely: 0.33 Never: 0
School A	1	1	1	1
School B	1	1	1	1
School C	1	0	1	1
School D	1	1	1	1
School E	1	1	1	1
School F	1	1	0	0.67
School G	1	1	0	1
School H	1	1	1	1

Table II

School	Do Non EWS Category students involve students admitted under Quota in sports?	On an average, how would you grade their academic performance?	What is there participation level in sports and Extra Curricular Activities?
	Always :1 Sometimes: 0.67 Rarely:0.33 Never:0	Excellent: 1 Very Good: 0.75 Good: 0.5 Average:0.25 Poor:0	Excellent: 1 Very Good: 0.75 Good: 0.5 Average:0.25 Poor:0
School A	1	0.75	1
School B	1	0.75	0.75
School C	1	0.5	0.5
School D	1	0.5	0.5
School E	1	0.75	0.75
School F	0.67	0.25	0.5
School G	1	0.5	0.75
School H	1	0.75	0.75

TOTAL SCORE FOR EACH SCHOOL ON ALL THE PARAMETERS

SCHOOL	TOTAL SCORE (Out of 7)	INDEX (NORMALISED SCORE)
SCHOOL A	5.96	0.85
SCHOOL B	5.6725	0.81
SCHOOL C	4.8925	0.69
SCHOOL D	4.55	0.65
SCHOOLE	5.01	0.71
SCHOOL F	3.6355	0.51
SCHOOL G	4.56	0.65
SCHOOL H	6.1675	0.88



FOOD AND CIVIL SUPPLIES

Too Many Mouths: Investigating Leakages in Delhi's Public Distribution System

Ria Goyal, Trisha Pande and Utsav Kedia

EXECUTIVE SUMMARY

The leakages that abound in Delhi's Public Distribution System (PDS) pose a significant threat to the food security of over 72 lakh individuals. This paper attempts to find ways to minimise any such leakages in the PDS at the ground level, where subsidised food is sold to beneficiaries through 2,265 Fair Price Shops (FPS). The National Food Security Act of 2013 (NFSA) attempted to rectify the PDS by introducing various reforms. Firstly, it created income-based criteria for selecting beneficiaries, while simultaneously leveraging Aadhaar linkage to weed out ineligible or non-existent beneficiaries. Secondly, the NFSA also mandates state governments to appoint a State Food Commission and to set up grievance redressal systems in order to regulate the PDS. However, these regulatory bodies have been unable to enforce the proper functioning of FPS, while Delhi's PDS remains overburdened with beneficiaries.

Besides unfamiliarity among beneficiaries, an immediate switch to a Direct Benefit Transfer (DBT) scheme may not resolve concerns such as ability of transferred subsidy amount to adjust to the highly volatile food prices. Through remedial measures which are focused at fixable faults in PDS, the government can strengthen the efficacy of its efforts to plug leakages in the existing system. The study consists of a broad survey of FPS across two circles of Delhi; followed by an in-depth case study analysis of another, single FPS. The study also includes interviews with officials of the Food Corporation of India (FCI), the Delhi State Civil Supplies Corporation and the State Food Commission (SFC).

During the study a large number of FPS were found to be functioning improperly by not displaying government-mandated information and remaining closed during their scheduled hours of operation. This paper asserts that this is due to these shops being economically unviable, and recommends that the Delhi Government act on this by establishing stricter selection criteria for FPS ownership and by establishing a ration card portability system.

Furthermore, the study points out a lack of transparency and accountability in the PDS, mainly caused by the Vigilance Committees' state of disrepair, and by a lack of public awareness about the established grievance redressal system. The Delhi Government should revive the Vigilance Committees by enforcing attendance requirements, while also making them more transparent by beginning to regularly post meeting minutes from each circle's Vigilance Committee on the Department of Food and Supplies' website. Moreover, the Delhi Government can take concrete steps toward increasing awareness of the grievance redressal system by making the relevant information more visible to PDS beneficiaries.

KEY FINDINGS

1. FPS in Delhi function inadequately due to low profit margins. 60% of reviewed FPSs were closed during hours of operation, while only 15% properly displayed the government-mandated information for beneficiaries.

2. The FCI's quality analysis procedure is of insufficient scale and is unable to ensure adequate quality of food supplies. As a result, 54.5% of beneficiaries expressed extreme dissatisfaction with the quality of the grain they acquire from their FPS.
3. The state's internal Grievance Redressal Mechanism is ineffective because of jurisdictional overlap between regional Food Security Officers and Assistant Commissioners. Moreover, only 24.25% of beneficiaries were aware of the Public Grievance Redressal System's (PGRS) existence.
4. Vigilance Committees are defunct due to a lack of initiative on behalf of the state and because attendance to committee meetings is low.
5. Errors of inclusion persist in the PDS. It was discovered that many beneficiary households were availing of the PDS despite earning more than INR one lakh per year.

Introduction

Malnutrition in India

Undernourishment in India is a problem of immense scale to the extent that India now houses around a quarter of the world's undernourished population. The numbers are staggering: as of 2016, 194.6 million people in the country (about 15.2% of the population) were undernourished. Currently, India fares poorly on the Global Hunger Index, as it ranks 97 of 118 countries in terms of its under-5 child mortality rate (40.5 deaths per 1000 infants); and the fact that a high proportion of its population is undernourished. (India Food Banking Network, 2011)

Food insecurity is a severe problem in poor, primarily rural states, such as Madhya Pradesh. However, the problem of undernourishment in majority urban states/Union Territories such as Delhi NCT cannot be ignored because unlike vulnerable households in rural states, urban poor are

purely reliant on cash income and food security schemes to meet their nutritional needs. In fact, as of 2015-2016, 12.8% of women and 17.7% of men had a below normal Body Mass Index (BMI), which is a general indication of an individual's nutrition and is valued normally at 18.5kg/m². This goes to show that without the state's help, individuals cannot meet their caloric requirements at present. The TPDS helps supplement their food consumption so that their nutritional intake is higher than it normally would be (Bhaskar, Deokuliar and Menon, 2015).

The Evolution of the Targeted Public Distribution System

Since malnutrition and hunger have been inextricably linked with India's history since the colonial era, it is natural that the British Government introduced the PDS very early on. It has existed since the time of World War II to counter the effects of inflation and food shortage through wartime rationing. It was then further expanded in the 1940s

with the onset of crises such as famines in many parts of the country. However, during this time rationing was restricted to urban centres, mostly those that had a population of more than 100,000 people. In 1947, following Partition, India lost some of its major food producing land tracts. Moreover, in 1964-65 India faced a series of droughts, and the resulting food shortage increased its dependency on food imports from the USA to a large extent.

However, the Green Revolution and the resultant self-sufficiency in food grains shifted attention towards the fair procurement of grain from farmers, the stabilisation of market prices, the maintenance of adequate buffer stocks, and the distribution of essential commodities to the poor. Additionally, The Food Commission of India (FCI) was set up in 1965 to facilitate the handling of food grains. In 1984, the Government of India (GoI) set up the Ministry of Food and Civil Supplies, and in 1992 a Revamped Public Distribution System (RPDS) was implemented. The PDS was meant to distribute food grains in economically vulnerable regions such as drought prone areas and integrated tribal development projects. But despite its focus on disadvantaged areas, it was not very effective due to gaps in implementation. Thus, in 1997 the GoI introduced the TPDS, under which it identified the Below Poverty Line (BPL) population in each state and provided them with highly subsidised food grain. In this way, the TPDS was meant to provide subsidised grain to 'poor in all areas' unlike the RPDS, which was meant for 'all in poor areas' (Planning Commission Report, 2005).

Then, in 2013, the GoI passed the NFSA, which brought about certain changes in TPDS.

For example, it abolished the BPL and APL categories, and also envisaged certain reforms, which will be discussed subsequently.

The National Food Security Act, 2013

The National Food Security Act 2013 aims to provide adequate food and nutritional security to the most vulnerable sections of society at affordable prices. This section covers some salient features of this Act with respect to specifically the Public Distribution System.

Section 9 of the Act specifies the percentage of the population to be covered under the Act as 75% of the rural population and 50% of the urban population.

Section 10 says that, based on its population, each state is required to formulate an eligibility criteria for households who are to be covered under this Act.

Chapter 6, Section 13 aims to empower women in the family by issuing the ration card in the name of the eldest female of the household.

In Delhi, all households with a yearly income of less than INR one lakh per year are entitled to receive ration at subsidised rates from FPS. These households are further divided into three categories based on their income levels:

- a) **Priority Households (PR):** These households receive four kilograms wheat and one kilogram rice per person per month at the subsidised rate of 2 and 3 rupees per kilo respectively.
- b) **Priority Households with Sugar (PR-S):** In addition to the PR entitlements to wheat and rice, these households receive six kilograms sugar per card per month at INR 13.5 per kg.

- c) **Antyodaya Anna Yojana (AAY):**
This scheme, started in 2002 by the government, covers the poorest of the poor households. Each household under this category receives 25 Kilograms of wheat, ten kilograms rice and six kilograms of sugar per month per card, at the same prices as PR and PR-S households.

Table 1: Category-wise entitlement for June 2017

S No	Commodity	Category	Quantity
1	Rice	AAY	10 kg/Per Card
		PR	1 kg/Member
		PR-S	1 kg/Member
2	Sugar	AAY	6 kg/Per Card
		PR-S	6 kg/Per Card
3	Wheat	AAY	25 kg/Per Card
		PR	4 kg/Member
		PR-S	4 kg/Member

Source: Delhi Food Security Portal

Chapter 1 details that Government procures grain through its minimum support price operations. This stock of grain procured and stored by the Food Corporation of India (FCI) is then used for distribution under the PDS and for price stabilisation activities of the government. It is the responsibility of the state government to ensure that the grain for PDS is delivered to the FPS from the FCI godowns. In Delhi, this function is performed by the Delhi State Civil Supplies Corporation.

In chapter 5, The NFSA further suggests reforms to the existing Targeted Public

Distribution System. These reforms include end-to-end computerisation, Aadhar linked unique identification and the introduction of schemes such as cash transfers or coupon systems. It also recommends that preference for FPS licensing be given to local bodies, co-operatives and self-help groups.

Table 2: Major reforms in TPDS after NFSA

	May, 2014	Dec,2016 (as on 06.12.2016)
Fair Price Shops automated	5,835	176,835
Digitisation of ration cards	75%	100%
Aadhaar seeding of ration cards	2%	71.13%
Online allocation of foodgrains started	9 States/UTs	29 States/UTs
Supply chain computerised	4 States/UTs	19 States/UTs
Toll free numbers/online grievance	25 States/UTs	36 States/UTs
Direct Cast Transfer in PDS launched	Nil	3 UTs

Source: Press Information Bureau, 26 December 2016

Chapter 7, Section 14 of the NFSA mandates the setting up of a grievance redressal mechanism, which may include call centres and helplines. A District Grievance Redressal Officer (DGRO) has to be appointed by the State Government for each district.

Section 16 mandates that the State Government set up a State Food Commission (SFC) that is adequately

representative of women and Scheduled Castes and Classes. The SFC is meant to monitor and review the implementation of this Act.

Chapter 11, Section 27 requires all TPDS related records to be placed in the public domain. It also necessitates periodic inspection of the FPS by the competent authority, which in Delhi's case is the FSO or the Inspector of the Circle in

which the FPS is located. Furthermore, Section 27 calls for the setting up of Vigilance Committees at the FPS, district, block and state levels. These committees have an advisory role and are meant to regularly supervise the implementation of schemes under this Act. They are supposed to submit their reports to the DGRO's office in case of any malpractices, misappropriation of funds or violation of provisions of this Act.

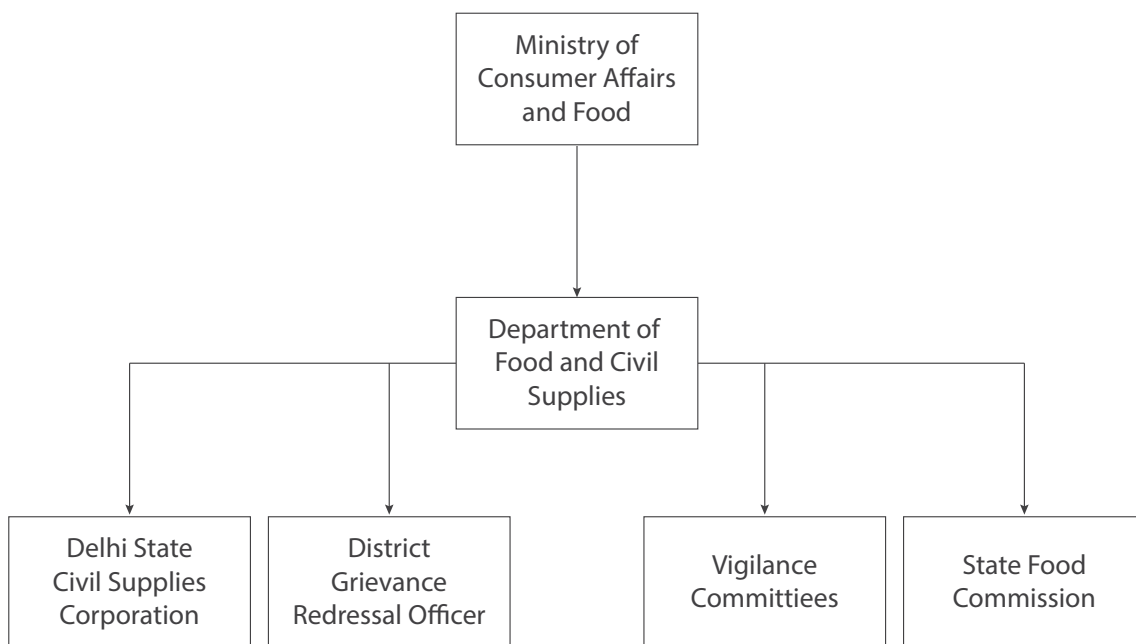


Fig 1: Flow chart depicting authorities involved in the Public Distribution System

The TPDS Control Orders of 2001 and 2015, as well as the Essential Commodities Act of 1955 and the Aadhaar Act of 2016 supplement the NFSA to ensure proper functioning of the Public Distribution System. For example, the Aadhaar makes it mandatory for all beneficiaries to have their Aadhaar numbers seeded into the ration card, in order to avail ration. It is a prerequisite functionality to the electronic Point of Sale machines at the FPS.

Methodology

The research conducted in this study consisted of three sections:

1. A broad study of FPS, conducted across two sample circles in order to gauge their functionality at the ground level.
2. Case studies on two FPS, one located in ChandniChowk (Circle-20) and the other in Sangli Mess, New Delhi (Circle-40).
3. Interviews with officials of the SFC, FCI, and DSCSC.

Broad Study

The researchers chose the Malviya Nagar and Shahdara circles as they represent a great difference in standard of living, Malviya Nagar being a relatively high-income area, compared to Shahdara. Furthermore, while the Malviya Nagar circle is centrally located, the Shahdara circle lies in the outskirts of the city.

The broad study in Malviya Nagar covered the areas of Kalu Sarai, Adhchini, Masjid

Moth and Gautam Nagar, while in Shahdara it covered Shahdara, Bihari Colony and Seemapuri. This broad study was conducted in order to understand how many shops were open during working hours, how many provided the requisite quality and quantity.

Within each circle, the study randomly selected ten stores per circle from the list provided on the Delhi's National Food Security website. The stores were visited in order to conduct a questionnaire that focused on the store's weekly days of operation, the timeliness of grain delivery by the state, the frequency of inspections by the FSO, etc. A detailed list of questions is available in the Appendix.

Case Studies:

360° ANALYSES

In order to better understand the functioning of a Fair Price Shop and further delve into the issues highlighted by the broad study, a different FPS was selected for a 360° Analysis. This study selected a store in Majnu ka Tila, Chandni Chowk (Circle-20) due to the fact that it had a normal amount of beneficiaries and that a relatively large portion of them were of the AAY entitlement category.

This 360° Analysis consisted of a questionnaire, administered to 33 of the store's beneficiaries, which focused on determining the exact quantities and qualities of food supplies they received as well as on gauging their awareness and experience of the State's Grievance Redressal System.

The 360° Analysis also consisted of a questionnaire administered to the storeowner in question in order to approximate his average monthly profit, as well as the timeliness and quality of the grain that they receive. The questionnaire gathered data on how much the owner spends on rent, electricity, labour, and other miscellaneous costs.

E-POS ANALYSIS

In order to investigate the implementation and actual functionality of the e-PoS system, a single FPS in New Delhi (circle-40) — one of the 42 FPS outfitted with the system, was included in the study. A questionnaire modelled on the format of the broad study was directed at the storeowner, however it additionally inquired as to the efficacy of the e-PoS machine and the process and costs associated with its instalment. This case study also consisted of interviews with five of the FPS's linked beneficiaries in order to understand the exact problems they might be facing in using the e-PoS system.

Interviews with Government Officials

BROAD STUDY INTERVIEWS

The broad study included qualitative interviews with the FSOs of both the Malviya Nagar and Shahdara circles. These interviews were conducted at circle offices of the respective FSOs. The main aim of these interviews was to understand the FSO's method of inspecting an FPS and to understand the sort of punitive measures

taken against non-compliant storeowners. Additionally, the interview gauged the justification offered by shop owners for missing grain, the process behind how the report from the FSO's office is disseminated to different offices, the sort of complaints filed against shop owners and how the FSO's office attends to them, and the process of obtaining a ration card.

360° ANALYSIS INTERVIEWS

The 360° Analysis aimed to gain a comprehensive understanding of the government's role in the procurement, storage of grain and its delivery to the particular FPS. Another goal of the analysis was to understand the process behind the state's internal Grievance Redressal System, which consists of complaints made directly to the office of either the circle FSO or the Assistant Commissioner. Therefore, the following interviews were conducted with selected public entities:

- The FSO and Circle Inspector for Chandni Chowk circle: The interview delved into the exact nature of the infractions perpetrated by store owners and any penalties that were brought down upon them in the past year. Furthermore, efforts were made to track the status of an application submitted by one of the FPS's beneficiaries.
- The Quality Analysis Cell at the FCI godown in Shakti Nagar: This go down stores and validates the grain that is ultimately delivered to the FPS in question. This interview tried to understand the godown staff's exact methods of grain storage and its quality analysis process.

- The manager at the DSCSC office in Shakti Nagar: This office which is neighbouring the FCI godown. The interview contained questions regarding the process of transfer of food grain from the FCI to the DSCSC. It also inquired as to the possible penalties imposed upon delivery truck drivers
- The Assistant Commissioner in charge of overseeing all FPSs in the district: While the interview was more general in nature, it also continued to track the status of the complaints previously asked about at the circle FSO's office.

STAKEHOLDERS INTERVIEWED FOR THE 360 DEGREE ANALYSIS

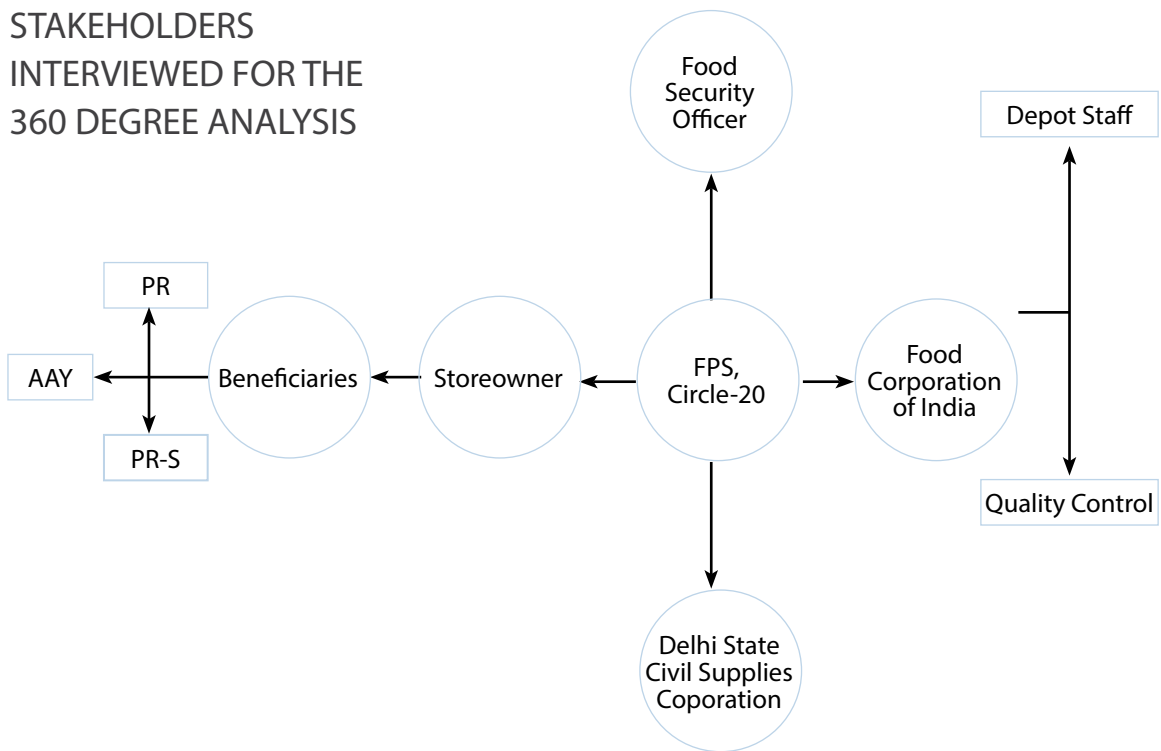


Fig 2: Representation of stakeholders interviewed for the 360 degree Analysis

Limitations

Limitations encountered while conducting research were related to the following:

- The Delhi NFS website displays incorrect information on the location of a few FPS. Some of the stores selected for the study had to be replaced with those we were able to locate successfully.
- Certain storeowners were unwilling to speak to us, which necessitated that we replace them with more cooperative participants.
- A large number of FPS were found closed, which reduced the number of interviews from which data was drawn.
- The beneficiaries' reliance on the FPS owners for food grains made them reluctant to speak freely, for fear of endangering their supply of food.

Literature Review

The history of why government-sponsored help is needed with respect to the public Distribution System in India is extensive. As Bhaskar Majumder explains in *Political Economy of Public Distribution System in India*, the government was entrusted with the production, supply, distribution and trade of essential commodities owing to the Essential Commodities Act of 1955. The rationale behind the legislation was that India did not wish to rely on external sources for food grains, so it opted to source them locally — meaning that the government could buy it from farmers at a minimum support price — so as to ensure that local farmers procured income, and that grain got distributed to needy households. The main target of the PDS in India is availability of foodgrains at affordable rates, so that the rate of malnourishment and hunger can be reduced. India continued to face crippling food

crises through '50s and '60s. Scholars such as Subbarao and Radhakrishnan pointed to targeting failures as the cause for continued inaccessibility to food security.

The methodology of this policy brief combines the approaches of researchers such as Reetika Khera and Nandini Nayak, with those of organisations like Rozi Roti Adhikar Abhiyan, and SEWA. Nandini Nayak and Shikha Nehra of Ambedkar University, Delhi, explore the role of NFSA 2013 in increasing the ease of access to foodgrains for beneficiaries. Their research methodology consisted of interviews with 320 beneficiary households in different districts of Delhi. The Rozi Roti Adhikar Abhiyan took a different approach by auditing roughly 10% (221) of the ration shops in Delhi. The difference between the two methodologies lies in their respective areas of investigation — the former explores the PDS issue from the beneficiary's perspective; and the latter understands it by visiting fair price shops and identifying problems in their functioning. This paper attempts to combine the two by interviewing both FPS owners and beneficiaries, in order to get a comprehensive view of the TPDS at the ground level.

Existing Problems Identified under TPDS

- In the audits conducted by the Rozi Roti team, they found that 61% of the shops were closed during working hours. This highlights the first step of the problem which beneficiaries face when it comes to accessing grain — that they find the shop shut. Moreover, their report revealed that 0% of shops audited displayed the complete information regarding grievance redressal.

This is part of a larger problem wherein beneficiaries do not know how to make a complaint even in serious circumstances. (Delhi Rozi Roti Adhikar Abhiyan and Satark Nagrik Sangathan. March 2017)

- Furthermore, Nayak writes that 48% of the beneficiaries had at least one name missing from the ration card due to errors of exclusion, and 44% reported that anywhere between one-four members did not have their names on the ration card (Nayak and Nehra 2017). Due to these facts, this policy brief explores whether there was a link between errors of exclusion and grain being illegally diverted towards the open market.
- Under a research project in Delhi headed by Khera it was found that 34% beneficiaries of a particular FPS were unable to avail their rations since the new e-PoS system had been installed. (Kashyap, Shagun and Aditi Priya, 2016) The economist Jean Dreze has written about how the implementation of these new technologies is a process that requires extreme precision and is hard to get correct, as a result of which extremely poor households in Delhi end up getting excluded and losing out on their food grains. This policy brief takes these considerations into account and has explored the feasibility of the mass implementation of such a project across Delhi.
- The NFSA, 2013 lays out a comprehensive framework for establishing accountability and transparency at the ground level. Section 15 stipulates the designation of a District Grievance Redressal Officer (DGRO) to implement the timely redressal of complaints and to ensure beneficiaries their entitlements. However, the Delhi

government was late in creating this important, regulatory position, while a lack of awareness within the government has rendered the SFC immobile. A report by the Comptroller Auditor General of India (CAG) details that, in one out of two of the districts tested, the Delhi government had only assigned a DGRO in June 2015; two years after the NFSA's passage. (Comptroller Auditor General of India, 2015) Moreover, the report by the Delhi Rozi Roti Adhikar Abhiyan states that, even as late as March 2017, the Additional District Magistrates (ADM) of four districts were unaware that the Delhi Government had designated them as the DGROs for the districts in which they were active as per an order passed in 2014. This jurisdictional confusion repeats itself in the instance of the Delhi Public Grievance Commission (PGC), which the Delhi government delegated to fulfill the role of the SFC. Indeed, the PGC was unaware of its role of receiving complaints and appeals under the NFSA.

- The reduced role of the SFC and DGROs threatens the accountability that the GR system brings to the PDS because there is no supervising body to regularly monitor the State's internal Grievance Redressal System, which consists of a helpline number and complaints made directly to either an FSO or AC. Without a dependable link between the SFC and the State's internal GR, there is no guarantee that any internally made complaints that are not answered in a timely manner will be furthered to the DGRO or SFC for effective redressal. This also prevents an assessment of the functioning of the internal GR mechanism itself, which this paper attempts to do.

- Such a break in the relay of information from the ground level to the SFC is also evident in the state’s Vigilance Committee, which is a vital link between beneficiaries and members of the administration, comprising of the MLA, FSO and five prominent, representative members of the public. The CAG report indicates that in 2015, Vigilance Committees were still not operational in Delhi. Currently, minutes of the Committee’s June meeting show that it did not discuss an agenda due to a “lack of numbers”, as only the FSO and one member of the public were present. Currently, there exist no state guidelines on attendance at Vigilance Committees.
- The Delhi Department of Food and Civil Supplies also lacks full transparency in regards to the Vigilance Committee’s meetings, as it does not post a complete record of either the frequency or subject matter of the State’s Vigilance Committee meetings. Vigilance Committees have the potential to improve the administration’s knowledge about ground level problems in the PDS’s implementation, which begs the question as to why the Delhi Government has not made efforts to empower them.

It is questions like these that have been kept in mind while formulating this paper. In the absence of a well-functioning grievance redressal mechanism, it is hard to envisage a leakage-free PDS in Delhi. This is especially true considering the large violations of NFSA 2013 that go unreported and unexamined due to this lack of functionality of the grievance redressal mechanism.

Learning From Chhattisgarh’s COREPDS

Chhattisgarh’s COREPDS circumvents certain problems faced by the Delhi government in curbing leakages in its own PDS, such as a lack of e-PoS functionality and large errors of inclusion and exclusion. Since 2007, the Chhattisgarh Government has enabled introduced a swathe of reforms to the PDS by de-privatising the FPS network and making them more viable by providing soft loans for infrastructure and working capital. Most importantly, it introduced the COREPDS, under which beneficiaries could avail of subsidised food at an FPS of their choosing by using either their registered mobile number or a state-provided smart ration card. With the use of e-PoS machines at each FPS, connected to a local database, all transaction data is collected online and made public. Unlike in Delhi, where FPS receive monthly shipments based on a pre-allocated amount, Chhattisgarh’s FPS are resupplied if and when the store owner sells all their grain. Not only does this system of ration card portability incentivise better operation by store owners, it also greatly empowers beneficiaries in their transactions with FPS owners.

A study of ration card portability in Chhattisgarh’s PDS notes that, though only about 25% of beneficiaries use card portability, the measure has decreased annual leakages in the state’s PDS to as low as 5% by acting as a background threat to FPS owners. (Joshi, Sinha and Patanik 2015) Though the Delhi government has made efforts to computerise the PDS by linking beneficiaries’ transactions with their Aadhaar based identification, without portability these technological advancements fail to

effectively plug leakages at the ground level. To implement computerisation without portability leaves beneficiaries unable to avail subsidised food in the absence of a GPRS connection or electricity at any particular FPS (Rajan, Chopra, Somashekhar, 2016). These findings suggest that for the Delhi Government to curb leakages in a manner similar to that in Chhattisgarh requires more than a centralised database. Chhattisgarh's COREPDS contains lessons for the Delhi Government on establishing low-cost, effective alternatives to Aadhaar based de-duplication in beneficiary databases.

Evidence and Analysis

Based on existing research, the major issues and problems that were investigated over the course of this study on the functioning of Delhi's Public Distribution System have been detailed in this section.

Problems in Functioning of Fair Price Shops:

- As per an order issued on 6 December 2005 by the Office of the Commissioner: Food Supplies and Consumer Affairs in the Delhi NCT government, Delhi FPS are to comply by the following rules:
- To display information on the wall outside the FPS pertaining to:
 1. License – The name and number of the FPS authority letter
 2. Available stock as on date
 3. The price rates of available commodities
 4. Samples of the available sugar, wheat and rice
 5. Their timings of operation

6. Which day of the week the store will be closed
7. The procedure for making complaints, including the names and contact information for the relevant authorities with whom to do so.

- To remain open all through the month during the fixed hours of 9 AM to 1 PM and 3 PM to 7 PM They are only allowed to be non-operational for one fixed day in the week.

These regulations were imposed with the aim of improving the reliability with which Delhi FPS provide their services. They also enable beneficiaries to hold their FPS and other state authorities accountable for lapses in the quality and quantity of the food they avail of.

However, during the broad survey of FPS it was found that:

- Out of the 20 shops covered, 12 (60%) of the shops were closed even during the hours that the shops are supposed to be open. Most shop owners either opened the shop only on one day of the week for their convenience, or opened the shop in the mornings and disappeared after the lunch break period (1 PM - 3 PM).
- Of the 8 shops (40%), which were open, only 15% clearly displayed a board displaying the correct government-mandated information.
- About 57% of the shops had a complaint filed against them in the past – on grounds of either not opening the shop on time, or not supplying enough ration to a beneficiary.

- 28% of the shop owners had no contact with their DGRO (some seemed confused at the mention of the DGRO's designation), although 100% knew who their FSO was and met them regularly.

These findings indicate the inadequacies in the functioning of the Fair Price Shops. There is an FSO appointed for each circle, which is required to conduct regular inspections of all the FPS in his circle to ensure that they open regularly, display mandated information, and distribute grains in a fair manner. However, the findings from this research prove that these checks are either not done with due vigilance, or that inspectors are too lax in their inspections and are thus unable to enforce these regulations. This poses a problem for the beneficiaries, since the shops only open for a limited time on a limited number of days and the beneficiaries have to stand in huge queues to collect rations. Due to the non-display of information, beneficiaries are often ignorant as to the availability of rations and the process of registering complaints. In certain cases, the beneficiaries are not even aware of their entitlement, which makes them vulnerable to quantity fraud as the FPS owner sells them less grain than they are entitled to.

These conclusions were further corroborated by the case study that was conducted at an FPS in the high density, low-income locality of Majnu ka Tila:

- The FPS in question was found to open six days a week for only the first half of the day and would shut down at 1 PM. The interviewed beneficiaries also asserted that the FPS only distributed ration for a few days after the delivery of grain to the shop, and each card holder was required to collect

the ration by the 15th of the month, else forsake it.

- The boards containing requisite information were not displayed, with the result that 75.75% of the beneficiaries were unaware about the grievance redressal mechanism and how to contact the FSO or DGRO of their circle.
- Samples of food grains as prepared at the FCI godowns were also not displayed. Thus, the beneficiaries had no way of checking what kind of grain is supplied by the FCI. This led to a lack of accountability of the FPS owner not only in terms of the poor quality of wheat grain provided, but also in terms of quantity of food grain sold. As one respondent asserted, out of the four kilograms of wheat that she received from the FPS, about half a kilo was just stones and sand.

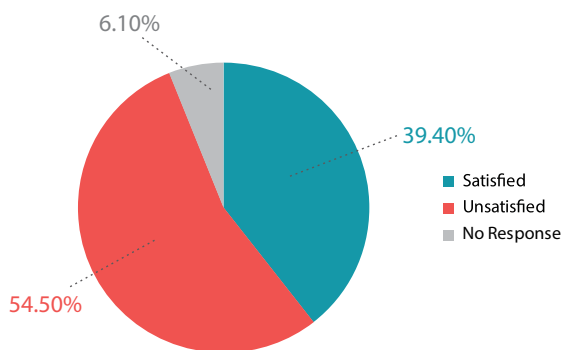


Fig 3: Percentage of households satisfied with quality of ration

- From the interviews of beneficiaries it was found that 36.4% people were receiving less grain than the amount they were entitled to. It was particularly so in the case of some AAY category card holders who were receiving only 20 kilograms of wheat as

opposed to the 25 kilograms that they are entitled to. Some ration card holders spoke of how they have entered into certain mutual agreements with the FPS owners, which allowed them to avail an extra kilo of wheat in place of their entitled rice allocation. However, we know that the government delivers only a fixed allocated quantity of grain to each FPS based on the number of ration cards that come under it and what their category-wise entitlements are. Such an agreement would beg the question of where the FPS owner gets that extra kilo of wheat he sells, and what is done with the kilo of unsold rice in place of which the wheat was bought. Another agreement they sometimes enter into entails the FPS owner selling wheat flour (*atta*) to the ration cardholders at a rate higher than that fixed by the government. However, selling flour in FPS shops is prohibited in Delhi

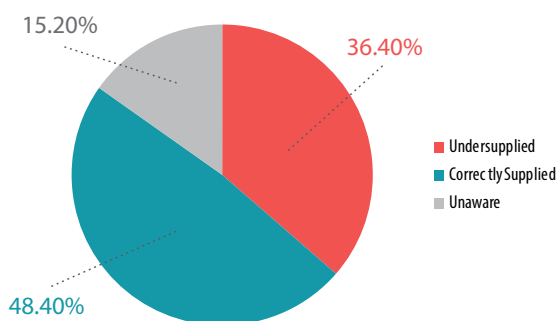


Fig 4: Households under-supplied in at least one-commodity

- Despite problems with relation to quality and quantity of grain supplied by the FPS, majority of the beneficiaries also said that they would not go to the FSO with their complaints because they believe complaints need to be made collectively and if an

individual makes a complaint by herself, there is a possibility that the FPS owner will stop their ration altogether. Ration cardholders also reported that the FPS owner is not receptive to their problems and shouts at them when they complain about the grain quantity or quality.

Low Economic Viability of Fair Price Shops:

One of the major reasons why the FPS does not function as per Government regulations is because of lack of incentives for their owners.

- 100% of the FPS owners interviewed in the broad study stated that their store’s profit margins were insufficient. Most of them reported that after subtracting their expenditure on rent, electricity and labour all that they had left was about INR 3,000-4,000 per month.
- The low commission rate of 70 paisa per kg, provided by the government was a major reason behind these low profits.
- A concrete example of the financial problems associated with FPS ownership was found at a store in Kalu Sarai, which falls in Malviya Nagar circle. An interview with the storeowner yielded that the store did not have sufficient funds to pay for electricity or to repair its roof, which the landlord had torn down.

- Besides the low commission, another reason for low economic viability could be the fact that there exist huge differences in the number of ration cards allocated to different Fair Price Shops. For example, while

conducting this research the shop with the greatest number of allocated ration cards was found to be in the Shahdara Circle with 950 Ration Cards, while the shop with the least number of ration cards was found in the Malviya Nagar Circle with only 36 ration cards. The more households an FPS supplies, the more commission they earn, and so the economic viability of a shop is positively linked to the number of ration cards allocated to it.

To get a better understanding of the economic viability aspect of this problem, an analysis was done of the one shop in Majnu ka Tila that was chosen for the case study. It had a total amount of 569 ration cards allocated to it.

- As per the National Food Security site of Delhi, the amount of grain allocated to this FPS as of June 2017 was 92.88 quintals of wheat, 25.32 quintals of rice, and 8.1 quintals of sugar. Therefore, total quantity of allocation equals 126.3 quintals.
- Assuming that this entire amount was delivered to the FPS and bought by the beneficiaries, the total amount of commission earned by the owner can be calculated to be INR 8,841.
- Taking into account the cost of operation that the owner of the FPS incurs in terms of the rent of the shop which is INR 1,500 per month, wages of labour employed which amounts to INR 4,000 per month, and the cost of electricity which is about INR 200 per month, his maximum profit margin for the month of June only amounts to INR 3,141 for June.
- Despite the fact that the quantity of

allocation differs across months, this difference is negligible and the profit margins stay within the range of INR 3,000- INR 3,500 per month.

These findings give us a greater understanding of why there is a lack of motivation on the part of FPS owners to open their shops regularly as per government mandate, and

Table 3: Average monthly costs of the FPS

Monthly Value	Amount (INR)
Revenue	8,841
Rent	1,500
Electricity	200
Labor	4,000

engage in fair distribution of food grains.

INEFFICIENT GRIEVANCE REDRESSAL MECHANISM

- As stated earlier, as per results of the case study, 75.75% of beneficiaries were unaware about the process through which they could make their grievances heard.
- Majority of the beneficiaries were also unaware about who the Food Supply Officer of their circle, and DGRO of their district was.
- There was hesitance and fear on the part of the people to actually register complaints even if they knew how to do so. This was due to the lack of a platform, which allows for collective discussion of grievances and complaints.

- The Vigilance Committees, which are supposed to review the functioning of PDS at the ground level and submit their reports to the DGRO, are largely defunct and plagued by absenteeism of members. They are not being held regularly on a quarterly basis as mandated by the TPDS Control Order 2001.
- During the duration of this research, an attempt was made to trace the trajectory of one particular complaint through the grievance redressal mechanism, however the authorities involved which included the FSO's and the DGRO's office redirected the responsibility of addressing the complaint to each other. Thus we see that the overlapping nature of functions of

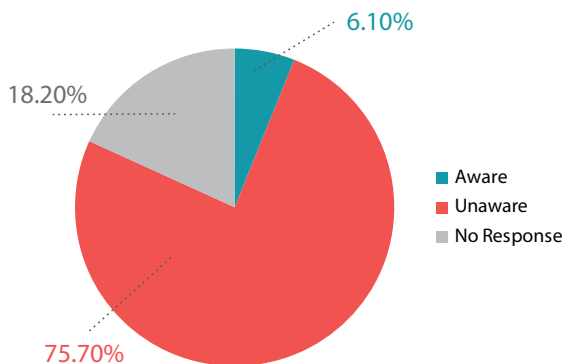


Fig 5: Percentage of beneficiaries aware about the Grievance Redressal System

different authorities results in diffusion of responsibility and weakens the system.

Inadequate Quality

- 54.5% of the beneficiaries interviewed expressed dissatisfaction with the quality of wheat distributed by the FPS in question. Indeed, some claimed to have refused their monthly allocations of wheat

on multiple occasions, stating that it was of unusable quality. Interestingly, despite this, the closing balance of the FPS in question has always been nil at the end of every month for the past year as per the data available on the Food Security site of the Delhi Government.

- The FCI godown at Shakti Nagar effectively implements the stringent guidelines for quality analysis. The Quality Analysis Cell puts every consignment of grain received through a sampling process before accepting its delivery.
- DSCSC officials stated that there exist severe penalties for individuals or parties that attempt to pilfer the grain or attempt to tamper with its quality. The nature of the penalties appears to be an effective deterrent against the redirection of food grain by the FCI staff or the DSCSC's truck drivers.
- Over the previous year, (10 May 2016–10 June 2017), The DSCSC consistently delivered the right quantity of food grains in a timely manner to the FPS in question. This shows that the delivery process is relatively leakage free.

Considering these facts, one of the few remaining, possible sources of leakage is related to the scale of the FCI's sampling method. As per a dispatch by the BIS Technical Committee, the sample lot shall be a "stated proportion into which the consignment has been divided for evaluation of quality." Once multiple consignments of grain are stacked together in the godown, a composite analysis is conducted of only one of the three samples taken from different

consignments within the stack. The non specific nature of the 'stated proportion' for lot sampling, and the low number of selections made during stack sampling, reveals that the FCI's method for quality analysis is of an insufficient scale.

Errors of inclusion and exclusion:

- As per Chapter 4 Section 9 of the NFSA 2013, Delhi has a fixed quota of ration card allocation of about 72.8 lakhs. Currently this quota has been filled and so the Government has put all pending ration card applications on hold. Due to this, many eligible households now find themselves excluded from the benefits of the NFSA 2013.
- These exclusion errors exist because of erroneous inclusion of ineligible households under the scheme. Over the course of the beneficiary survey it was found that many of them who had been eligible for the scheme at the time of getting their ration cards made, had now crossed the one lakh per year income bar, but were still being covered.
- Problems were also witnessed in the case of joint families who wished to get their ration cards separated, but that process would entail deletion and reissue of cards, which was highly unviable in light of the fact that the issue of new cards has now been put on hold. These joint families face a problem as their electricity consumption comes up to be more than two kw/month, and as per a notification issued by the Delhi Government regarding the eligibility criteria for inclusion in the scheme, households which consume more than two kw/month of electricity are not eligible to avail ration under PDS.
- Another source of exclusion has come up with the government installing electronic Point of Sale (ePoS) machines in order to facilitate digital transactions. These machines have been installed in a few FPS of Delhi on a pilot basis to ensure greater accuracy in targeting identified beneficiaries, and to increase transparency in distribution of foodgrains. They use the biometric thumbprint of the ration cardholder to link it to their Aadhaar number for identification. However, as per primary research conducted in one shop located in Mandi House of the New Delhi circle, it was found that poor e-POS machines may cause hindrances. Interviews with the FPS owner, and beneficiaries of that shop revealed that these machines often fail to register the thumbprint of the individuals, which results in great inconveniences for them in accessing their ration. When the ePoS machines fail to register their thumbprint, these individuals have to travel back and forth multiple times, and often cover long distances to collect their ration. The additional transportation costs accrued through this offsets the benefits they receive from the food subsidy. Manual workers who have calloused hands, kids and women with henna particularly, have trouble with this system of identification based on thumbprints.

Recommendations

Improving the Economic Viability of FPS

One of the major problems identified in secondary literature as well as observed

in primary research, is that of arbitrary decisions undertaken by the Fair Price Shop owner. These could be multifarious in nature — such as underselling (giving less quantity of grain than is mandated), overcharging (not following NFSA guidelines and demanding higher rates for the grain), selling or converting the food grains (bags of flour are sold at higher rates, even though the beneficiaries might want to avail wheat), not displaying the samples provided to them by the FCI, or closing the shop during working hours (often not opening it for more than one day a week, or only for the first half of the month). This leads to the diversion of grain towards the black market — either by the beneficiaries since they feel it is not fit for their consumption, or by the owner as observed through the researchers in their field analysis.

Having established the link between such behaviour and the FPS's low economic viability, this paper makes the following recommendations:

- Currently, the department only selects applicants on the basis that the FPS owner has a 12th grade education and prior experience operating a store. As per information provided by the Circle-20 FSO's office, an applicant must have a minimum of INR 50,000 in their bank account and their store must be at least 3 x 5 x 3 meters in dimension. While these ensure a modicum of selectiveness, the Government of the NCT of Delhi should make the process of allocation of FPS license more selective through:
 - a) Increasing the focus on allocating FPS ownership to consumer-cooperatives. The Delhi Government should increase

its efforts to actively seek them out and incentivise them towards ownership. While this measure does not address the storeowners' concern of insufficient profit margins, it can improve the functioning of the FPS by encouraging consumer participation. Cooperative ownership can improve the regularity with which the FPS remain open and reduce the pilferage of grain from the store as beneficiaries themselves have a stake in its successful delivery.

- b) Focusing the selection process on storeowners with pre-existing stores or those with the ability to supplement their revenue through the sale of products and non-SFA goods that are not covered under the ECA. As per the TPDS control order of 2015, FPS are allowed to sell non-SFA goods to supplement their income. However, out of the 20 stores visited during the broad study, only one store in Malviya Nagar circle was found to have an alternate source of income through the sale of non-SFA goods. Implementing such a measure could improve the profitability of FPS set up in the future by ensuring that accepted applicants have the ability and incentive to earn more than the insufficient commission, through their own efforts.

A commonly proposed solution to the FPS low economic viability is to raise the commission earned by the storeowner on each kilo of supplies sold. In fact, this commission had already been increased from INR 0.30 per kg to INR 0.70 per kg, prior to this study, to little benefit. Despite the increased commission, storeowners still claim insufficient profits and it is unlikely that a further, similar sized increase to it would sufficiently incentivise storeowners, especially considering the high

financial cost of doing so.

- A larger number of ration card holding customers can improve an FPS's economic viability. One way of achieving this, while at the same time incentivising the FPS owner to function effectively is the ration card portability system. This system would allow a ration cardholder to buy their food grain entitlement from any FPS in their circle. Such a system would encourage storeowners to improve their services, by fostering increased competition between FPS within the same circle.

Improving Accessibility

The Delhi Government's quota for issuing ration cards is for 7,277,995 individuals, but currently there are 7,273,259 linked beneficiaries. This level of ration card saturation has put the PDS under considerable strain. More importantly the Chandni Chowk circle FSO stated that this has prevented further applications from vulnerable households from being accepted. As of December 2016 there were 30,000 pending ration card applications in Delhi (Goswami, 2016). Based on the number of errors of inclusion witnessed during fieldwork (annual income was above the threshold), this paper makes the following recommendations:

- That the officials of the Circle Office should conduct door-to-door surveys in each circle on a bi-annual basis to weed out ineligible households who still avail of ration at subsidised rates. The survey would consist of inspection and interviews to identify households who hold ration cards despite being ineligible as per the Delhi Government circular titled,

"Guidelines for Identification of Eligible Households to Receive Food Grains at Subsidized Prices Under 'National Food Security Ordinance 2013'". Complete financial inclusion and Aadhaar linking of bank accounts will also ensure greater transparency to help weed out ineligible beneficiaries who have income greater than one lakh per annum. Such exclusion criteria as mentioned in the circular includes ownership of a light or heavy vehicle, household electricity connection of above two kw, and employment of any member of the household under state/central/local governments or any bodies or corporations that operate under the government.

- That the pilot phase for the e-PoS machines be extended, in order to better understand the problems to accessibility it poses before it is implemented across Delhi. Though the Delhi Government plans to install these machines across the state within the year, delaying the installation would allow the development of better connectivity and infrastructure that can support the functioning of e-PoS machines.

Improving Transparency

Having noted the under-used potential of Vigilance Committees to improve the administration's knowledge about ground level problems in the PDS's implementation, this paper makes the following recommendations:

- That the Delhi Government generates and enforces specific guidelines on attendance by members of the Vigilance Committee. It should set a minimum amount of meetings to be attended annually and also mandate attendance by at least one government

representative—either the FSO or the MLA. Regular attendance at Vigilance Committee meetings will allow the committees to better relay more information from the ground level and also to set more comprehensive agendas to act upon.

- That the Delhi government begins to post the minutes of Vigilance Committee meetings from all circles with increased regularity.
- Considering the numerous instances of incorrect information published on the Delhi Food Security Portal regarding information on FPS and the commodity-wise allocation made to them, this paper recommends that the Delhi Government increase the frequency with which it updates such information. Doing so would be a successful move towards the goal of end-to-end computerisation as outlined by Section 12 of the NFSA. This would not only decrease the chances of diversion of food grain to the open market, but would also aid any future studies and audits of the end-to-end computerisation of the PDS.

Improving Accountability

- That the Delhi government revive the Grievance Redressal Mechanism by doing the following:
 - a) Posting any information that is required about an FPS not only on the wall of the FPS, but also on a few locations in a 500 metre -1 kilometre radius of the store. By posting the information that is required as per the Delhi Government's order on FPSs, the Delhi Government can enable beneficiaries to hold the FPS storeowners more accountable by ensuring that the

display of information is not left in the hands of the storeowner.

- b) Streamlining the internal grievance redressal system by resolving the jurisdictional confusion that is slowing down the processing of complaints. By clearly outlining a time bound, stage-wise system for the passage of complaints, from the FSOs office to the Assistant Commissioner's office, the Delhi government can make the GR system more efficient.
- That the FSO or Circle Inspector be made to conduct an inspection of each FPS in the circle within one week of the date of delivery of food supplies. This makes it possible for the inspector to better observe how the FPS conducts business, because the store will likely still have a large stock of leftover grain. Moreover, this gives the inspector an opportunity to meet the beneficiaries, a large majority of whom collect their food supplies within two weeks of delivery to the FPS.

An Alternative to PDS: Direct Benefit Transfer Scheme

The National Food Security Act 2013, under Section 12(h) calls for the introduction of schemes like cash transfers, which would be implemented in the states as per guidelines issued by the Central Government. Such a scheme would involve direct cash transfers from the government to the Aadhaar linked bank accounts of the beneficiaries. In August 2015, a notification was issued for Cash Transfer of Food Subsidy Rules, which stipulated that the DBT scheme could be implemented in identified areas after the concerned State Governments had given their written consent. Before

PROCESS FLOW FOR DBT

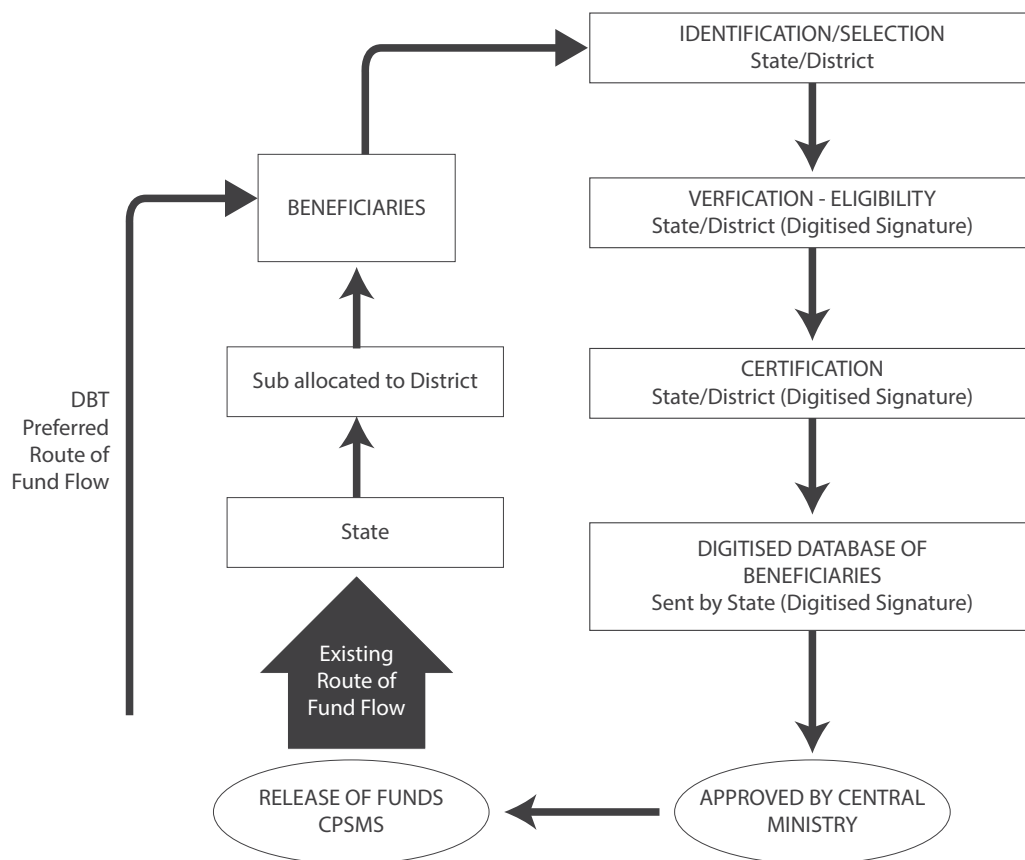


Fig 6: Process Flow of DBT

Source: PPT, Direct Benefit Transfer, Planning Commission, GoI

implementing this scheme, the states need to have a complete digitised and de-duplicated database of beneficiaries, and all the bank account details have to be merged with the Aadhaar numbers. So far it has only been implemented in the Union Territories of Puducherry and Chandigarh.

The prime aim of DBT is to plug the leakages that the PDS currently has due to which

the benefits of Government subsidy does not always reach those who need it the most. Its successful implementation would mean that people would be able to use the transferred cash to buy preferred quality of grain from the open market at market prices. It would also massively reduce government spending on the intermediate costs of storage, transportation, handling, and distribution of food grains. Digitisation of data and direct

transfer would ensure greater transparency and reduce exclusion and inclusion errors, which currently plague the Public Distribution System. However, at the current levels of technological and financial infrastructure in Delhi, it is hard to say if DBT for food security is actually feasible for Delhi.

The Shanta Kumar Committee Report 2015 recommended progressive replacement of the PDS with DBT. The Economic Survey 2015-16 claimed that the JAM trinity (Jan Dhan Yojana, Aadhaar and Mobile number) was the best way to achieve this. However, it also spoke about how the major challenge faced with respect to this, was getting the money from the banks to the people's hands (Economic Survey 2015-16, Chapter 3). India currently doesn't have the financial and institutional infrastructure to implement it without creating massive exclusion errors because the poorest people, especially those

living in rural areas will have great difficulties in accessing it. This is not just because despite the Government's Jan Dhan Yojana, not every person in the country has a bank account, but also because bank branches from where the individuals would have to withdraw their cash are not always accessible considering their limited numbers. As of 2015, there existed only 43,000 bank branches in the country compared to over five lakh Fair Price Shops. Besides this, it is also difficult to ascertain the correct amount of cash that should be transferred because in a scenario where the people would have to obtain food grain from the open market, they will certainly get exposed to the effects of inflation.

As per surveys conducted by the Central Government in 2016 in Chandigarh and Puducherry, 70% beneficiaries in Chandigarh, and 88% in Puducherry said that the amount credited to their accounts was insufficient to buy the Five kilograms of

Table 4: Pros and cons of a Direct Benefit Transfer Scheme

Advantages of DBT	Disadvantages of DBT
Will do away with leakages in PDS	Financial inclusion not complete
Better quality foodgrains become accessible	Difficult to ascertain how cash is actually utilised
Greater security in the form of hard cash in bank account	Bank branches limited and not as accessible as FPS
Saves intermediary spending on transportation, handling and distribution of foodgrains	Fluctuating market price; exposure to adverse effects of inflation

foodgrain that they are entitled to under the NFSA 2013 (Dash 2016).

A DBT scheme had also been implemented in Delhi for the first time in the form of Dilli Annashree Yojana in 2012. The Ministry of Food and Civil Supplies implemented it in collaboration with 18 major banks and the Unique Identification Authority of India. Under this, Delhi's two lakh BPL families were to receive INR 600 per month in the bank accounts of the eldest female of the household. This scheme failed and had to be withdrawn soon after its implementation because the beneficiaries were not receiving their full cash entitlements every month, and there were great exclusion errors in the absence of complete financial inclusion.

The Self-Employed Women's Association (SEWA) also did a pilot study in 2011 to study cash transfer of food subsidy in Delhi. Based on the same, it was suggested that DBT should be introduced in Delhi only in a phased manner wherein people can be given an annual choice as to whether they wish to receive cash transfers or subsidised foodgrain. SEWA iterates that the primary goal of the Government in implementing DBT should be to reduce poverty and hunger, and goals of financial gain and cost-effectiveness should be secondary to that. Only then can DBT serve to reach its goals without inconveniencing people who rely heavily on Government aid to obtain food. As the Shanta Kumar Committee also said, moving towards direct cash transfers would mean a reduced role of the Food Corporation of India and a reduced spending on handling of foodgrains (Kumar 2015). However, greater administrative ease and government savings should not come at the cost of the common

people's right to food, which would be curtailed in the absence of a well-functioning system of providing food security (Guy Standing, The Hindu, Jan 02 2013).

As per an opinion survey conducted in the course of this paper's research, it was found that when asked whether the beneficiaries preferred a well-functioning Public Distribution System, or a shift to Direct Benefit Transfers, only 21.20% respondents were favourably disposed towards DBT. The most commonly cited reason for preferring PDS was that withdrawing money and then buying grains from the unstable open market was too uncertain and troublesome. Thus, for now it is recommended that pushing reforms in PDS should supersede attempts to move towards a system of direct cash transfers. If the government does wish to implement Direct Benefit Transfers in PDS, it should be done in a phased manner so that initially PDS and DBT co-exist, before PDS is gradually phased out as the system of cash transfer becomes more efficient and inclusive.

The Cash Transfer of Food Subsidy Rules 2015 has covered all the policy considerations with respect to DBT in PDS, but the issue raised in the paper is how the city currently lacks the infrastructure to implement it effectively.

Recommendations with regard to the best ways of implementing this scheme would include:

- The government should conduct research on the working of this scheme through a pilot project to get an understanding of issues faced at the ground level.

- Financial inclusion needs to be ensured. The Central Government's Jan Dhan Yojana is a step in that direction.
- Aadhaar linking and de-duplication of ration cardholders is essential for identification and deletion of ghost beneficiaries.
- The PFMS needs to be made functional to ensure monthly transfer of cash, without any glitches or delay.
- The government would also have to make its price stabilisation mechanism effective by ensuring a stable supply of grain in the market. This is essential to protect the ration cardholders from inflationary pressures.
- Since issues of accessing banks easily persist, a system of loaded smart cards could be used which would mean that the beneficiaries do not have to withdraw money from banks, but can use the smartcards to buy grain from specific shops.

Conclusion

This study shows that the replacement of the Delhi PDS with a DBT scheme is not currently feasible. However, it also puts forth

recommendations to improve the PDS within the existing framework, until such time that the Delhi government can properly implement a DBT scheme. The implementation of these recommendations would improve the functioning of the FPS in Delhi, and would be a move towards empowering beneficiaries.

Currently the government is attempting to increase transparency in the TPDS by pushing for Aadhaar seeding of ration cards and the digitisation of the beneficiaries' database. The installation of e-PoS machines was also an attempt to check the leakages in the TPDS. However, as we have seen, any benefits gained from these attempts have been offset by the losses incurred due to their inadequate implementation. Before implementing any such well-meaning schemes, the GoI and the Government of Delhi should conduct a proper study of whether or not conditions on the ground allow this.

The right to food is a non-negotiable right, and the incorrect implementation of government reforms has endangered that right for many. While shortcomings in other welfare schemes may be serious, food security is indispensable because a nutritious diet is vital for the proper functioning of any individual in social, economic, and political life.

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Appendix

A: Sample Questionnaires

QUESTIONNAIRE - PDS BENEFICIARIES

1. When are stores open? Can you collect all rations at once?
2. What is the average amount of food grains you receive on a monthly basis.
3. Have you made a complaint against your FPS, or wanted to do so?
4. Are you aware of the grievance redressal mechanism? Have you ever used it? If so, how was your experience?
5. How would you rate the quality of food grains supplied by your FPS?
6. Does the provided food subsidy cover your family's food needs?
7. What is your income?
8. Have you or members of your household had problems registering for AADHAR?
9. If given the chance, would you switch to a cash transfer method?

QUESTIONNAIRE - PDS STORE OWNERS

1. What are your days of operation? Have you ever closed the store on a working day? If so, please state the reason.
2. What is the frequency of food grain deliveries by the State? Have there ever been late deliveries?
3. What is the quantity picked up each week for 1) Rice 2) Wheat 3) Sugar 4) Kerosene?
4. What is the quality of food grains supplied by you? How do you assess the quality? Have there been any complaints from beneficiaries?
5. How many times a month does inspection take place? Are the scales inspected?
6. Has a complaint against your shop ever officially been filed?
7. Do you maintain contact with your DGRO?
8. Are you content with the ePoS function? Is it easy for the beneficiary to use? (Response on a scale from 1 to 10, 1 being the lowest)
9. Is making Aadhaar mandatory for rations good or bad?
10. What is your profit margin in this job? Do you get any commission from the government? Do you find this satisfactory?
11. How would DBT cash transfers affect your business? Do you think INR 1000 per month is adequate for market prices?

B: Table Cataloguing Beneficiaries' Response to Questionnaire

Entitlement Category	Reported Daily Family Income (INR)	No. of Ration Card Holders	Complete Aadhaar Seeding (Y/N)	Wheat Uptake (kg)	Rice Uptake (kg)	Sugar Uptake (kg)
PR	N/A	5	Y	20	4	0
PR	300	3	Y	12	3	0
PR	N/A	4	Y	16	4	0
AAY	200	6	Y	25	5	4
PR	300	6	Y	25	0	0
AAY	N/A	5	Y	20	5	6
AAY	200	5	Y	20	5	0
AAY	N/A	4	Y	25	10	6
PR	250	5	Y	16	5	0
PR	300	1		4	0	0
PR	300	6	Y	20	4	4
AAY	N/A	1	Y	20	5	0
PR-S	200-500	4	Y	16	4	4
PR	333	8	Y	32	8	0
PR-S	300	N/A	N/A	20	8	N/A
PR	333	4	Y	16	4	0
PR-S	500	8	Y	N/A	N/A	N/A
AAY	N/A	6	N	20	5	5
PR	N/A	9	Y	30	N/A	0
AAY	N/A	4	Y	20	5	5
AAY	N/A	5	Y	20	10	5
AAY	N/A	9	Y	25	10	5
PR	N/A	1	Y	5	0	0
PR	N/A	5	Y	20	5	5
PR-S	500	7	Y	20	5	5
PR-S	N/A	5	Y	20	5	5
PR – S	N/A	3	Y	16	4	5
PR – S	N/A	5	Y	20	5	6
PR	616	3/5	N	12	N/A	N/A
PR	N/A	6	Y	24	0	N/A
PR	333	7/8	Y	28	N/A	N/A
PR	N/A	4	Y	16	4	0

Entitlement Category	Satisfactory Quality (Y/N)	Store Opens Reliably (Y/N)	Aware of GRS (Y/N)	Complaint Made (Y/N)	Reception to DBT (Positive/Negative)
PR	Y	Y	N/A	N	N/A
PR	Y	Y	N/A	N	N
PR	Y	Y	Y	N	N/A
AAY	N	Y	N	Y	P
PR	N	N	N/A	N	N/A
AAY	N	Y	N	Y	P
AAY	Y	Y	N	N	N
AAY	N	Y	N/A	N	N
PR	Y	Y	N	N	N
PR	Y	Y	N	N	P
PR	Y	Y	N	N	N
AAY	Y	Y	Y	Y	N/A
PR-S	N	N	N	N	N/A
PR	N	N	N	N	N
PR-S	Y	Y	Y	Y	N
PR	N	N/A	N	N	P
PR-S	N	N/A	N/A	N/A	P
AAY	N/A	N/A	N	N	N
PR	N	N/A	N	N	N/A
AAY	N	N	N/A	N	N/A
AAY	N	N	N/A	N	N/A
AAY	N	N/A	N	N	N/A
PR	N	N/A	N	N	N/A
PR	N	N/A	N	N	N
PR-S	N	N/A	N/A	N/A	P
PR-S	N	N/A	N	N	N
PR - S	Y	N/A	N	N	N
PR - S	Y	Y	N	N	N
PR	N	N/A	N	N	N
PR	N	N/A	N	N	P
PR	Y	Y	N	N	N
PR	N	Y	N	N	N



HEALTHCARE

Quality and Accessibility of Government Hospitals and Mohalla Clinics

Aditya Bhandari, Ishan Bhardwaj and Sunidhi Sawhney

EXECUTIVE SUMMARY

To gauge if quality healthcare is conveniently accessible to the people in Delhi, it helps to take a look at what constitutes a good healthcare system as defined by the World Health Organisation (WHO); "A good health system delivers quality services to all people, when and where they need them."

There are two crucial aspects to a good healthcare system. First, the delivery of healthcare services to people whenever and wherever the need arises. In other words, there needs to be an accessible system wherein people can easily avail healthcare services at any given point in time. Second, the provision of quality services to all patients. Lack of quality in terms of healthcare may end up doing more harm than good, adversely affecting the lives of many.

This paper seeks to examine the extent to which Aam Aadmi Mohalla Clinics (AAMCs) and Delhi government hospitals provide convenient entry into the healthcare system whilst ensuring quality services to patients. To analyse this closely, the concepts of accessibility and quality have been broken down into measurable metrics, giving an objective viewpoint of the existing conditions. The focus and scope of investigation was narrowed down to three AAMCs and three Delhi government hospitals which act as the units of analysis in this case study. These institutions were evaluated on the basis the awareness of patients regarding government initiatives and basic medical facts, the costs borne by patients, patient satisfaction, and the extent to which doctors disseminate relevant information to all patients.

The study finds that the three surveyed AAMCs have done a commendable job in achieving the basic goal of bringing primary healthcare closer to people while ensuring that they are treated by qualified doctors. These clinics have elicited positive reactions from the general public which has lauded them for the ease with which they can be accessed. Furthermore, it appears that the doctors at these clinics attempt to build good rapports with the patients, enhancing the overall quality and experience.

On the other hand, the performance of the three surveyed Delhi government hospitals evoked negative reactions from the interviewed patients who were dissatisfied with the inadequate infrastructure which caused delays in availing services. It was also discovered that on several occasions, doctors didn't make the effort of keeping patients involved in and aware of the treatment processes, thereby alienating them entirely from the reality of their health condition. The lack of awareness amongst patients regarding the various government initiatives designed to help them, further exacerbates the problem.

KEY FINDINGS

1. A massive 70% of the OPD load of the Delhi government hospitals comes from outside Delhi, as per the interviewed government officials.

2. The Bed-to-Population Ratio of Delhi is 2.76 beds per 1000 population; which falls far short of the WHO recommended 5 beds per 1000 population, as per the Delhi Economic Survey 2016-17.
3. 64.8% of the patients at the surveyed mohalla clinics were female, indicating the easy access of these clinics to the female population of the neighbourhood.
4. 84.8% of the patients at the surveyed mohalla clinics gave an above average satisfaction rating to the services of these clinics.
5. 55.3% of the patients surveyed at the Delhi government hospitals gave an above average satisfaction rating to these institutes.
6. Nearly 70% of the patients at the surveyed Delhi government hospitals were not given enough information by the doctors about their illnesses, treatments and medicines.
7. 64.8% of the people at mohalla clinics and 51.3% at government hospitals were not aware of the presence of fake doctors in Delhi.
8. Between 2012 and 2015, the Delhi Medical Council asked the police to register cases against 422 fake doctors. Of these, 300 cases have still not been registered by the Delhi Police, as per media reports.
9. Only a meagre 16.4% of people at Delhi government hospitals were aware of the mohalla clinic scheme, launched over a year ago.
10. 93.1% of the patients surveyed at the Delhi government hospitals were not aware of the existence of other schemes like the Delhi Aarogya Nidhi and Delhi Aarogya Kosh.

Introduction

Before asking questions of the healthcare system in Delhi, it must first be appropriately defined. WHO provides the following definition for what a health system is:

"A health system consists of all organisations, people and actions whose primary intent is to promote, restore or maintain health."

This paper attempts to lay down the key features that constitute a good healthcare system and effectively assess whether those features exist in the healthcare offered at Aam Aadmi Mohalla Clinics (AAMCs) and Delhi government hospitals.

A basic requirement that citizens have is the facility to access healthcare services wherever and whenever they need them.

This establishes the grounds for assessing the standard of a given healthcare system. In the absence of such a facility, people in need of healthcare services may choose to exit the system, or not enter if at all, thereby putting their own wellbeing at risk.

Access to healthcare means having "the timely use of personal health services to achieve the best health outcomes" (IOM, 1993) Attaining access to good healthcare involves the following:

1. Gaining entry into the healthcare system.
2. Access to sites of care where patients can receive the required services.
3. Finding providers of healthcare services who tend to the individual needs of patients and with whom patients can develop a relationship based on two-way communication and mutual trust.

The other requirement that citizens expect the healthcare system to fulfil is the provision of high quality services from all service providers. Poor quality can erode people's faith in formal healthcare services and also have severe repercussions on their health.

There are multiple ways of assessing the quality of healthcare systems. A WHO Report titled Quality of Care (2006) suggests that quality of healthcare may be evaluated through the following six primary dimensions:

- 1) Effectiveness
- 2) Efficiency
- 3) Accessibility
- 4) Patient Centeredness
- 5) Equity
- 6) Safety

The above parameters of judging accessibility and quality aid the evaluation of AAMCs and Delhi government hospitals in this paper. The scope of analysis has been limited to three AAMCs and three Delhi government hospitals. These six institutions form the units of analysis in this Case Study. The objective of analysing these institutions was to gain an understanding of the how the AAMCs and government hospitals in the city of Delhi function.

The paper finds that the three AAMCs received positive reviews from the patients availing their services. Patients claimed that they had been extremely satisfied with the doctors treating them at these clinics and also with the provision of all prescribed medicines and tests. Patients also appreciated the proximity of these clinics to their homes. It was observed that a large number of patients, after their first visit to one of these three AAMCs, decided upon AAMCs their go-to places for primary healthcare services.

However, the three Delhi government hospitals received negative reviews from the patients with respect to how the doctors treated and the inadequate infrastructure. Patients also complained about the large delays in availing services at these hospitals. Furthermore, a lack of availability of medicines forced them to purchase medicines from private service providers, thereby burdening them with additional expenditure. A common finding across the six institutions was the lack of awareness among all the patients about basic government schemes. This highlighted need for the government to make significant efforts towards educating the public about healthcare services.

The paper starts off by presenting basic facts about the present arrangements regarding the healthcare system in Delhi. It then presents an in-depth analysis of existing literature in the space of healthcare evaluation which also serves as a basis for various methods adopted in this paper. The paper then outlines methods used to gather data through both primary and secondary sources while citing its objectives for employing these methods. The next section presents findings for all the six surveyed institutes with respect to each of the six metrics, and the analysis of these findings. The last lesson outlines learnings following from these findings.

Present Arrangements

Healthcare Administration In Delhi

The multiplicity of authority in the political sphere is a salient feature of the city of Delhi, and its healthcare sector is no exception. Healthcare in Delhi is provided by three main administrative organisations – the Government of the National Capital Territory of Delhi (GNCTD), the Municipal Corporation of Delhi (MCD) and the Delhi Cantonment Board (DCB). In addition to these three organisations, various private and civil sector organisations also provide healthcare facilities.

This research focusses on the services provided by the GNCTD in the healthcare sector. The Department of Health and Family Welfare, GNCTD is responsible for the provision of healthcare to the people of Delhi. The Ministry has various departments and secretaries which report to the Principal Secretary, who in turn reports to the Minister of Health and Family Welfare, GNCTD.

Delhi Government Healthcare Institutions

The GNCTD seeks to provide a four-tier healthcare delivery system, under which the following institutions are expected to play key roles:

1. AAMCs for primary healthcare
2. Multi-Specialty Polyclinics for secondary healthcare
3. Multi-Specialty Hospitals for IPD care
4. Super Specialty Hospitals

This study focusses on the first tier (Aam Aadmi Mohalla Clinics) and the third and fourth tiers (Multi-Speciality and SuperSpecialty Hospitals respectively) of this system.

The AAMCs have been created in various localities to provide quality primary healthcare services which are easily accessible.

Primary healthcare is defined by The Declaration of Alma Ata (WHO, 1978) as “the first level of contact of individuals, the family and community with the national health system bringing healthcare as close as possible to where people live and work, and constitutes the first element of a continuing healthcare process.”

AAMCs are expected to provide people with free healthcare services which include free check-ups, free medicines, and free diagnostic tests. The government’s stated objective is to have 1000 functioning AAMCs. However, in the two and a half years that the AAP Government has been in power, only about 107 AAMCs have been opened. Various

reasons have led to delays in achieving the stated target. Interviews with state officials revealed that getting the required approvals from other governing bodies has been a major problem, causing indefinite delays. The MCD has objected to the opening of these AAMCs on roads and footpaths. The Lt. Governor also held objections regarding the opening of these primary clinics in government schools citing legal reasons. Furthermore, the use of porta cabins requires the Lt. Governor to approve the required expenditure, and such approvals have also been hard to come by. All these factors, in combination with other political and economic factors, have hindered progress on the Government's stated objective to set up 1,000 AAMCs.

The GNCTD has under its purview 38 hospitals. As per the Delhi Master Plan 2021, these hospitals, depending upon their bed size, cater to between one lakh to five lakh people. These hospitals are expected to provide tertiary healthcare services, which is defined by John Hopkins University, USA (2014) as 'specialised consultative care, usually on referral from primary or secondary medical care personnel, by specialists working in a centre that has personnel and facilities for special investigation and treatment.'

LEGAL PROVISIONS

The regulation of qualification and conduct of medical professionals in India is governed by the Indian Medical Council Act, 1956. Government hospitals need to be registered under the Societies Registration Act, 1860. One of the primary Acts which deals with the regulation of medical practice in the state of Delhi is the Delhi Medical Council, 1997. It provides for the constitution of the Delhi Medical Council (DMC) and maintenance of a

register of medical practitioners who engage in modern scientific medicine. According to the Act, it is the duty of the DMC to prescribe a code of ethics for medical practitioners in Delhi and to ensure that no unqualified person practices medicine.

In spite of the existence of the DMC, there are a considerable number of cases of medical negligence occurring every year in both government and private hospitals. In this case, the patients who face medical negligence at the hands of doctors at government hospitals are at a disadvantage. This is because as per the Consumer Protection Act 1986, the person who obtains free or charitable treatment at a government hospital is not a consumer.

Quality Systems

The establishment of a quality system in a healthcare organisation facilitates the standardisation of systems and processes. This standardisation further ensures improvement of the hospital's performance with respect to the above-stated key components of quality. A quality system thus compels healthcare organisations to focus on patient needs and expectations.

In India, The Bureau of Indian Standards, the National Accreditation Board for Hospital and Healthcare Service Providers (NABH) Standards and the Indian Public Health Standards (IPHS) have been created in order to ensure quality of services. IPHS have been set up especially for providing a yardstick to measure the services being provided at public healthcare facilities. The Ministry of Family Health and Welfare has also released National Quality Assurance Standards (NQAS) for all hospitals to abide by.

Interviews conducted with Delhi State Government officials revealed that four Delhi government hospitals have been accredited with the NABH while two more, presently at the pre-entry level assessment state, are due for accreditation by 2018.

Six Delhi government hospitals have been assessed under NQAS at the state-level in 2016-17, and are now up for national-level assessment.

Consent in Healthcare

The concept of consent in healthcare may be defined through the schools of thought propounded in the US and the UK. One doctrine is that of 'informed consent' practiced in the US, wherein it is the doctor's responsibility to furnish all relevant information to the patients to obtain consent. The other is the doctrine of 'real consent' practiced in the UK, wherein the doctor's duty is to warn his patients of risks associated with a treatment in accordance with accepted practice to obtain the patient's consent.

In 2008, the Supreme Court, in the case of Sameera Kohli v. Prabha Manchanda, mandated the receipt of informed consent by the patient from the doctor. The 'adequate information' to be furnished by the doctor (or a member of his team) who treats the patient should enable the patient to make a balanced judgment as to whether he should submit himself to that particular treatment or not. This means that the doctor should disclose the nature and procedure of the treatment, its purpose, benefits and effect, alternatives available if any, and an outline of the substantial risks involved and adverse consequences in case the patient refuses to undergo treatment. Under this, it is for the doctor to decide, with reference to the

condition of the patient, the nature of illness, and the prevailing established practices, how much information regarding risks and consequences should be given to the patients, and how they should be counseled, having the best interests of the patient in mind. A doctor cannot be held negligent either in regard to diagnosis or treatment, or in disclosing the risks involved in a particular surgical procedure or treatment, if the doctor has acted with normal care, in accordance with recognised practices, accepted as proper by a responsible body of medical men skilled in that particular field, even though there may be a body of opinion that takes a contrary view.

Literature Review

As the research question calls for an assessment of whether or not quality healthcare is accessible in Delhi, it is important to evaluate existing studies on the subject that have been conducted in India and other parts of the world.

In a study conducted by the IMS Institute for Healthcare Informatics titled *Understanding Healthcare Access in India* (2013), healthcare access was evaluated on the following dimensions:

1. Physical accessibility of required healthcare facilities for a patient.
2. Availability of the resources required for patient treatment.
3. Functionality of the resources providing care.
4. Affordability of the complete treatment to the patient.

In the absence of even one of the above elements, a patient is unlikely to receive appropriate healthcare. Geographical and economic accessibility was also assessed in

a few states in India in the same study. It was found that in rural areas, only 37% of the people were able to access in-patient (IPD) facilities within a five kilometre distance and only 68% were able to access the Out-Patient Department (OPD). This is remarkably different from the situation in urban areas where 73% and 92% of the people have access to IPD and OPD respectively. Moreover, all distances, whether less than or greater than five kilometre, are relatively easier to cover in urban areas. This suggests that physical accessibility is not a problem in the urban areas. It was also found that the distance travelled is independent of the income class of the population; all segments are inconvenienced to a similar extent while accessing healthcare facilities. The economic burden of a treatment too is significant for both the poor those who can afford it, for example, each episode of illness resulting in an IPD treatment costs more than their monthly average household expenditure.

The IMS study has helped us identify the key factors to note whilst assessing the accessibility of mohalla clinics and Delhi government hospitals.

This study evaluates healthcare from a patient-centric perspective, in keeping with the stance of various researchers and scholars in the field.

As per the Donabedian model (1980) of assessing healthcare, which emphasises the importance of the patient's perception, healthcare managers have begun incorporating patient-centred care into the healthcare mission. Donabedian defined quality in healthcare as "the application of medical science and technology in a manner that maximises its benefit to health without

correspondingly increasing the risk." He also deduced that quality in healthcare is measured through the categories of structure, process and outcome.

Studies such as Donabdien's emphasise the need for patient-oriented medical services. The quality of primary and tertiary healthcare centres in Delhi have therefore been assessed based on the metric of patient satisfaction in this paper. Healthcare providers often use patient satisfaction surveys to understand the lacunae in quality of care provided and to identify critical areas for improvement. Patient satisfaction surveys can be used to measure the quality of services from the subjective perceptions of the patients/beneficiaries.

This opinion of patients is also influenced by the infrastructure at healthcare institutions, as institutions with quality infrastructure can provide high quality services efficiently which contribute to a better overall experience. Higher nurse-to-bed and bed-to-patient ratio are indicative of reduced burden on the staff, which in turn directly enhances the staff's ability to pay greater attention to detail in terms of patient care. In a study conducted by Rothberg et al (2005) in the United States, it was observed that the educational qualifications, attitude, and behaviour of the staff impacted the overall ability to provide quality medical services and to fulfil patient expectations. These studies reiterate the importance of taking quality of staff and bed to patient ratios into consideration whilst assessing healthcare

To assess quality in healthcare, it is also important to understand whether or not patients are provided key information about services and treatments. Lack of information

is termed as ‘information asymmetry’, which is one of the major issues that has plagued the healthcare sector, hampering its effective functioning. It has been found that elimination of information asymmetry improves the quality of treatment provided in the healthcare sector. While the direct impact of the service rendered by healthcare institutions is borne by the patients, the doctors still hold monopoly over information in this sector.

In a qualitative study by M.A. Stewart (1995), analysing previously conducted randomised controlled trials, it was found that effective patient-provider communication has a positive correlation with the quality of healthcare provided. Furthermore, effective communication enhances patient continuity and also helps providers devise plans for ensuring patient continuity, which has been found to be an important metric for judging quality of healthcare.

Asymmetries in information distribution between the providers and patients also encourages and perpetuates the existence of fake doctors. Fake doctors are essentially charlatans—people who don't possess any skill but still provide a certain skill-based service, capitalising on information asymmetry and high demand for that service. Quacks or fake doctors constitute a massive problem in terms of quality of services provided in the healthcare sector of Delhi. The fact that the medical sector of India is largely unregulated is one of the major reasons why these quacks have had the opportunity to establish and run a parallel sector of healthcare services.

A study of quacks in rural Madhya Pradesh conducted in 2015 by Das et al, noted that

people prefer going to charlatans due to the lack of educated professionals and because charlatans devote more time to each patient thereby making them feel like their personal needs are being taken into consideration. The study also proposed recommendations for training these uneducated services providers. Runi Datta, in 2013, conducted a similar study of quacks in rural West Bengal in order to observe the reasons for their emergence, and found similar results.

Research Methodology

Since the aim of the study was to measure quality and accessibility focussing primarily on patient satisfaction, an effective method of extracting relevant information directly from patients at the hospitals and AAMCs was devised.

Primary data was collected through field visits to three mohalla clinics and three Delhi government hospitals. These places were chosen after employing the method of cluster sampling. For applying this method, all the people going to the AAMCs and Delhi government hospitals were taken as the population. This population was divided into separate groups or clusters. This was done separately for the AAMCs and the Delhi government hospitals. In both cases, each institution served as a cluster. Then, a simple random sample of clusters was selected from the population for conducting the survey.

These six healthcare institutions were evaluated on the basis of the following metrics in order to gauge the accessibility and quality of healthcare offered:

Accessibility

1. Pre-consultancy Delays
2. Costs Involved
3. Knowledge of Existing Schemes

Quality

1. Satisfaction Levels
4. Patient-Provider Communication
5. Presence of Fake Doctors

Objective questionnaires featuring questions relating to the identified metrics (see Appendix) were used to survey respondents at mohalla clinics and Delhi government hospitals. Data was obtained through personal interviews (face to face surveys) wherein the respondents were directly asked questions from the questionnaire. Every respondent was spoken to individually so as to gain a better insight into their thoughts and opinions.

Table 1: Details of visits to government hospitals and mohalla clinics

Name	Date of Visit	Number of Respondents
Mohalla Clinics		
Todapur AAMC	16 June 2017	35
GK-I AAMC	20 June 2017	35
Munirka AAMC	21 June 2017	35
Delhi Government Hospitals		
Pandit Madan Mohan Malviya Hospital	14 June 2017	41
Lal Bahadur Shastri Hospital	24 June 2017	60
Deen Dayal Upadhyay Hospital	28 June 2017	58

In addition to conducting the survey through a questionnaire, the observation approach was employed to gauge the kinds of services that are available at these institutes and the manner in which patients are treated by the doctors and associated staff.

Comprehensive interviews were conducted with the doctors at the mohalla clinics. These interviews were focused on understanding the kinds of facilities available at these clinics. Interviews were also conducted with Delhi government officials working on the Delhi State Health Mission. These interviews were focused on understanding what the government's objectives are and the difficulties faced by the government in implementing some of its pertinent schemes.

Key Limitations

1. The face-to-face survey method proved to be more time consuming which may have decreased the potential number of respondents.
2. Inability to talk to hospital administration due to large formal procedures involved.

Secondary data was collected through various government reports on healthcare, family welfare and medical practices. In addition to these reports, various research papers, journals, case studies, independent reports and policy papers were also studied in order to collect data and gain a greater perspective on the field of public healthcare and its relevance in Delhi.

Findings

Accessibility

PRE-CONSULTANCY DELAYS

The accessibility of a healthcare service is compromised if patients have to spend a long duration of time waiting to consult a medical practitioner. This section reviews the amount of time spent by patients in waiting to consult the doctors at Delhi government hospitals and AAMCs.

Following are statistics on certain parameters relevant to the healthcare sector of Delhi:

- As per the 12th Five-Year Plan (2012-17), the targeted ratio was set at three beds per 1000 population for the projected population of 190 lakhs for the National Capital Territory of Delhi. Even though the targeted increase in the bed-to-population ratio is a welcome sight, it still falls short of the WHO standard ratio of five beds per 1000 population. The graph shows the bed to population ratio in Delhi from 2011-2015, as per data provided in the Delhi Economic Survey, 2016-17.

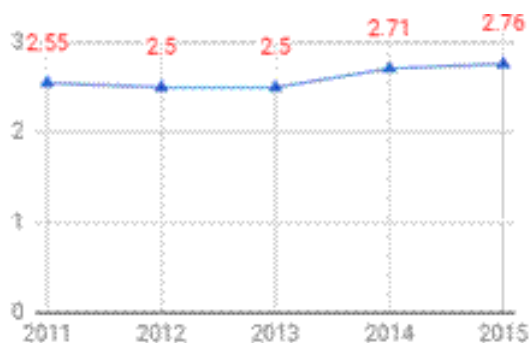


Fig 1: Bed-to-Population Ration in Delhi (2011-15)

- According to the National Health Profile, 2015, there were a total of 10,932 registered allopathic doctors with an individual doctor catering to the needs of 2,203 people.
- Through personal interviews conducted with GNCTD officials it was found that almost 70% of OPD and patient load received by Delhi government hospitals comes from outside the National Capital Territory of Delhi.

The inadequate number of beds and the dismal doctor-to-patient ratio along with the massive migrant patient load leads to an overburdening of these Delhi government hospitals as most of these hospitals have neither the necessary infrastructure nor the adequate personnel to deal with such a high OPD load.

Hospitals

Pandit Madan Mohan Malviya Hospital

A total of 41 patients were surveyed and it was found that 82.9% of the patients had to wait for an hour or more just to meet the doctor for consultation.

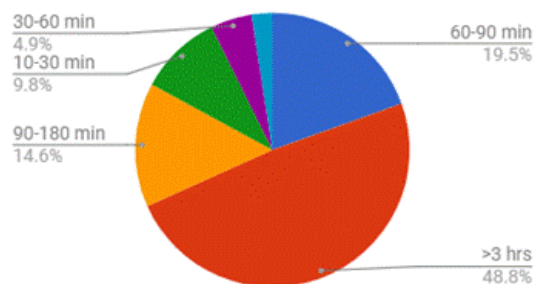


Fig 2: Average waiting time at Pandit Madan Mohan Malviya Nagar

Lal Bahadur Shastri Hospital

A total of 60 patients were surveyed and it was found that 76.7% of the patients had to wait for an hour or more just to meet the doctor for consultation.

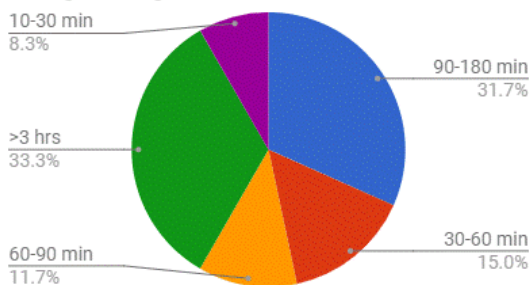


Fig 3: Average waiting time at Lal Bahadur Shastri Hospital.

Deen Dayal Upadhyay Hospital

A total of 58 patients were surveyed and it was found that 69% of the patients had to wait for an hour or more just to meet the doctor for consultation.

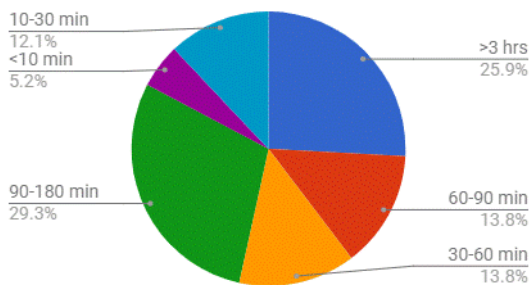


Fig 4: Average waiting time at Deen Dayal Upadhyay Hospital.

As can be inferred from the above data, over 60% of the patients at all hospitals had to wait for an hour or more just to meet with the doctor. As was observed at these three hospitals, this waiting time can be broken into two facets, first the wait for getting registered and second, waiting in the OPD ward to meet

the doctor, both equally long. After having analysed the data collected from these three hospitals, it is safe to say that the problem of adequately long pre-consultancy delays is prevalent at these healthcare units.

Mohalla Clinics

Todapur Mohalla Clinic

Of the 35 patients surveyed, 97.1% of the patients had to wait for a maximum of 30 minutes or less to meet the doctor.

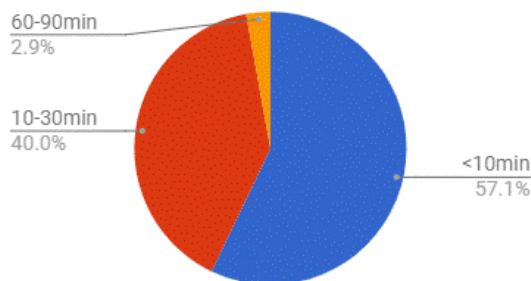


Fig 5: Average waiting time at Todapur Mohalla Clinic.

Greater Kailash I Mohalla Clinic

Of the 35 patients surveyed, 80% of the patients had to wait for a maximum of 30 minutes or less to meet the doctor.

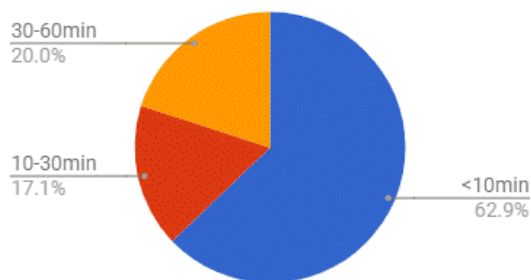


Fig 6: Average waiting time at GK-I Mohalla Clinic.

Munirka Mohalla Clinic

Of the 35 patients surveyed, 97.2% of the patients had to wait for a maximum of 30 minutes or less to meet the doctor.

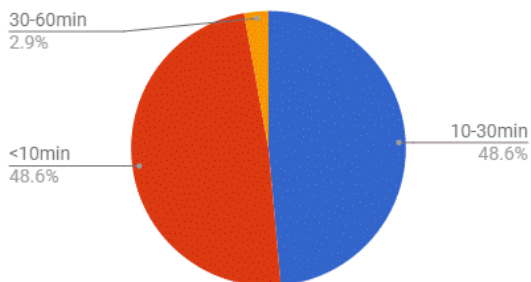


Fig 7: Average waiting time at Munirka Mohalla Clinic.

One of the aims of the AAMCs is to make primary healthcare accessible to the people of Delhi. The findings from the survey reveal that people don't have to wait for too long before consulting the doctor at these clinics, which indicates that at least these three mohalla clinics are on the right path towards achieving the set goal.

COSTS INCURRED

This section examines the various direct and indirect costs borne by patients in availing healthcare services in Delhi.

Availability of Medicines

A major portion of the total costs incurred by patients is included under 'Out of Pocket Expenditure on Health' (OOPH). WHO defines OOPH as "direct payments made by individuals to healthcare providers at the time of service use."

A higher OOPH indicates that patients are spending a high amount of money in order to access healthcare facilities, which acts as a burden and creates barriers to entry into the healthcare system. Faced with the problem of high expenditure, patients tend to minimise the number of visits made to the doctor. This is a major impediment to healthcare access. Although public healthcare facilities seek to provide free services while charging minimal user fees, increased usage of private facilities coupled with poor accessibility to public facilities leads to an increase in the OOPH.

Medicines purchased from private providers are a major cost borne by patients while availing healthcare. Non-availability of drugs and medicines at public healthcare facilities forces people to buy from private providers. To gauge the availability of appropriate drugs/medication, the patients surveyed

were asked if all medicines prescribed by the doctor were available at the pharmacy in the government hospital/clinic.

Mohalla Clinics

It was observed that the surveyed AAMCs were well equipped with the required medicines. close to 86% of all the people were able to get the required medicines at the clinic itself.

Hospitals

However, medicine availability at the government hospitals is a big problem. 39% of the people have to purchase medicines from outside the hospital which increases the OOPH.

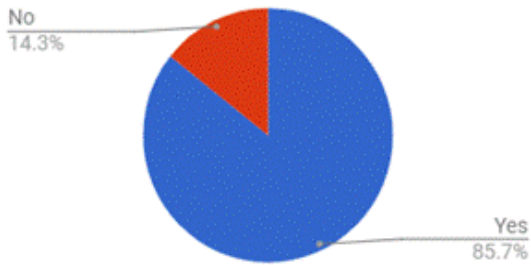


Fig 8: Availability of prescribed medicines at the Todapur Mohalla Clinic.

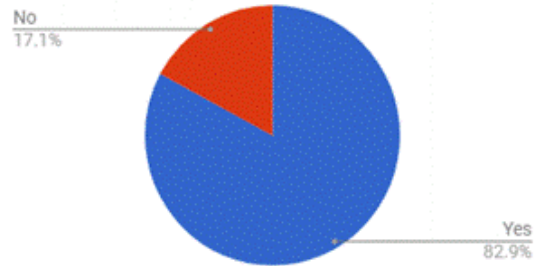


Fig 9: Availability of prescribed medicines at the GK-I Mohalla Clinic.

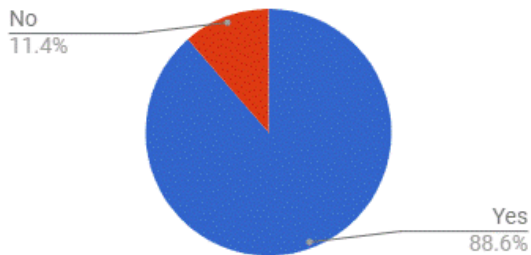


Fig 10: Availability of prescribed medicines at the Munirka Mohalla Clinic.

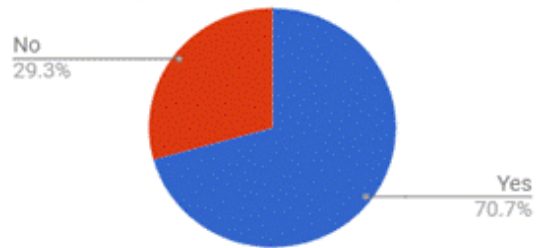


Fig 11: Availability of prescribed medicines at the pharmacy of Madan Mohan Hospital.

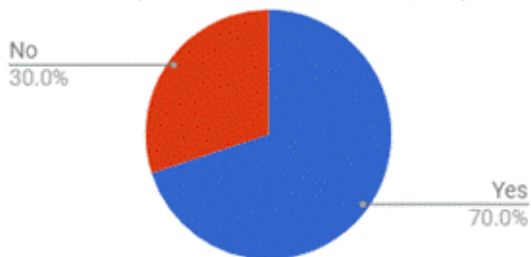


Fig 12: Availability of prescribed medicines at the pharmacy of Lal Bahadur Shastri Hospital.

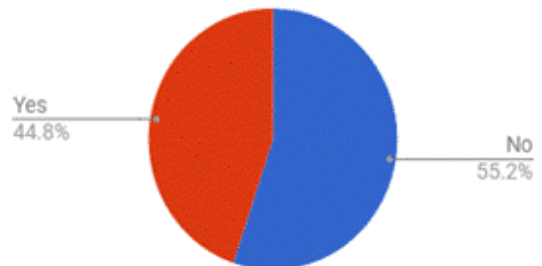


Fig 13: Availability of prescribed medicines at the pharmacy of Deen Dayal Upadhyay Hospital.

Transportation Costs

In addition to the OOPH, there are various other indirect costs borne by patients that act as a burden. These include the transportation costs that must be borne to reach the healthcare institutions.

Mohalla Clinics

AAMCs were set up in close proximity to residential areas with the objective of minimising this cost. To examine the extent to which AAMCs have been successful in this regard, respondents at the three AAMCs surveyed were asked about their transportation costs.

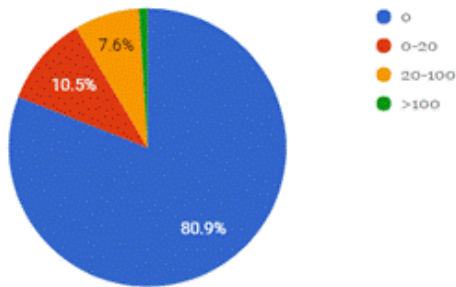


Fig 14: Transportation cost in INR to reach AAMCs.

Here, it was observed that 81% of all respondents bore no transportation cost in arriving at the mohalla clinic.

This indicates that the mohalla clinics are easily accessible and are located at a proximity to people's homes. It can be said that these clinics have succeeded in their goal of bringing primary healthcare services closer to people's homes and reducing transportation costs significantly.

Hospitals

To assess the transportation costs borne by patients in visiting Delhi government hospitals, 118 respondents were surveyed at the selected government hospitals and were asked about their transportation costs.

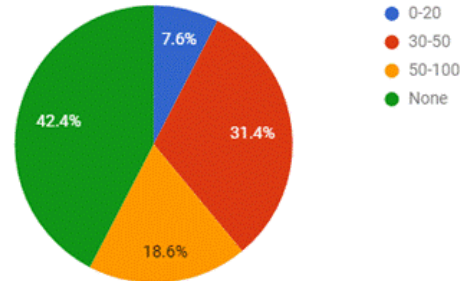


Fig 15: Transportation costs in INR to reach Delhi government hospitals.

It was observed that nearly 40% of the respondents did not have to bear any transportation cost. Only about 20% of the respondents bore a transportation cost exceeding INR 60 (which could be seen as a burden).

Therefore, it may be concluded that most people do not have to bear the burden of transportation cost while accessing government hospitals.

Cost of Missing Work

Another opportunity cost that people face while availing the services of public healthcare facilities is the cost of missing work. This poses a major impediment to accessibility. All people who receive daily wages for their labour are forced to forgo a day's wage when they visit these facilities. This de-incentivises patients from entering the healthcare system.

Mohalla Clinics

Patients coming into the selected AAMCs were asked whether they had to miss work to come there.

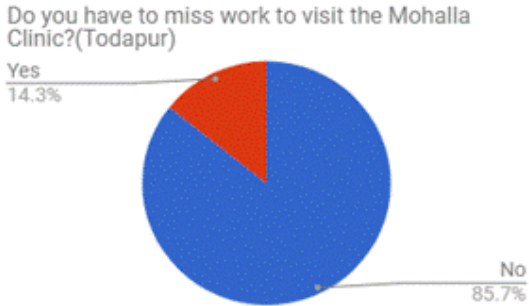


Fig 16: Responses at AAMC in Todapur.

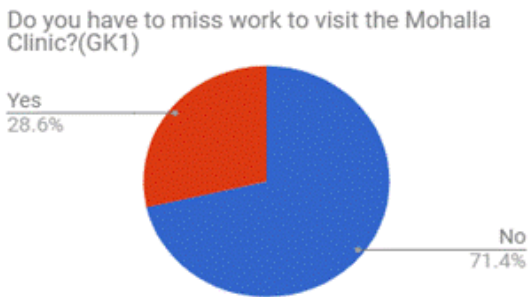


Fig 17: Responses at AAMC in GK-I.

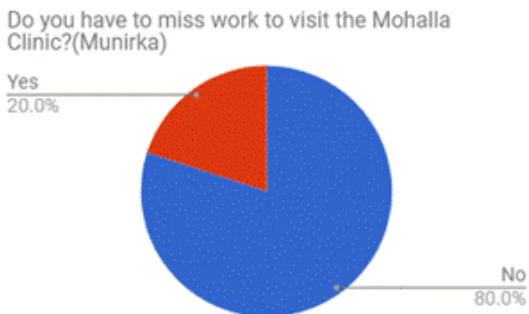


Fig 18: Responses at AAMC in Munirka.

Do you have to miss work to visit Mohalla Clinics? (cumulative)

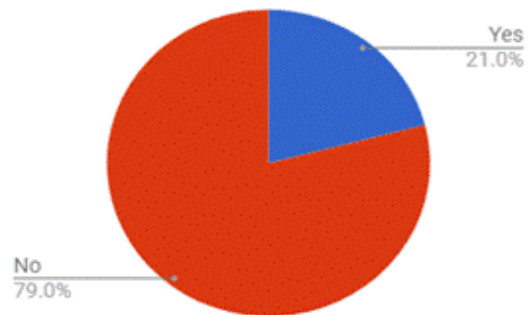


Fig 19: Cumulative responses across surveyed AAMCs.

The large skew towards 'No' is primarily because most people that have to miss work do not turn up to the AAMCs at all. This problem was also noted by the doctors at all the three clinics surveyed. In fact, the doctor at the Todapurmohalla clinic when interviewed revealed that he mostly tended to female patients since most males were busy at work during the AAMC's operational hours.

KNOWLEDGE OF EXISTING GOVERNMENT SCHEMES

This section examines the extent to which accessibility to healthcare is compromised due to lack of awareness among people regarding important government schemes on health and family welfare.

A large number of government schemes are introduced with the objective of making entry into the healthcare system more convenient for citizens. The schemes' success, however, is contingent on people having the required knowledge about these schemes and all that they entail so as to avail of the schemes' benefits.

The current AAP Government's (2015-2020) provision of AAMCs has been made to make cheap and quality primary healthcare services available to people. Respondents at the three selected Delhi government hospitals were asked if they were aware of the presence of these AAMCs set up by the government for their benefit.

Pandit Madan Mohan Malviya Hospital

Out of the 41 patients surveyed, 80.5% were unaware of this provision.

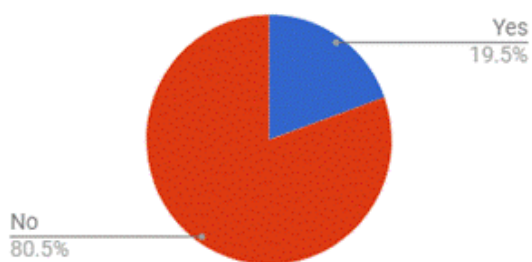


Fig 20: Awareness about the presence of mohalla clinics- responses from Madan Mohan Malviya Hospital.

Lal Bahadur Shastri Hospital

Of the 60 patients surveyed, 91.7% were unaware of this provision.

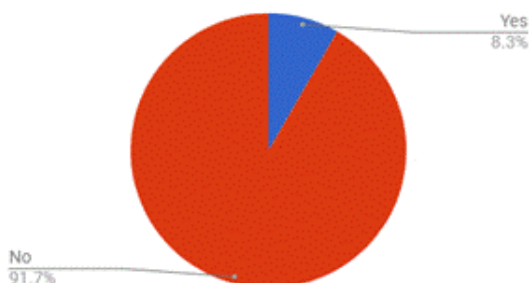


Fig 21: Awareness about the presence of mohalla clinics- responses from Lal Bahadur Shastri Hospital.

Deen Dayal Upadhyay Hospital

Out of the 58 patients surveyed, 77.6% were unaware of this provision.

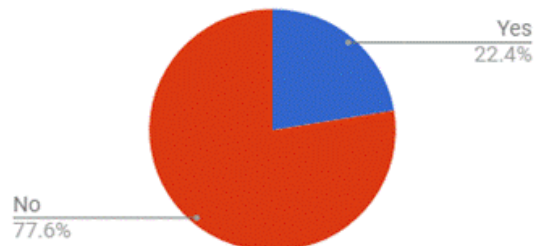


Fig 22: Awareness about the presence of mohalla clinics- responses from Deen Dayal Upadhyay Hospital.

This lack of awareness among people with respect to AAMCs represents a major obstacle to entry into the healthcare system. A large number of people are unable to avail quality healthcare services only because they are uninformed about the presence of AAMCs.

To get a wider perspective, citizens' awareness of two more government schemes, namely the Delhi Arogya Nidhi and the Delhi Arogya Kosh, was examined.

Delhi Arogya Nidhi (DAN) is a scheme which provides financial assistance of upto INR 1.5 lakhs to needy patients whose family income is less than INR one lakh per annum for treatment of diseases in government hospitals only. To meet the eligibility criteria for the same, the patient must have a National Food Security Card, must be a resident of Delhi, and must furnish domicile proof of residing in Delhi continuously for the last three years (prior to the date of submission of application). This scheme is valid only for treatment received in a government hospital in Delhi.

Delhi Arogya Kosh (DAK) is a registered society which provides financial assistance of upto INR five lakhs to the needy eligible patients for treatment of any illness/disease in a government hospital.

To gauge the general awareness about these schemes, 159 patients at the three selected Delhi government hospitals were interviewed.

Pandit Madan Mohan Malviya Hospital

Of the 41 patients surveyed, 95.1% of the patients were unaware of the above-mentioned schemes.

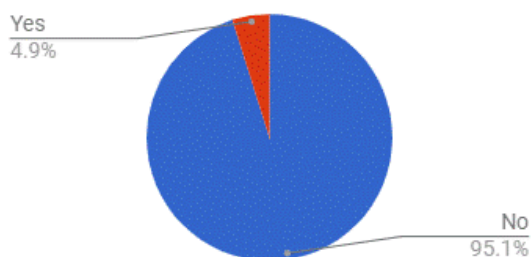


Fig 23: Awareness about GNCTD schemes, DAN and DAK at Madan Mohan Malviya Hospital.

Lal Bahadur Shastri Hospital

Out of the 60 patients surveyed, 86.7% of the patients were unaware of these schemes.

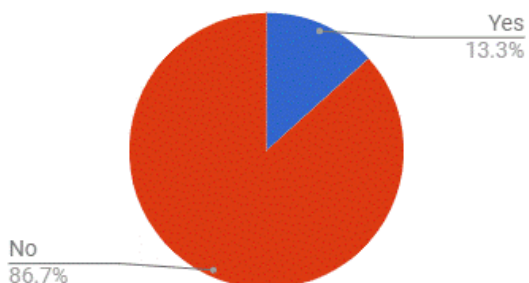


Fig 24: Awareness about GNCTD schemes, DAN and DAK at Lal Bahadur Shastri Hospital.

Deen Dayal Upadhyay Hospital

Out of the 58 patients surveyed, 98.2% of the patients were unaware of these schemes.

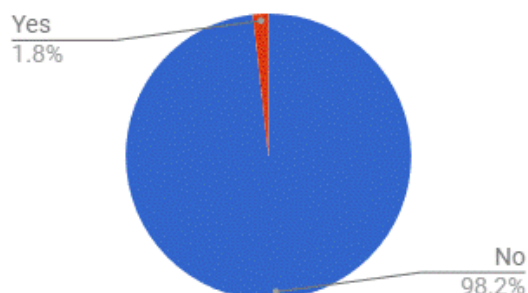


Fig 25: Awareness about GNCTD schemes, DAN and DAK at Deen Dayal Upadhyay Hospital.

From the data gathered, it can be inferred that more than 90% of the 159 patients surveyed across the three hospitals were unaware of the DAN and DAK schemes. This further highlights the lack of awareness among patients about various government schemes which are launched for their benefit. This hampers accessibility to healthcare services.

Quality

SATISFACTION LEVELS

Patient satisfaction is a measure of the extent to which a patient is content with the healthcare which they received from their healthcare provider.

While evaluating healthcare quality, patient satisfaction is a performance indicator measured in a self-report study and a specific type of customer satisfaction metric. Patients' satisfaction with a healthcare service is mainly dependent on the duration

and efficiency of care, and how empathetic and communicative the healthcare providers are. Patients who are more satisfied are more likely to adhere to treatment plans and maintain their relationships with their healthcare providers. It is favoured by a good doctor-patient relationship.

In the survey conducted at government hospitals and AAMCs, patients were asked to rate their satisfaction levels with regard to their entire experience at the AAMC/hospital on a scale of 1-5, with 5 being the highest level of satisfaction and 1 being the lowest.

Hospitals

Pandit Madan Mohan Malviya Hospital

Out of the 41 patients surveyed, the majority, 60.9%, gave the institute a rating of 4 or above.

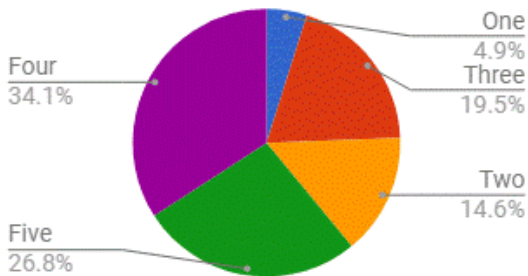


Fig 26: Patient Satisfaction Ratings at Madan Mohan Malviya Hospital.

Lal Bahadur Shastri Hospital

Out of the 60 patients surveyed, the majority, 56.6%, gave the institute rating of 3 or below.

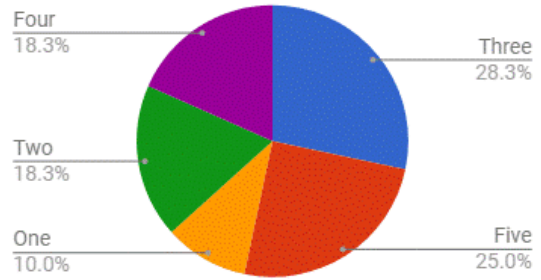


Fig 27: Patient Satisfaction Ratings at Lal Bahadur Shastri Hospital.

Deen Dayal Upadhyay Hospital

Out of the 59 patients surveyed, the majority, 63.8%, gave the institute a rating of 4 or above.

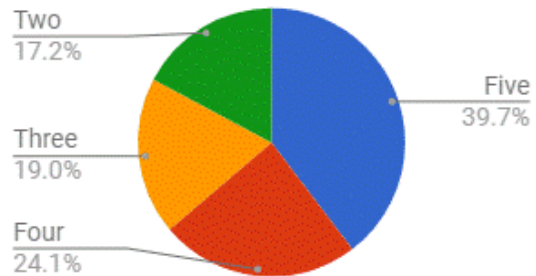


Fig 28: Patient Satisfaction Ratings at Deen Dayal Upadhyay Hospital.

The data collected reveals that 45% of the respondents rated their satisfaction levels at 3 or below, which implies that a significant proportion of the population felt that the services received were average or below average. Around 55% of the respondents felt that the services received were above average and were mostly content with the services.

When the patients were asked about the reasons for their low satisfaction levels, they complained that the doctors and staff were rude to them. A large number of the patients

expressed dissatisfaction with how the doctors treated 'illiterate' patients as opposed to 'literate' patients. According to them, illiterate patients were often dismissed quickly by the doctors who do not generally attempt to build a rapport with them.

Patients were also dissatisfied with the waiting system that was employed at the Delhi government hospitals. They claimed that they were forced to wait in long queues for elongated periods of time and were unable to exit the queues even to consume food or water. Many patients also complained that the doctors were very hasty with their check-up procedure.

Mohalla Clinics

Todapur Mohalla Clinic

Out of the 35 patients surveyed, the majority, 94.3%, gave the clinic a rating of 4 or above.

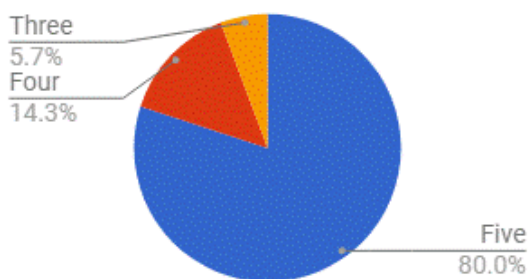


Fig 29: Patient Satisfaction Ratings at Todapur AAMC.

Greater Kailash I Mohalla Clinic

Out of the 35 patients surveyed here, the majority, 80%, gave the clinic a rating of 4 or above.

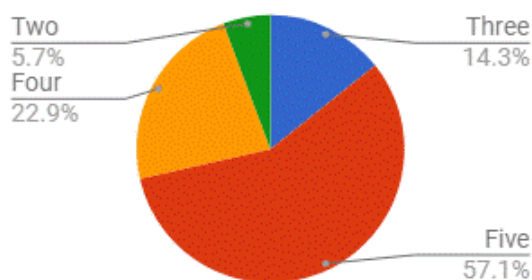


Fig 30: Patient Satisfaction Ratings at GK-I AAMC.

Munirka Mohalla Clinic

Out of the 35 patients surveyed, the majority, 80%, gave the clinic a rating of 4 or above.

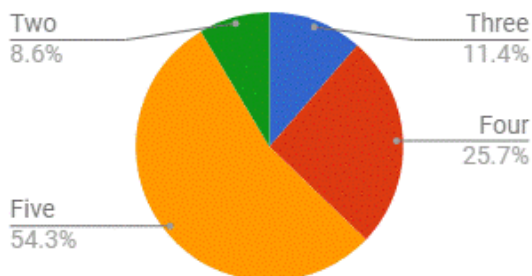


Fig 31: Patient Satisfaction Ratings at Munirka AAMC.

It may be observed here that 85% of the respondents were extremely satisfied with the facilities, with around 64% giving a perfect score of 5. Patients claimed that these clinics allowed them to quickly consult a capable doctor without having to wait in queues for long durations.

To further analyse the extent to which patients were satisfied with services at the AAMCs, the patients were asked whether they use the facility for all primary healthcare requirements.

Do you visit Mohalla Clinics for all primary healthcare requirements?

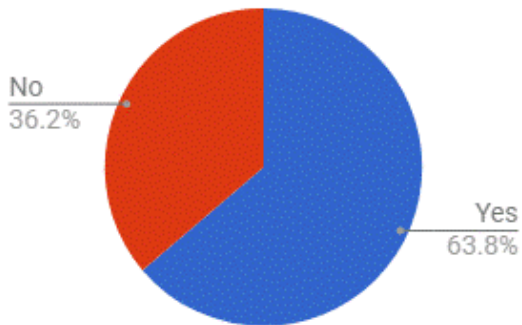


Fig 32: Responses across AAMCs.

A majority of the patients preferred to come back to these mohalla clinics which indicates that they visit the AAMCs for all primary healthcare requirements.

Patients who replied in the negative stated that timings of the AAMCs posed a problem. AAMCs were not always accessible in the case of an emergency and therefore patients were forced to resort to alternative healthcare facilities.

However, it may be safe to conclude that mohalla clinics are, by and large, meeting the set objectives and are ensuring patient satisfaction.

Patient-Provider Communication

This section seeks to assess the degree to which doctors at Delhi government hospitals engage with the patients on matters related to treatment specifics, pros and cons of the treatment, medicines prescribed, costs involved, and availability of alternate treatments. This information helps the patients take informed decisions thereby further enhancing the quality of care they receive.

Pandit Madan Mohan Malviya Hospital

Out of the 41 patients surveyed, 65.8% responded saying that the doctor did not completely or adequately explain his/her findings to them.

How well does the doctor explain his/her findings and diagnosis to you?

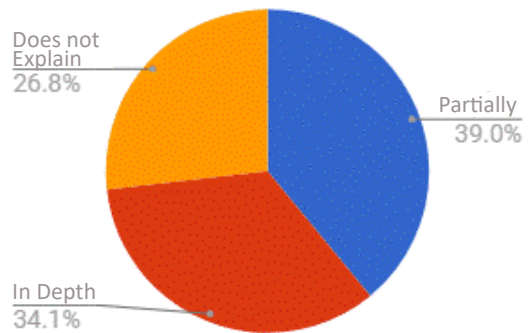


Fig 33: Responses at Madan Mohan Malviya Hospital.

When asked how well the doctor explained the pros and cons of the treatment and medicines administered (the procedure being undergone) to them, 34.1% of the patients said that they received no explanation or information whatsoever. 46.3% of the patients were partially informed of the same.

Does the doctor explain the pros and cons of the procedure that you would be undergoing?

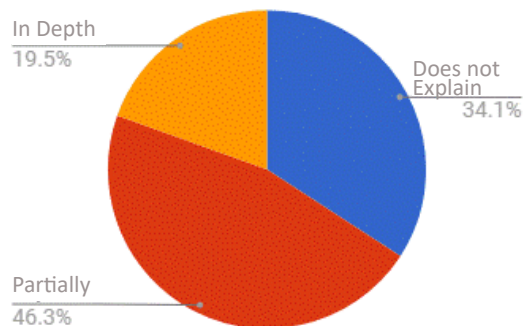


Fig 34: Responses at Madan Mohan Malviya Hospital.

51.2% of the patients were not informed at all about the availability (or lack thereof) and costs of alternate treatments for their illness. Only 9.8% were adequately informed about the same by the doctor.

Lal Bahadur Shastri Hospital

Of the 60 patients surveyed, 48.3% were not informed about the doctor's findings. 41.7% were partially informed of the doctor's findings.

How well does the doctor explain his/her findings and diagnosis to you?

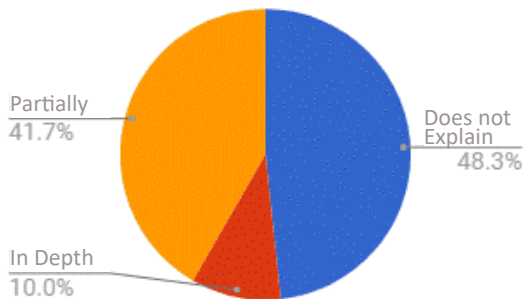


Fig 35: Responses at Lal Bahadur Shastri Hospital.

When asked how well the doctor explained the pros and cons of the treatment and medicines administered (the procedure being undergone) to them, 56.7% of the patients said that they received no explanation or information whatsoever.

Does the doctor explain the pros and cons of the procedure that you would be undergoing?

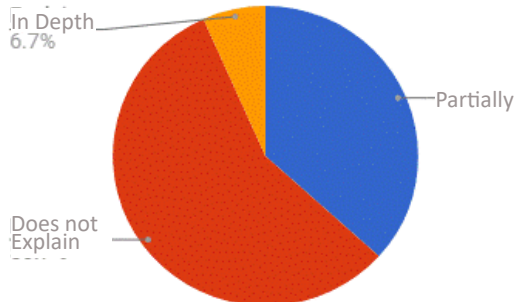


Fig 36: Responses at Lal Bahadur Shastri Hospital.

66.7% of the patients were not informed at all about the availability (or lack thereof) and costs of alternate treatments for their illness. 30% were partially informed about the same by the doctor.

Does the doctor explain to you the costs of different available treatments?

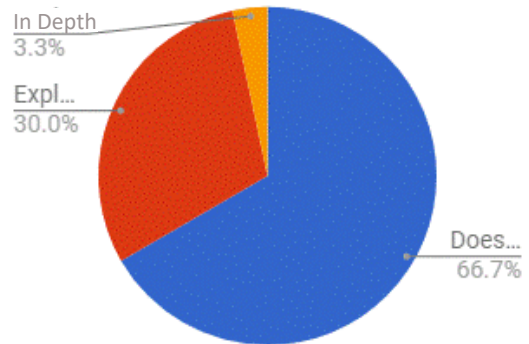


Fig 37: Responses at Lal Bahadur Shastri Hospital.

Deen Dayal Upadhyay Hospital

Of the 58 patients surveyed, 70.7% were not adequately informed about the doctor's findings.

How well does the doctor explain his/her findings and diagnosis to you?

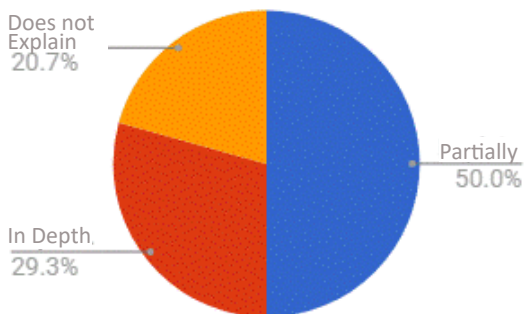


Fig 38: Responses at Deen Dayal Upadhyay Hospital.

When asked how well does the doctor explained the pros and cons of the treatment and medicines administered (the procedure

being undergone) to them, 51.7% of the patients said that they received no explanation or information whatsoever. 31% of the patients were partially informed of the same.

Does the doctor explain the pros and cons of the procedure that you would be undergoing?

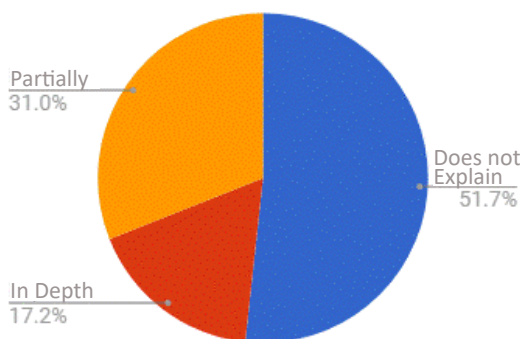


Fig 39: Responses at Deen Dayal Upadhyay Hospital.

66.7% of the patients were not informed at all about the availability (or lack thereof) and costs of alternate treatments for their illness. 30% were partially informed about the same by the doctor.

Does the doctor explain to you the costs of different available treatments?

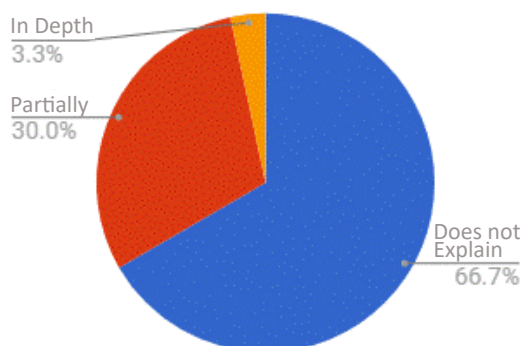


Fig 40: Responses at Deen Dayal Upadhyay Hospital.

It was also observed that some of the information display boards at these hospitals were not bilingual (available only in English and not in Hindi). The fact that these hospitals are visited primarily by patients who aren't literate in English renders these unilingual information boards redundant.

The state of information kiosks and help desks at these hospitals was also examined. Out of the three hospitals, only one (Lal Bahadur Shastri Hospital in Khichri Pur) had a functional helpdesk which was used to provide patients with information regarding the medicines that were prescribed to them by their respective doctors. The other hospitals didn't have a functional helpdesk at the time of visit. On the other hand, the three mohalla clinics visited had adequate bilingual information displays thereby allowing patients to gain valuable information about the services available to them.

Fake Doctors

'Quacks' or 'fake doctors' can be defined as medical practitioners who operate without the required educational qualifications.

The presence of quacks in the Delhi healthcare system poses direct threats to quality as these professionals operate without the skill set that comes with the appropriate educational qualifications required to provide services as a registered doctor.

This section analyses the reasons behind the prevalence of quacks in the Delhi healthcare system. It also examines why these quacks appeal to patients seeking healthcare services. Interviews with state officials revealed that the system for reviewing complaints against quacks is complicated and elaborate which slows down

the process of locating and exterminating quacks and causes inefficiencies.

The Anti-Quackery Cell which functions under the Directorate of Health Services, Government of Delhi, acts as a coordinating agency receiving complaints from people residing in Delhi. These complaints are referred to the concerned Chief District Medical Officers (CDMOs) for inspection. CDMOs then investigate the cases referred to them by the cell by forming a team of appropriate investigating officers. These officers prepare reports based on their findings.

These reports are then forwarded to the Delhi Medical Council (DMC) for taking further action if necessary. The DMC is the enforcement agency and initiates action as per the Delhi Medical Council Act.

Reports suggest that the Delhi Medical Council, between 2012 and 2015, asked the police to register cases against 422 people who were proven to be quacks and could not legally practice allopathy. However, in approximately 300 cases out of the 422, the police haven't even lodged FIRs. (Sources: India Today 2015).

This inability of the DMC and the police to work cohesively is due primarily to differences in incentive. Interviews with the state officials revealed that quacks often exist in areas where they are the only viable medical service providers, making it harder for the police to apprehend them. The police do not want to risk public disorder by lodging cases against these service providers until a better alternative turns up.

To further understand the widespread presence of quacks in the capital, respondents

in the three mohalla Clinics and the three Delhi government hospitals were asked whether they were aware of the problem of fake doctors.

Hospitals

Pandit Madan Mohan Malviya Hospital

Out of the 41 patients surveyed, the majority, 57.7%, were aware of the presence of fake doctors.

Are you aware of the presence of fake doctors in Delhi?

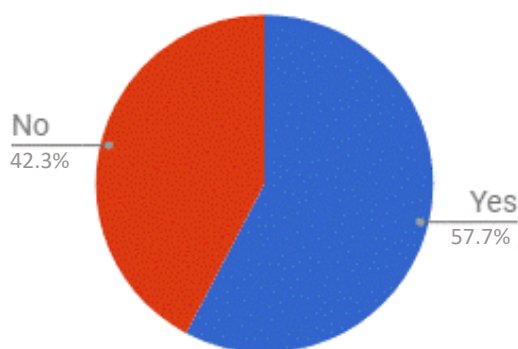


Fig 41: Responses at Madan Mohan Malviya Hospital.

Lal Bahadur Shastri Hospital

Out of the 60 patients surveyed, the majority, 61.7%, were aware of the presence of fake doctors.

Are you aware of the presence of fake doctors in Delhi?

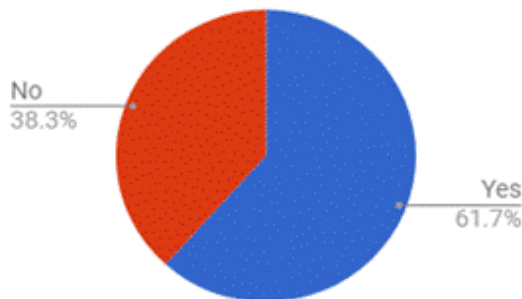


Fig 42: Responses at Lal Bahadur Shastri Hospital.

Deen Dayal Upadhyay Hospital

Out of the 58 patients surveyed, the majority, 58.6%, were not aware of the presence of fake doctors.

Are you aware of the presence of fake doctors in Delhi?

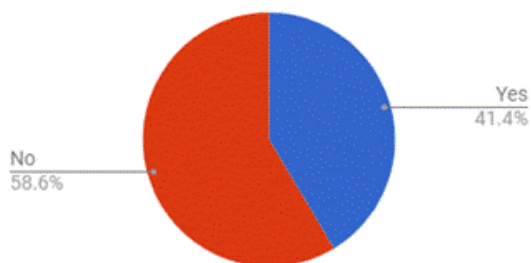


Fig 43: Responses at Deen Dayal Upadhyay Hospital.

Mohalla Clinics

Todapur Mohalla Clinic

Out of the 35 patients surveyed, the majority, 71.4%, were not aware of the presence of fake doctors.

Are you aware of the presence of fake doctors in Delhi?

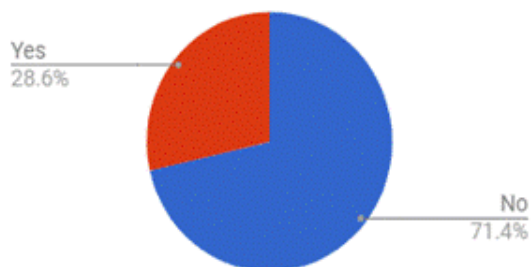


Fig 44: Responses at Todapur AAMC.

Greater Kailash I Mohalla Clinic

Out of the 35 patients surveyed, the majority, 65.7%, were not aware of the presence of fake doctors.

Are you aware of the presence of fake doctors in Delhi?

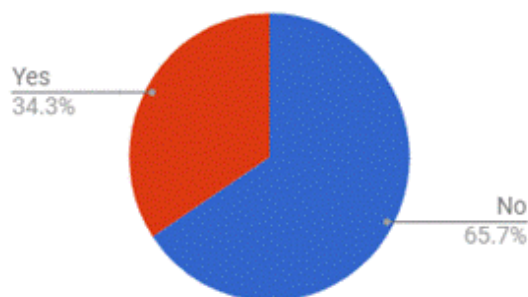


Fig 45: Responses at GK-I AAMC.

Munirka Mohalla Clinic

Out of the 35 patients surveyed, the majority, 57.1%, were not aware of the presence of fake doctors.

Are you aware of the presence of fake doctors in Delhi?

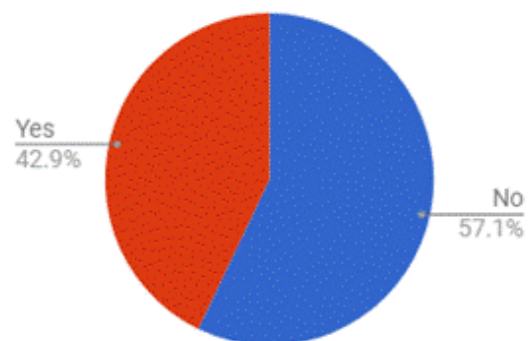


Fig 46: Responses at Munirka AAMC.

It was observed that in both AAMCs as well as Delhi government hospitals, a majority of the patients were unaware of the presence of these fake doctors.

The lack of awareness among patients about the presence of quacks makes it easier for quacks to operate.

Even among the people who claimed to be aware of the presence of fake doctors in Delhi,

a large number stated that they do not always make the effort of verifying the doctor's credentials before consulting him/her.

To understand the extent to which patients might prefer going to fake doctors who are private service providers, patients at the three mohalla clinics were asked where they went to avail primary healthcare services before the establishment of the AAMCs:

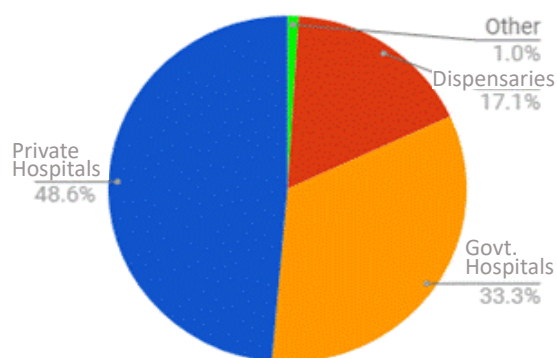


Fig 47: Institutions used for primary healthcare requirements before the existence of AAM.

Before the establishment of AAMCs, nearly half of the respondents went to private clinics, which is the ambit under which fake doctors operate.

Interviews with the doctors at the mohalla clinics revealed that a large number of patients may be incentivised towards going to quacks because of their unethical use of steroids. Steroids administered bring instant relief to the patients while adversely affecting their health in the long run. The patients, however, are attracted by the short-term satisfaction provided. Moreover, since mohalla clinics are only accessible for about four hours a day, patients may resort to private clinics which are more accessible.

Lessons Learnt

The case study analysis of these six institutions yielded critical insights into the functioning of public healthcare services. The findings from the analysis have been used as a base for making certain recommendations that could potentially enable the citizens of Delhi to have better access to quality healthcare at AAMCs and Delhi government hospitals.

A major problem discovered was that of information asymmetry with regard to the Delhi Government's schemes (DAN and DAK), the presence of fake doctors, treatment procedures etc. Steps which can be taken by the Delhi Government to remedy this are as follows:

1. Use of bilingual information billboards a AAMCs and hospitals for the people who are not literate in English.
2. Use of bilingual billboards in the vicinity of AAMCs informing people about the presence of these AAMCs. No indicators informing people about the presence of AAMCs were found at the three clinics visited during the study.
3. Creation, regulation and maintenance of information kiosks and help desks at Delhi government hospitals to reduce the burden on the doctors and pharmacists of informing patients about the treatment and medicines prescribed.
4. Information dissemination drives to educate the population about the presence and dangerous consequences of visiting fake doctors.

To combat pre-consultancy delays arising from long, chaotic queues, the existing first-come-first-serve system can be replaced by an offline registration system wherein people are handed tokens which signify their position in the queue. This will reduce confusion and increase convenience for patients.

The ill-treatment of patients by doctors and lack of two-way communication can be assuaged by enhancing the communication skills of doctors through effective

skill-building sessions. Doctors can also be taught how to improve patient-provider rapport and focus their attention to the patients' individual needs.

These recommendations, if adopted, could help solve some of the major problems plaguing the healthcare sector.

Conclusion

The study revealed key findings with regard to the services provided at AAMCs and Delhi government hospitals.

It was observed that patients are forced to wait for long durations at government hospitals in order to avail services. On the other hand, conditions at the AAMCs are far more favourable as patients can very quickly avail healthcare services.

As far as costs incurred are concerned, findings suggest that a majority of the patients bore reasonably low transportation costs. However, non-availability of drugs and medicines at government hospitals increased the patients' out-of-pocket expenditure.

Lack of awareness about government healthcare schemes was found to be a major issue. Most patients at the AAMCs and government hospitals were found to be unaware of major government initiatives and also of the presence of fake doctors in Delhi.

Another significant problem highlighted was that of the lack of communication from the doctors. This was an area where all clinics and hospitals seemed to be lacking.

Patients at government hospitals claimed that doctors did not attempt to include them in the treatment procedures and did not relay adequate information, leading to dissatisfaction. On the other hand, patients at the three AAMCs were extremely satisfied with the services. Further research can be undertaken to examine the various reasons behind the lack of communication between doctors and patients. Unless this problem is understood at the grass-root level, it will be difficult to work towards solving it.

Finally, it can be concluded that the three AAMCs seem to be functioning efficiently and providing accessible and quality services to people. However, quicker progress needs to be made towards achieving the set goal of having 1,000 AAMCs in the city if a significant impact is to be observed.

The three Government hospitals, on the other hand, were plagued with multiple problems ranging from inadequate infrastructure to uncommunicative doctors.

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Appendix

Questionnaires

QUESTIONNAIRE – MOHALLA CLINICS

1. Gender: Male/Female/Other
2. On the following scale, how satisfied have you been with the doctor's interaction with you? (Scale of 1-5, 1 being the lowest)
3. What is the average waiting time before you get your turn?
 - <10 min
 - 10-30 min
 - 30-60 min
 - 90-180 min
 - >3hr
4. Where did you go for check ups before the establishment of Mohalla Clinics?
Do you still go there?
5. What are the transportaion costs you incur while coming here?
 - 0-20
 - 30-50
 - 50-100
 - None
6. Do you visit the Mohalla Clinic for all primary healthcare requirments? Yes/No
7. Are all medicines prescribed by the doctor available at the pharmacy here? Yes/No
8. Do you have to miss work to visit the Mohalla Clinics? Yes/No
9. Do you take a second opinion on Healthcare? Yes/No
10. Has a diagnosis ever proven to be incorrect in your experience? Yes/No
11. Are you aware of the presence of Fake Doctors in Delhi? Yes/No

QUESTIONNAIRE – DELHI GOVERNMENT HOSPITALS

1. Gender: Male/Female/Other
2. On the following scale, how satisfied have you been with the doctor's interaction with you? (Scale of 1-5, 1 being the lowest)
3. what is the average waiting time before you get your turn?
<10 min
10-30 min
30-60 min
90-180 min
>3hr
4. What are the transportaion costs you incur while coming here?
0-20
30-50
50-100
None
5. Do you visit the hospital for all primary healthcare requirments? Yes/No
6. Are all medicines prescribed by the doctor available at the pharmacy here? Yes/No
7. Do you have to miss work to visit the hospital? Yes/No
8. Do you take a second opinion on Healthcare? Yes/No
9. Has a diagnosis ever proven to be incorrect in your experience? Yes/No
10. Are you aware of the presence of Fake Doctors in Delhi? Yes/No
11. Are you aware of the various Government Schemes to help EWS sections of the society like Delhi Arogya Nidhi, Delhi Arogya Kosh, etc? Yes/No
12. On the following scale, how well does the doctor properly explain his findings and diagnosis to you?
1. Does not Explain 2. Explains Partially 3. Explains In- Depth
13. If you are undergoing a procedure, does the doctor coherently explain the pros and cons of the said procedure?
1. Does not Explain 2. Explains Partially 3. Explains In- Depth
14. Does the doctor explain to you the costs of different available treatments?
1. Does not Explain 2. Explains Partially 3. Explains In- Depth



INFRASTRUCTURE

An Analysis of Provision of Affordable Housing to Low-Income Groups

Chetna Ahuja, Devashi Chawda and Simren Nagrath

EXECUTIVE SUMMARY

This research paper seeks to examine the extent to which affordable housing is made available to the urban poor in Delhi by the Government, and whether the Delhi Development Authority's (DDA) provision of affordable housing for the low-income group (LIG) is serving its purpose. The findings of this research prove that the DDA's provision of affordable housing for the LIG is highly inadequate and fails to serve the intended purpose.

The various problems associated with the provision of affordable housing have been assessed by explicating the very concept of affordable housing and all that it entails — in context of national-level policies, schemes carried out by governmental and autonomous authorities in Delhi, and the efforts made by the DDA towards making affordable housing accessible in Delhi. Solutions and recommendations for alleviating the situation have been suggested at the end of the paper.

Through interviews with residents of four DDA settlements built for the LIG, and through an analysis of the existing literature on affordable housing, it was found that a considerable number of the original allottees had put the flats up for sale or had left them vacant. The reason for this was found to be large distances from the city centre, insufficient space and poor transportation facilities at the time of allotment. This leads us to question whether the definition of affordable housing at the policy level is exhaustive enough to ensure that the needs of the beneficiaries are met.

Affordable housing is a vast and complex issue and therefore the scope of this research has been limited to addressing only the fundamental concept of affordable housing, the understanding of which is crucial for policy-making.

KEY FINDINGS

1. The narrow definition of affordable housing at the national and state planning levels falls short of addressing the needs of the poor sections of society. All factors — including size of the house, the location of the house, services provided (electricity, water, community services like parks, schools and hospitals nearby), the quality of construction, the state of the economy at the time of purchase, and the demand and preference patterns of consumers — are not adequately taken into consideration.
2. Settlements are generally located far away from the beneficiaries' place of work, and due to a lack of coordination between the governmental and autonomous agencies which provide connectivity, transport, employment opportunities etc., cheap and well-connected means of transport are not available to the residents. This causes a low vacancy rate.
3. A large number of DDA flats intended for use by low-income groups and economically weaker sections have been either sold off or rented out. Very few original allottees reside in these flats. In case of allotment schemes which prohibit the sale of houses for an initial period of five years, allotted houses lie vacant.

4. Due to the low quality of the houses and services provided, the intended beneficiaries find it more useful to sell off these houses in the black market at high premium rates or rent them out and secure themselves a regular source of income.
5. 50% of the people surveyed were not satisfied with the size of the house provided. Of the remaining 50% who were satisfied, 27% were satisfied only because they had small families of three to four members only.
6. In a number of settlements, allotted housing spaces have been illegally expanded into commercial or commercial-cum-residential spaces. Lack of regular inspection and corrupt inspection officers contribute to the situation.
7. Low-cost housing invariably leads to low quality of infrastructure because the cost of construction is very high. Technological upgradation for bringing down costs is hard to attain as it requires multiple sanctions and approvals from governmental echelons.
8. Improving the current scenario of affordable housing in Delhi will require:
 - a) Greater awareness among all stakeholders involved, especially the beneficiaries so that they are able to demand proper services.
 - b) Stricter administration to ensure that all agencies work in tandem to make the affordable housing schemes successful.

Introduction

The Housing Concept

Provision of housing involves not only furnishing a space enclosed within four walls and a roof. It also entails assured safety, dignity, security and privacy. The type of housing made available to individuals in a city is an important parametric of assessing the quality of life that citizens lead.

The concept of ‘affordable housing’, therefore, has various aspects to it. Houses need to be made available to the low-income groups at low costs while taking into consideration factors such as the size of the house, the location of the house, services provided (electricity, water, community services

like parks, schools and hospitals nearby), the quality of construction, the state of the economy at the time of purchase, and the demand and preference patterns of consumers. Affordable housing, therefore, is a provision for both shelter as well as a quality lifestyle.

Numerous human rights agreements around the world have posited proper housing as a fundamental right of every human being. United Nations special rapporteur on adequate housing, Leilani Farha, in an interview, claimed, “[Housing] is a cornerstone right and fundamental to an approach that begins with the dignity, equality and security of the human person. Narrow interpretations that focus on housing as a commodity, or housing that only provides a

roof over one’s head, have been rejected under international human rights law. Rather, the right to housing has long been understood as the right to live somewhere in peace, security and dignity” (Dirks, 2015).

At present, it seems as though the national and state governments and their agencies attempt to cater to only one aspect of housing – the cost. The other qualitative aspects such as the quality of construction and additional services, the location of the house and its connectivity to other major areas of the city are not adequately taken into consideration in the governments’ affordable housing projects thereby undermining the gravity of the issue and leading to poor implementation and failure of housing schemes.

Current Scenario

Indian demographics are visibly affected by the increasing population and consequent urbanisation. Urbanisation in India is chiefly a city-centric phenomenon with cities like Mumbai, Delhi and Bangalore constantly experiencing rapid multi-dimensional and multi-sectoral growth and expansion. Urban migration – the geographical movement of population from surrounding rural off-shoots to the nearest urbanised centre – is one of the major outcomes of city-centred urbanisation. The most common reason for urban migration is the search for better employment opportunities and prospects.

The population in Delhi, as per the 2011 census is 16.79 million, with over 95% of the population living in urban areas. Every year 78,000 people move to Delhi in search of economic opportunities and to elevate their socio-economic status (Barara et al,

2016). Urban migration at such a high rate has led to the problem of housing shortage, worsening rapidly, and unplanned, unauthorised settlements mushrooming within the city of Delhi.

According to the Delhi Master Plan 2021, “the population of Delhi is expected to range between 220 to 230 lakh by 2021”. And on the basis of this projection, “the estimated additional stock of housing required will be 24 lakh dwelling units”.

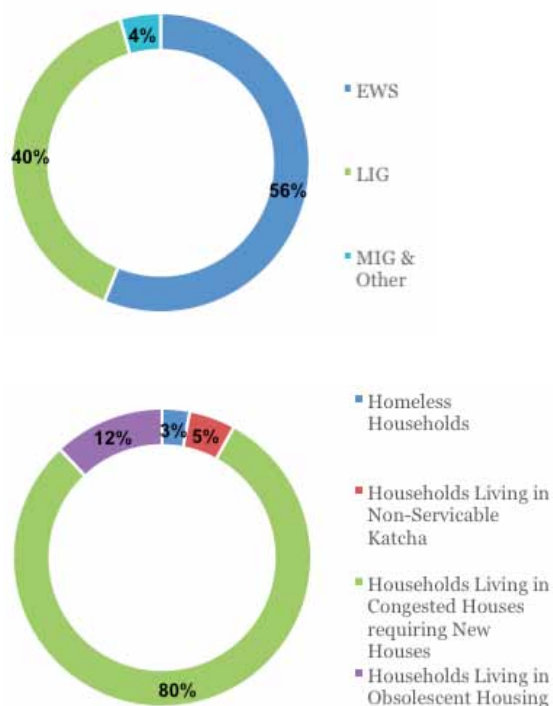


Fig 1: Demographic composition with respect to income and housing.

Source: Report of the Technical Group on Urban Housing Shortage, MoHUPA 2012

Apart from the housing shortage arising as a result of urban migration, there also exists a problem of increasing urban poverty. Poverty in India has declined from 320.3 million in 1993-94 to 301.7 million in 2004-05. Although the total number has declined by 18 million, as per the NSSO the number of urban poor has risen by 4.4 million within the same time span, (Open Government Data Platform).

Urban poverty has been observed to be a major crisis in Delhi. The shortage of housing in urban areas, along with increasing urban

poverty, gives us the basis for the need for affordable housing. Provision of proper housing to the urban poor at affordable rates (below the average market rates) relative to their incomes is an urgent requirement.

This paper aims at elucidating the concept of affordable housing and analysing the fissures and fault lines in the planning and implementation of schemes for affordable housing taken up by the government and in the facilities offered. On the basis of the research, it offers recommendations which could potentially ameliorate the problem at hand.

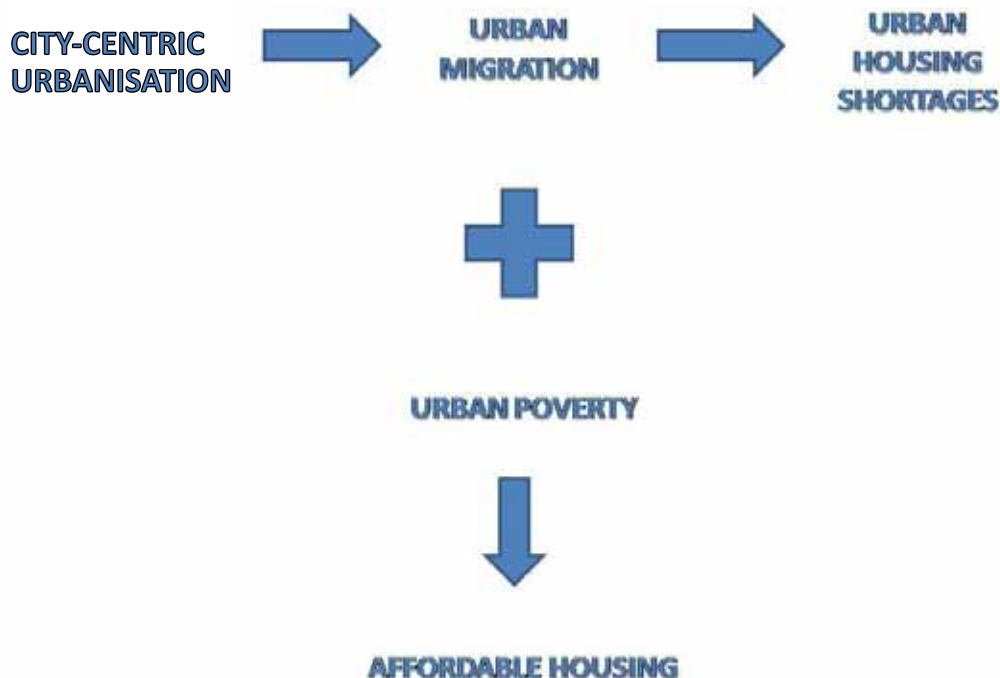


Fig. 2: Factors giving rise to the need for affordable housing

Stakeholder Analysis

The stakeholders in housing projects can be divided into four broad groups:

the providers of affordable housing, the policy makers for affordable housing, the beneficiaries of affordable housing, and the additional service providers.

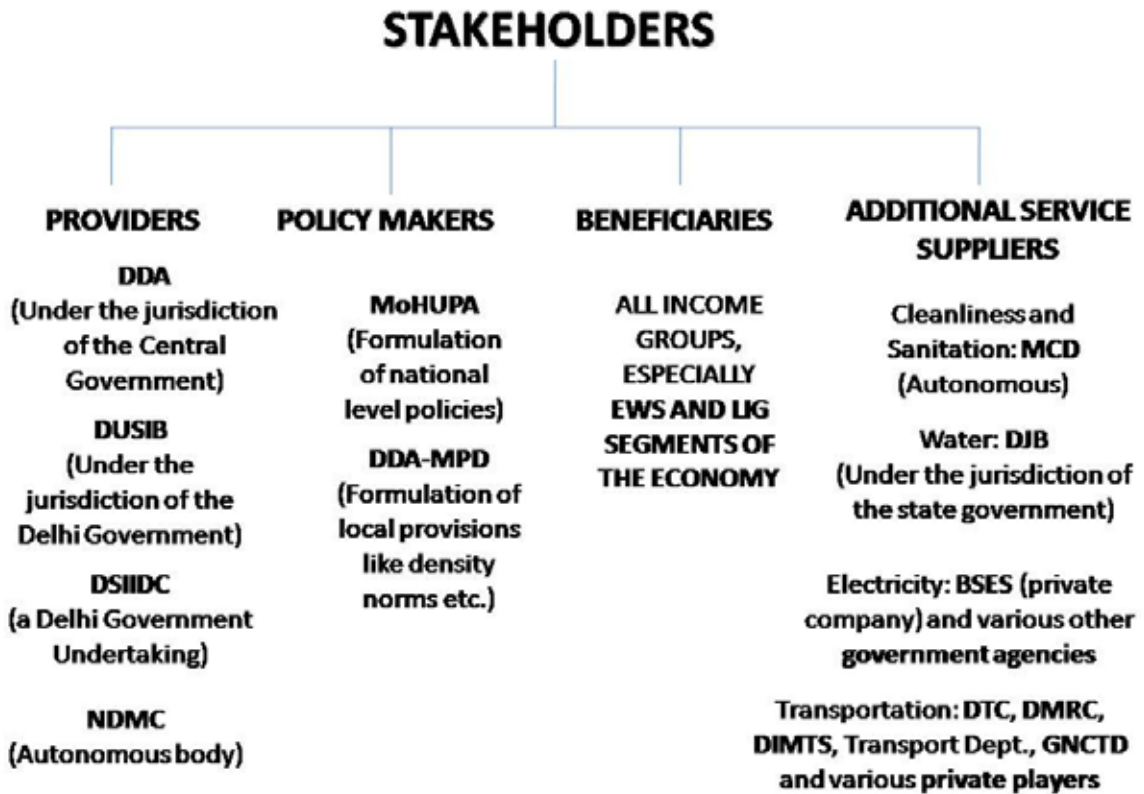


Fig. 3: Major Stakeholders in Affordable Housing Projects

Providers

There are four major providers of affordable housing:

1. Urban local bodies:
 - i) Delhi Development Authority (DDA)
– under the jurisdiction of the Central Government
 - ii) New Delhi Municipal Council (NDMC)
– autonomous body
2. Delhi Urban Shelter Improvement Board (DUSIB) – under jurisdiction of the State Government
3. Delhi State Industrial and Infrastructure Development Corporation Limited (DSIIDC) – under jurisdiction of the State Government
4. The private sector, which is involved in certain cases for provision of affordable housing in construction and development capacities

DELHI DEVELOPMENT AUTHORITY

The Delhi Development Authority is an urban local body that acquires its role as the ninth developer of the State of Delhi from the Delhi Development Act 1957 to “promote and secure the development of Delhi” (Delhi Development Act, 1957).

It falls under the jurisdiction of the Central Government and is under the direct control of the Ministry of Urban Development. The Lieutenant Governor of the National Capital Territory of Delhi is the ex-officio Chairman of DDA.

DDA undertakes affordable housing activities for Economically Weaker Sections (EWS), Lower-Income Groups (LIG), Middle-Income

Groups (MIG) and High-Income Groups (HIG), and also relocation and in-situ rehabilitation activities for the residents of *Jhuggi Jhopri (JJ)* clusters. It launches a housing scheme almost every year under which it provides houses for various income categories. The Slum and JJ Department has now been largely transferred to the Delhi Urban Shelter Improvement Board. Recently, it has also taken up construction under the Pradhan Mantri Awas Yojana (PMAY).

DELHI URBAN SHELTER IMPROVEMENT BOARD

The Delhi Urban Shelter Improvement Board functions under the control of the Government of the National Capital Territory of Delhi (GNCTD) and within the purview of the DUSIB Act, 2010. The Act was passed by the legislative assembly of the Delhi Government on 1 April 2010 and came into force by orders of the Lieutenant Governor on 1 July 2010. Under this Act, DUSIB has the power “to notify certain areas as slums, where with the passage of time, the buildings have become dilapidated and the basic civic services are missing” (DUSIB, official website).

In addition to this, DUSIB has also been assigned the role of providing civic amenities to JJ Squatter Settlements/Clusters and undertaking their resettlement.

The Slum and JJ Department was, earlier, frequently transferred between the MCD and DDA before it finally came under the ambit of DUSIB.

DUSIB also works to implement the housing activities that the State Government is liable to carry out under the policies launched by the Central Government.

DELHI STATE INDUSTRIAL AND INFRASTRUCTURE DEVELOPMENT CORPORATION

Delhi State Industrial and Infrastructure Development Corporation Ltd. is a government undertaking that was established in February 1971. It is an agency of the Delhi Government that not only undertakes housing activities required to be conducted by the Delhi Government as per the national policies but also provides housing for industrial workers.

NEW DELHI MUNICIPAL COUNCIL

The NDMC is an autonomous urban local body that provides housing for its employees as per the Government of India accommodation rules and the rules passed by the council from time to time (NDMC, official website).

Policy Makers

There are two major policy makers for affordable housing:

1. Ministry of Housing and Urban Poverty Alleviation (MoHUPA)
2. Delhi Development Authority through its Master Plan

MINISTRY OF HOUSING AND URBAN POVERTY ALLEVIATION

The Ministry of Housing and Urban Poverty Alleviation is the main governmental authority at the national level for formulating policies and undertaking a wide range of monitoring, sponsoring, supporting and coordinating activities with regard to the

issues of urban employment, poverty and housing in our country. It is presently headed by Shri M. Venkaiah Naidu, Minister of Housing and Urban Poverty Alleviation. Among its most important roles is that of policy formulation. Over the years, the MoHUPA has released several policies aimed at combating the problems of housing in Delhi and for the provision of affordable housing.

Some of its earlier schemes and missions under the Congress government include: Rajiv Awas Yojana (RAY), Jawaharlal Nehru National Urban Rural Mission (JNNURM), Affordable Housing in Partnership (AHP) and Rajiv Rinn Yojana (RRY). Presently, under the BJP Government, the Pradhan Mantri Awas Yojana has been launched by the MoHUPA which discontinues earlier schemes of the RAY, RRY, and AHP — only subsuming liabilities of the approved projects. It introduces new schemes such as the Credit Linked Subsidy Scheme, and the Credit Guarantee Fund Scheme which are aimed at providing financial assistance to the economically weaker sections and lower-income segments for meeting their housing needs.

DELHI DEVELOPMENT AUTHORITY'S MASTER PLAN FOR DELHI

The first Master Plan for Delhi (MPD-62), proposed by the Delhi Development Authority with the aim of achieving planned development in the capital, was launched in 1962.

Subsequent to the MPD-62, two new Master Plans have been drafted: MPD-2001 and MPD-2021. The Master Plans are revised every five years. They aim at providing

ways, means and procedures which “enable a coordinated and integrated approach” towards the development of the city, which are extremely necessary given the numerous agencies in Delhi dealing with different urban services. Apart from focusing on critical issues such as housing and infrastructure, which is imperative for securing development, the Master Plans have also always focussed on “the planning process itself and the related aspects of governance and management” (MPD- 2021).

The vision of the current MPD-2021 is “to make Delhi a global metropolis and a world-class city, where all the people would be engaged in productive work with a better quality of life, living in a sustainable environment”.

Service Providers

The main, service providers are those concerned with the provision of electricity, water, transport and sanitation.

ELECTRICITY

While power generation (National Thermal Power Corporation, National Hydro Power Corporation, Damodar Valley Corporation, Indraprastha Gas Company Ltd., Pragati, Bawana) and transmission (Power Grid, Delhi Transco) are entirely supervised by the Central and state governments via various agencies, power distribution is primarily carried out by private companies (such as BSES). The government (through New Delhi Municipal Council and Military Engineering services) also plays a role in distribution.

WATER

The Delhi Jal Board (DJB), functioning under the Delhi Government, is required to provide water to all parts of Delhi, including the affordable housing settlements constructed by the DDA and other local and corporate bodies.

TRANSPORTATION

The various modes and means of transportation in Delhi are managed by government agencies like the Delhi Transport Corporation (DTC), Delhi Metro Rail Corporation (DMRC), Delhi Integrated Multi-Modal Transit System (DMITS); all of which come under the overarching supervision of the Transport Department of the GNCTD. There are also various private players, for instance private taxi services like Ola and Uber, involved in providing transportation services in various capacities.

CLEANLINESS AND SANITATION

The Municipal Corporation of Delhi (MCD) is an autonomous body. It is not directly involved in provision of affordable housing. It is, however, charged with ancillary functions such as cleanliness and community service which are also necessary aspects of housing provision. It also works for providing accommodation to its own employees.

Beneficiaries

The beneficiaries of affordable housing generally include persons from all income groups since most affordable housing schemes build settlements that are a conglomeration of houses meant for LIG, MIG and HIG. The definition of affordable housing, however,

under various schemes, was formulated considering primarily the EWS and LIG. Some of these definitions have been discussed ahead in the Policy Brief section.

Policy Brief: Evaluation of Policy Guidelines

This section analyses four national-level policies and the current MPD with regard to their definition of affordable housing. Within these, the focus was on the following aspects of affordable housing: how the policy defines beneficiaries, the income, the carpet area, the connectivity and the provision of basic services.

National Urban Housing And Habitat Policy

The Ministry of Housing and Urban Poverty Alleviation released the National Urban Housing and Habitat Policy (NUHHP) in 2007. As per the Preamble of the NUHHP, it “intends to promote sustainable development of habitat in the country” by “realising the goal of Affordable Housing for All” (Ministry of Housing and Urban Poverty Alleviation, 2007). Though the term ‘affordable housing’ is mentioned in the Preamble as the main aim of the policy, there is no explicit definition of the term offered by the policy. As far as the objective of affordable housing is concerned, the NUHHP highlights only the importance of increasing the pace of development of housing and consequently the housing stock, and improving the affordability of EWS and LIG categories (MoHUPA, 2007).

The policy does not explicitly state the beneficiaries either. It does, however, enlist provisions for slum dwellers and the persons

belonging to other vulnerable sections of society such as the EWS and LIG. For example, it states that 10-15% of land or 20-25% of Floor Area Ratio (FAR) should be reserved for EWS/LIG housing through legal stipulations and spatial incentives, and that special action plans should be developed for slum dwellers (MoHUPA, 2007). The policy also lays down financial provisions for EWS and LIG. For example, it urges the Housing and Urban Development Corporation (HUDCO) to encourage EWS and LIG housing, states that incentives will be given to Urban Local Bodies (ULBs) and Developmental Bodies to reserve land for EWS and LIG, and that the National Housing Bank should develop a National Shelter Fund in order to provide subsidies to EWS/LIG section (MoHUPA, 2007). It also recommends provisions for slum improvement and upgradation by encouraging the adoption of JNNURM reforms, releasing of Transferable Development Rights (TDR) and increasing FAR (MoHUPA 2007). Thus, even though the policy is not intended specifically for slum dwellers and EWS and LIG categories, since many of its provisions are targeted at these groups, they can be considered to be the main beneficiaries. However, these beneficiaries are not defined based on income. The policy highlights other aspects of housing such as construction, regulatory reforms and building materials (MoHUPA, 2007). This broad, vague approach to the topic of housing in India can be a reason lack of detailed beneficiaries.

With regard to the provision of basic services, the NUHHP states that it is the responsibility of the Central Government to “promote action plans” for providing basic amenities such as water, drainage, sanitation, sewerage, power supply and transport connectivity, and that the State Government must prepare medium

and long-term strategies for providing these basic amenities (MoHUPA, 2007). However, it does not outline guidelines for the Central and state governments to follow in order to ensure implementation of these provisions.

In conclusion, the NUHHP creates a framework for the Central and state-level governments to follow for housing schemes. In practicality, the policy acts more as a list of recommendations which can be further elaborated upon, than a full-fledged blueprint or plan of action. It fails to provide specific details on how the plans and suggestions are to be implemented or acted upon. The website of the MoHUPA states that a revised version of the NUHHP, in line with the agenda of the Pradhan Mantri Awas Yojana and its mission of Housing for All by 2022, is set to be released in 2017. The revised version can perhaps be expected to provide more details and plans for implementation, taking into account all the various aspects associated with affordable housing.

Jawaharlal Nehru Urban Renewal Mission

The JNNURM was launched in 2005 and was initially intended to last until 2012. However, the mission was extended till March 2017 to complete the projects that had been initiated. The Mission aims to “encourage reforms and fast track planned development of identified cities” (MoHUPA, 2005). It comprises two sub-missions:

- Sub-mission for Urban Infrastructure and Governance
- Sub-mission for Basic Services to the Urban Poor (BSUP)

The issue of housing falls under the second sub-mission, which places a special focus on the “integrated development of slums through projects for providing shelter, basic services and other related civic amenities with a view to providing utilities to the urban poor” (MoHUPA, 2005). The basic services intended for the urban poor include “security of tenure at affordable prices, improved housing, water supply and sanitation, and ensuring delivery of other existing universal services of the government for education, health and social security” (MoHUPA, 2009). The provision “security of tenure at affordable prices” aligns closely with the definition of affordable housing discussed above. The sub-mission itself, however, does not offer any explicit definition of affordable housing. The term “improved housing” is also vague in that it does not mention the ways in which housing is to be improved. However, the provision of other services like water and sanitation has been included within the outlined objectives. Services such as the delivery of education, health and social security, however, are not linked to housing in this mission. The provision of these services has been stated as a mandatory reform for ULBs but the Mission does not specify how this will be achieved. This can be problematic, especially considering the lack of guidelines for defining what “affordable prices” are.

Although the title of the sub-mission cites the urban poor as the beneficiaries, the sub-mission does not clarify which persons constitute the urban poor. As per the general and BSUP guidelines, however, the beneficiaries seem to include slum dwellers and persons belonging to the EWS and LIG categories. The sub-mission also recommends earmarking at least 20-25% of

developed land in all housing projects (public and private) for EWS and LIG categories (MoHUPA, 2009). However, this provision is an optional reform and does not lay down any mandates. There are also no guidelines which take into consideration the incomes of the beneficiaries or the carpet area of the houses to be provided. This makes the sub-mission's terms extremely vague and susceptible to manipulation or misuse.

In conclusion, the BSUP sub-mission is not solely geared towards the provision of affordable houses. The provision of housing is only one part of the basic services it aims at providing. Like the NUHHP, it recommends reforms that will streamline the process of construction and land usage, which help in the availability of housing, but it is not directly linked to its provision. In this manner, the BSUP Sub-mission is broad and superficial in addressing the provision of affordable housing.

Rajiv Awas Yojana

RAY was launched in June 2011 to achieve a "Slum Free India". Its preparatory phase went on till June 2013, lasting two years. Its second implementation phase began on 2013 and will last until 2022, focussing on two primary agendas:

- Curative strategy: "Bringing all existing slums into the formal system and enabling them to avail the basic amenities that are available for the rest of the city" (MoHUPA, 2013).
- Preventive strategy: "Redressing the failures of the formal system that lie behind the creation of slums by planning for affordable

housing stock for the urban poor and initiating crucial policy changes required for facilitating the same" (MoHUPA, 2013).

Under RAY, the Affordable Housing in Partnership (AHP), which is part of the preventive strategy, encourages the creation of "affordable housing stock for the prevention of slums, promote public-private partnership (PPP)" and the provision of "stimulus to the activities of housing boards and development authorities" (MoHUPA, 2013). Though RAY does not define the concept of affordable housing either, through the AHP, it does define the income and carpet area criteria for EWS and LIG housing, as is depicted in the table below.

Table 1: Income criteria for EWS and LIG as specified under AHP, RAY

	Annual Household Income
EWS	Upto INR 1 lakh
LIG	Between INR 1 to 2 lakhs

Table 2: Carpet area criteria for EWS and LIG as specified under AHP, RAY

	Carpet Area
EWS	21 to 27 sq. m.
LIG-A	28 to 40 sq. m.
LIG-B	41 to 60 sq. m.

The AHP allows individual states to determine the sale prices of the houses, taking into consideration the purchasing power of people from the EWS and LIG categories. However, the AHP does not mention or take into account the provision of basic amenities or connectivity.

The other beneficiaries of RAY are slum dwellers, as per its "Slum Free India" aim.

The implementation phase of RAY involves planning Detailed Project Reports (DPR) for selected slums within a city. The role of the DPRs is to integrate housing with basic civic infrastructure and social amenities such as health, education, social security and connectivity to city civic infrastructure along with basic infrastructure such as water supply, sewerage, drainage etc. (MoHUPA 2013). RAY emphasises that DPRs should focus on in-situ redevelopment and up-gradation in order to prevent “loss of livelihood linkages or additional commuting leading to loss of income” (MoHUPA 2013). In this way, RAY does aim to fulfil the requirement of basic services and transport connectivity for slum dwellers.

In conclusion, Rajiv Awas Yojana seems to be better planned than past policies. Its curative and preventative strategies aim not only at improving the current situation of slums but also at preventing the proliferation of slums. RAY has now been subsumed under the Pradhan Mantri Awas Yojana.

Pradhan Mantri Awas Yojana – Housing For All 2022

PMAY was launched in 2015 with the aim of providing housing to all eligible families and beneficiaries by 2022. It was designed to be carried out in three phases and provides four options for the beneficiaries:

- **IN-SITU SLUM REDEVELOPMENT:**

All slums are included under in-situ redevelopment. This option encourages the role of the private sector for particular slums approved by the responsible authorities. It will provide a slum

rehabilitation grant of rupees one lakh per dwelling unit. However, states/UTs have the flexibility to spend more or less than this amount (MoHUPA, 2015).

- **AFFORDABLE HOUSING THROUGH CREDIT LINKED SUBSIDY:**

This option is a demand-side intervention for EWS and LIG sections seeking loans from banks, housing finance companies and other such institutions by increasing credit flow. It provides an interest subsidy at the rate of 6.5% for tenure of 15 years and a loan amount up to rupees six lakh at the subsidised rate. (MoHUPA, 2015)

- **AFFORDABLE HOUSING IN PARTNERSHIP:**

This option is a supply-side intervention that will provide financial assistance to EWS houses being built in PPP. Central assistance, under this option, will only be given to projects that have at least 35% of the houses for EWS sections and have at least 250 houses (MoHUPA 2015).

- **SUBSIDY FOR BENEFICIARY-LED INDIVIDUAL HOUSE CONSTRUCTION:**

This option helps give assistance to individual EWS families to either construct new houses or enhance existing houses on their own. It states that central assistance will be given at the rate of INR 1.5 lakh per EWS house. It requires beneficiaries to already be residing in slums and to not be covered under in-situ redevelopment. It states that financial assistance will be released in instalments and that the

beneficiary is to use one's own funds as well (MoHUPA, 2015).

Though PMAY does not define affordable housing, it does provide a definition for an EWS house. It states that an EWS house is “an all-weather single unit or a unit in a multi-storeyed super-structure having carpet area of up to 30 sq. m. with adequate basic civic services and infrastructure services like toilet, water, electricity etc.” (MoHUPA 2015). This definition of an EWS house not only takes into consideration the size of the house, but also the basic services.

The PMAY also clearly defines a beneficiary as a family that “comprises of a husband, wife, unmarried sons and/or unmarried daughters” (MoHUPA 2015). It further states that a beneficiary family should “not own a pucca (an all-weather dwelling unit) house either in his/her name or in the name of any member of his/her family in any part of” (MoHUPA 2015). Therefore, it does not mark out beneficiaries according to income but rather by the ownership of a pucca house. It also states that beneficiaries can avail only one of the four options under PMAY.

PMAY defines the income and carpet area criteria for EWS and LIG categories for the purpose of credit-linked subsidy scheme, as is depicted in the table below.

Table 3: Income criteria for EWS and LIG under the PMAY

	Annual Household Income
EWS	Upto INR 3 lakh
LIG	Between INR 3 lakh to 6 lakh

Table 4: Carpet area specified for EWS and LIG under the PMAY

	Carpet Area
EWS	Upto 30 sq. m.
LIG	Upto 60 sq. m.

States/UTs can redefine the annual income and carpet area criteria depending on the local conditions in consultation with the Central Government. This provision takes again takes into account the affordability of the persons in need.

An article published in mid-2016 in The Indian Express highlighted the progress of this policy a year after its launch, revealing the true picture. The article quotes Chandana Das, a housing activist who is a part of the development organisation Youth for Unity and Voluntary Action. Das, commenting on the in-situ slum redevelopment, affordable housing in partnership, and beneficiary-led individual house construction options under the PMAY, states that the “central finding of INR 1 to 1.5 lakh per unit is grossly inadequate for construction houses in metros such as Mumbai and Delhi and even in many smaller towns” (Nair, 2016). With regard to the credit-linked subsidy scheme, the article quotes the development economist, Amitabh Kundu, who states that “even after an interest subsidy ... the EMI works out to Rs 3,000 per month” which, according to him, is “not affordable for the poor” (Nair 2016). Therefore, the PMAY does not really take into consideration the affordability of its beneficiaries. Even though it does allow states to redefine income and carpet area criteria for its beneficiaries, the amount of financial assistance given per house under its various options cannot be changed. This fixed financial assistance does not help

tackle the issue of affordability for EWS and LIG categories.

In conclusion, PMAY seems to be better designed than other policies since it defines specifically the income and carpet area criteria as well as what constitutes a beneficiary and an EWS house.

Master Plan for Delhi (MPD) 2021

In defining its beneficiaries, the MPD highlights a distinction between the slum dwellers and pavement dwellers, and the EWS and LIG categories (Delhi Development Authority, 2010). However, it does not define the income and carpet area criteria for EWS and LIG categories. It only provides the carpet area of relocation sites for slum dwellers. Thus, it can be assumed that it follows the income and carpet area criteria defined in some of the national-level policies such as the Rajiv Awas Yojana and the Pradhan Mantri Awas Yojana. An important aim highlighted under this plan is the provision of housing for the urban poor to the extent of 50-55% of the total housing (DDA 2010).

The MPD does not provide a definition of affordable housing for its housing strategy, but does focus on increasing net residential density. For housing the urban poor, it has instituted a change in its approach for slum relocation in that it proposes a change in the area of housing (from 18 to 25 sq. m.), an increase in FAR, provision of TDR, provision of tenure rights and acknowledgement of affordability of slum dwellers (DDA 2010). However, like NUHHP and JNNURM, it does not say how this change will be implemented. For the prevention of growth of slums, the plan mandates the provision of EWS housing

or slum rehabilitation in all group housing to the extent of 15% of permissible FAR or 35% of dwelling units on the plot, whichever is higher (DDA 2010). It further states that these projects are to be undertaken by public and private agencies and cooperative societies.

In conclusion, the MPD is similar to the NUHHP in that it provides a framework for housing in Delhi. It focuses on many other aspects of development in Delhi and not only on provision of shelter.

Literature Review

There is a massive housing shortage in the country and in Delhi. The case of Delhi is unique in terms of the migrant population that it receives and the multiplicity of public agencies for its governance. Housing has come to be a multi-faceted problem that covers a wide range of sectors including education, transport, healthcare, water and employment. It requires cooperation among these sectors to solve the problem of shortage. Shortcomings in any one of these sectors may render well-intentioned policies and schemes useless. As measured by the Ministry of Housing and Urban Poverty Alleviation, the occupancy rate of dwelling units built under Rajiv Awas Yojana was less than 7% in 2015. This would suggest discrepancies in the planning and implementation of housing schemes, where the requirements of affordable housing are not being met.

There are two broad categories of housing in Delhi – formal and informal. The informal sector consists of slums, squatter settlements and other unauthorised colonies that lie outside the realm of legal access to land. While they differ in their conception, the common characteristic remains a lack of

security of tenure, poor infrastructure and congestion. Apart from these, there are rural villages that were absorbed into the city's geographical limits with the onset of urbanisation to form Delhi's urban villages.

The process of providing affordable housing can be broken down into four steps: planning, land assembly, implementation and final disposal (Sivam 2003). Existing literature on the subject of housing helps understand the planning aspect of the affordable housing project, especially the concept of affordability and how the concept has influenced the outcome of housing schemes in Delhi.

To achieve the goal of affordable housing for all, the term affordability must be defined well within the policy spectrum in order to ensure efficient implementation. The definition of affordability in terms of ability to pay or purchase has received criticism. Traditionally, the 30% affordability definition— “meaning those spending more than 30% of their income on housing while earning in the bottom 40% of the income range”—is used. However, affordability is a

dynamic term that differs from household to household. As is argued by Urmi Sengupta in *Affordable Housing in the Urban Global South: Seeking Sustainable Solutions* (2014), to keep affordability restricted to income and ignore other aspects such as distance from city centre, space, basic amenities, social infrastructure and recurring costs of maintenance may be detrimental for the goal that the government wishes to achieve.

Kiran Wadhwa, in *Affordable Housing for Urban Poor* (2009), claims that low income groups value location and proximity to their place of work the most when searching for shelter, with size as a close second. Lack of job security drives these sections to seek residence close to the city centre. DDA housing projects are usually at a considerable distance from the city centres and DDA flats for LIG and EWS are generally small providing space only for a room, kitchen and bathroom with low ceilings. This may be to reduce costs but it ignores the size of the family and how such small quarters can greatly reduce the utility of the living quarters provided even if it is at subsidised prices.

City	City Centre
Mumbai	Nariman Point
NCR	Connaught Place
Bangalore	MG Road
Chennai	Nungambakkam
Pune	Kalyani Nagar
Kolkata	Park Street
Ahmedabad	Vastrapur

¹Source: Jones Lang LaSalle Research, 1Q12

Note: Figures mentioned are distances of the major locations from the city centre. These are major developers and locations analysed through primary surveys in each city. Projects launched by developers might be currently at higher prices but have units that were originally launched below INR 10 Lakhs during the last 2-3 years.

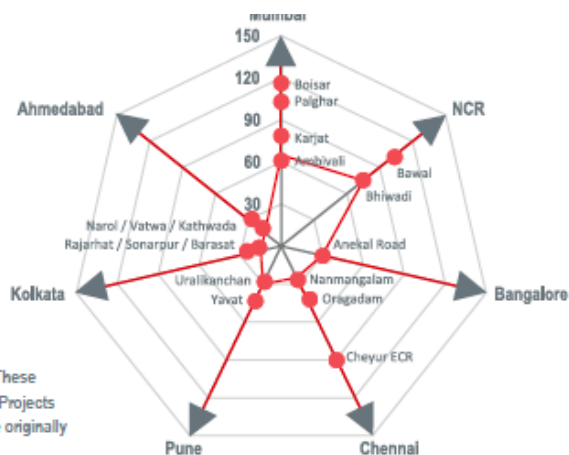


Fig 4: Distance of major affordable housing locations from the city centre

Table 5: Differences in issues concerning public agencies and urban poor regarding housing

Issues concerning the public agency (Housing Provider)	Issues concerning urban poor
<ul style="list-style-type: none"> • Security of tenure to all with provision of affordable housing • Unit with same area and design to all • Water supply and sanitation etc. • Integrated basic services 	<ul style="list-style-type: none"> • Security of tenure/legal ownership and affordable housing • Proximity to workplace and to earn livelihood • Minimum living cost • Proximity to own community/relatives

Source: *Applicability of soft system methodology in problem analysing in the field of affordable housing: Case study of Nonadanga, Kolkata, West Bengal*

Provision of inadequately sized houses has led to illegal expansion of buildings and houses to combat space issues. However, it is not within the means of all families to do so and may be largely carried out by second or third generation buyers. Wadhwa further argues that to view size as a luxury demanded by the rich would imply that affordability of housing suffers from a class bias. The transportation

and opportunity costs of location and space may be just high enough for allottees of DDA schemes to choose not to sell these flats or put them up for rent. This makes it necessary to differentiate between low-cost housing and affordable housing. Thus, while these schemes may be targeting LIG and EWS, these groups may not necessarily be the ones who benefit from it. Therefore, turning to the informal

Table 6: A brief review and comparison of low-cost and affordable housing on the basis of most important parameters

Parameters	Low-cost housing	Affordable housing
Amenities	Bare minimum to none	Basic
Target income class	EWS and LIG	LIG and MIG
Size	<28 sq. m.	28-112 sq. m.
Location	Inner city, some in periphery	Inner city
Developer	Government	Private developers, government
EMI to gross income	>30%	>40%
Finance sources	MFIs	Commercial banks

Source: *Compiled from KPMG (2010) and MGI (2010), Affordable housing in the Urban Global South by Urmi Sengupta*

housing sector may be due to these needs being overlooked for the EWS and LIG.

According to A. K. Jain, the ex-commissioner of planning at the DDA (2016), restrictions on Floor Area Ratio (FAR) and Floor Space Index (FSI) may lead to under-utilisation of land. To avoid this, norms for relaxation were introduced in the NUHHP (2007) that would allow for greater supply of housing stock. However, it may also lead to the speculative and vacant housing that has been observed with the latest schemes.

Poor trunk infrastructure when providing social housing seems to be a problem of poor coordination between various agencies and the DDA. Alpina Sivam, (2003), is of the view that public-private partnerships are essential for an efficient housing market. Taking a sample of Canberra and Melbourne in Australia, Lucknow, Ahmedabad and Gurgaon in India, and Jakarta and Singapore, it was found that it is essential for all stakeholders—housing cooperatives, private sector, public sector, financial sector etc.—to be active participants in the provision of affordable housing.

The Sukhobristi Housing Project in Rajarhat, Kolkata examined by Sengupta makes another case for public-private partnerships. The houses were offered along the lines of luxury housing offered to middle and higher income groups by private developers and there are a variety of other facilities such as shopping malls and guard houses. This project was made possible by government aid in the form of off-site subsidy and relaxation of density, FAR and unit size norms (which helped them earn more from the given land). Low transportation costs in Kolkata were also a

contributing factor. Thus, here we have an example where the synergies of the various stakeholders involved results in benefitting the target group.

Premium quality 'ready to move' housing being provided by the private sector helps diminish the opportunity cost problem discussed in terms of affordable housing provided by the government because the house that you now get is more than just walls and basic amenities. The inclusion of private sector, thus, invariably has to come with the condition of improved housing finance outreach for the urban poor because with the private sector housing does become more expensive than what is offered by the government.

Another goal of affordable housing is to empower the beneficiaries and allow for upward social mobility. Anushree Deb, (2016) observes that one of the ways to achieve this is to remove segregations between housing provided for various income groups and promote interaction by sharing of common spaces. This can create incentives to develop commercial centres within housing projects and to an extent eliminate the trade-off between travel and residence. This can be observed in the case of the Wangsa Maju township in Kuala Lumpur that provided affordable housing to middle and low-income groups. Its high occupancy rate is credited to its location close to the city centre and use of public-private partnerships.

Taking a sample of DDA colonies of LIG and EWS housing in Delhi, these problems i.e. poor off-site infrastructure, large distances from city centre, lack of mixing of income groups and size constraints seem to hold true.

Research Methodology

In order to understand the ground reality of affordable housing activities carried out by the Delhi Development Authority, four EWS and LIG DDA settlements were visited in the following locations:

- Sector 28, Rohini
- Sector 14, Dwarka
- Sector 16, Dwarka
- Sector 26, Dwarka



Img. 1: Rohini, Sector 28: Water is mainly provided through such water tanks



Img. 2: Dwarka, Sector 26: A large number of buildings are being used for commercial purposes



Img. 3: Dwarka, Sector 16: An abundance of vehicles suggests that people living here belong to middle and higher income groups

A total of 30 responses were received from all four settlements combined.

Primary research involved meeting with residents of EWS and LIG housing settlements constructed by the DDA, and government or bureaucratic officials involved with the process of affordable housing by the DDA in order to gain first-hand information. Secondary research involved an interview with Mr. Uttam Gupta, the Deputy Director of Planning (Master Plan), DDA. The discussion with him verified findings from the primary research.

It was decided that the data collected from the primary research would be represented through a case study for the following reasons:

- The population size, i.e. the number of beneficiaries of the DDA schemes, was too large.
- The number of respondents was relatively very small because the sites were not easy to reach, and most people did not answer openly as they were inherently suspicious.
- Hardly any LIG beneficiaries were found to be residing in the flats, the reasons for which shall be explained in the next section.

The residents' responses regarding ownership of the house, i.e. whether or not they were the original allottees; the quality of services (electricity, water, cleanliness, transportation and connectivity) provided; the proximity of the settlements to schools and hospitals; and the degree of convenience regarding the size of the house were recorded orally.

Findings

Primary Research

1. PERSONS OCCUPYING THE HOUSE

In all the four settlements, only 15% of the houses were occupied by the original allottees.

No original allottees were found in the settlements at Rohini and Jasola. One original allottee each was found in Dwarka Sectors 14 and 16. Two original allottees were found in Dwarka Sector 26.

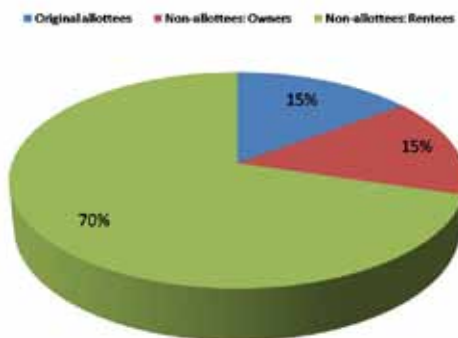


Fig.5: Type of respondents

When the respondents (both allottees and non-allottees) were asked why the original allottees/beneficiaries did not reside in the houses allocated to them, they cited the following reasons:

- The houses were too far away from their place of work
- Lack of proper connectivity to surrounding places
- Poor quality of construction and basic services

Most respondents were rentees (non-allottees) and paid rent at the following rates (Table 7):

Table 7: Rent paid as per location visited

Location	Rent
Dwarka Sector 16	INR 4000-7000
Dwarka Sector 14	INR 9500-10,000
Dwarka Sector 26	INR 3000-6000
Rohini Sector 28	INR 2500-4500

2. TRANSPORT AND CONNECTIVITY

Respondents cited multiple problems with transportation and connectivity. These problems included lack of a proper functioning road leading to the settlement (Dwarka Sector 26), absence of easily accessible public transport (Sarita Vihar during its early days) and lack of basic transportation services like bus transport (Rohini Sector 28).

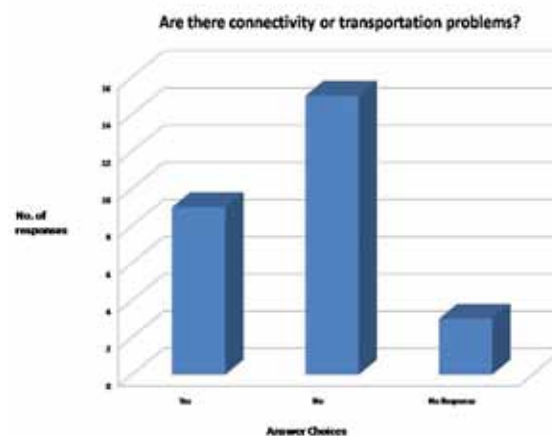


Fig.6: Transportation and connectivity problems

The following discrepancies must be noted before drawing any conclusion from the data tabulated above.

- a) Of the total number of persons who did not have a problem with transportation and connectivity, 25% already owned some means of conveyance. Approximately 25% of the people used Ola and Uber to commute to their work place daily.
- b) One third of the respondents (10 out of 30) were unwilling to divulge information regarding ownership of personal means of conveyance.
- c) 85% of the respondents covered were not original allottees who might have originally faced the problem and for whom the lack of these transportation and connectivity services could have been a reason for letting of the DDA flats acquired under a scheme.

Problems of poor connectivity and lack of proper modes and means of transport were more visible in the newer settlements like the ones in Dwarka Sector 26 and 16 and in Rohini Sector 28. Dwarka Sector 14 and Sarita Vihar in Jasola, which are relatively older settlements, have developed over the years and therefore have fewer transportation and connectivity problems. The eventual and gradual development of transportation and connectivity, however, must not be used to justify the initial absence of these essential services. These services must be set up right from the time that the house is allotted to the beneficiaries.

It was also observed that settlements where problems relating to connectivity and access to schools and hospitals were relatively more were those wherein only LIG flats were located, for example, Dwarka Sector 26 and 16, and Rohini Sector 28. Settlements at Jasola and Dwarka Sector 14, which house

LIG, MIG, HIG, and SFS beneficiaries together, face relatively fewer problems. It can thus be concluded that in places where people belonging to various income categories live together, the level of services and accessibility are better.

3. HOUSE SIZE

50% of the respondents were satisfied with the size of the houses and the remaining 50% cited various problems. 15% were not satisfied and 27% were satisfied only because they had small families. Almost all families which found the house size convenient were those which had either three or four members only.

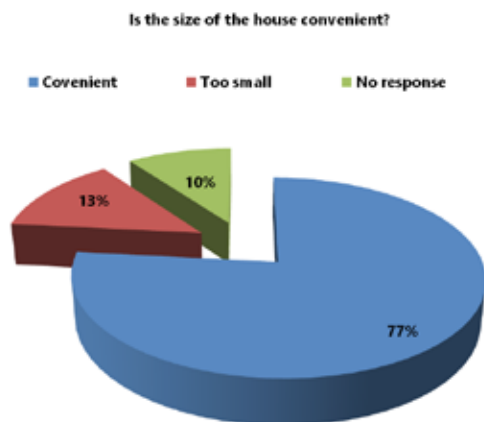


Fig. 7: Satisfaction with house size

4. UTILISATION OF ALLOTTED SPACE

Instances of illegal expansion were found at the settlements in Jasola and Dwarka Sector 16. 1-BHK houses had been expanded into 2-BHK or 3-BHK as per convenience. Residents claimed that inspection did not take place regularly, and even when inspection officers were sent to check illegal expansions, their silence was bought through bribes.

A large number of flats in all four settlements

were also being used for commercial or commercial-cum-residential purposes.

An original allottee residing in the LIG Housing Settlement in Dwarka Sector 16, which had been built under the 1981 Residential Scheme, rated that he was given possession of the house in 2005, almost 25 years after the scheme had been launched. By this time, the 1-BHK house allotted to him no longer held any utility for his family which now consisted of six members. Similar instances of delayed action, however, were not observed at any of the other settlements. A real estate agent dealing in DDA flats, when spoken to, claimed that huge time lags were not that rare a phenomenon and occurred quite often. This time lag was also observed to be a reason as to why beneficiaries did not live in the houses allotted to them; by the time they received possession of the houses, they no longer had any use for them as the sizes of their families and incomes had grown over the years.



Img. 4: This picture is of an illegal extension occurring in Dwarka Sector 16.

Secondary Research

An interview with Mr. Uttam Gupta, the Deputy Director of Planning (Master Plan), DDA, was also conducted. His responses verified the findings from the primary research. He was in agreement with the observation that the affordable housing activities undertaken by the DDA were not serving their purpose of providing housing to the low-income classes and residents of unauthorised colonies. Most of the houses under these schemes were being used as an investment and for “speculation” in the real estate market.

The major findings from the interview are as follows:

1. Mr. Gupta cited the following as the major reasons for the beneficiaries not residing in the houses provided to them:
 - i. **Location:** the settlements are generally located far away from the beneficiaries' place of work, and due to a lack of coordination between the governmental and autonomous agencies which provide connectivity, transport, employment opportunities etc., cheap and well-connected means of transport are not available to the residents.
 - ii. **Quality:** Low-cost housing invariably leads to low quality of infrastructure because the cost of construction is very high. Technological upgradation for bringing down costs is hard to attain as it requires multiple sanctions and approvals from governmental echelons.

- iii. **No need for housing:** The people currently residing in JJ clusters and other unauthorised colonies do not need the houses being provided under the banner of affordable housing by the DDA and other governmental agencies. These houses were being demanded purely for the purpose of speculation. This is due to the low quality of the houses and services provided. The beneficiaries, thus, find it more useful to sell off these houses in the black market at high premium rates or rent them out and secure themselves a regular source of income.
2. In order to combat the use of affordable housing for investment and speculation, the DDA came up with the five-year lock-in clause in its housing schemes according to which a house cannot be sold for a period of five years after its possession has been granted to a beneficiary. This, however, is not a sustainable solution to the problem. It is also problematic because it only addresses the symptom rather than the actual root of the problem.
 3. Private sector participation (PPP) in affordable housing activities is not feasible in Delhi because:
 - i. Delhi is a UT and hence all land and housing-related matters are largely controlled by the Central Government.
 - ii. With its numerous agencies, multiplicity of authority, and incoherent and disputable division of powers and functions, PPP does not provide a very feasible model.
 4. In order to ensure private sector participation, the DDA has laid down

provisions in the MPD which require all housing developers to ensure that 15% of FAR or 35% of the dwelling units, whichever is more, are constructed for EWS and LIG (MPD 2021).

5. Improving the current scenario of affordable housing in Delhi will require:
 - i. Greater awareness among all stakeholders involved, especially the beneficiaries so that they are able to demand proper services.
 - ii. Stricter administration to ensure that all agencies work in tandem to make the affordable housing schemes successful.

Recommendations

After due observation and analysis, the following recommendations are offered to address the various problems associated with affordable housing in Delhi.

1. More precise and comprehensive definitions of affordable housing:

The national-level policies and the schemes initiated by the various governmental and autonomous agencies in Delhi, all define and view affordable housing in terms of two parameters only: income of the intended beneficiary and the size of the house. Various income groups are provided houses of varying sizes, with the size of the house being directly proportional to the income of the beneficiary. These current efforts are inefficient as they fail to address other key aspects of affordable housing such as location, quality of construction and services, and size of the house. These aspects are just as necessary as the income of the household and the size of the

house being provided.

Until and unless the provisions for affordable housing both at the national and local levels do not take into consideration the above-mentioned factors and ensures that these considerations filter into the final ground-level activities for affordable housing, the efforts directed towards affordable housing will continue to fall short of adequately benefiting the target group.

2. Setting up a separate committee with better representation, responsibility and accountability:

There are a number of factors associated with affordable housing: construction of the houses, provision of electricity, provision of water, provision of sanitation, regular and timely maintenance of construction, provision of roads and better connectivity, access to cheap and convenient means of transportation. Problems arise because different agencies are responsible for the different jobs listed above, and there exists a lack of coordination between these agencies. Each agency tries to shrug off responsibility and a blame game ensues when a beneficiary complains about or tries to avail a facility that has not been provided. Thus, a separate committee under the Ministry of Housing and Urban Poverty Alleviation must be formed, which is solely entrusted with the duty of providing and maintaining affordable housing.

This new committee must have representatives from all the major stakeholders involved in the provision of affordable housing, with the Central Government acting as the ultimate overseeing and approving authority (through the MoHUPA). The committee must be involved in all the activities relating

to affordable housing, rather than being concerned solely with construction and disposal of affordable houses. For ensuring a smooth functioning of all operations, the committee must be divided into separate wings to cater to the four geographical divisions of the city of Delhi. Further subdivisions can be made if the need arises. This committee must be the one point of contact for any problems that the beneficiaries might have with regard to the affordable houses at any point in time.

3. The inclusion of the private sector for technological upgradation:

The level of technological sophistication can vary with the political party in power. The private sector must be given the impetus of technological upgradation as it would greatly increase the efficiency of affordable housing schemes by ensuring better quality of construction of buildings thereby also making the process more economical. Private parties can also provide services that require maintenance over a long period of time, for instance, elevators.

Conclusion

Affordable Housing is a vast, complex issue, involving not only low-cost housing but also quality services, connectivity, security, privacy and dignity. Given the large population and skewed rate of urbanisation leading to urban housing shortages and poverty, affordable housing has become a major issue in our country and even more so in our capital, Delhi. Redefining the concept of affordable housing in national and state-level schemes and policies can help the situation in a major way. Developing a rental housing market and extending the reach of the formal market will also improve the situation.

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LABOUR AND EMPLOYMENT

Implementation of Minimum Wages Act, 1948

Asma Khan, Ruchi Avtar and Sharon Jose

EXECUTIVE SUMMARY

India introduced the Minimum Wages Act in 1948 to create a basic standard of living for all workers, to create fair labour standards and to stimulate consumption among the low-income groups. A minimum wage serves as the price floor level which is set by a tripartite committee consisting of the government, employers' representatives and employees' representatives. Workers are classified as un-skilled, semi-skilled, skilled and highly-skilled with wages varying according to the skill set.

In India, an alarming 82.7% of the workforce falls under the unorganised sector that is vulnerable to exploitation and non-payment of minimum wages attributable to their illiteracy and lack of effective bargaining power. The worrying trend is the increasing rate of informal employment, leaving the workers with little to no access to social security schemes. This has also spread to the organised sector due to contractualisation, which outsources the task of bringing in the required number of workers to certain contractors. Contractors themselves fall outside the ambit of regulation, resulting in widespread informality and flexible labour relations that cause a hindrance to effective implementation of the Act. This paper focuses on construction workers and security guards who, despite their large numbers, face the most exploitation.

In March 2017, the Delhi Government enacted a 37% hike in the minimum wages across all the listed industries, decided by a Minimum Wages Advisory Committee. Initially this change was met with opposition from various stakeholders. The exact impact of the hike cannot be determined in this study due to the limited time frame since its implementation. However, there is speculation that it may cause a turn towards automation or result in greater informalisation.

To determine and investigate the actual implementation of the hike, primary analysis was undertaken across the chosen sectors. Construction workers employed in private and public works along with security guards working at residences, hospitals, schools, banks and heritage sites were surveyed. Various stakeholders and eminent economists were also interviewed. The three key issues identified with the implementation of the Act were lack of awareness, blatant non-compliance of payment and pitfalls in enforcement.

This paper lays down recommendations to address these pitfalls, that advocate for effective implementation of the Act. There is a need for greater awareness through combined efforts of the government and civil society. Empowerment of the labourers through unionisation and proper enforcement of the law will go a long way to address the issue of exploitation faced by thousands of workers in the country.

To ensure the protection of interests of both employers and workers, the paper suggests linking wages with productivity and performance of the workers. This, along with the provision of a greater social security net, would reduce inequality and help to alleviate poverty. The International Labour Organization (ILO) defines decent work as opportunities for work that are productive and deliver a fair income, security in the workplace and social protection for workers and their families. Being able to achieve such a benchmark will balance the objectives of social goals and market responses.

KEY FINDINGS

1. The Delhi Government enacted a 37% hike in minimum wages across all the scheduled industries on 6 March 2017. Five months after the hike came into force, there is no visible evidence of its implementation.
2. There is little to no awareness of the mandated minimum wage among both employers and workers. The government has not made any significant efforts to rectify this deplorable situation.
3. 88% of the workers interviewed do not receive the standard minimum wage. Alarming, even the 68 of the 105 workers who know the exact minimum wage are unable to demand or negotiate their rightful due. Workers engaged in public works undertaken by the government are in no better state.
4. The major issue discovered is the increasing shift towards contractualisation with even the government opting for the same. These contractors usually end up with a free reign due to a lack of regulation and exploit the workers by paying wages much lower than the stipulated amount.
5. Construction workers and security guards lack the ability and opportunity to unionise, attributable to their mobile nature of employment. This puts them in a weak bargaining position to negotiate their wages.
6. Inspectors appointed by the government are responsible for the enforcement of the Act. However, a lack of manpower and engagement in corrupt practices has undermined the essence of this very provision.
7. There is no effective grievance redressal mechanism set up to address the atrocities faced by the poor workers.

Introduction

India is a labour surplus country with a workforce of over 51.37 crore (Central Intelligence Agency, 2016) which is expected to expand by 16-17 crore by 2020 (ASSOCHAM). This workforce is divided into the organised and unorganised sectors and the formal and informal sectors.

Organised Sector: Comprises industries that come under the purview of certain appropriate authorities or the government and are supposed to follow all the rules and regulations set by that authority.

Unorganised Sector: Comprises organisations that are not incorporated within or affiliated to the government or any

appropriate authority and are therefore not required to follow any rules.

Informal Sector: Comprises all unincorporated proprietary and partnership enterprises, as per NSSO. National Account Statistics (NAS) states that the informal sector can be considered to be a subset of the unorganised sector.

Formal Sector: Comprises all the enterprises and establishments that are registered, protected and taxed by the government. It is a subset of the organised sector.

An alarming 82.7% of the workforce in India falls within the unorganised sector (Ministry of Labour and Employment, 2017). These persons constitute a huge majority of the workforce, and thus make important contributions to the GDP. Despite this fact, labourers in the unorganised sector are vulnerable to exploitation, attributable to their illiteracy and lack of effective bargaining power. The worrying trend is the increasing rate of informal employment even in the organised sector leaving them with little to no access to social security schemes.

Many labour laws have been passed over the years, targeting a majority of the Indian workforce and laying down mandates on how employment in various industries should be regulated. But their implementation is rare and often flawed. Sharma (2006) recommends “simplifying and rationalizing the complex and ambiguous pieces of labour legislation that allows for labour adjustment with adequate social and income security.” In an attempt to simplify, amalgamate and rationalise

the relevant provisions of the existing 44 Central Labour Laws, the government has proposed a Labour Code on Wages Bill. It has been proposed as “a bill to consolidate and amend the law relating to wages and bonus and the matters connected there with or incidental thereto.” If the proposed bill is passed it will subsume the current laws: Minimum Wages Act of 1948, the Payment of Wages Act of 1936, the Payment of Bonus Act of 1965 and the Equal Remuneration Act of 1976.

The motivation behind the introduction of a standard minimum wage is:

- To increase the standard of living for the most vulnerable and disadvantaged sections of society.
- To create fair labour standards with the government setting the minimum wage as the bargained wage set for all workers, not just the most vulnerable. Lack of labour unions to ensure a collective bargaining power for all workers made a standard minimum wage important.
- To increase incentives to take jobs, as opposed to other methods of transferring income to the poor such as food subsidies or welfare payments for the unemployed that make them dependent on government.
- To stimulate consumption by putting more money in the hands of the low-income people who spend their entire paycheques. This increases the purchasing power of these sections, leading to greater circulation of money throughout the economy.

Minimum Wages

A minimum wage is the lowest remuneration that employers can legally pay their workers. In other words, it is the price floor below which workers may not sell their labour. It is thus an important determinant of the employment level. This can be shown through the simple demand-supply curves.

Labour is usually one of the most essential factors required in operation of any firm. The corresponding cost incurred by a firm to employ labour is the wage rate paid to them. Thus, the cost incurred by a firm is an increasing function of the number of workers employed, and their wage rate. This is because as the wage rate rises, it becomes more expensive for firms to hire workers and so firms hire fewer workers or hire them for fewer hours. The demand curve for labour, which shows the number of workers hired at different wage rates, is therefore downward sloping. On the flip side, labourers want the maximum wage possible. Since higher wages increase the number of labourers willing to work, the supply curve for labour, which shows the number of workers willing to be employed at various wages, is upward

sloping this is seen in Fig 1 below. With no minimum wage in place, wages will adjust until quantity of labour demanded is equal to quantity supplied, reaching equilibrium at W_0 where the supply and demand curves intersect. Usually this market level of wages is way too low to provide for the basic amenities for a single individual. Minimum wages are then set as a price floor above the equilibrium price at W_1 . This price floor is the minimum an employer must pay in order to employ a worker. At this wage level, the demand for labourers will be L_2 while the supply will be at L_1 . Since more workers are willing to provide labour than that demanded by employers, this will result in a situation of unemployment.

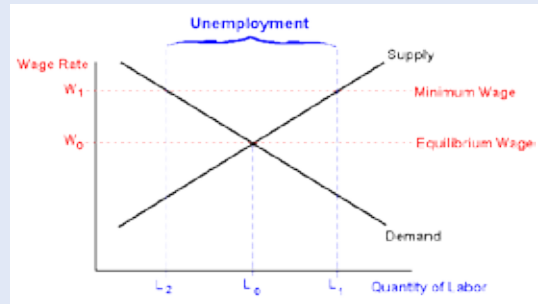


Fig 1: Demand and supply curve for labour and wages

Introduced initially with the intention of uplifting the labour class, the concept of minimum wage has evolved over the years. According to eminent economist Guy Standing (2008), minimum wages at best provide a standard of decency to guide employers and workers on what would be fair and reasonable in the actual conditions of the time. However minimum wage laws

have received less support from economists in general as compared to the common public. Economists disagree as to the measurable impact of minimum wages in practice. Despite decades of experience and economic research, debates about the costs and benefits of minimum wages continue today (Wendy Cunningham, 2007). The most important questions raised are:

- Do minimum wages exacerbate the unemployment situation? In market economies, an above-market wage creates unemployment. The question remains, how high can the government set the wage without aggravating unemployment?
- Are minimum wage policies a means to increase low wages? There seems to be a counter-intuitive reality where benefits of a minimum wage are being reaped by the more skilled and wealthier population at the expense of the poorest who are the first victims of attrition.
- Are minimum wage policies effective in economies with a large informal sector? Informal sector workers earn the lowest wages and therefore require more protection. However, these workers are by definition outside the government's sphere of direct influence, so minimum wage policies may essentially not reach the intended beneficiaries.
- Are minimum wages creating a greater divide in the industry? Since the large industries have an option of turning to automation, any uniform mandated wage

Table1: Arguments for a against minimum wage.

Arguments in favour of minimum wage laws	Arguments against minimum wage laws
<ul style="list-style-type: none"> • Removes financial stress and encourages education, resulting in better paying jobs • Increases the standard of living for the poorest and most vulnerable people • Increases incentives to take jobs, as opposed to other methods of transferring income to the poor that are not tied to employment (such as food subsidies for the poor or welfare payments for the unemployed) • Encourages efficiency and automation of industry • Increases technological development since labour costs increase • Removes low paying jobs, forcing workers to train for, and move to, higher paying jobs • Stimulates consumption, by putting more money in the hands of low-income people who spend their entire paychecks. Hence increases circulation of money through the economy • Decreases the cost of government social welfare programs by increasing incomes for the lowest-paid • Encourages people to join the workforce rather than pursuing money through illegal means, e.g. selling illegal drugs 	<ul style="list-style-type: none"> • Discourages further education among the poor by enticing people to enter the job market • Benefits some workers at the expense of the poorest and least productive. • May not prove effective at alleviating poverty due to the disemployment effects • Encourages employers to replace low-skilled workers with computers, such as self-checkout machines • Reduces quantity demanded of workers, either through a reduction in the number of hours worked by individuals, or through a reduction in the number of jobs. • Hurts small business more than large business • Discriminates against, through pricing out, less qualified workers (including newcomers to the labour market) by keeping them from accumulating work experience and qualifications, and thus higher wages later • May cause price inflation as businesses try to compensate for the higher costs by raising the prices of the goods being sold • May result in the exclusion of certain groups (ethnic, gender etc.) from the labour force • Disemployment effects lead to labourers moving to other states or countries in search of jobs

tends to hurt smaller businesses more. This excludes low cost competitors from labour markets which generates various industrial-economic inefficiencies.

Minimum Wages Act, 1948

The Minimum Wages Act 1948 is an Act concerning Indian labour law that sets the minimum wages that must be paid to workers in the industries specified by the government in the scheduled list. The minimum wages are determined by the Central and State governments in the scheduled employments falling within their respective jurisdictions which employ more than 1000 workers. The Act legally binds the employers to pay the fixed level of minimum wages at fixed intervals. There are 45 scheduled employments under the Central jurisdiction which pertain to any authority of the Central Government including Railway administration, while under the State sphere, the number of such employments is 1,709 (Annual Report 2015-16, Ministry of Labour and Employment).

The main provisions laid down by the Act are as follows (arranged in order of relevance for this paper):

Section 3(1)(a): Sets and imposes the payment of minimum wages in industries covered under scheduled employments, which employ 1,000 or more workers.

Section 12: States the right of workers engaged in a scheduled employment to a minimum wage which every employer is required to pay.

Section 13: Fixes hours of work for a normal working day inclusive of intervals of rest and payment for the day of rest.

Section 14: Lays down the criteria for overtime wages.

Section 11: Dictates payment of wages in cash without any deductions other than statutory deductions.

Section 25: Stipulates that any contract or agreement, whereby an employee either relinquishes or reduces his right to a minimum rate of wages shall be null and void in so far as it purports to reduce the minimum rate of wages.

Section 3: Dictates the Variable Dearness Allowance (VDA) to be linked to the Consumer Price Index Number which is to be revised twice a year effective from April and October. The minimum rates of wages will be reviewed/ revised, for every five years, by the appropriate government.

Section 18: Mandates maintaining records of the employees by the employers specifying details regarding their name, age, place of birth, etc. Registers relating to fines imposed, deductions for damage/loss caused to the employers should be maintained and preserved for a period of 3 years after the date of last entry made therein.

Section 19: Prescribes the appointment of inspectors by the State government who shall enforce the Act by inspecting the premises of the employer in terms of payment of wages, work given to the workers and information maintained in the records.

Section 22: Imposes that anyone contravening the rules of the Act shall be punished with a fine and/or imprisonment which may extend to period of six months.

As per Section 4 of the Act, the minimum wages are set based on basic wages and cost of living index. The yardsticks on which minimum wages are revised are as follows:

- a) 3 consumption units per earner
- b) Minimum food requirement of 2,700 calories per average Indian adult
- c) Cloth requirement of 72 yards per annum per family
- d) Rent corresponding to the minimum area provided under the Government's Industrial Housing Scheme
- e) Fuel, lighting and other miscellaneous items of expenditure to constitute 20% of the total Minimum Wages
- f) Children education, medical requirement, minimum recreation including festivals/ ceremonies and provision for old age, marriage etc. should further constitute 25% of the total Minimum Wage.

A uniform and comprehensive wage policy for all sectors of the economy is difficult to set because of the variety of occupations and costs of living across the nation. In order to reduce the disparity in the minimum wages set by the government, the concept of National Floor Level Minimum Wage as a non-statutory measure was introduced on the basis of the recommendations of the National Commission on Rural Labour in 1991. The central government has raised the National Floor Level Minimum Wage from INR 137/- to INR 160/- per day with effect from 1 July 2015 corresponding to an increase in the

Consumer Price Index (Annual Report 2015-16, Ministry of Labour and Employment). State governments have the liberty to set a wage rate that is atleast equal to, or greater than the National Floor Level.

As per the Act, a revision of the minimum rates should take place after an appropriate interval of five years. In Section 5 of the Minimum Wages Act 1948, two methods have been prescribed for the fixation/revision of minimum wages. The first is the 'Committee Method' where tripartite committees and sub-committees are set up by the appropriate governments to hold enquiries and make recommendations with regard to the fixation and revision of minimum wages. The second is the 'Notification Method' where government proposals are published in the Official Gazette for information of the persons likely to be affected thereby. It specifies a date not less than two months from the date of the notification on which the proposals will be taken into consideration.

Classification

The Government has divided eligible workers as unskilled, semi-skilled, skilled and highly skilled. These can be defined as follows:

- **Unskilled:** An unskilled employee is one who performs operations that involve simple duties, requiring little or no independent judgment or previous experience although familiarity with the occupational environment is necessary.
- **Semi-skilled:** A semi-skilled worker is one who performs work of routine nature with limited scope which includes

proper discharge of duties assigned. It is a relatively narrow job with no application of individual judgement or skill as important decisions are made by higher authorities/employers.

- **Skilled:** A skilled employee is one who is capable of working efficiently, exercising considerable independent judgement and discharging duties with responsibility. The employee must possess a thorough and comprehensive knowledge of the trade, craft or industry.
- **Highly Skilled:** A highly skilled worker is one who is capable of working efficiently and supervises the work of skilled employees.

This classification has been done purposefully since most industries do not have clear-cut segregations. In their practical application, however, these definitions display ambiguity resulting in classification of many occupations being contested.

Sectors Assessed in this Study

India's legislature has numerous provisions relating to minimum wages, working conditions and improvement of the welfare and living standards of workers. However, proper enforcement of the same is rare. Minimum wage violations are not unusual, especially in the industries where labourers are poor, vulnerable, illiterate, have less bargaining power, are movable labour lack unions, work on daily wage and are found in abundance (Kumar and Fernandes, 2015). For the purpose of this study, two such sectors have been observed and analysed – construction workers and security guards.

Construction Workers

For the protection of construction workers, The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 was enacted. In force since 1 March, 1996, it states that the employer is to provide safe drinking water and a place to stay along with paying the minimum wage as mandated by the government. However, despite such legislature, the construction industry still witnesses labour abuses such as unpaid salaries, poor living conditions, hazardous working conditions, exploitation by the contractors, no crèche facilities for women, etc. The impermanent nature of jobs of construction labourers and the fact that most of them are migrants make them difficult to reach. Coupled with the lack of data, this poses complex challenges for state and non-governmental actors. For the state, the challenges include the enforcement of existing labour and wage regulations as well as housing and services. Non-governmental actors are confronted with the dilemma of how best to gain access to this invisible and transient pool of contract construction labour (Kumar and Fernandes, 2015).

According to a report by McKinsey Global Institute (2017), the construction sector in India has the potential to add 50 million jobs over the next 10 years. Due to the fundamental problems that plague this industry, despite the immense scope to absorb a huge amount of surplus labour population and give them meaningful employment and livelihood, this sector was chosen for the study. In this study, as per the definitions of the kinds of workers given

above, construction workers are classified as semi-skilled workers.

Security Guards

“India has almost six million security personnel engaged by thousands of private security firms operating in various parts of the country.” (Sanjay Upadhyaya, 2011). They are often neglected and exploited as they work in poor and risky working conditions and lack the power to negotiate. They work for 12 hours even in extreme weather conditions. According to the Private Securities Agencies Regulation Act, 2005, “security guards are to be paid double for overtime but most of them are not paid for covering 24 hours of another guard.” They are frequently displaced which keeps them disunited, and are not paid any allowance for relocation. Guards are mostly appointed by agencies where the principal employer does not regulate the contractor. The contractors then take undue advantage of this leeway, making this sector prone to exploitation. D. Reghunath Panaveli, State President, Kerala State Private Security Contractors Federation, has said that the price war owing to intense competition among agencies coupled with clients’ demand for cheaper service invariably reflected in low pay for security employees.

K. Vijayan Pillai, president of Kerala Security Employees Union, raised the issue of double jurisdiction, wherein the licence to agencies is issued by the home department while the labour department handles employment-related issues. This results in confusion and lets agencies go scot-free. As a result, security agencies have emerged in the absence of any

regulatory mechanism. Thus, very few security agencies are licensed.

As per the Union Minister of Labour and Employment, Bandaru Dattatreya (The Hindu, 2017), unarmed security guards should be classified as skilled workers and armed security guards as highly skilled workers. This has been proposed to enhance wages of over 50 lakh security personnel employed in the private security space, as well as to provide social cover to over 2.5 crore of their family members. However, research done on the conditions of persons engaged in security services in India is miniscule and therefore this paper covers this sector. For the purpose of this research, unarmed security guards have been considered as skilled workers.

Hike in Minimum Wages

The Delhi government became the first in the country to impose the highest hike of 37% in minimum wages, following ratification of the cabinet decision by the Hon’ble Lieutenant Governor of Delhi, Mr Anil Bajjal on 3 March 2017. The last such revision was carried out in 1994, about 22 years ago, with only the Variable Dearness Allowance (VDA) being increased bi-annually in line with the Consumer Price Index number. Dubbed as “historic” and “highest” in independent India by Arvind Kejriwal, Chief Minister, the hike is in force post notification in the Official Gazette on 4 March 2017. The government is confident that over 50 million families will benefit from this move. It has been specially mentioned that the minimum rates of wages being fixed are linked with All India Consumer Price Index Series, 2001 (Base 2001=100).

The hiked wages are as given below:

Table2: Hiked wages per category of worker.

Schedule of Employments	Category of Workmen/ Employees	Minimum rates of wages in Rupees	
		Per Month	Per Day
All scheduled employments	Unskilled	13,350/-	513/-
	Semi-skilled	14,698/-	565/-
	Skilled	16,182/-	622/-
	Clerical and supervisory staff		
	Non-matriculate	14,698/-	565/-
	Matriculate but not graduate	16,182/-	622/-
	Graduate and above	17,604/-	677/-

The Lt. Governor approved the constitution of the Minimum Wages Advisory Committee comprising employers' representatives, workers' representatives and government representatives which was notified on 15th September 2016. Rates from Kendriya Bhandar for food items and rates from Khadi Gram Udyog for clothing components were adopted. There were huge differences in calculations of the team of employers' representatives and the team of workmen's representatives. While the employers calculated INR 8,525 per month. for the unskilled category, the trade unions calculated INR 16,200 per month . for the unskilled category. Therefore, the Labour Department worked out the calculations by adopting parameters as laid down by the International Labour Conference held in 1957 and the judgment given by the Supreme Court in the year 1991.

However, right after the Labour Department came out with the final numbers, the hike faced strong opposition from the Apex Chamber of Commerce & Industry, which represents the interest of around 50,000 MSME units in Delhi. They went to the High

Court, contesting the recommendations made by the Committee on the grounds that it lacked the LG's prior approval (violation of Section 5) and that the nominated committee was in violation of Section 9 as it did not comprise an equal number of representatives from the employer category. Apex's claim was that out of the five representatives for the employers, two were from PWD and DMRC respectively which took away the say of MSMEs. This goes against the entire idea of a tripartite committee which gives an equal say to all the stakeholders who are to be affected by any such decision.

Three days after the Delhi Government announced the revised minimum wages, the High Court partially stayed the order. A bench comprising the Chief Justice G Rohini and Justice Sangita Dhingra Sehgal took a call on the Minimum Wages (Delhi) Amendment Bill, 2015 in which the government proposed a penalty of INR 50,000 and a jail term of up to three years for violation of provisions of the Act. They directed the government "not to take any coercive action" in attempting to enforce the stricter penalty on non-payment of higher wages. At present, the penalty is

INR 500 while the jail term is six months, as was specified in 1948.

In May 2017, the Delhi Labour Minister Gopal Rai clarified that there was no stay by the Delhi High Court on the minimum wages order. The Labour Department is confident that the hike has already been implemented in over 100 departments of the government.

Possible Effect of the Hike

Every five years the minimum wages are hiked by 2-3% over and above the adjustment for inflation, but the 2017 hike has been like no other. At the time of the writing of this paper, it has only been three months since the hike has been brought into effect. Though the hike has been welcomed by all workers covered under the scheduled industries, its true impact remains under scrutiny.

The increase has raised opposition from various stakeholders including employers across scheduled industries, government officials and eminent economists. While the hike could easily be government propaganda aimed at maximising votes, the labourers are easily led to an illusion that the government has acted keeping their best interests in mind. A hike would encourage employers to replace the labourers with technology which is a huge loss for a labour surplus country like India. An overvalued hike would not only increase the burden on employers to pay but also increase corruption and poverty. This hike may only lead to a short-term improved image of the party. Even though unemployment would be a short-term externality, the long-term effects would involve decreased purchasing power of the labourers as they resort to even lower

wages in the informal sector. Only the better skilled workers would manage to stay in the industry while the lesser skilled labourers who require greater protection would be adversely affected.

Any increase in wages leaves the employer with two choices. The employer could either increase the prices depending on the elasticity of their products and services or reduce their costs by employing fewer workers. If the employers fail to improve profits or reduce costs, it could lead to bankruptcy. This could also reduce incentives for opening businesses, industries and other establishments which would further reduce job creation possibly resulting in dependence on more foreign investment even though workers in India remain underemployed.

Institutional Problems

LACK OF MANPOWER IN THE LABOUR DEPARTMENT TO ENFORCE THE ACT

Trade unions have pointed out that the Department of Labour lacks adequate manpower to implement the hike. Anurag Saxena, leader of the Centre of Trade Union as well as member of Delhi government's committee for all the scheduled employments under the Minimum Wages Act, 1948, reveals that there are only 11 labour inspectors in Delhi government's labour department to implement the newly approved minimum wages with more than 20 lakh labourers. Ashok Agarwal, an advocate in the Delhi High Court, argued that the Delhi Government could not even implement the earlier rates of minimum wages due to lack of manpower. He adds that the labour department is overburdened with work, as

there are 24 labour laws in the capital state and the department has only 170 employees to implement them. He also mentions that the entire department is functioning on 24% of the staff strength that was prevalent in the 1970s. Lallan Singh, a deputy labour commissioner admits that his office has a nearly 40% shortage of manpower.

PROBLEM OF CONTRACTUALISATION GIVING RISE TO INFORMALISATION

Another major challenge is the problem of contractualisation. Large modern enterprises have embarked upon informalisation by contracting out much of their labour work using sub- contractors, casual labour and agency labour. However, the State, responsible for regulating the organised sector, has also begun to systematically contract out large parts of its formal employment, thus enlarging the informal sector. Labour informalisation is associated with precariousness, lack of regulation of labour contracts and widespread illegality leading to an increase in poverty in the labour market.

INCREASING PAY-PRODUCTIVITY GAP

The Indian economy is entering a "productive growth phase" and real GDP growth is likely to rise to 7.9% by December driven by favourable external demand, improving corporate balance sheets and private capex recovery, says a report (Hindu BusinessLine 20017). However, if an economy flourishes as a result of increased productivity, it does not necessitate the fact that such a growth will percolate to the economically weaker sections of the society. Despite the staggering economic growth India is witnessing, the lower classes in India have weak bargaining

power and receive low wages. There is no shortage of workers seeking employment at construction sites, often at very low wages.

A similar case can be seen in the US. From 1973 to 2015, net productivity rose 73.4%, while the hourly pay of typical workers essentially stagnated — increasing only 11.1% over 42 years (after adjusting for inflation). This means that although Americans are working more productively than ever, the fruits of their labours have primarily accrued to those at the top and to corporate profits, especially in recent years.

The income, wages and wealth generated over the last four decades have failed to “trickle down” to the vast majority largely because policy choices made on behalf of those with the most income, wealth and power have exacerbated inequality. Most of these policies have eroded labour standards and weakened labour market institutions that have reduced workers’ individual and collective power to bargain for higher wages. For example, the creation of Special Economic Zones (SEZs) by the government to attract foreign investors by providing them with cheap labour. In essence, rising inequality has prevented potential pay growth from translating into actual pay growth for most workers. The result has been wage stagnation or payment of lower wages.

Research Methodology

With an objective to assess the degree of efficiency of the implementation of the Act in the two sectors chosen, a field study was conducted to determine the awareness and the extent of enforcement of the Act. The survey method of collection of data was adopted using a comprehensive questionnaire. 55 construction

workers, falling within the 'semi-skilled' category, employed in private and public works were interviewed. 50 security guards, belonging to the 'skilled' category, working at residences, hospitals, schools, banks and heritage sites were interviewed to gauge the present-day situation and get an array of opinions. (Questionnaire attached in Appendix 1).

For the purpose of this research, due to the paucity of time and ease of access, the area of focus was chosen as South Delhi, comprising the following localities:

- Hauz Khas
- Green Park
- R.K. Puram
- Defence Colony
- Greater Kailash
- Vasant Kunj
- Saket
- Satya Niketan
- Khirki Village
- Shapur Jat
- Chanakyapuri
- Hauz Rani Village
- Okhla

The aim of the field research was to get a qualitative idea of the current situation in the two chosen sectors from a wide variety of employment contracts. A balanced combination of private and public works was maintained across both construction workers and security guards to get a better representation of ground reality.

The following aspects of the Act were assessed:

- Basic awareness of the concept of minimum wages.
- Payment of minimum wages as specified by the Delhi Government for different

industries.

- Number of hours of duty during the week.
- Payment of work done overtime and provision of paid leave.
- Inspections of the wages paid, meant to be conducted by labour inspectors appointed under the Act.

Along with on-ground surveys, in-person interviews were held with the President of Apex Chamber of Commerce, and eminent economists and dignitaries. Arup Mitra, AJC Bose, Sanjay Upadhyaya and Manohar Lal, who have worked in the field of labour economics and social security have made an important contribution to this research. The primary data has been supported by secondary information collected extensively from online sources such as the Economic Survey of Delhi 2015-16, NSSO surveys, Economic and Political Weekly and academic writings on minimum wages.

Constraints And Limitations

The researchers were faced with the following limitations while conducting the research:

1. Workers were reluctant to talk about their income in the presence of the contractors and thus it was difficult to elicit answers.
2. Since there is no data on the exact number of people engaged in construction work and security services in South Delhi, it is hard to determine the percentage of the work force represented in the chosen sample of 55 and 50, respectively.

Findings

- 46 construction workers and 24 guards out of the total 105 workers interviewed were

Table 3: Findings

	CONSTRUCTION WORKERS	SECURITY GUARDS
Awareness	84% workers were unaware of minimum wage.	48% guards were unaware of minimum wage.
Payment of Minimum Wages	92% workers were not paid the minimum wage.	84% guards were not paid the minimum wage.
Working hours	76.36% workers worked for eight to nine hours and the remaining 23.63% workers worked for more than nine hours.	38% guards worked for eight to nine hours and the rest 62% guards worked for 12 hours.
Overtime and Paid Leave	70.90% workers did not receive extra wages for working overtime while 85.45% did not get paid leave.	26% guards did not receive extra wages for working overtime and 92% did not get paid leave.
Inspection	No one was ever asked.	96% claimed that no inspector came to inspect their wages.
Grievance Redressal Mechanism	None of the workers were aware of any grievance redressal mechanism.	4% were aware of the existence of a grievance redressal mechanism but did not trust its working.

not aware of the minimum wage set by the government for their nature of work. The females especially were unaware and were thus exploited more than men. The guards were relatively more aware of the exact minimum wages set by the Delhi Government. The construction workers were more concerned with just getting a job. Alarming, a significant number of contractors themselves were unaware of a mandated minimum wage, which highlights the root of the problem.

- A staggering number of 95 workers out of the 105 interviewed were not receiving the mandated minimum wages. Some employers said this was because the workers' value did not equal the cost borne by the employers in paying their wages. The workers chose to work at a lower wage due to excess supply of labour. While non-compliance in payment in the private sector is widely prevalent, it was surprising to note that the same case existed in the government-sanctioned works like road construction and the Delhi Metro.
- Basic provisions like overtime pay or even a single day of paid leave in a month was found to be a distant reality. Almost 85% of those surveyed in both sectors were not given such benefits. A majority of the respondents worked more hours than mandated in the Act.
- The Act mandates a government-appointed inspector to keep a check on the wages being paid. Of all the people surveyed, only two claimed to have had their wages inquired about by an official. Apart from them, no one had ever faced an inquiry. Contractors also stated that they had never had any visits from an inspector.
- Across both sectors, 88% of the respondents said they were not able to negotiate their wages due to the fear of losing their jobs. Even when some of them did attempt to negotiate, their appeals were not taken into consideration by their supervisors. When asked why a majority of persons were not part of any unions acting as a strong collective voice, both sectors expressed their

plight. The guards claimed that frequent shifts in posting and varied wages caused them to remain disunited. The construction workers cited frequent migration as the reason for a lack of unionisation.

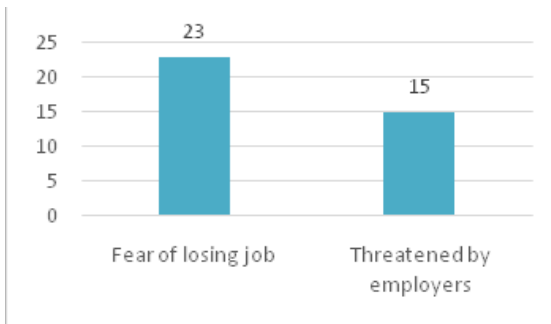


Fig 2: Why are the construction workers unable to negotiate their wages?

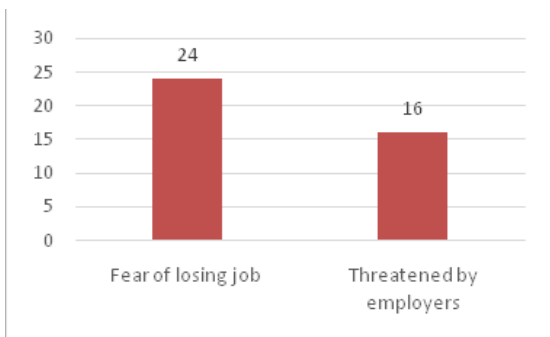


Fig 3: Why are the guards unable to negotiate their wages?

- Despite the Act not mandating provisions for social security benefits, there was reasonable access to these provisions. Most security guards said they received a contribution to ESI (Employees’ State Insurance) and PF (Provident Fund) but some also complained that they did not receive their entitlement even though it was cut from their salary. Construction workers were much worse off – only a few received food and water while at work.

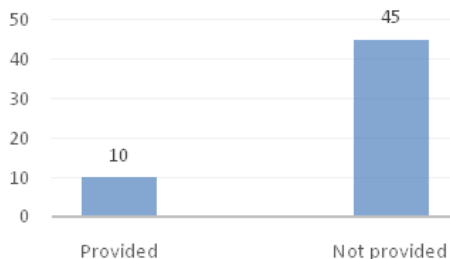


Fig 4: Do workers get any benefits?

Fig 5: How many guards are provided facilities?

- Most of the workers interviewed were hired through contractors and despite the Contract Labour (Regulation and Abolition Act) 1970, none of these contractors come under regulation. This has resulted in the formal sector also being informalised. The pathetic plight of workers was highlighted by a DMRC guard who was aware that INR 18,000 was sanctioned by the government as his standard wage but only received INR 8,000 as the remaining INR 10,000 was pocketed by the contractor. Despite a majority of guards being employed by agencies, the sector still has many problems that are usually associated with contractors.

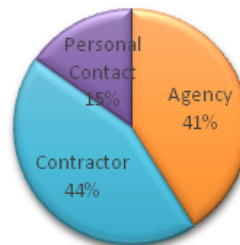


Fig 6: Job Arrangement

Analysis

- **Lack of awareness:** There is little to no awareness of a mandated minimum wage amongst the construction workers and security providers interviewed. Awareness itself is the most essential step towards implementation of the Act because only informed labourers will be able to demand their due. Although the government announced awareness campaigns starting 11 June 2017 for the new minimum wages in Delhi, as of 5 July 2017, none have commenced properly. Attempts to bridge the information asymmetry have failed miserably.
- **Blatant non-compliance of payment:** Despite the passing of an Act and regular upward revisions of the minimum wages, there exists a widespread problem of non-compliance of payment and workers being cheated of their due. Lack of unionisation has resulted in workers not being able to demand their right. A large supply of labour and no medium to voice the exploitation being faced has forced workers into accepting a lower wage.
- **Enforcement issues:** There is hardly any inspection conducted to ensure proper payment of wages to the workers. With a huge shortage in the number of inspectors appointed by the Delhi Government at present, the legal enforcement of the Act has been neglected. In an interview with Arup Mishra, a professor at Institute of Economic Growth, it was found that inspections and grievance redressal mechanisms to address the problems of workers had not been effectively implemented. This is an institutional problem that needs a complete upheaval to

bring in any positive change. Another major issue related to the system of contractors wherein they have a lot of power with practically no regulation has resulted in extreme exploitation and inhumane working conditions for the labourers.

Recommendations

There were several areas of concern identified in the implementation of the Act, such as lack of awareness about the Act, non-payment of minimum wages and lack of enforcement in terms of inspectors not performing their duties. Although the Act is well-formulated, if it is not being implemented well, it could hurt various stakeholders. Ensuring proper implementation could solve a lot of problems faced by the workers and contribute to alleviating poverty among a very large population. Thus, there is a need to tune policy suggestions with the ground reality and focus on real implementation.

Policy Challenge 1

Lack of awareness about the mandated minimum wages among the constructions workers and security guards.

SUGGESTION

1. The awareness campaign can be more efficient if it is taken up simultaneously by the government, civil society and NGOs. The government should publicise the set minimum wages and mandates of the Act through television, radio and newspaper advertisements so that information regarding the same can reach the beneficiaries. Non-governmental organisations should step forward in

creating awareness at the ground level by setting up awareness camps which are more accessible.

- 2 There should be an increase in the number of Worker Facilitation Centres which are accessible to the workers and provide a medium for the workers to gain information about their minimum wages and the social security benefits they are entitled to. There should be simple procedures for enrolment and registration of unorganised workers for various social security schemes. A booklet can be circulated among them which details the list of the various wages set, the social security schemes, their provisions and the procedure to avail them. Such a booklet should be in the language which the workers can easily understand.

Policy Challenge 2

The mandated minimum wages are not being paid to the workers by their employers or contractors.

SUGGESTION

- 1 There is a dire need to empower oppressed voices and give more representation to the workers belonging to the most vulnerable sections of society in the tripartite committees in contrast to the present situation where workers from only one or two industries are represented. The National Centre for Labour is an apex body of a number of member organisations working towards presenting a collective voice for the informal sector workers at the national level. The need of the hour is for more such organisations that have the legal know-how to fight for the workers' rights. NGOs like Centre for Indian Trade Unions and the National Centre for Labour should initiate national debates, exploratory meetings and workshops targeted towards issues related to problems of labourers in the unorganised sector and work towards development of workers unions in all states. Mobilisation of these workers can be done through rallying and creating awareness about their rights in labour chowks and efforts should be made to organise them.
- 2 Daily wage workers like construction workers who are largely movable labour and mostly unregistered, are unable to receive benefits such as ESI, PF and various other social security schemes from the government and the employer. Displacement and frequent migration also make unionisation difficult. To uplift this section of society, formation of labour unions should be encouraged, alongside awareness campaigns.
- 3 The problem of contractors taking away a huge chunk of the wages could be solved by ensuring proper regulation of contractors and providing maximum safeguards to the workers. Contractors have the right to make a profit but in order to increase their profit and at the same to escape the law, they make the workers, who are willing to work at a lower wage due to surplus of labour, sign contracts with the government-set minimum wage written on paper but pay them wages which are less than half that amount. There is a need for more transparent contracts which mentions the exact amount that is actually being paid to the workers. Increased transparency in legal contracts will bring down the exploitation of workers and the present

level of corruption. The government should not set a very high minimum wage which de-incentivises businesses and agencies to come into existence given the lowered chances to make a profit. Contractualisation is a reality which cannot be abolished in the current scenario. The government and the civil society should work closely to bring under regulation the contractors and unlicensed agencies and to ensure that wage security and social security cover is being provided to workers to protect them from exploitation.

Policy Challenge 3

Lack of enforcement efforts on the part of the government

SUGGESTION

- The total manpower and the number of inspectors in the Ministry of Labour and Employment should be increased for the effective implementation of the Act. However, increasing the number of inspectors alone will not solve the issue as these activities can be easily corrupted. There should be strict implementation of the punitive measures for the inspectors and employers who engage in corrupt activities such as bribing or deliberately manipulating reports. This can be ensured by the government empowering the labour unions and organisations representing labourers to keep a check and penalise violators.
- A rather overlooked policy is the idea of paying the labour inspectors higher wages and other benefits. This will enable

them to resist underhand dealings and other forms of illegal activities which renders their role ineffective.

- A coherent enforcement strategy will succeed if it is based on awareness and information, effective and regular labour inspections and punitive measures in case of violation. The best way to ensure this would be to bring in a system of checks and balances on the inspector through the concerted efforts of trade unions of workers as well as the civil society as they would have greater incentive to ensure enforcement. A labour inspector could be accompanied by a member of workers' union or any NGO working towards the cause of labourers of the unorganised sector at the site of inspection.
- There should be a separate provision in the Act which mandates the setting up of a formal Grievance Redressal Cell that is easily accessible to all workers. The settlements of disputes which are received through this Cell should be held in an efficient manner which gives equal voice to all the stakeholders involved. The coverage should extend to the district level where filing of complaints occurs in an impartial way at minimal costs. There should also be a separate online portal for redressing the grievances relating to non-payment of minimum wages and similar disputes.

Looking Beyond

Over time it has been felt that there is a need to set the minimum wage at a level which

balances social goals and market responses. A minimum wage that is set too high by the government may actually aggravate poverty with a rise in short-term unemployment and a shift to the informal sector. Thus, social justice guidelines alone do not suffice for setting the minimum wages. At the same time, the market may recommend very low wages which are unacceptable by the society. Therefore, a careful balance must be struck between the objectives of both the market and the society.

Reaching such a balance may seem next to impossible if an attempt is made to keep all stakeholders pacified. A possible way forward may be to link wages to the productivity and performance targets. This would entail a twofold strategy: first, to bring down the setting of wages from the state level in three broad and highly ambiguous categories to an industry-specific determination; and second, to set up a floor-level wage, determined by the tripartite committee for a very basic survival requirement which is not binding on the employers, and should be paid to the worker. Over and above this base wage, the wages should increase as the individual's productivity or the industry's profits increase. If wages are paid according to this model, it would not hurt the competitiveness in the market. In fact, it would encourage competition as the workers would be incentivised to work more and be more productive to receive higher wages. At the same time, the payment of the floor-level minimum wage would ensure that the worker receives a regular income. Such a wage system also considers the capacity of the employers to pay and reduces the burden on MSMEs and provides scope for small establishments to rise while large

organisations can utilise their capacity to pay the workers.

A combination of floor level minimum wage for every industry, increase in the wages linked to the productivity of workers and a large social security net to secure the workers will contribute towards the welfare of the workers without hurting the market. This will also help bridge the pay-productivity gap which our country is witnessing. Social security schemes like insurance, pension, health and education coverage and others should extend to all the workers. Undocumented workers are vulnerable to exploitation by unscrupulous employers. Consequently, they earn lower wages than workers who have greater access to legal protections and are able to switch jobs more readily. Thus, there is a need to regularise important workers to provide them with basic workplace protections and enable them to earn higher wages.

In the long term, there is a need for India to shift from the concept of basic sustenance, to an idea of decent work and living. As specified by the International Labour Organization (ILO), decent work involves opportunities for work that are productive and deliver a fair income, security in the workplace and social protection for workers and their families. This would enhance the prospects for personal development and social integration, freedom for people to express their concerns and participate in the decisions that affect their lives. Such a situation would provide for equality of opportunity and treatment for men and women alike. Achievement of such a scenario would strike the perfect balance that shall contribute to overall economic and social development.

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Appendix

Questionnaire

QUESTIONNAIRE – GUARDS AND CONSTRUCTION WORKERS

1. Nature of your work?
2. How did you come to know of this job?
3. How much are you paid?
4. How are you paid?
5. How frequently are your wages paid?
6. Are you able to negotiate your wages?
7. What prevents you from demanding a higher wage?
8. Are you a part of any labour union/group who can help you to fight for higher wages?
9. Are your wages increased twice a year or more frequently?
10. How many hours do you have to work in a day? Does this include hours of rest?
11. If you work longer, do you get more pay?
12. If you have to leave work because of any emergency, by how much is your salary cut?
13. Does any government person come to find out how much is being paid to you?
14. Do you know what the mandated minimum wages are for the industry you are in?
15. Do you know about the grievance redressal mechanism set up by the Delhi government?
If yes, have you ever tried to put forth a grievance, and has it been addressed?
16. Apart for money, are there any other facilities provided to you by your employer (like insurance, food, place to stay, etc.)?
17. Does the government provide you any facilities like Insurance or Pension Fund, education facility, provision of food?
18. For ladies: Are you provided with facilities like night crèche, ladies toilet etc?



TRANSPORT

Women Service Providers in Delhi's Public Transport System

Easha Guha, Khushboo Chattree and Shruti Appalla

EXECUTIVE SUMMARY

Studies on travel patterns of women have found that women tend to make shorter and greater number of trips in comparison to men and thereby, prefer using public transport. Besides being reliable, efficient, and affordable, women require transport services to be safe.

This study explores the challenges faced by women service providers in the transport industry with a special focus on safety perceptions and grievance redressal mechanisms. Through primary and secondary research, it concludes that women conductors and drivers within the DTC face major challenges due to the absence of a formal policy, inefficiency of existing grievance redressal mechanism, and a lack of appropriate infrastructure. A pressing need for gender-sensitivity training is also realised. The study further suggests measures to address these policy gaps and achieve favourable workplace environments.

KEY FINDINGS

1. 70% of the female respondents said they prefer an office job over a route job.
2. Female respondents at 10 out of 16 depots cited a lack of basic amenities including water, sanitation and washrooms at the depots.
3. 37% of the female respondents said that they have been on the receiving end of harassment either from a co-worker or a passenger.
4. 76% of the total respondents felt that there is a need for an official platform for women conductors to collectively discuss issues and raise concerns.
5. 72% of the female respondents admitted to having witnessed sexual harassment on the bus in one form or another.
6. 68% of the total respondents felt that the grievance redressal system in DTC is ineffective.
7. Almost all respondents cited DTC's passenger first approach as a problem.

Introduction

As a signatory to the Committee on the Elimination of the Discrimination Against Women (CEDAW), gender analysis in India is particularly relevant. Enabling women

and girls to utilise public services has direct and ancillary benefits for sustainable social and economic development. Advancements in transport infrastructure and services are important to achieve these goals.

In a study conducted by Jagori in 2010, 40-60% of the women admitted to having been victims of sexual harassment while using public transport or waiting for public transport in Delhi.

Further, a survey conducted by Assocham some months after the Nirbhaya Rape Case revealed a 40% decrease in the productivity of the female workforce in Delhi-NCR. It was reported that nearly 82% of the women respondents said they had started leaving their workplaces soon after sunset. These women claimed that they feared travelling

in public transport at odd hours, especially at night. In comparison, only 22% of the male respondents made the same assertions regarding their concern for personal safety.

On a micro level, this not only hampers women's mobility but also puts unnecessary hurdles in their career growth. On a macro-level, the choice of participation in the labour force changes from a trade-off between work and leisure to a trade-off between work and safety. It is evident that Delhi as a city is yet to start gaining from the benefits of a workforce comprising empowered women.

HISTORICAL BACKGROUND

During World War I, as men went to the warfront, numerous jobs were vacated. Women who were conventionally bound to domestic work, stepped into uncharted territory. They began working as firefighters, office clerks and civil servants. Despite the initial resistance to the entry of women in market jobs, the acute shortage of staff left no option to the society but to accept their new societal role. Women learnt new skills and got opportunities to delve into more exciting and empowering jobs. The state conducted recruitment drives and campaigns to employ women. Many of them went on to work as nurses and serve in the army, navy and air force. The imperial war museum reported that the number of women workers in the munitions factory went up from 412,000 to 1,647,000 between 1914 to 1918.

Transport, traditionally a male-dominated sector, faced an extreme shortage of staff during the war in underground, bus and tram services. It was in November, 1915 when London got its first female conductor. The number of female workers in transport went up from 18,200 to 117,200 during the war.

In *Fall of Giants* (2010), Ken Follett describes the situation in 1915 through the eyes of one of the main protagonists, Ethel Williams, a working class, single mother:

“All kinds of new jobs were opening up for women, but Ethel had quickly learned that men and women were still unequal. Jobs at which men earned three or four pounds were being offered to women at a pound a week. And even then the women had to put up with hostility and persecution. Male bus passengers would refuse to show their tickets to a woman conductor, male engineers would pour oil into a woman's toolbox, and women workers were barred from the pub at the factory gate. What made Ethel even more furious was that the same men would call a woman lazy and shiftless if her children were dressed in rags.”

New responsibilities brought along many challenges for female service providers. Even though they contributed equally to the market, the market did not treat them equally. They rightfully demanded equal pay as their male counterparts.

Delhi Transport Corporation

The Delhi Transport Corporation (DTC) was set up in 1971 under the authority of the Government of India. In Section 22 of the Road Transport Corporation Act, 1950, the following objectives were laid down for the DTC:

- To provide or secure or promote an efficient, economical, reliable and properly coordinated system the road transport in Union Territory of Delhi and any extended area.
- In doing so, it shall act on business principles.
- To achieve a high level operational efficiency.
- To charge fares not exceeding those prescribed by the State Under Section 43(1) (i) of the Motor Vehicle Act, 1939.

- To attain financial self-sufficiency.

DTC, which was functioning under the administrative control of Govt. of India, was finally taken over by Government of National Capital Territory (NCT) of Delhi on 5 August 1996.

Over the years the DTC has been blamed repeatedly for not paying enough attention to the safety of women in buses. To address these concerns, it introduced various remedial measures. A report by the Centre for Budget and Governance Accountability elucidated that efforts at ensuring women's safety in public buses have focused on the use of surveillance and technology like CCTVs and GPS trackers in buses. While these may serve the purpose to some extent, the actual challenges of ensuring safety are related to both the weak institutional capacity of DTC and poor implementation of specific initiatives. In being untrustworthy, unreliable and unaided by proper policy formulation, the public transport system in Delhi is denying women the right to the city.

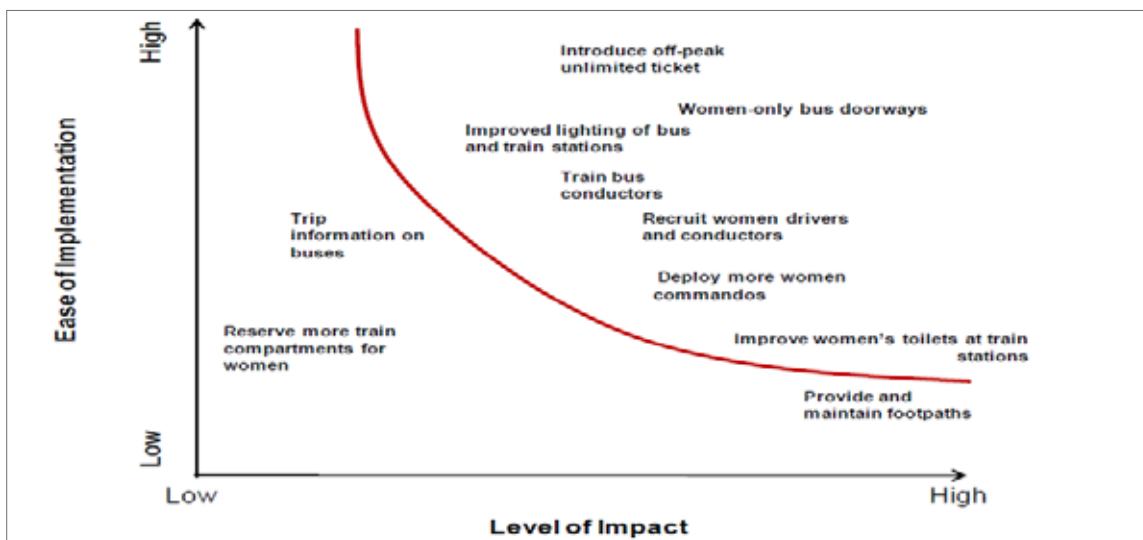


Fig 1: Impact Mapping of measures to ensure gender sensitivity

Source: Gender Assessment of Mumbai's Public Transport (World Bank, 2011)

A measure of improving security that hasn't yet been explored adequately enough is the inclusion of women conductors and drivers into the DTC workforce. It is an ingenious, impactful idea with its roots in modern history that could be effective in various ways:

- Employment provides women the opportunity to earn and financially contribute to improving their physical constitution and social bargaining power.
- Their presence in an otherwise male dominated industry initiates the process of formulating policies keeping in mind the needs of women passengers and service providers.
- Women conductors themselves develop a sense of responsibility and purpose attached to their contribution in society.
- Lastly, women passengers tend to perceive a bus as more secure with a sense of familiarity that comes from the presence of women conductors.

Women were first deployed in DTC as conductors in 1982 during the Asian Games. Most of them were later moved to depot offices. A second recruitment notification for women came out in 2010 during the Commonwealth games. Presently, DTC has 245 female conductors and 1 female driver. However, a startling fact is that they currently form only about 1% of the conductors on DTC buses.

Table 1: Gender Composition of DTC

	Total Strength	Female
Drivers	11,651	1
Conductors	12,412	245

Recruitment of these conductors is conducted through a gender-neutral process via an online portal of employment exchange.

Interested candidates are required to undergo six months of primary health care training post which they become licence holders. All license holders are eligible for the position and can register themselves on the portal. Selection of candidates is subject to availability of vacancies.

No study has been conducted on Delhi's bus transport system that focuses on the opinion of women service providers on their workplace and the importance of their role as efficient instruments to build a safe environment.

Our study aims to understand broadly the degree to which gender inclusiveness forms a part of the Delhi Transportation Corporation's agenda for employment, by addressing the following:

- Availability of basic amenities specific to women workers
 - Separate washrooms in depots and on bus routes
 - Drinking water
 - Separate cloakrooms in depots for women
- Viability of a secure workplace environment
 - Number of times a conductor has been subject to harassment on routes and in depots
 - Number of times such harassment has been reported
 - Satisfaction of victim with the outcome of an inquiry, if held
 - Reasons for not holding an inquiry/ taking action
- Availability of grievance redressal systems
 - Accessibility and frequency of reaching out to grievance redressal systems
 - A recognised support network of women conductors across depots

The need for feminising the transport workforce has been recognised by Corporations of different states too. Karnataka

State Road Transport Corporation and Kerala State Road Transport Corporation employ women conductors in large numbers.

KARNATAKA STATE ROAD TRANSPORT CORPORATION	MUMBAI PUBLIC TRANSPORT
<p>KSRTC is the first Government organisation in the state which has implemented the 33% reservation for the women in jobs. The total strength of employees in the organisation is 3,6525, out of which 2,560 women employees, among them 9 lady Driver-cum-Conductors, 789. Conductors, 848 Technical Assistants (Mechanics) and 914 other staff. Work will be allotted most of the time as per their choice and place. No women conductors are allotted to the night halt duties. But, if their native places is outside, then only on written request the night halt duties will be allotted. There are separate rest room and toilets for the women employees at the depots. Women grievance committees are in existence in every division and at Central Offices to prevent any sexual harassment at the workplace. The committees feature a member from NGOs. Separate block has been provided to the women employees in Duty Rota system and they are allotted only light schedules. An amount of INR 500/- per month as Child Care Allowance (for two children only) is being given to the women employees till the child attain the age of two (2) years. The women employees are eligible for all other facilities extended to all employees of the Corporation.)</p> <p><i>Source: ASRTU-NEWS-March-2016.pdf³</i></p>	<p>An independent study by the World Bank on Mumbai's public transport found that women display 30% more mobility while completing non work-related chores during off peak hours, as compared to men. They also display a pattern of travelling known as trip-chaining which implies making a continuous sequence of short trips to several destinations to complete daily chores. Given these travel patterns, it was revealed that women preferred travelling with women conductors and drivers and would consider applying for these jobs as well. This response assumes greater importance in light of the fact that a majority of the women feel unsafe while getting on and off a bus, while a significant number also felt unsafe during the bus journey. Armed with this opinion, the study recommended identification of and development of measures to recruit and retain women in these jobs, such as employing them on starter-routes that are shorter and less crowded, and child-care options for women with children who want to work. Further, it is also recommended that BEST should deploy more women commandos and security personnel.</p> <p><i>Source: A Gender Assessment of Mumbai's Public Transport (World Bank, 2011)⁴</i></p>

CYCLES AND SUFFRAGETTES

The feminist movement, has even historically, relied on new advances in transportation to re-acquire public spaces. By the 1890s, America was totally obsessed with the bicycle. There were millions of bikes on the roads and a new culture built itself around the technology. People started "wheelmen" clubs and competed in races. Susan B. Anthony and Elizabeth Cady Stanton were credited with declaring that "woman is riding to suffrage on the bicycle," a line that was printed and reprinted in newspapers at the turn of the century. The bicycle took "old-fashioned, slow-going notions of the gentler sex," as The Courier (Nebraska) reported in 1895, and replaced them with "some new woman, mounted on her steed of steel." The bicycle, as a new technology of its time, had become an enormous cultural and political force, and an emblem of women's rights. "The woman on the wheel is altogether a novelty, and is essentially a product of the last decade of the century, she is riding to greater freedom, to a nearer equality with man, to the habit of taking care of herself, and to new views on the subject of clothes philosophy." wrote The Columbian (Pennsylvania) newspaper in 1895.

Source: LaFrance, Adrienne. "How the Bicycle Paved the Way for Women's Rights." The Atlantic. June 26, 2014.

Research Methodology

The study adopted a mixed-method research methodology, incorporating both quantitative techniques (primary survey methodology) and qualitative techniques (case study interviews).

The research was conducted over a time span of one month, beginning from mid-June.

Under quantitative analysis, purposive sampling method was adopted which identified Delhi for the purpose of the study. The selection of sample within Delhi entailed zonal classification of DTC depots in Delhi, followed by a telephonic enquiry to ascertain a list of the number of women conductors in each depot. In each zone, two types of depots were identified:

- 1) Depots with relatively larger number of women conductors (<5)
- 2) Depots with relatively lower number of women conductors (>5)

An attempt was made to cover both types of depot in each zone. The main thrust of this method was to assess whether employment condition depended on strength in numbers or stronger bargaining power as a result of larger groups. It was later revealed that problems faced by women conductors were similar across depots irrespective of the number of women conductors employed.

A secondary aim was to achieve adequate depot coverage in all zones of Delhi. This was done to assess differences in conditions of women conductors prevailing in all parts of the city. 19 out of a reported total of 43 depots were covered, and the researchers were able to meet female conductors at 16 of these depots. At least one woman conductor

per depot was interviewed to make the sample representative. In all, 32 women conductors were interviewed. In addition, 15 male conductors were interviewed to record their perspective on issues affecting women.

Further, to compare the amenities provided by the government with those provided by private transport operators to women service providers, telephonic interviews with women drivers from Sakha, Meru Eve, Ola, and Uber were conducted.

Following steps were used for collecting the primary data:

1. Personal visits to depots to interview women conductors after their working shift.
2. Telephonic and/or personal interview conducted with the company executives and employees of private organisations.

The challenges and limitations of this paper include:

- Non-functional phone lines of more than 50% of the depots
- Absence of central registry of the employees of DTC
- Lack of public access to employee directory at depots
- Resistance to participating in the survey by depot officials

Since data being collected about employees of the DTC was sensitive in nature, there existed a risk of receiving biased responses. To avoid this, the questionnaire consisted mainly of objective questions along with a few questions wherein conductors were asked to provide their own suggestions regarding improvements they

would like to witness in their profession.

Chance interactions with some depot managers yielded a common warning of insistence on plausible deniability of the researchers' visit. In some cases, conducting the survey was disallowed completely.

Findings and Analysis

After the completion of the field survey, the collected information was put into perspective. Through the field survey, the satisfaction level of female conductors with regard to their job and the problems that they face both on the route and within the depot were gauged. As the job of a conductor is primarily associated with public dealing, a female conductor's perspective on the challenges that the nature of the job poses and the efficiency of the system in resolving grievances that may arise were also assessed. Further, the opinion of conductors on specific measures taken by the government to enhance safety in buses such as bus marshals and ladies' special buses was taken into account.

Extraction of data led to the following broad conclusions:

1. Most of the female respondents were either in their 20s or 30s. The length of work experience varied, ranging between 9 months to 7 years (i.e. those who were recruited for the Commonwealth Games in 2010). They were paid the same salary as their male counterparts, INR 622 per day.
2. When asked about their perception of the rationale behind hiring female conductors during the games, most of the respondents cited the following:
 - Females were hired to build the image of DTC as an equal employer
 - To enhance safety within the buses and to offer a secure environment for foreign tourists
 - Women are perceived to be polite
3. Most conductors surveyed lived in the same zone as the depot they worked at. These conductors either used the bus or depended on a family member to get to the depot in the morning. They did not report travelling to and from the depot as a major problem. Most conductors appeared to have worked on the same depot since their induction into the workforce. However, the procedure to request a change of depot in case a conductor so desired was unable to be determined. Most of the respondents worked on the morning eight-hour shift, which starts at around 6 AM and ends at around 1.30-2 PM. The respondents seemed to prefer the morning shift as they were able to head back home early and spend time with their family.
4. Flexibility in choosing the bus route seemed to vary from one depot to another. Respondents at some depots reported that they were sent on routes of their choice or routes that were perceived to be safer. Others said that they had no say in choosing their route and had to stick to whichever route was allotted to them. The following are the types of routes that were most preferable to respondents:
 - Routes that cover areas which perceivably have more "literate passengers as they tend to maintain decorum and don't misbehave"

- Routes which have adequate accessible washrooms
 - Routes that are shorter in length
5. When asked whether they liked their job as conductors, nearly three-fourths of our respondents said ‘yes’. Moreover, they believed that although public dealing had its difficulties, given their limited educational qualification and skill-set, the job was giving them a respectable way of gaining financial independence which would be difficult to find elsewhere.

Do you like your job?	Response	Female
Yes	75%	1
No	25%	245

6. In case of a grievance, a complaint is lodged with the depot manager who takes further action. All respondents were aware of this procedure. Some respondents said that employees refrain from reporting incidents as they fear backlash which could range from isolation to expulsion. We came across major incidents of harassment at two depots and a formal complaint was lodged in one of these cases.

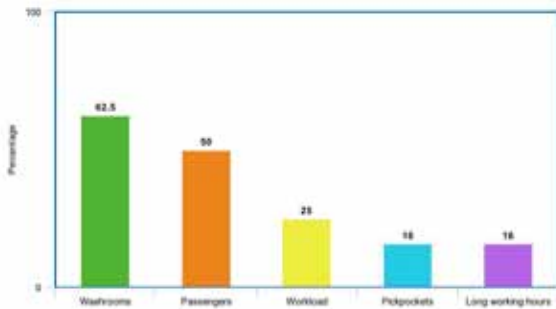


Fig 2: Problems faced by female conductors on routes

7. The survey attempted to understand the perspective of service providers within the DTC regarding the degree of safety for women passengers on these buses. 62% of the female respondents and 50% male respondents felt that DTC buses were unsafe for women. Other respondents said that DTC buses as a mode of transport were safe at all times by virtue of being registered by a government organisation and also due to the accountability of conductors and drivers. Almost all respondents said that being out late in the evening wasn't safe for women in general.

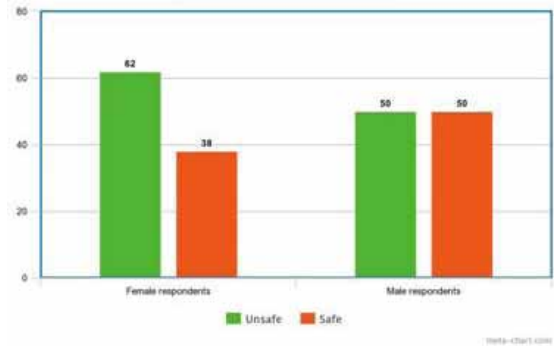


Fig 3: Perspective on safety of DTC buses for women

8. Amongst those who found DTC buses unsafe for women, the perception regarding the time after which buses become unsafe varied. Some respondents quoted a certain time in the evening while some felt that buses didn't provide a conducive environment for females to travel in general.

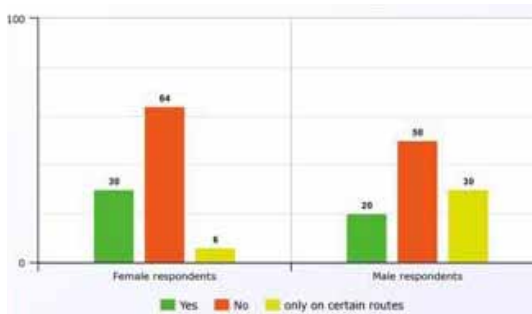


Fig 4: Would you allow your family members to travel in buses after a certain time in the evening?

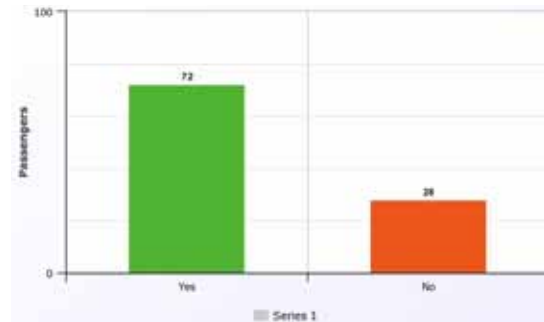


Fig 5: Have you ever witnessed an incident of sexual harassment on the buses?

9. To reduce the scope of bias arising from the fact that respondents were employed by the DTC, the respondents were asked to answer survey questions bearing in mind the perspective of their family members. 41% of the respondents who had earlier cited DTC buses as safe answered in the negative when asked if they would allow their family members to travel by the bus after a certain time in the evening.

10. Nearly all our respondents spoke extensively about incidents of misconduct on the part of passengers that they endure. Most of them had a fatalistic perspective on these issues. Although not completely unperturbed by the behaviour of passengers, they claimed to have learnt to take it in their stride. About one-third of those surveyed admitted to having been at the receiving end of what they consider serious incidents of misconduct and misbehaviour.

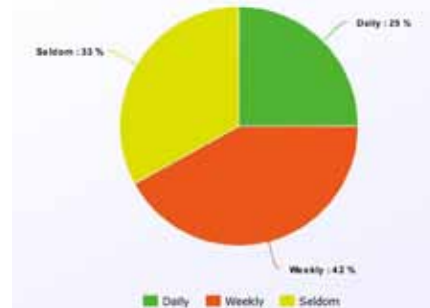


Fig 6: How frequently have you noticed sexual harassment on the bus?

11. Around three-fifths of the female respondents said that they had previously intervened to resolve issues between passengers along the route. Amongst the various ways a conductor has to mediate such issues, the most prominent ones were scolding the accused, asking the accused to leave the bus, and calling the police. The frequency of such interventions was noted as: “sometimes when necessary”

12. Amongst those who said that they don't intervene, the most commonly cited reasons for the same were as follows:

- Other passengers intervene and handle the matter
- The involved parties solve it out

amongst themselves and hence intervention is not required

- Passengers tend to shift blame onto the conductor hence she is unable to intervene
13. Most of the female respondents felt the need for a separate platform for female employees within the DTC to connect with each other. They felt that it would be both enriching and empowering if they could meet other conductors on a regular basis and share their experiences as a community. Others cited the ineffectiveness of existing unions as a reason for general disdain towards attempts at community building, and also claimed that they did not have enough time to attend such gatherings.
 14. There was no specific training directed at gender sensitisation and passenger dealing for DTC bus conductors. The training was technical in nature and focused on handing out of tickets and on a mechanical understanding of the bus.
 15. All the respondents felt strongly about having a separate system for conductors to complain against passengers.
 16. Most of the respondents preferred ladies' special buses over buses with female conductors in the evening. They believed that a greater number of ladies' special buses should be introduced and their frequency should be increased.
 17. Perception of male and female respondents appeared to differ on the effectiveness of bus marshals/guards. All the male respondents cited bus marshals as ineffective. Half of the female

respondents felt the same way. They claimed that bus marshals tend to sleep off in buses on most occasions and tend to sneak off when an actual incident takes place. The remaining female respondents, however, felt that the presence of bus marshals was important for ensuring safety on the bus.

Further Observations

Apart from the responses received in the survey, certain observations were made regarding the social environment that women conductors encounter at their workplace. The researchers visited 19 depots scattered across different zones of Delhi and noted the following common occurrences:

1. Gender ratio in depot offices was highly skewed in favour of men. A male-dominated work space manifests as the promotion of a set of values and codes within the workspace which are designed by men, for men.
2. Male-domination in the workplace also manifests as domineering groups of men clustering around the depot. A woman conductor related that she had overheard these groups of men having inappropriate conversations about women on several occasions. These incidents caused her great discomfort.
3. Additionally, several women conductors recounted occasions on which they had been the subject of unhealthy gossip. This put unnecessary mental stress on these women and interfered with their day-to-day work.

4. In an attempt to gauge the environment at the depot, the respondents were asked to comment on their working relationship with other male and female conductors. It was observed that female conductors do not tend to spend a lot of time at the depot and do not have any close-knit friend circles even among the female conductors. Most of the respondents said that they tend to “mind their own business and communicate no more than necessary” although they did cite their co-workers as being friendly and helpful.
5. Dilapidated infrastructure at depots including crumbling walls, unkempt bathrooms and broken furniture make for an unwelcoming work environment which may contribute adversely to the motivation of DTC employees.
6. Another important issue raised by women conductors is the absence of a formal set up to report their grievances. Currently, any grievance is reported through a formal letter sent to the depot manager. This process puts complete onus on the depot manager to acknowledge and act to resolve the complaint. However, in most cases the complaint does not even receive a hearing. Another shortcoming of this process is that most women who face problems relating to harassment, bus routes and depot amenities do not report these, as their status as contractual labour makes them feel vulnerable and they fear being transferred as a result of speaking up.

All the above observations require attention on the part of the policy maker to formulate an action plan which addresses each of the above.

SUGGESTIONS FROM CONDUCTORS

During the field survey, the respondents were also asked open-ended questions allowing them to suggest measures that they deem appropriate to bring about necessary changes within the DTC. The actual efficacy of these solutions is yet to be tested:

1. Restricting the number of passengers per bus

Most conductors complained about the difficulty of managing over-crowded buses. Overcrowding increases the probability of pick-pocketing, physical harassment and makes ticket-collection difficult. Conductors report that perpetrators also get away with inappropriately touching or molesting women as often there is not enough space or time to protest. Offenders also tend to get away because such harassment is hard to distinctly recognise.

Conductors recommend that restricting the number of passengers that get onto buses will not only increase safety and reduce accidents caused due to passengers hanging from doors but also increase safety for women by providing enough personal space. The suggestion may have some bearing but it is not possible to implement without increasing the number of buses in a fleet to prevent overcrowding.

2. Charging a minimal cost for filing a complaint against a conductor

Most conductors face regular harassment from unruly passengers who are provoked due to the smallest of matters, such as the conductor not having enough change to return. One of the suggestions received was that passengers should be charged with a minimal fee at the depot for filing a complaint when they attend inquiries into the matter to prevent them from filing unnecessary, false complaints.

While taking this suggestion into consideration, it is important to assess the effect such a fee would have in preventing passengers from complaining against genuine incidences.

SHANNO BEGUM'S TRYST WITH AZAD FOUNDATION AND UBER

When Shanno Begum lost her husband, she had no choice but to assume the role of the breadwinner for her family. She began working at a vegetable kiosk and later worked as a domestic help in homes. These professions, however, barely kept her household afloat and she searched for a more viable source of income. That is when she came across Azad Foundation which offered six-month long training courses to women who had cleared the 10th standard for learning to drive motor vehicles. Shanno Begum took this up as an opportunity and enrolled into the program after clearing her 10th class exams. Along with driving classes, Azad Foundation also offered her self-defence classes and training in map-reading. After working with Azad, she was hired as the first woman Uber driver in Delhi.

Cab aggregators like Uber have been increasingly working with women, helping them to receive vehicle financing, with low down payments and rates. They have also entered into partnerships with organisations like FICCI Flo, National Safai Karamcharis Finance & Development Corporation (NSKFDC), the Ministry of Skill Development and Entrepreneurship, and various institutes for industrial training that provide women with training in driving, traffic rules, self-defence, basic English, and navigation. Uber recently announced a global partnership with UN Women and has pledged to create 100,000 jobs for women around the globe, by 2020. As part of grievance redressal systems, they incorporate rating systems, and emergency buttons on the app itself.

Recommendations

The data compiled allows for several meaningful conclusions to be drawn. It is to be noted that there exist multiple stakeholders in the department of public transport. Establishing synergistic linkages between

different stakeholders is imperative to ensure efficiency within the system. The role of each affected and involved party should be comprehensively defined to foster effective interaction and coordination.

This study has attempted to suggest policy recommendations in such a way that they reflect each stakeholder's role in overcoming the challenges faced by women service providers. The issue-specific recommendations are arranged in order of priority.

Building Washrooms

The policy on provision of adequate infrastructure with particular focus on washrooms for women conductors requires a systematic approach. For that purpose, the problem can be broken into two parts:

1. PROVISION OF WASHROOMS WITHIN BUS DEPOTS AND TERMINALS

It is important to deal with the lack of washrooms within depots on a priority basis. The land on which the depot and terminals have been built belongs to the DTC. Therefore, there is an urgent need to identify these depots and terminals and notify them to send out tenders to contractors at the earliest.

The DTC, under notifications already issued, has released tenders for building toilets at depots and terminals. The progress on these notifications need to be reassessed (See appendix).

2. PROVISION OF WASHROOMS ON ROUTES

In the field survey, it was found that some routes do not have washrooms at all, such as route number 604 and 39. There are many such routes which require attention in this regard.

The provision of washrooms on bus routes requires more thought and administrative planning for the following reasons:

- There has been no route-mapping exercise which identifies the position of washrooms on the existing bus routes. Hence, there is an urgent need to build knowledge on which routes have washrooms and which do not.

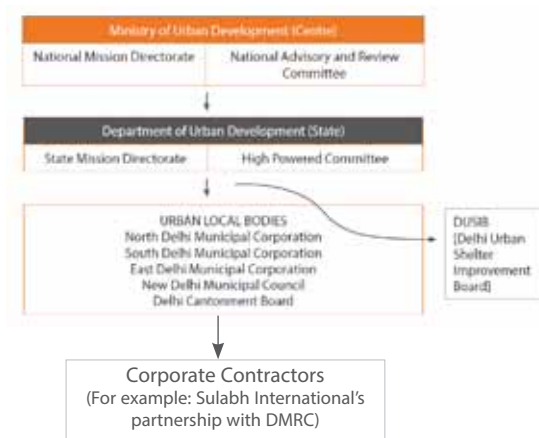


Fig 7: Government Structure under Swachh Bharat Abhiyan

- For routes which do not have a washroom, the least that can be done is the provision of washrooms at the start and end point of the route, especially for those routes that do not begin at the depot.
- Upon identification of priority routes by the DTC, proposals can be sent to ULBs for approval as per the route.
- ULBs in specific zones shall allocate funds and work under the Swachh Bharat Mission.
- The toilets have to be built under the category of public toilets. Once the State and ULB's have identified land for the creation of these toilets, the private sector should be encouraged to build and maintain the toilets through a PPP (Public Private Partnership).
- See Appendix 5 for unutilised funds present under the SBM that could be utilised for this purpose.

Grievance Redressal Systems

Besides key infrastructural adjustments, having a female workforce also requires ensuring that the environment is conducive for female employees to work. A conducive environment may be defined as one where:

- Women do not feel disadvantaged or marginalised
- They can freely express their views and report grievances without fear of future consequences

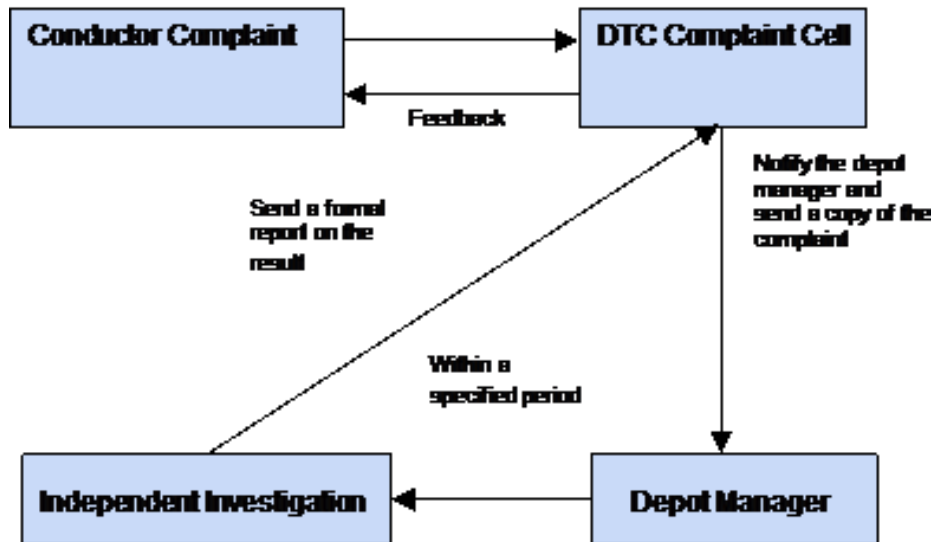


Fig 8: Grievance Redressal Structure

1. PUNITIVE ACTION AGAINST DEPOT MANAGER

In case of non-adherence to the time limit of conducting and concluding the investigation, punitive action should be taken against the depot manager. A possible form of action could be an official reprimand in the ACR of the depot manager.

The above system creates pressure on the depot manager to actively resolve issues arising within his depot while maintaining the anonymity of the complainant at the depot.

2. DEPOT WOMEN'S CELL

To resolve grievances of women conductors that may arise within the depot, an efficient complaint mechanism is necessary. We propose that a separate Women's Cell be set up within each depot.

The DWC (Depot Women's Cell) will be responsible for:

- Dealing with complaints pertaining to

gender discrimination/sexual harassment in a time bound manner. Further it should be ensured that the complainant is not ostracised by fellow employees. Anonymity of the victim should be maintained for as long as possible. Appropriate disciplinary action should be taken against the accused if found guilty. There should also be a provision for an inter-depot transfer for either the victim or the accused.

- Ensuring female conductors have the flexibility to choose their routes or to change routes if they have a legitimate reason for the same.
- Coordinating with the DWCs from other depots to create an official platform for all female conductors. This platform will play an important role in creating a community for conductors where they can interact with each other and collectively attain great bargaining power to push for their demands.

A possible structure for the DWC is as follows:

1. **The depot manager** will be responsible for conducting enquiries on grievances and ensuring that action is taken swiftly within a stipulated time frame. S/he would also to send a periodic assessment report to the DTC complaint cell providing details of ongoing investigations and resolved cases.
2. **A female employee from the depot** who has served for a considerable number of years and hence has enough experience and perspective on challenges faced by a female conductor both within the depot and on the route. She could either be a conductor or an employee at the depot office. She would be responsible for helping aggrieved female employees approach the depot manager and ensuring that they get adequate assistance. Further, she is also

responsible for ensuring that the depot manager initiates action.

3. **A representative from a third party like an NGO**, to act as a neutral body and ensure that the proceedings are free from any inherent biases that representatives from within the depot may have. The body would be responsible for monitoring the investigations and ensuring that both the victim and accused receive a fair opportunity to present their case.

Gender Sensitisation Trainings

The Delhi Transport Corporation holds multiple trainings over the year for conductors, drivers and officials.

It was found that a lot of drivers and conductors find it difficult to recognise harassment or find it difficult to differentiate

Table 2: Trainings at DTC

S. no.	Trainings	Description
1.	Refresher course	2-day course organised at Training School, Nand Nagari Depot
2.	Refresher course for renewal of HMTV driving license	2-day refresher course by Transport Department
3.	Low-Floor Bus training	3-day training course at Nand Nagari on DTC Low-Floor Buses
4.	Induction Training for newly recruited DSSB/cont. drivers	4-week training course to Drivers
5.	Induction Training for newly recruited contractual conductors	2-week training course conducted by DTC as and when directed by Personnel Department
6 .	Training by Delhi Traffic Police	A special training course for drivers imparted by Delhi Traffic Police
7.	Training by UTCS	UTCS provides various training to drivers, conductors, ministerial staff and officers of DTC from time to time in coordination with the DTC Training School.

Source: Delhi Govt. Website. ⁵

between its multiple modalities. Several conductors disregarded eve-teasing as simple playfulness or accidents. In an attempt to create safe spaces that enhance gender equality, it is imperative to stress zero-tolerance for eve-teasing and physical advances.

Training to achieve gender equality is a transformative process that aims to provide knowledge, techniques and tools to develop skills and changes in attitudes and behaviours. It has been seen to be an effective measure for, at the very least, sensitising employees to identify different forms of gender discrimination.

The survey also tried to assess whether gender sensitisation trainings had been provided by either the DTC or external agencies like non-profits or civil society organisations for the benefit of the conductors and drivers. We gathered that no such system exists within the DTC. UN Women has, however, held gender sensitisation campaigns for bus marshals in the DTC and for conductors in the BMTC.

Gender sensitisation training programs and courses are already held across government organisations in other sectors like the Delhi Police and the bureaucratic machinery, and there is a need for organising the same for DTC employees.

It is of primary importance that gender sensitisation courses be included as part of the introductory training provided to conductors and drivers in the DTC. We suggest that the approach to training for gender equality be guided by key international normative principles, especially those highlighted in:

- Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)
- Beijing Declaration and Platform for Action

The modules for the course must be custom-designed for the DTC and must be separate for male and female conductors. It must contain relatable anecdotes, gender-specific examples and role play.

Enhancing Safety On Buses

1. Closed Circuit Television (CCTV)

In order to curb untoward incidents on buses and make enforcement stricter enforcement GNCTD has proposed installation of CCTVs on all DTC and cluster buses with project costs funded by the Nirbhaya Fund of Central Government. During Financial Year 2015-16 a pilot was conducted and 200 DTC buses from Sarojini Nagar and Rajghat Depots were installed with CCTVs. However, besides installation, proper maintenance, both live streaming of video and secure storage of archived surveillance footage are also key concerns. Well-equipped central command centres are required for efficient management and ensuring that expenditure on CCTVs does not go in vain.

2. GPS Tracking Devices

GPS devices can improve monitoring, thereby making delivery of services swifter and more efficient. According to a report published by the Centre for Budget and Governance Accountability out of 3,906 buses with GPS device, it was found to be functional on only 199 of these buses. Thus, besides upscaling the installation of GPS devices to all DTC and cluster buses, there is a need to ensure

proper maintenance and operations of these devices as well. Further, effective complaint management also requires well-functioning backend control centres along with PCR vans for swift action.

3. Use of Safety apps

- Himmat is a safety app launched by the Delhi Police. It acts as a panic button and allows for a quick response by the PCR van from the nearest police station. The integration of the app onto the phones of conductors and drivers can be a helpful tool to report cases of harassment, eve-teasing and pick-pocketing.
- 'My SafePin' is a personal safety app that crowdsources information about safety of different areas from its users to determine safety scores. It uses the GPS location of the user to send alerts when they enter areas with low safety scores, the users can in turn choose to invite friends/family to track them. Integration of such apps with the existing DTC and Delhi Inter-Model Transit System (DIMTS) apps that give information about bus schedules and routes could help collect information about safety on these routes and help initiate further action.

4. Display of route information and emergency contacts on bus stops

During the field survey, it was found that there is little knowledge of existing complaint redressal contact information except the police helpline '100'. Non-digital display of relevant route information and emergency helpline numbers in addition to the existing advertised content on bus stops could be an efficient mechanism

to spread awareness about the same. Contact information of DTC central control rooms and central complaint cell could be displayed along with other standard helpline numbers. The display on a given bus stop could also consist of schedules of buses plying on that route along with their point of origin and related bus terminals.

5. Zero-Tolerance Policy - Implementation of Punitive and Preventive Measures

- The DTC must ensure that through systematic, timely responses to complaints of harassment by either passengers or conductors within the bus and at depots, it creates an environment with zero-tolerance for any misconduct. This can be done with the help of civil society organisations and non-profits through awareness programs. Periodic efficiency assessment of grievance redressal systems should also be conducted by collecting and analysing empirical data on the rate of resolution of complaints to create a system of checks and balances
- The Delhi Police must ensure that all complaints of eve-teasing are registered under Section 298 (A) and (B) of Indian Penal Code that prescribes up to three months imprisonment for making obscene gestures or remarks to a woman.

Table 3: Summary of Recommendations

PROBLEM	PLAUSIBLE SOLUTION
Lack of adequate infrastructure: Non-availability of washrooms on routes and within depots	<ul style="list-style-type: none"> • Build washrooms within depots and ensure accessibility during morning hours • Construct washrooms on bus terminals, conduct route mapping and identify priority route • Need for coordination between DTC and concerned ULBs
Work environment not inclusive for female employees to work in	<ul style="list-style-type: none"> • Steps to increase accountability of Depot Manager • Setting up Depot Women's Cell comprised of the depot manager, a female employee from the depot and a representative from a third-party
Conductors unable to act during instances of eve-teasing or sexual harassment; either unable to understand the issue or fear for their own safety	<ul style="list-style-type: none"> • Gender sensitisation training for all employees • Integration with Himmat and other safety apps for conductors and drivers
Lack of evidence against unruly passengers	<ul style="list-style-type: none"> • Installation of CCTVs in buses
Lack of safety in buses	<ul style="list-style-type: none"> • Installation of GPS devices for enhancing efficiency of helplines and swift action • Use of safety apps • Zero tolerance policy against harassment
General lack of awareness about helplines, and other means of assistance	<ul style="list-style-type: none"> • Display boards on bus stops with relevant information

Scope for Further Research

The topic at hand is expansive and multi-faceted and there are many areas that can be further delved into. Analysis of our primary findings has shed light on many issues that female conductors face on a daily basis. Some of the problems could be further looked into are as follows:

1) Analysis of cluster bus depots. Under the Private Stage Carriage Buses Corporatisation Scheme, 657 bus routes in Delhi were clubbed into 17 clusters in 2011. Along with the DTC, each cluster was

designated to one private entity through a bidding process monitored by the Delhi Inter-Modal Transit System (DIMTS). It was found that cluster buses also have female bus conductors. Further research could focus on the differences, if any, in the facilities provided and challenges faced by female employees within cluster buses in comparison to the DTC.

2) Further studies could delve into:

- Efficiency assessment of CCTVs, GPS tracking devices and mobile applications aimed at enhancing personal safety.

- Evaluating the role of ladies' special buses in making public transport safer and analysing the need and viability of upscaling the fleet size.

Conclusion

The aim of this study was to understand the challenges faced by women employed as service providers within the DTC. It was found that while some problems faced by female conductors/driver may arise due to the lack of infrastructure,

others are operational in nature and may be a consequence of ineffective policies. Moreover, women conductors and drivers comprise about 1% of the total workforce of the DTC, and this low percentage of membership reduces their bargaining power considerably. Lack of adequate avenues to put forth their grievances and opinions leads to further marginalisation of these employees. Thus, besides measures to increase safety on buses, steps need to be taken towards more fundamental changes to enhance inclusivity of the work environment.

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Appendix

Appendix 1: Sample Questionnaire

QUESTIONNAIRE USED IN FIELD SURVEYS

1. Name:
2. Age:
3. Years of experience:
4. Area of Residence (with pin code):
5. Educational Qualification:
6. Route number (Current, Previous, Most preferred) Shift timing:
7. Depot
8. Are you satisfied with your work environment?
9. Does your workplace have basic amenities?
(Water, separate washrooms, safety provisions for fire, etc.)
10. Do you like your job?
11. What do you like/not like about the job?
12. Do you like the route you work on? Do you want your route to be changed? Why do you do you want to change your route?
13. Which routes have you worked on previously?
14. Would you prefer an office job to a route job?
15. Are your co-workers friendly? Do you talk to other male/female conductors? (Yes/No, number)
16. Have you ever been at the receiving end of any form of harassment from passengers or Co-workers? If yes, have you ever reported a complaint of harassment against a co-worker or passengers?
Who did you report the complaint to?
If no, Why didn't you report?
17. Are buses unsafe for women?
After what time are buses unsafe for women?
Would you allow your family members to travel in buses after a particular time?
Do you think the presence of bus marshalls enhances safety of the bus?
Would you prefer ladies' special buses over bus with female conductor in the evening?

18. Have you ever seen an incident of sexual harassment in the bus?
 What is the frequency of such incidents? (Many times a day, daily, weekly, seldom, rarely, never)
 Have you ever intervened in an incident of sexual harassment in the bus?
 What is the frequency?
 How did you intervene?
 Were you satisfied by the outcome?
 Why didn't you intervene?
19. Are you aware of any grievance redressal systems using which you could complain?
 Have you ever used them?
 If yes, were you satisfied by the outcome?
 Do you think grievance redressal systems are effective?
 Should there be a separate system for conductors to complain against passengers?
20. Have you undergone any training relating to gender sensitisation?
21. Is there a platform where you can connect with other women conductors (especially from other depots)?
22. What do you think could be done to improve women's safety on buses? (qualitative)

Appendix 2: List of Depots Visited

1. Ambedkar Nagar Depot, Mehrauli-Badarpur Road, Khanpur Village, Khanpur, New Delhi, Delhi 110044
2. East Vinod Nagar, Ram Kumar Gautam Marg, Block E, Vinod Nagar East, New Delhi, Delhi 110091
3. Hari Nagar Depot 2, Shaheed Bhagat Singh Marg, Block C, Janakpuri, New Delhi, Delhi 110064
4. Hari Nagar Depot 3, Shaheed Bhagat Singh Marg, Block C, Janakpuri, New Delhi, Delhi 110064
5. Kalkaji Depot-Ma Anandmayee Marg, Pocket D, Okhla Phase II, Okhla Industrial Area, New Delhi, Delhi 110020
6. Keshopur Depot, Keshavpur Vegetable Market, Block WZ, Chokhandi, Vishnu Garden, New Delhi, Delhi 110018
7. Nandnagri Depot, Mangal Pandey Marg, Nand Nagri, Village Mandoli, New Delhi, Delhi 110093
8. Noida Depot, Block B, Sector 16, Noida, Delhi 201301
9. Rohini Depot, C-4/34, Sector-6, Pocket 4, Sector 6D, Rohini, Delhi, 110085
10. Rohini Depot 2, Dr KN Katju Marg, Block G-3, Sector 16, Rohini, New Delhi, Delhi 110085
11. Rohini Depot 4, Bawana Road, Sector 18, Rohini, New Delhi, Delhi 110085
12. Sarojini Nagar Depot, Africa Ave, Netaji Nagar Market, Netaji Nagar, New Delhi, Delhi 110023
13. Shadipur Depot, Main Patel Rd, Block B, Baljit Nagar, Shadipur, New Delhi, Delhi 110008
14. Srinivaspuri Depot, Captain Gaur Marg, Srinivaspuri, New Delhi, Delhi 110065
15. Sukhdev Vihar Depot, Mathura Road, Sukhdev Vihar, Okhla, New Delhi, Delhi 110020
16. Vasant Vihar Depot, Palam Marg, Basant Lok, RK Puram, New Delhi, Delhi 110057

Additionally, we also visited the following depots but were unable to collect data due to reasons provided in the paper:

Indraprastha depot, Mahatma Gandhi Road, IP Estate, New Delhi, Delhi 110002

Mayapuri depot, Block WH, Mayapuri Industrial Area Phase I, Mayapuri, New Delhi, Delhi 110064

Rohini depot 3, Outer Ring Road, Institutional Area, Sector 3, Rohini, New Delhi, Delhi 110085

Tehkhand Depot, Ma Anandmayee Marg, Railway Colony, Tughlakabad, New Delhi, Delhi 110019

Wazirpur depot, Block C5, Keshav Puram, Tri Nagar, New Delhi, Delhi 110034

Yamuna Vihar depot, Yamuna Vihar Ghonda Rd, Subhash Vihar, Shahdara, New Delhi, Delhi 110053

Appendix 3: Route Information

At the time of writing of this study, the following routes were found to have female conductors in the morning shifts-

1. Ambedkar Nagar Depot-724
2. Hari Nagar Depot- 2 -879
3. Hari Nagar Depot- 3-729(LS),861
4. Hasanpur-319,165
5. Kalkaji Depot- 306
6. Keshopur Depot-39,724,910
7. Nandnagri Depot-212
8. Noida Depot-34
9. Rohini Depot- 4-971,39
10. Rohini Depot- 2-879,442,891
11. Sarojini Nagar Depot-543,544
12. Shadipur Depot-448,522
13. Srinivaspuri Depot-502
14. Vasant Vihar Depot-604

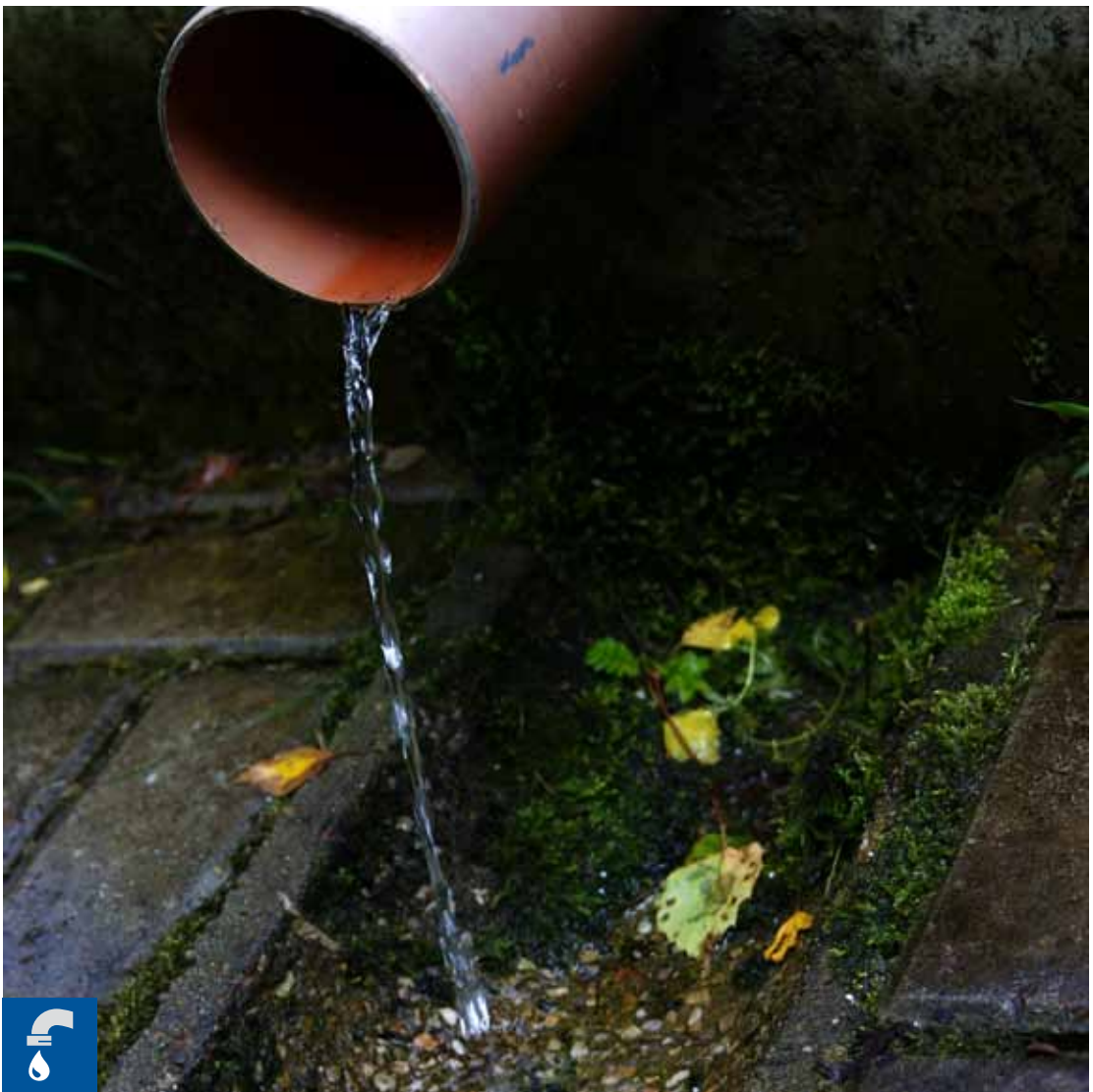
Appendix 4: Facilities at Depots

Depot Name	Separate washrooms for women	Water and sanitation
Sarojini Nagar	Yes	Yes
Hari Nagar-2	Yes	Yes
Hari Nagar-3	Yes	No
Hasanpur	Yes	Yes
Rohini-4	Yes	No
Rohini-2	Yes	Yes
Srinivaspuri	Yes	No
Sukhdev Vihar	Yes	Yes
Vasant Vihar	Yes	Yes
Keshopar	Yes, but not accessible	No
Kalkaji	Yes	Yes
Shadipur	Yes	No
Noida	No	No
Nandnagri	Yes	Yes
East Vinod Nagar	Yes	Yes
Rohini-1	Yes	Yes
Indraprastha depot was found to be a non-functional depot acting as a collection point for broken down buses.		

Appendix 5: Utilisation of SBM Funds (in lakhs)

	Total Funds Allocated	Expenditure	Expenditure (%)
North Corporation	4,627.66	0.00	0.00
South Corporation	3,162.66	7.93	0.25
East Corporation	4,198.66	N/A	N/A

Source: *Researching Reality Paper 2016*



WATER AND SEWAGE

Sustainable Approach towards Domestic Wastewater Management Systems

*Baksheesh Sachar, Dhruv Gupta and Tanvi Bansal**

** The authors would like to thank Harsh Yadav for his inputs to the analysis*

EXECUTIVE SUMMARY

The Delhi stretch of 22 kilometres (1.6% of the River Yamuna course) contributes 70% of the total pollution in Yamuna. An estimated 85% of this pollution is caused by domestic waste.

This paper analyses the centralised approach that has been followed till date to clean up the river, by examining the efficacy of Yamuna Action Plans I and II and the Interceptor Sewer Project. It attempts to highlight how none of these efforts by either the Central or the state agencies have yielded any positive impact on Yamuna's pollution levels for the Delhi stretch. The critical challenges in terms of economic, environmental and infrastructural feasibility that the conventional, centralised hardware approach faces, and various inefficiencies in terms of capacity and quality of treated water in the existing infrastructure, and the time and resource costs involved in bringing Delhi under the ambit of the existing sewage system, have inevitably aroused the need of finding an innovative and sustainable alternative to sewage management.

This then paves way for the second and most important section of the paper, which entails a feasibility analysis of decentralised/local sewage collection and treatment systems in terms of ease of planning, coordinated administration, better technology, benefits to the environment, cost comparisons for construction, operation and maintenance, and finally, the social acceptance of such a system of local treatment and re-use of treated water.

The study ends with a recommendation of adopting the localised sewage management systems as a sustainable way forward, stating that these are more feasible than the centralised systems. It also looks at possible shortcomings of this system and how these can be addressed. The need for Delhi to draft a policy in line with the Centre's recent Faecal Sludge and Septage Management (FSSM) policy, for a local sewage management system, has also been emphasised.

KEY FINDINGS

1. Despite around INR 7,000 crores having been spent under the Yamuna Action Plan I and II, a longitudinal analysis of the change in water quality standards over the years reveals that it has had little/no effect on the pollution levels of the Delhi stretch of the Yamuna.
2. The Interceptor Sewer Project has led to little reduction in the BOD (Biological Oxygen Demand) levels, from 55 to 47 mg/l by 2016, even after almost a decade of its inception, which is still quite far from the target BOD level of 12 mg/l that was set in 2008.
3. The state agency, Delhi Jal Board (DJB), is responsible for collection and treatment of sewage in the city. However, capacity is less than required and over 25% of the existing capacity is underutilised due to various reasons such as inefficient sewage conveyance, unavailability of

land and faulty projections of population in the catchment area of a Sewage Treatment Plant (STP). In addition, almost 30% of the operational capacities are not meeting even the most basic quality standards of treated water.

4. Direct disposal of domestic sewage through the storm-water drains (which were meant for rainwater harvesting but have now become merely open sewers carrying untreated wastewater directly into the Yamuna) and the lack of dilution due to scarcity of fresh water and poor quality of treated water, are all responsible for crores of investment going down the drain with no effect on the river's health.
5. It is time and cost consuming to augment the capacity and improve quality standard of treatment of centralised Sewage Treatment Plant (STPs) because of the complicated and large scale technology.
6. 46% area of Delhi is presently un-sewered and according to DJB, it will take 20 years and about INR 20,000 crores to connect all of Delhi to a centralised sewage system.
7. The present sewage system involves the construction of large-scale infrastructure, which has high operation and maintenance costs and has to be centrally monitored for performance. The long conveyance structures make it impossible to detect system issues such as need for rehabilitation, clogging, and leakages, in time, thereby leading to inefficiency and ineffectiveness of such expensive technologies.
8. Therefore, focusing on domestic sewage management through a local/decentralised system, instead of the conventional centralised system and promoting the re-use of such treated water is the only sustainable way ahead to reduce disposal of sewage directly into the Yamuna by the 22 drains of the city.
9. Decentralised systems are feasible on all fronts: Economic, social, planning, administrative, technology and environment, provided their limited shortcomings are kept in check.
10. A system which is 'collectively planned' by community institutions and the DJB, 'managed singularly' by the community and 'monitored' by both resident Welfare Association (RWAs) and the DJB, will increase accountability and responsibility of the community, better the ties of DJB and the people (which lacks trust at present) with more community involvement and transparency in operations. A bottom-up approach to making future plans for sewage systems will make the plans fool-proof with better estimates and projections.

Introduction

River Yamuna enters Delhi near the Palla village, and traverses 22 kilometres from Wazirabad to Okhla barrage, which accounts for merely 2% of river length. However, this stretch contributes to 70% of the total pollution load, with high bacteriological contamination, and chemical and physical waste. Yamuna is turned into an open 'sewer' (Category E), due to direct dumping of domestic sewage through the 22 storm water drains and direct release of toxic effluents from factories and power stations into the river and due to other non-point sources such as open defecation, half burnt bodies and carcasses, cattle and human bathing etc. (Central Pollution Control Board 2007).

Construction of barrages at Tajewala, Wazirabad and Okhla, have modified the hydraulic regime (ecological flow) along the river to such a great extent that it has lost its self-purification abilities. Given the rising population, urbanisation and industrialisation, it is almost impossible to ensure a minimal flow or any flow at all, especially during the non-monsoon season (when almost all the water is abstracted for various uses: drinking water supply, irrigation, industrial cooling and others), unless the pollution load added to the river is minimised. (Central Pollution Control Board 2006).

At present, 680 million gallons of wastewater is generated, and from the existing capacity of 651 million gallons, only 431 million gallons (74%) is actually treated everyday, leading to emptying of untreated sewage of over 250 million gallons directly into the river (Economic

Survey of Delhi 2016-2017). This is just about one of the point sources of pollution: domestic sewage. In order to limit the scope, the study focuses on only the efficacy of 'domestic wastewater treatment' and how the optimum solution to bring Yamuna back to life will be to prevent the domestic waste water from directly flowing into the river. This can be achieved not only through the conventional approach of intercepting drains, improving the treatment quality standards of current Waste Water Treatment Plants (WWTP), augmenting the existing treatment capacity and holistically developing the sewage conveyance systems; but also through the non-conventional approaches of decentralised and on-site treatment, especially in areas like

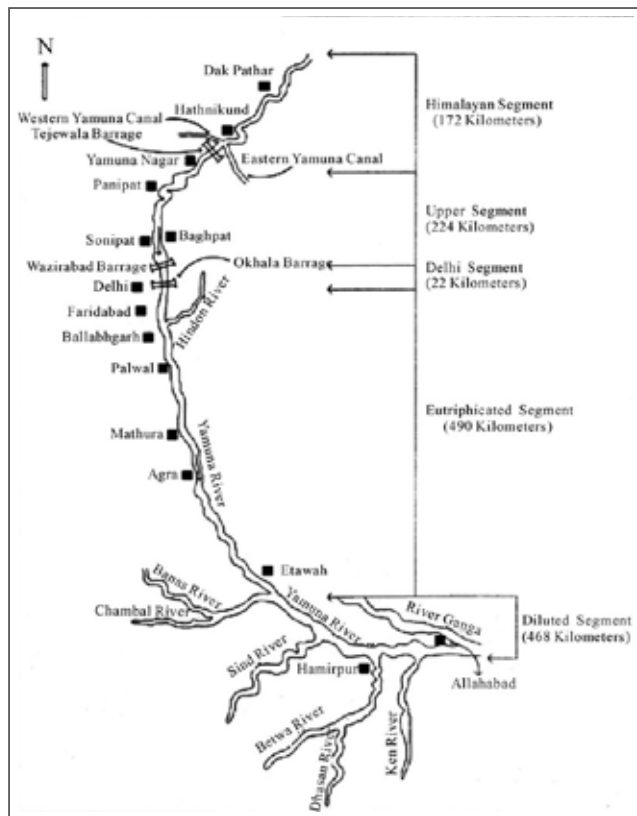


Fig 1: Course of the Yamuna

unplanned colonies and rural Delhi where centralised/conventional approach will be too cost- and outcome-ineffective.

Hence, the objective of the study is:

- I. To analyse the efficacy of centralised sewage systems in light of the analysis of programs (Yamuna Action Plans (YAP), Phase I and II) funded by the Central Government and executed by the Delhi State Government and municipalities, over a time span of 1993-2016.
- II. To test the feasibility of decentralised cluster-based sewage treatment option in comparison to conventional centralised treatment system on the basis of planning, costs (economic), technology, environment, and social acceptance.

Section 1: Analysis of Past Conventional Approach

1. Past Plans: Programs for Yamuna Rejuvenation in Delhi– Yamuna Action Plan

The 1978 study of the status of pollution in Yamuna, conducted by CPCB, revealed the sorry state of the once pristine water body. Based on the findings of this study, the Government of India took up water quality restoration measures under the scheme named ‘Yamuna Action Plan’ under the mega project of the Ganga Action Plan (GAP) Phase–II with financial assistance from the Government of Japan. The timeline was as follows:

- Yamuna Action Plan Phase I (September 1993 – April 2000) + Extended part (Till February 2003)

- Yamuna Action Plan II (December 2004 – September 2008) + Extended part (Till March 2011)
- Yamuna Action Plan III (2013-2015) + Extended part (Till 2018)

Apart from the above stated Central Government’s scheme for Yamuna rejuvenation, the State Government, through the Ministry of Urban Development, also seeks to effectively handle the treatment of domestic sewage (through DJB) and industrial wastes (through Delhi State Industrial and Infrastructure Development Corporation-DSIIDC). Examples of the ongoing efforts such as Interceptor Sewage Plan (ISP) and the Master Sewerage Plan 2031 have been further analysed in this paper, in light of challenges faced in the centralised system.

Environmental benches of the Supreme Court (SC) and National Green Tribunal (NGT) have also acted in public interest to introduce plans of their own: Maily se Nirmal Yamuna Revitalisation Program 2017 (for extended decentralised network of STPs, biodiversity parks, community involvement, ecological flow management and for focusing attention on inter-agency coordination).

The lack of holistic planning and comprehensive, coordinated implementation by the various agencies involved have been the major reasons for effort and money going down the drain. There have been no improvements in the health of the Yamuna as a result of these programs despite expenditures stretching beyond INR 7,000 crores. This has led to a confusing amalgam of programs and often disconnected, piecemeal approaches.

A. YAMUNA ACTION PLAN I: MAJOR WORKS IMPLEMENTED

1. In spite of the fact that Delhi contributed to almost 70% of the total wastewater in the river, it was completely left out of the sewerage component of YAP I. No work whatsoever was allocated for interception and diversion of open drains, construction and maintenance of Sewage Pumping Stations and STPs, under the scheme (Japan Bank For International Cooperation 2007).
2. Focus on important non-sewerage/non-point sources of pollution like dhobi ghats, crematoriums and bathing facilities was also almost negligible, with merely four crematoria being constructed as opposed to 24 and 70 in UP and Haryana respectively (WWF 2003).
3. Instead, there was an inordinately high emphasis on public participation and community awareness (over 5,000 different activities were launched) vis-à-vis their potential in achieving reduction in pollution loads from low-income communities (Sharma 2011).
4. Almost half of the funds allocated to Delhi under YAP I were used for the construction of Community Toilet Complexes, only 40% of which were actually opened, that too with no connection to a treatment facility, rendering the entire motive of reducing open defecation futile (Nema 2007).
5. The five mini STPs and ten micro STPs, to be constructed for pilot study of decentralised and on-site treatments under the scheme, were found to be largely non-functional while the decentralised STPs

constructed on Sen Nursing Home and Delhi Gate Nallah were graded as poorly effective (Nakamura 2004).

B. YAMUNA ACTION PLAN II: MAJOR WORKS IMPLEMENTED

Not only was the augmentation sanctioned under YAP II for STP at Okhla, Keshopur and Yamuna Vihar not required at all as the existing capacities were still under-utilised due to ineffective conveyance systems, but the work itself was awarded at least five years late. The same was the case for rehabilitation of trunk sewers project (Delhi Jal Board 2016).

C. ANALYSIS OF WATER QUALITY CHANGES IN DELHI STRETCH OF YAMUNA

The impact of various efforts of the Delhi Government to ensure effective treatment of waste water from 1999 onwards has been analysed, with special focus on effect of YAP. In the graphs below:

- Data on Yamuna river quality has been sourced from Central Pollution Control Board (CPCB) Envis and CPCB Reports (1999 – 2014). Both, BOD and Chemical Oxygen Demand (COD) levels are annual mean at Nizamuddin Bridge midstream (middle of Delhi stretch) and at Wazirabad (where Yamuna enters Delhi).
- Population growth rate has been calculated taking 1980 as base (*Source: Census documents*).
- Industrial growth is the average of monthly Index of Industrial Production (IIP) taking 1980 as base (*Source: CSO*) (The change in composition of Index is taken as constant).

What is Biological Oxygen Demand?

BOD is an indicator of organic contamination of water. The higher the level of sewage in water, the higher the amount of organic matter present, and the higher the demand of oxygen by bacteria to break it down, therefore, higher the BOD. Hence, the lower the level of BOD, the better the quality of water.

Domestic waste in Delhi contributes 85% of BOD as per CPCB report. Treatment plants seek to reduce the level of BOD to as low as possible to ensure water quality.

What is Chemical Oxygen Demand?

COD is an indicator of chemical contamination of water. The higher the level of industrial activity and discharge in the region, the higher the level of chemicals in the water and higher the COD. Hence, a lower level of COD indicates better quality of water.

C.1 Longitudinal analysis of pollution in River Yamuna for BOD level:

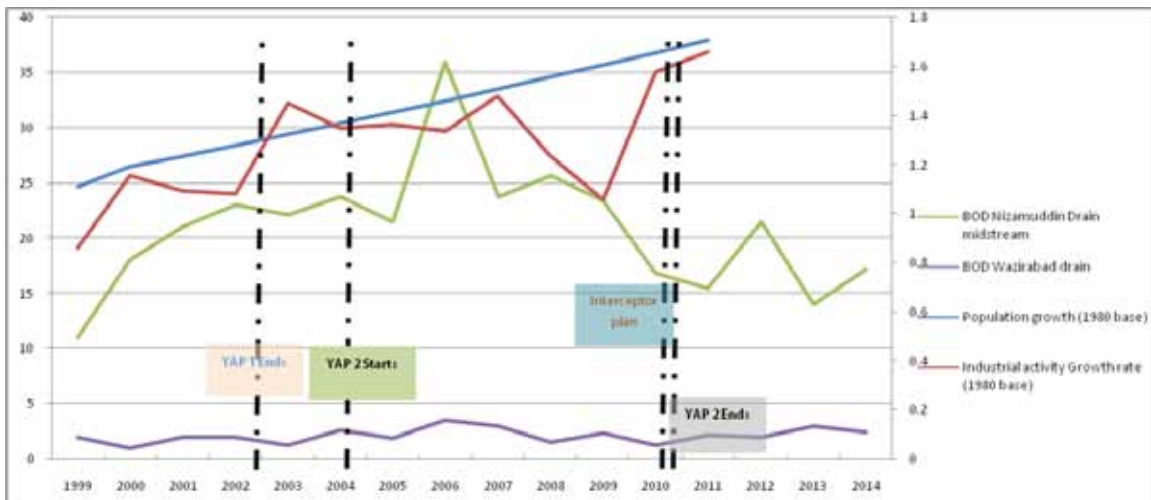


Fig 2: Longitudinal analysis of the change in the level of contamination in Yamuna for Delhi stretch with time (BOD levels)

Observations

- The population growth in the 2011 decade dropped to 20.9% from 47%. The change severely affected projections by different agencies causing underutilisation of wastewater treatment capacity.
- At the time of implementation of YAP I (Till 2001), and even after the completion of its extended phase (March 2003), there was an average increase in BOD levels. This can be attributed to inefficiency of the program in Delhi which majorly focused on

non-point sources of pollution abatement through public participation and awareness activities, river front development and community toilet complexes rather than infrastructural development to cater to the more critical point sources.

- YAP II prominently targeted rehabilitation of trunk sewers and setting up and/or augmentation of STPs at Okhla and Keshopur. The sudden increase in 2005-2007 is difficult to explain owing to multiple factors in effect. The gradual reduction of BOD from 25 mg/l to 15 mg/l in 2014 is attributed to expanded trunk sewer network to 178 kilometres

and rehabilitation and desilting of 246.7 kilometres by 2009-10 (Appendix 1).

- The BOD level at Wazirabad barrage remains constant and within bathing purity limits as per CPCB standards. Water Quality at this place remains largely unaffected as per the longitudinal analysis.
- The pollution in Yamuna at Nizamuddin Bridge remains atleast 6-7 times more than the prescribed bathing water quality standards by CPCB, even after the expenditure of INR 7,000 crores over a period of 20 years (Appendix 2) (Central Pollution Control Board 2006).

C.2 Longitudinal analysis of COD with respect to Industrial Growth in Delhi:

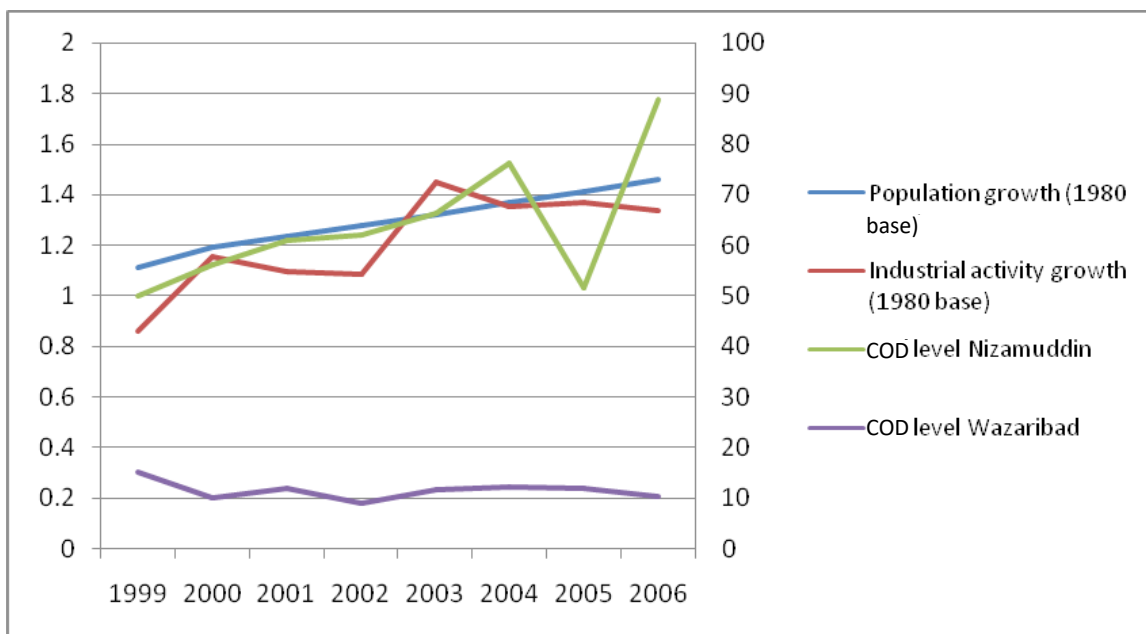


Fig 3: Longitudinal analysis of the change in the level of contamination in Yamuna for Delhi stretch with time (COD levels)

Observations

- The increase in industrial growth has had a slightly significant effect on COD level (industrial waste). The government's efforts in construction of Common Effluent Treatment Plants (CETPs) have been partially effective. Due to this, it becomes essential to shift polluting industries and take active steps in industrial pollution abatement.
- The COD levels at Nizamuddin Bridge have been continuously increasing. The reasons for this are:
 - i. Industrial waste treatment infrastructure deficit i.e. CETPs
 - ii. Unauthorised industrialisation in residential spaces
 - iii. Less focus on wastewater treatment and therefore on Yamuna cleaning and more

focus on water supply to fulfil citizens' water requirement

- The COD level at Wazirabad Barrage remains constant, implying that the negative effect of industrialisation is prominent in Delhi region only.

2. Interceptor Sewerage Plan 2008

According to the DJB, the interceptor sewer project is an integrated approach towards zero sewage flow in the drains and thus, the river. The plan was to lay interceptor sewers of 115 kilometres to tap the 135 minor drains, carrying sewage into three of the major drains—Najafgarh, plus supplementary, and Shahdara and Barapullah; and then divert it to the nearest STPs. These drains together contribute 70% of the total pollution in Yamuna.

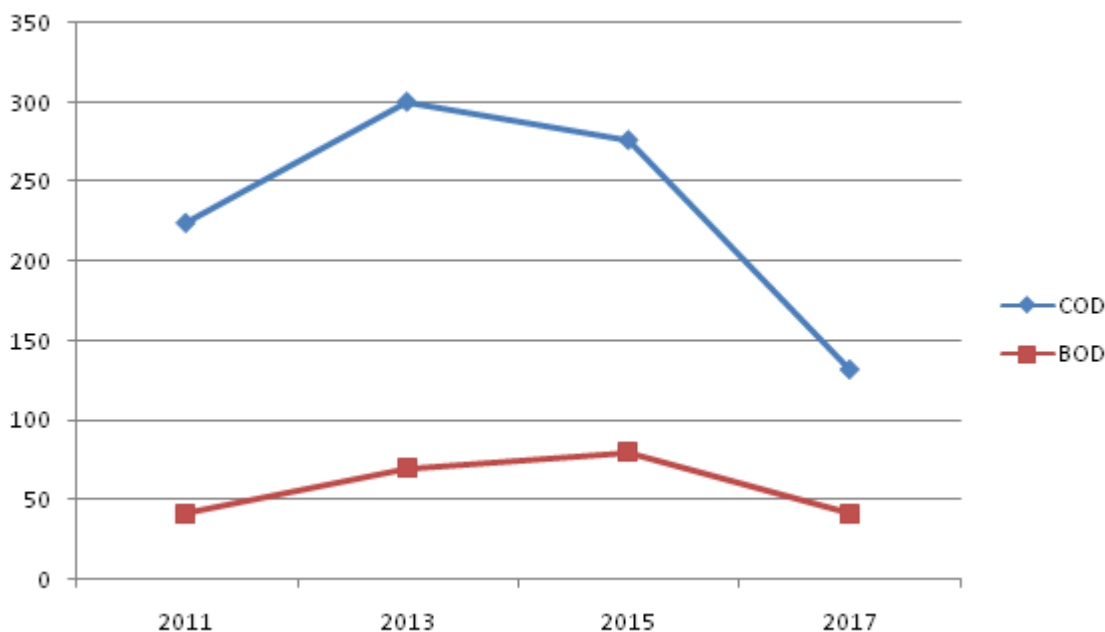


Fig 4: BOD data from Najafgarh drain for April 2011-2017

Source: DPCC

- The project was supposed to be implemented during 2009-2012, but the project was awarded only in 2010, with a target to complete by 2016. The Interceptor Plan (IP) was the hardware approach costing around INR 5,600 crores as per May 2009 prices. (Centre for Science and Environment 2009). By April 2016, only 75% work was completed for diversion of drains (Comptroller and Auditor General 2015).
- The project promised to reduce the BOD discharged by Najafgarh and Shahdara drains to about 12 mg/l, under the condition that planned interceptions take place. Though the BOD levels at Najafgarh drain (Earlier known as River Sahibi) have decreased after 2015, to 47mg/l in April 2017, it is not even close to the projected level of 12mg/l (Comptroller and Auditor General 2015).
- No projections for coliform counts were available. The report was also silent on other quality parameters in River Yamuna after the implementation of the project.

The non-attainment of the IP even after the SC judgement can be for following reasons:

- i. No proper data on number of illegal sewers directly connected to Najafgarh drain. 135 sewers were mapped at the beginning of the plan. Later, the number increased to 188.
- ii. The capacity of the STP to which sewerage has been diverted needed further augmentation. Dr. Sen Nursing Home and Delhi Gate are already running at full capacity. The lag time in project starting and large centralised

land requirement could be the major problem. This points to major problem in centralised wastewater treatment plant.

- iii. Total wastewater generation of these sewers was not calculated properly. Groundwater use was not taken into consideration.
- iv. Any given storm water drain carries untreated sewage directly falling into it from un-sewered regions of Delhi and the diluted wastewaters released by STPs after treatment. Hence, the IP ends up re-treating the already treated wastewater, thereby reducing the efficacy of the program on the whole. A decentralised STP at the mouth of minor drains or near every major un-sewered colony would have been much more effective.

Thus, the objective of this project which was to provide a commercially, technically viable, and feasible solution on a priority basis within a short span of time for effective abatement of pollution in the River Yamuna and improving water quality, making it the best fit for the designated use, did not really succeed.

3. Existing Wastewater Management Infrastructure in Delhi

A. SEWAGE TREATMENT PLANTS: AN ANALYSIS OF OPERATIONS

1 Capacity Analysis

Out of the total 651 Millions of Gallons per Day (MGD) treatment capacity, only 576 MGD operational (other 75 MGD either closed or not commissioned yet), out of which only 431 MGD being treated at present (75% capacity

utilisation) (Refer Appendix 3), leaving 249 MGD of wastewater being directly dumped into the river, untreated (Comptroller and Auditor General 2015).

Underutilisation of STPs has been attributed to mismatch between treatment capacity created and actual sewage generated in the relevant catchment area, arising from the following reasons:

- **Due to unavailability of land** required for construction of a conventional centralised STP, they generally end up being made in low sewage load areas or away from the congested point sources, thereby increasing the cost and leakages associated with conveying sewage through the long length sewer lines. For instance, the Ghitorni plant which has a capacity of 5 MGD, is lying idle since its construction in 1997 due to non-availability of sewage in its commanding areas while DJB continues to incur Operation and Maintenance expenditure on it (Comptroller and Auditor General 2012).
- **Due to faulty projections by planning agencies** without taking existing sewerage conveyance, leakages, extraction of groundwater and present flow of sewage load to the concerned STP. Hence, unrequited capacities end up being sanctioned and created. For instance, the Rohini plant with a capacity of 15 MGD, received less than 1 MGD of wastewater and was thus working below 17% of its capacity for 12 years. The under utilisation of the plant is blamed on DDA's estimates by DJB. Similarly, Okhla STP's augmentation was not required at all as water supply had still not been augmented and the earlier

capacity was itself under-utilised up to 34%. (Comptroller and Auditor General 2013).

- **Inefficient sewage conveyance system** prominently due to incompetency of the land planning agency, DDA. The sewer lines cannot therefore be laid down by DJB. A close look at the introduction of draft Master Plan for Delhi 2021 (MPD-2021) by Delhi Development Authority, reveals that faulty projections of population and short comings in terms of comprehensive planning in MPD 2001 led to the growth of unauthorised colonies and *Jhugi Jhopri* clusters. These encroachments and squatter settlements happened to a large extent on the vast tracts of land owned by the DDA. These colonies are so congested and ill-planned that laying of a proper sewage system would take another 20 years and INR 20,000 crores (Aecom Wapcos 2014).

2 Quality of the treated effluent

NGT has ordered DJB to augment their STPs to the standards of BOD <10mg/l and Total Suspended Solids (TSS) <10 mg/l. This was done because dilution is not possible due to no or very limited freshwater flow in river Yamuna, even if it is assumed that all STPs treat the entire wastewater generated in Delhi, given the BOD standards most of the STPs currently work at, i.e. <30 mg/l, river Yamuna will still be 10 times the bathing level (class C) standards of <3 mg/l. Hence, the wastewater itself should be treated at lowest BOD levels possible.

- However, the monthly performance data of STPs by Delhi Pollution Control Committee (DPCC) for the month of April 2017 revealed that 29.81% of total operational capacity of STPs (543.3 MGD) is working

below their set standards (Delhi Pollution Control Committee 2017).

- Even though the NGT order was passed in 2010, 77.19% of STPs are still working at BOD <30mg/l and TSS <50mg/l. This is because it takes a lot of time and capital to change/augment the complex technology used in centralised STPs.

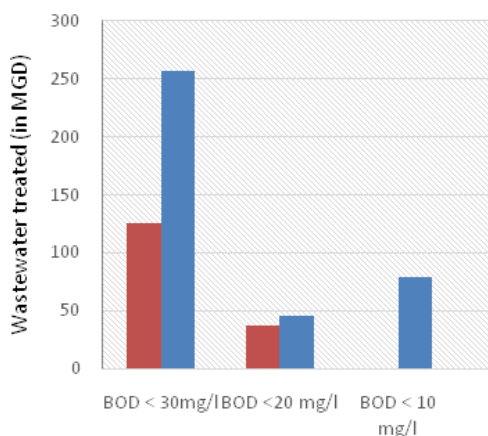


Fig 5: BOD standards of treated wastewater at present

B. SEWAGE CONVEYANCE SYSTEMS: AN ANALYSIS OF THE UN-SEWERED DELHI

1. Insufficient sewage collection and conveyance system: Storm water drains have now become channels of carrying black sewage water thereby turning into open sewers.

About 46% of the Delhi's area, which accommodates around 40% of the population (40-50 lakh individuals) does not have access to a proper sewage system and the untreated waste water from such households directly falls into the nearby storm water drains, which in return are directly emptied into the Yamuna. This effectively negates any effort made towards

treatment as the STPs release treated water into the nearby drain. If the same drain is also carrying untreated sewage from un-sewered regions, then the dilution becomes futile.

- Lack of coordination between different authorities responsible for the city's sewage conveyance and storm-water drainage systems (Table 2) often leads to overlapping projects, long processes of permissions in implementing important projects like de-clogging of sewer lines in time and other planning and administrative issues.
- The unauthorised colonies are unplanned colonies set up on DDA land, without due permission from the authority to do so. Thus, while DDA is torn between removing these illegal inhabitants or not, it often ends up not focusing at all on the provisions of sewerage system in such settlements. There is also no space for laying sewer lines due to the excessive congestion in and around these colonies.

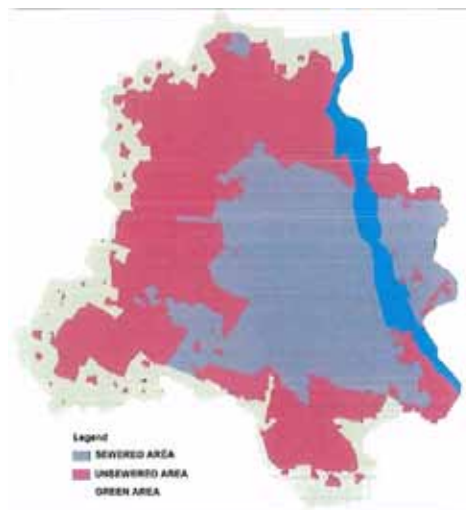


Fig 6: Sewage coverage in Delhi
Source: Master Sewerage Plan 2031

Table 1: Types of settlements and sewerage

Type of 'unplanned' settlements	Total number of such settlements	Un-sewered settlements (number)
Urban Villages	135	9
Rural Villages	227	165
Unauthorised Colonies	1639	1539
Regularised-Unauthorised colonies	567	26
JJ Clusters	672	0
JJ Resettlement Colonies	44	0

Source: Master Plan of Delhi 2021 and official website of Delhi Jal Board

3. It is not technically feasible to lay sewer lines in most rural and urban villages due to low wastewater flow. The low flow throughout the year causes excess siltation and early breakdown of infrastructure adding exponential costs. Minimum wastewater flow required is 113-135 LPCD.

4. *Jhuggi Jhopri* clusters and slums lack the facility of sewers altogether. With open drains carrying sewage to the big

nallahs, flowing right outside the houses, these illegal encroachments were not even considered for provision of basic facilities before the Delhi Slum and JJ Rehabilitation and Relocation Policy 2015, which is yet to be implemented even in 2017.

Innovative approach of decentralised low energy bio-mechanical technology will work well in these areas.

Table 2: Administrative structure

Agency	Sewage Conveyance Systems	Storm Water Drainage
Delhi Jal Board	Has full responsibility of water supply and treatment of domestic sewage for NaNCT of Delhi/area under MCD's jurisdiction. (NDMC, DCB and DDA construct branch sewers which outfall into trunk sewers for their respective jurisdiction areas, and the sewage is further taken care by DJB.)	
MCD (Municipal Corporation of Delhi)		Has full responsibility for drains with <60 feet, no treatment provision
Public Works Department (PWD)		Has full responsibility for drains with >60 feet (mostly along roads), no treatment provision
Irrigation and Flood Control Department		Has full responsibility for major drains which carry rainwater to Yamuna, no treatment provision
Delhi Development Authority	Makes the land development and habitation plans. It also provides forecast into population rise on basis of which sewage treatment capacity is planned. These expected population targets are mostly wrong since they do not consider changing demography (expanding regional cities around Delhi).	

Section 2: Moving towards Sustainable System for Sewage Management

For the purpose of this paper, the centralised approach (where DJB is solely responsible for the collection and treatment of wastewater generated with no involvement of the community, at a large scale, on vast tracts of land, and at a high construction operations and maintenance cost) has been referred to as the ‘conventional approach to sewage management’.

The decentralised sewage treatment system (close to the point source of its generation, with more involvement from community institutions like RWAs in terms of re-use of treated water and maintenance of the plants, monitored closely by government and constructed and operated with minimal funds over significantly lesser amount of land) is referred to as the non-conventional approach, and is proposed as the way ahead for the un-sewered Delhi.

Accelerating urbanisation, ever-increasing demand for water, inadequate management of wastewater, and ineffective implementation of highly centralised and sophisticated treatment technologies that are highly centralised, have necessitated the need to shift focus from an ‘end of loop system’ of centralised wastewater treatment to a ‘closed loop system’ of decentralised treatment. While the classical civil engineering system has not been able to deal with water in an integrated manner, it is believed that the decentralised model which views wastewater as a resource and public or community partnership an essentiality, will definitely be a better solution.

Feasibility Analysis of Decentralised Systems

A. PLANNING

Centralised Systems

Some of the issues arising due to top-down plan approach, based on long term population and wastewater generation projections at a centralised level are:

1. **Faulty projections:**

- Population **projections of DDA** are used by DJB for construction of STPs, but these have been found misleading, in general. For instance, in the **MPD 2021**, Delhi’s population projection was 18.2 million for 2011 but the actual population was 16.8 million (Census 2011). While under-projection might create a capacity disparity, over-projections are even more problematic as they lead to under-utilisation of capacities created. This is due to DDA projections based on geometric mean which does not take the changing demographic into account (Aecom Wapcos 2014).
- There are huge disparities in fresh water supply to different regions causing high dependence on **groundwater** in some areas like North Delhi. The DJB does not have comprehensive data on personal illegal ground water consumption by Delhi residents. And hence, it is not taken into consideration for wastewater calculation, thereby leading to a downward bias of wastewater projections.

- DJB also does not consider **area-wise leakage** into its wastewater calculation, thereby constructing capacities more than required, thus leading to underutilisation of capacity.
2. **Time lag:** Long term planning is based on unverified assumptions, thus causing disparity in what is planned and finally, required. This also makes a later stage intervention to accommodate any future demographic changes difficult due to land availability issues and limit of capacity expansion.
 3. Due to **limited community involvement** and region-specific planning, the focus remains only on large infrastructure (also known as the hardware approach).

Decentralised Systems

Merits

1. **Proper projections:** A decentralised sewage system is based on a **bottom-up plan approach** and thus, eliminates unconfirmed assumptions because local surveys, close to the point source will be done to plan the project and hence:
 - Population plans can be based on immediate demographic development
 - Actual water consumption can be based on direct engagement surveys
 - Land use mapping can be done to understand potential treated wastewater reuse sites
2. **Less time lag:** A decentralised system is based on ‘immediate need’, because of less lag time involved in construction,

unlike in the centralised systems. And is hence flexible to change in need of the population, in terms of capacity.

3. **Higher community involvement**

For successful implementation of the decentralised system, community involvement through RWAs is of prime essence. For ensuring committed participation of local institutions, CPCB in 2003, prescribed an incentive model for RWA-operated decentralised systems, with following major incentives: (Alhuwalia 2012).

- i. Sewerage component in water bill (is the charges for sewerage facilities provided, calculated on 60% of the water usage) can be partially eliminated
- ii. The property tax, which includes a sewage development component, could be reduced substantially
- iii. This model will also entail an attractive pricing for freshwater usage

Demerits

The degree of collectivisation of wastewater at any stage of the treatment and reuse or dispersal processes will be determined by a variety of local circumstances, including topography, site and soil characteristics, development density, type of development, community desires with regard to land use issues, and sites of potential reuse and/or sites where discharge would be allowable. These plans will therefore be subjective, and a little less replicable and would thus require good technical expertise in planning (Chirisa 2017).

The decentralised system will require a strengthening of institutions and capacity building in order to maintain region-wise responsibility and accountability. This system

runs a risk of becoming too complex if technology is not efficiently employed.

B. ADMINISTRATION

Centralised Systems

Although the monitoring of quality of treated wastewater involves a private contractor, DJB, DPCC and NGT committees, it is the DJB that is solely responsible for collection and treatment of domestic sewage in Delhi through the construction of relevant infrastructure (sewer lines, SPSs, STPs). The organisational structure of the DJB is based on functional division which allows streamlining of operations, with decision-making and planning taking place only at higher levels of authority. In this case, concerned authorities also lack up-to-date technical expertise as promotions within the system take place on seniority basis. Therefore, the plans that are finally sanctioned are done so without the technical advice of Junior/Assistant Engineers who work at the base level, in close touch with the actual reality of sewage management in the city.

Decentralised Systems

Merits

For ensuring efficiency, a matrix-based organisational structure would be required to be put in place. These region-wise project-specific teams, if organised according to the Japanese concept of 'quality circles', can ensure a responsive governance. In addition, community involvement and Real Time Technology for information dissemination of wastewater quality might serve as a complimenting force for the same.

Demerits

These structures might suffer from diffusion of responsibility if proper systems are not put in place, like a centralised monitoring body to look after effective functioning of the systems.

Another important concern is of late response to any failure/stoppage of decentralised STPs. Being located in habituated areas, such disruptions will directly impact the residents.

Administration can also become bulky if appropriate technology methods are not adopted.

C. TECHNOLOGY

Centralised Systems

Electro-mechanical technologies which are mostly used, do ensure cleanliness. However, using this technique for removal of eutrophication-causing nutrients like nitrogen and phosphorous is more difficult and expensive, in comparison to phytoremediation. Also, one of the major causes of non/limited operations is uncertain power due to ambiguous power agreements. (Centre for Civil Society 2016).

Decentralised Systems

Merits

Although bio-mechanical methods are recommended in decentralised systems, allowing ease of operations, efficiency, reliability (longer life) and assured compliance of quality standards, miniaturised electro-mechanical methods can also be used, which further highlights the inter-operability of technology when employed at a smaller scale.

Demerits

While the collection of biogas is expensive and not recommended in decentralised systems, problems associated with sustainable methods of capturing and processing methane and other gases being released in the atmosphere is yet to be studied.

There is a possibility of technical failures, as moving from the tried and tested centralised approach to a new non-conventional decentralisation one will require several pilot-runs and planning to ensure that there is no wastage of funds. For example, as per the initial plan, the DJB was supposed to build decentralised STPs in 6 locations: Gautampuri, Aya Nagar Village, Sai Nagar, Kair Village, Sonia Vihar A-Block, and Begam Vihar B-Block, and water was provisioned to be re-used through a double piping system. However, on account of technical irregularities the project was not sanctioned and it was finally tendered for only 3 locations: Aya Nagar, Mitraon, and Kairon.

D. ENVIRONMENTAL

Centralised Systems

Traditionally, the onsite sewage management system was operated through house-owned septic tanks. The poor design of these tanks and associated environmental concerns such as groundwater seepage, led to active adoption of the centralised system, which is mainly characterised by wastewater collected at different locations, treated at a central STP and release of water in the nearest drain.

- However, not only does the laying of sewer lines at a depth of 7-8 metres disturb the biological ecosystem in the soil, but the transporting of untreated sewage over long

distances can also turn the entire sewage septic, besides increasing the chances of leakages (NRCPB 2017).

- The large transportation distances can also reduce the potential and increase costs for re-use of water at non-contact points. Hence, the DJB's efforts to ensure re-use of water are minimal at present, due to problems associated with distance and transportation. There is also an over reliance on electric power for transporting wastewater as gravity hardly suffices for wastewater movement force.

Decentralised Systems

Merits

Treatment of wastewater at or near the source of its production provides several economic benefits:

- Sewer lines are laid at a depth of 1-2 metres below the ground
- Better potential for re-use of reclaimed water due to less transportation distance and cost (this also depends upon social acceptability of treated water which is addressed later in the report), for use of nutrient-rich water for horticulture, and for recharging groundwater (depending on the hydrology of area)
- Enables extension of sewage coverage in areas, previously served by individual septic tanks or storm water drains

Demerits

Periodically monitoring water treatment quality is essential to avoid groundwater contamination and health issues caused by reuse of water. There are also limitations to the reuse of recycled water which are provided in Table 3.

Table 3: Issues and constraints pertaining to different categories of water reuse

Wastewater reuse categories	Issues/ constraints
1. Agricultural, irrigation, commercial nurseries	<ul style="list-style-type: none"> • Surface and groundwater contamination if not managed properly • Marketability of crops • Public acceptance
2. Landscape irrigation: Parks, school yards, golf courses, cemeteries, greenbelts, residential	<ul style="list-style-type: none"> • Effect of salts in water on soils and crops • Public health concerns related to pathogens • Use area control including buffer zone may result in high user costs
3. Industrial recycling and reuse: Cooling water, boiler feed, process water, heavy construction	<ul style="list-style-type: none"> • Constituents in reclaimed water related to scaling, corrosion, biological growth, and fouling • Public health concerns, like aerosol transmission of pathogens in cooling water • Cross connection of reclaimed and potable water lines
4. Groundwater recharge and replenishment: Saltwater intrusion control Subsidence control	<ul style="list-style-type: none"> • Possible contamination of groundwater aquifers used as a source of potable water • Organic chemicals, total dissolved solids, nitrates and pathogens in reclaimed water
5. Recreational and environmental uses: Lakes and ponds, marsh enhancement, stream-flow augmentation, fisheries	<ul style="list-style-type: none"> • Health concerns due to presence of bacteria and viruses • Eutrophication due to nitrogen and phosphorous • Toxicity to aquatic life
6. Non-potable urban uses: Fire protection, air conditioning, toilet flushing	<ul style="list-style-type: none"> • Public health concerns about pathogens transmitted by aerosols • Effects of water quality on scaling, corrosion, biological growth, fouling
7. Potable reuse: Blending in water supply reservoirs Pipe-to-pipe water supply	<ul style="list-style-type: none"> • Constituents in reclaimed water, especially trace organic chemicals and their toxicological effects • Aesthetics and public acceptance • Health concerns about pathogen transmission, particularly enteric viruses

Source: Master Sewerage Plan 2031

E. ECONOMIC FEASIBILITY

Centralised Systems

- Large capital expenditure (CAPEX) is required in the beginning of the project (called the mobilisation advance), and the lag time involved in construction, unprecedented delays in sanctioning, tendering, awarding and finally starting the work after taking permissions and NOCs from all concerned state authorities further

escalate costs (called interest cost).

- In addition, out of the total fixed cost for construction of an STP, 48% of it is for the conveyance system (as seen in the economic feasibility study below), a non-core expenditure that can be reduced under decentralised systems.
- DJB uses DBO model for awarding contracts against central government's prescribed BOT (Annuity) model. This leads

to contracts being awarded to the lowest bidder for OPEX operational expenditure (OPEX). The contractor in turn makes money from higher CAPEX but later mismanages the STP due to insufficient OPEX sanctioned. Any rehabilitation cost is borne by the DJB.

Decentralised Systems

Merits

- Fixed capital investment (CAPEX) on an incremental basis and less lag time between infrastructure setting and beginning of actual treatment, reduces the amount of mobilisation advance and interest costs.

- Further, due to less sewer network required, not only is the CAPEX less but also the OPEX is lower due to reduced need for regular cleaning, sewer rehabilitation and electric pumping cost. (Refer economic feasibility study).

Demerits

Improper employment of technology and uncertain market potential for reuse of treated water and sludge may add to operation and management cost. For instance, use of electro-mechanical technology against the favourable bio-mechanical one will require specialised engineers for proper functioning and maintenance.

CASE STUDY: Economic Feasibility Analysis

Zindpur Sub Drainage Zone under Narela Drainage System (North-West District)

This Sub Drainage Zone is spread across Hiranki, Mukhmelpur, Kadipur, Nanglipuna, Alipur, Khusak, Zindpur, Budhpur and Kherakalan villages. **The Zindpur drainage basin is entirely unsewered** and has a **very large green coverage** in the form of orchards, farmland and forests. **There are densely populated regions spread across the area.**

A centralised wastewater treatment system is planned in Master Sewerage Plan 2031 with sewage treatment plant at Zindpur and three Sewage Pumping Stations at Hiranki, Kadipur and Zindpur. Thus, the wastewater has to travel 33 kilometres from farthest point to get treated. A system of decentralised sewage treatment at source of pollution covering on an average population of 10,000 can be used. Thus, decentralised plants of 1-2 MLD can be set in pockets of residences.

Analysis Methodology

The researchers have chosen to perform a life cycle approach study for cost analysis of different wastewater management systems. For this, the cost has been divided into fixed and variable components. The planned infrastructure and cost estimates of the centralised system set up are taken from the Delhi Master Sewerage Plan 2031. For the decentralised system, the infrastructure requirement has been estimated with the help of the NCRPB Sewerage design document. For operation and maintenance cost analysis, past tenders for the Okhla plant operation cost (30 MGD) have been used. Calculations are shown in Appendix 4.

CASE STUDY: Economic Feasibility Analysis

Table 4: Area Demographics

Area	Population	Population Growth (Decadal)	Population Density
2001-2010	Population density	21.79	8,298

Source: Census 2011

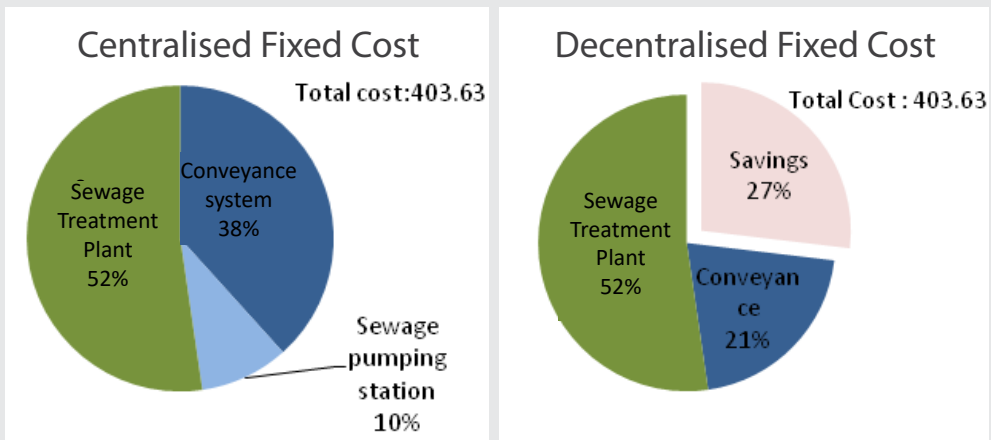
Table 5: Wastewater Generation

	Wastewater Generation (MGD)	Population Growth (Decadal)	Population Density
	2011	2021 (Projected)	2031 (Projected)
Zindpur Sub drainage	14.60	24	33.3

Source: Master Sewerage plan 2031

Table 6: Economic Feasibility Analysis

Centralised System (33.33 MGD)	Population Density
Fixed Cost: INR 403.63 Crore (Life: 30 years)	Fixed Cost: INR 295.1634 Crore (Life : 30 years)
Annual Variable Cost: INR 4.58 Crore Cost per 1,000L water treated: INR 4.138	Annual Variable Cost: INR 6.47 Crore Cost per 1,000L water treated: INR 3.32
Annual Cost saving in Decentralised option over centralised option: 19.57% Assumed capacity utilisation in decentralised is higher at 90% due to low gestation period and better planning. Environment Cost though significant is not computed.	



CASE STUDY: Economic Feasibility Analysis

OBSERVATIONS:

1. The centralised system is dependent on the laying of a conveyance system which includes internal and peripheral trunk sewers and Sewage Pumping Stations. This accounts for 48% (38% for conveyance and 10% for Sewage Pumping Stations) of the total fixed cost for a centralised system. In a decentralised system, wherein the sewage gets treated at source, the need for a conveyance system is reduced and that of Pumping Stations is eliminated, thereby saving 27% of the total cost (10% from SPSs and rest from laying down long sewer lines), as shown in the pie diagram.
2. The use of electro-mechanical technology in the decentralised system increases the operation and maintenance cost of STP due to the need for more specialised engineers. The use of bio-mechanical technology does not require any specialised management thereby reducing the cost further. Also, the cost of rehabilitation of sewer pipelines is eliminated. (For the purpose of the cost analysis of the activated sludge process, it is assumed that the same technology is used for both plants. Thus, the cost has further scope of reduction if technology is improved.)
3. The annual cost of treating 1KL of wastewater in a decentralised system is 19.57% less than that in a centralised system.
4. The decentralisation system will also promote small green technology entrepreneurs to invest their efforts in developing such projects.

F. SOCIAL FEASIBILITY: ENVIRONMENTAL AWARENESS, STAKE AND ACCEPTANCE

Centralised Systems

There is zero to minimal involvement of the general public in wastewater treatment operations. This isolationist working method and lack of transparency limits the people's confidence in the DJB's capability to follow set wastewater treatment standards. This also causes low awareness about set water quality standards. Despite the interest to actively participate in environmental conservation,

there is a lack of opportunities for taking action. (Refer social feasibility study below).

Decentralised Systems

These systems allow community institutions like RWAs, citizen organisations to be actively involved in the management of wastewater. Also, a community's acceptance for reuse of treated water for different direct purposes and for consumption of agricultural products irrigated with treated wastewater increases with higher transparency and community involvement. (Refer social feasibility study below).

Social Feasibility Study

There is a need for social research for understanding the public's perception of water use and re-use and the psychological factors governing its decision-making process. Therefore, it is of vital importance to understand the social acceptability of using reclaimed water. In the present study, the researchers have tried to gauge the acceptance of treated effluent for the reuse of water among the people in the South Delhi (SD) region.

South Delhi has a population density of 10,935 persons per square kilometre, according to the 2011 census. As per the Master Plan Delhi 2021, this population is bound to increase two-fold by 2021, leading to an increased demand for water, which would further exacerbate the wastewater management issues.

South Delhi comes under Zone 10 of the Sewerage Master Plan and it is divided into five sub-drain zones viz. Mehrauli, Vasant Kunj, Ghitorni, Mahipalpur, and Kapashera. Present demand of water is around 90 MGD (approx.), 80% of which is wastewater (72 MGD), while the existing total capacity of Waste Water Treatment Plants (WWTP) installed in these five sub-zones is only 20 MGD. There is a need to conserve water keeping in mind the increasing demand for water, but before that, the society needs to attain a certain level of acceptance so that a close loop system can be sustained easily, with wastewater being generated, collected, and treated locally; and the treated effluent being reused by people.

Survey

For the purpose of this study, a qualitative survey was conducted in the South Delhi region and a hundred responses were recorded.

Note: The survey was conducted on a small fraction of the population, to gauge a general opinion. However, since the sample population is not completely representative of the entire Delhi population spread across different types of settlements (planned and unplanned urban, rural, unauthorised, JJ and slums), the survey cannot be generalised overall. Therefore, every time the sustainability of a decentralised system is to be gauged before its construction, a region-specific study should be conducted.

The questionnaire was designed for the following purposes:

- To gauge the understanding of the people and the basis on which they make their decisions to accept or reject the usage of reclaimed water.
- To gauge the level of trust among the people regarding various governing authorities related to wastewater management.
- To examine the consumers' attitude towards the environment and their acceptability of produce grown with treated wastewater, so as to get an idea about the people's willingness to use recycled water in light of environmental concerns.

Awareness among people

a. About scientific quality standards

There is a critical lack of knowledge among people with regard to water-related decisions, with only 20.4% having a basic knowledge of treated waste-water standards. This shows a complete seclusion of the general public from water management and over reliance and trust on government institutions or social influence.

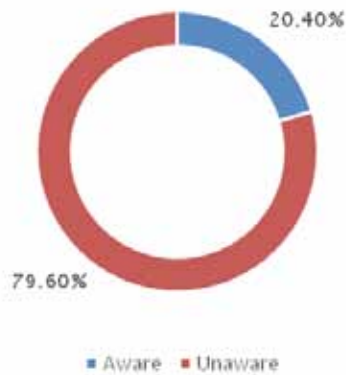


Fig 7: Awareness among people regarding quality of treated water

b. About the effect on them due to pollution in Yamuna

Regarding their stake in the pollution over river Yamuna and the effect of the pollution on them, 65% of the respondents said they are affected directly or indirectly by the river's pollution, whereas 21.4% said they are not at all affected by it and the rest 13.6% were sceptical about it.



Fig 8: Awareness among people regarding their stake in the pollution in Yamuna

Social acceptance for reuse of recycled water



Fig 9: Willingness among people for reuse of DJB-monitored, treated waste water

a. Acceptance of the institution involved (DJB)

Reasons for acceptance

- 76.50% of the people were willing to use DJB treated wastewater due to environmental concerns.
- 51.50% were willing to use treated water as they were unsatisfied with the regular water supply.
- 17.60% were willing to use wastewater due to economic benefits.

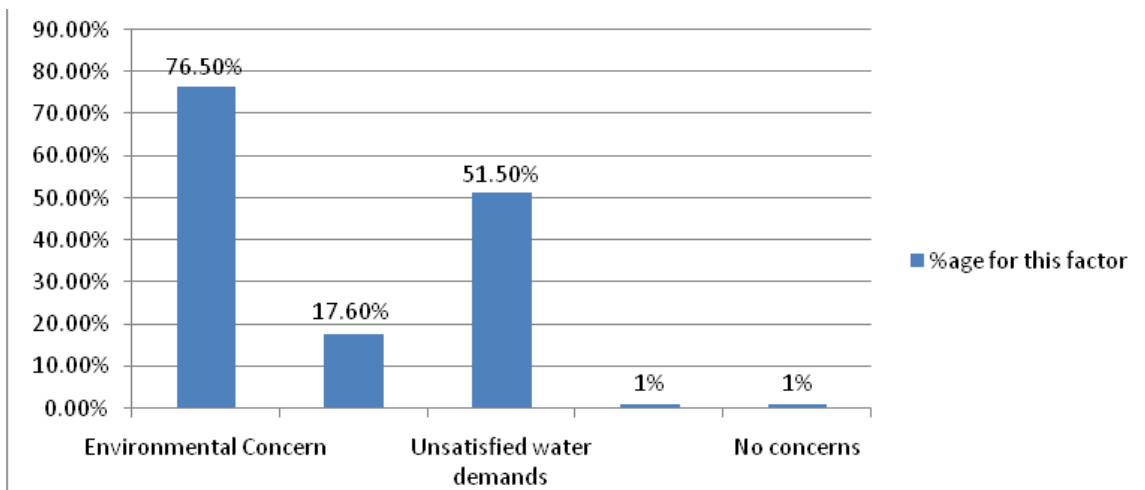


Fig 10: Factors motivating acceptance for reuse of wastewater

Reasons for lack of acceptance

The majority (54.20%) claimed that it wouldn't be open to using treated wastewater, driven mainly by personal disgust or the 'Yuck Factor'. The persons said they were not mentally prepared to use water which has been treated from sewage.

Trust issues with the DJB were highlighted through the 37.50% of people who gave a negative response that they were not confident about the quality of water treated by DJB. The estrangement of citizens from the system of wastewater management may be cited as the main reason behind the scepticism regarding the DJB's performance.

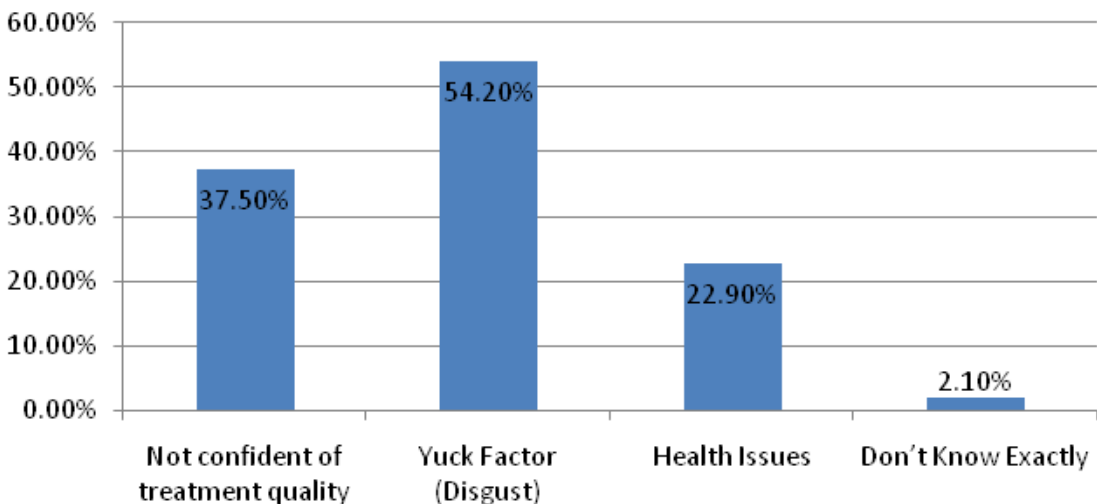


Fig 11: Factors demotivating people from reusing wastewater

b. Acceptance for various uses of reclaimed water

Indirect Use: Irrigation of crops

A majority of people (56.30%) had no issues with their food crops being irrigated from treated water. This finding also strengthens the previous conclusion of lack of knowledge among citizens.

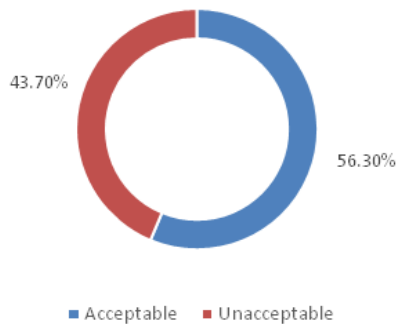


Fig 12: Acceptance of crops irrigated using treated wastewater

Direct Uses

Nearly all people willing to reuse wastewater are willing to utilise it for washing, gardening and flushing, which are non-contact uses. Thus, it makes more sense to treat wastewater only to obtain the quality required for safe non-contact uses, instead of treating it for drinking or bathing.

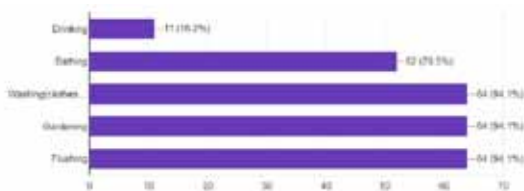
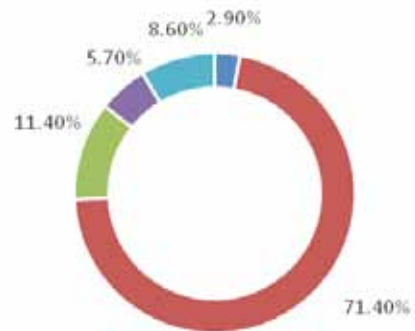


Fig 13: Acceptance for direct use of wastewater

c. Requirement for transparency

Requirement for community involvement on scale of 1 to 5, with 1 being an indicator of not being in favour of checks and 5 being an indicator of being strongly in favour of checks

71.40% of people, who said no to DJB treated water earlier, felt a strong need for transparency within the wastewater management system (refer to pie chart), and hence, 92.2% (56.9%: very strongly, 35.3%: strongly) felt the need of community involvement in the wastewater management system.



- Low price of water
- Transparency in the process of supply
- Community involvement
- Use of recycled water by other persons (neighbours)
- Not willing to use recycled water

Fig 14: Motivations for using recycled water



Fig 15: Responses to need for community involvement

Bengaluru Case Study on Decentralised Sewage Treatment Plants

A few citizens and municipal bodies have realised the scarcity of water. One such body is the Karnataka State Pollution Control Board (KSPCB) which has been trying to fight towards achieving better use of water in Karnataka. KSPCB issued an order in 2004 for zero liquid discharge (ZLD) in Bengaluru which has a population of 8.42 million people spread over 800 square kilometres (Census 2011). Bengaluru has been trying to meet the daily demands of water by pumping 1250 MLD from River Cauvery, which is 300metres downhill and 100kilometres away from the city.

Groundwater contribution adds up to 600 MLD, at the cost of high water pressure on villages situated on the periphery of the city. The city generates 1100 MLD of wastewater with a treating capacity of 721 MLD. 40% of the city sewerage system is estimated to be underutilised due to lack of drainage network thereby leading to failures in plants.

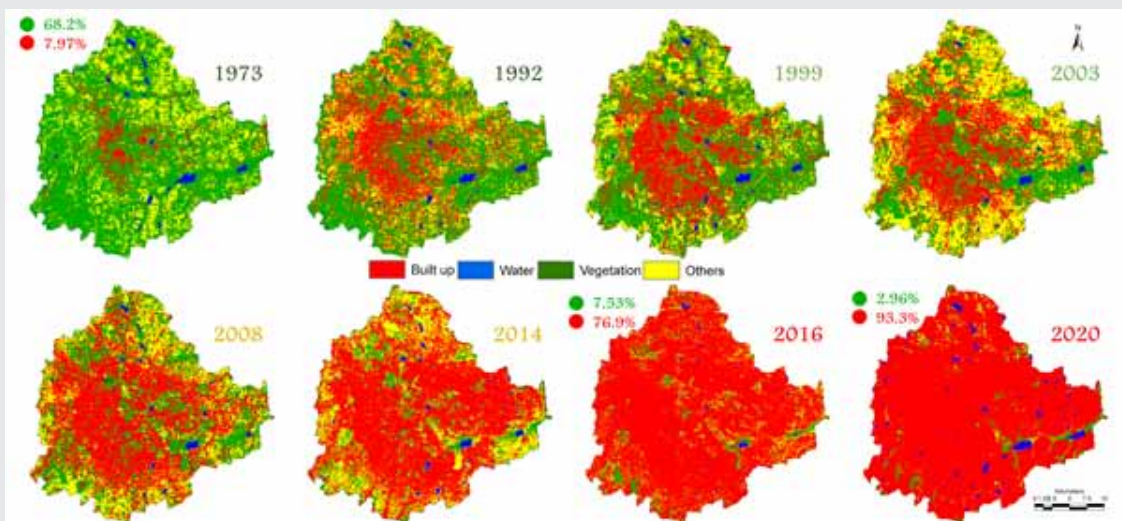


Fig 16: Decline of vegetation and drying up of water bodies due to rapid urban growth from 1973 to 2016. Source: Environmental Information System, Indian Institute of Science

For the past few years, Bengaluru has been facing an aggravating scarcity of water all over the city which forced the KSPCB to enforce on-site STPs and reusing of 100% treated water in residential colonies with either more than 50 residential units or a built-up area of more than 5,000 square km. This stringent order marks the beginning of decentralised wastewater treatment and reuse (DWTRU) at a scale which has led to the formation of more than 2,200 decentralised plants in Bengaluru. This level of DWTRU System is considered the largest of its kind in India, with 70% of these plants employing activated sludge processing for secondary treatment, as per a survey done by Centre for DEWATS Dissemination, Bengaluru. The survey also suggests that treated water is typically reused for landscaping, car washing and (with use of dual piping technology) for flushing of toilets.

According to the KSPCB provisions, a builder needs to compulsorily have a DWTRU system in the building to obtain a permit for work. After the construction of a sewage treatment system, resident welfare associations are responsible for taking care of the treatment system while employing human resources to take care of the plant 24x7. Generally, the costs of maintaining the DWTRU can be divided into three categories: cost of employing 3-4 personnel who may work 24x7 in shifts towards maintenance of the plant + cost of electricity used for plant + cost of chemicals and sludge disposal mechanism. These costs are borne by the RWAs and not by the builder.

This case shows how effective policy formulation may lead to innovative and achievable solutions towards sustaining current resources. Though the KSPCB's goal of having 100% reuse seems to be impossible to accomplish, it is still a definite step forward in the direction of sustainability.

Table 7: Challenges to current decentralised STPs operational in Delhi

Plant location	Capacity	O&M agency	Year built	Observations
Molarband	3 MLD	MCD (S&JJ)	2003	<ol style="list-style-type: none"> 1. For Domestic wastewater from CTCs 2. 100% capacity utilisation 3. Recurring maintenance issue 4. No record for maintenance of sludge produced, status report 5. The treated effluent standards are being met 6. Sludge and treated wastewater is reused for parks by the horticulture department 7. No system of biogas production, trapping and reuse
Tikrikurd	2 MLD	MCD	2003	<ol style="list-style-type: none"> 1. No status reports of equipment 2. Has to be closed due to delayed maintenance & power cuts. 3. Utilisation limited to 15%
Vasant Vihar	35 KLD (0.035 MLD)	RWA	2006	<ol style="list-style-type: none"> 1. Working efficiently 2. Treated wastewater used for parks and gardening

Lack of proper monitoring and delayed maintenance issues, seen in the above decentralised STPs operated by MCD, are similar to the issues in centralised systems operated by DJB. However, efficient working of Vasant Vihar STP shows how community involvement and community agencies like RWAs can play an important role. Local planning for local issues is therefore the way ahead.

Policy Recommendations

The objective of this study has been to observe and understand the most sustainable method for countering domestic point source of pollution generated by the un-sewered regions of Delhi. The Delhi Jal Board's current approach has been to set up large centralised sewage treatment plants managed by specialists and monitored by the government. This has led to a complete seclusion of the general public from the treatment processes. The poor management of water and wastewater has also led to unsustainable energy, an expensive system of sourcing raw water from Bhakra Dam and Renuka Dam approximately 300 kilometres away and the discharging of partially treated waste into the Yamuna. Thus, a change is required to develop a hybrid model of decentralised and centralised wastewater treatment system with involvement from community institutions for a sustainable integrated approach to wastewater management.

As happened in the case of solar power, having localised handling of household sewage, instead of extensive and costly centralised sewer systems with distant outfalls, could well be a turning point for sewage treatment.

1. **Generating community awareness through involvement and transparency** is important to deal with the lack of institutional trust on the DJB, and build a sense of accountability among people.
 - Real time communication of sewage quantity and quality of input and output from all the existing STPs, as has been done by the Panaji Municipal Corporation

(Goa). Restrictions on public visits to STPs should be removed. Records of maintenance and utilisation of sludge produced should be publicly available.

- Social awareness can be promoted through college and school visits to the STPs to counter any misgivings regarding the use of reclaimed water.
 - Promotion of urban horticulture and farming using sludge and treated wastewater — the effluent is rich in nitrogen and phosphorous which could help plants and crops grow efficiently if used for their irrigation.
2. DJB can continue to augment and improve the existing STPs to make their operations better. But for future planning, **current planning and implementation methods need to be improved by using bottom-up approach instead of top-down approach.** The planning, at present, is done on a macro-level by a separate administration department of the DJB with the help of project management consultants, with zero or limited involvement of executive/assistant/junior engineers and people in the relevant catchment area, who have better region-specific knowledge. This seclusion leads to a 'one size fits all' solution, which further results in region-specific opportunities for reuse and treatment, threats of higher population growth, and inequities in water consumption being neglected.

Hence, for further planning in the un-sewered areas, especially the unauthorised colonies, conduct a local study, to analyse population specific needs of water supply, sewage treatment and water re-use,

3. On the basis of these local plans made, a decision can be taken as to what would be more feasible: laying sewer lines and connecting the area's sewage to the nearest STP or developing a local system of treatment for that particular area; after duly considering the critical handicaps of the centralised system like long gestation periods, minimum flow requirement for efficient operations etc.

Decentralised wastewater treatment systems should ideally be 'collectively planned' by community institutions and the DJB, 'managed singularly' by the community and 'monitored' by both RWAs and the DJB (because pilot studies suggest that communities can't be given the 'sole monitoring' responsibility). The added responsibility and the accompanying power given to the local authority like RWA will improve accountability because they have the highest stake in the treatment of the area's sewage. In addition, there will also be economic savings as per the CPCB model discussed in the study. Treated water can also be re-used within the locality, for purposes other than drinking and bathing.

However, in adopting this system, attention must be paid to administrative capability for continued monitoring and timely redressal of technical glitches.

4. **Gathering comprehensive region-specific demographic and water-use data using citizen organisations like RWAs etc.** will also help in preparation of sewage treatment plans locally, will enable more realistic numbers and data, and prevent problems arising from wrong projections.
5. The Faecal Sludge and Septage Management (FSSM) policy, announced by the Union Government in February 2017, did not gain much attention of the public and authorities but is actually a way ahead for local sewage management. The policy covers all projects of the Central government and enjoins state governments, local urban bodies and private facilities to ensure that the provisions of the policy are implemented for onsite sanitation services. A similar policy, integrating the setting up of decentralised systems for a local area and an on-site system for specific purposes like toilet complexes in these areas, could be the way ahead for Delhi.

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Appendix

Appendix 1: Sewerage Coverage and Rehabilitation with Time

Components	Year												
	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10
Truck Sewer (km)	130	130	130	132	135	140	143.6	147	150.5	153.9	160.1	168.7	178
Branch Sewer (km)	4693	4693	4693	5653	5703	5844	5956	6000	6070	6164	6217	6317	6410
Rehabilitation Desilting (km)	-	-	-	-	-	-	-	-	-	50	51.5	64.2	81
Unauthorized/Regularised Colonies	356	361	366	402	427	458	482	493	506	517	526	536	540
Urban Village	81	82	82	93	93	93	98	99	105	107	108	111	111

Appendix 2: Expenditure on Delhi stretch of River Yamuna

S. No.	Capital investments to clean Delhi stretch of Yamuna	INR Crore
I.	YAP I	17
	YAP extended	163
	17 STPs (capacity 2330 MLD)	750-1,000
	15 CETPs	256
	Sewer rehabilitation	100
A	Sub-total (till 2015)	1,286-1,536
II.	Sewer rehabilitation (2004-05)	170
	Sewer rehabilitation JBIC (YAP II)	185
	Sewer rehabilitation (Delhi Govt.: 51 km, 10 trunk sewers)	377
	Interceptor sewer project	2,454
	STP augmentation at Delhi gate and Sen Nursing (based on DJB norms of Rs 5 crore per MGD)	130
	STP augmentation after utilising existing capacity (gap 1948)	2,164
B	Sub-total (till 2015)	5,682
	Total for 22 km of Yamuna (A + B)	6,968-7,218

Appendix 3: Existing water and sewage infrastructure:

Water and Sewage Maintenance (Delhi)	
Conveyance system:	822 MGD
Internal sewers	
Peripheral sewers	
Trunk sewers ²	
Wastewater generated (80% as per CPHEEO) (not accounting for leakage losses and groundwater taken out)	680 MGD
No. of sewage treatment plants	22
Total capacity (CAG Report 2016)	651 MGD
Actual Treatment	431 MGD
Gap between wastewater generation and treatment	249 D

Source: CAG report, April 2016

Appendix 4: Economic Feasibility Study

CENTRALISED SYSTEM

COMPUTATION OF FIXED COST:		
Conveyance system:		
Internal sewers	346.757 km in length at INR 0.242398523 crore per km =	INR 84.05338 cr. INR 59.07562 cr. INR 11.571 cr.
Peripheral sewers	26.386 km in length at INR 2.2389 crore per km =	
Trunk sewers	3.857 km in length at INR 3 crore per km =	
		A. ₹ 154.7 cr.
Sewage Pumping Stations at:		
Hiranki	2 MGD	INR 6.58 cr. INR 16.36 cr. INR 14.88 cr.
Kadipur	7 MGD	
Zindpur	22 MGD	
		B. INR 37.82 cr.
Sewage Treatment Plant at:		
Zindpur	33.33 MGD at INR 211.11 crore and at 403.63 at present value (in 2017)	INR 403.63 cr.
I. Total Fixed Cost (A + B + C)		INR 596.15 cr.
II. Total annual fixed cost written off in a particular year (depreciation charged at straight line method)		INR 13.45433 cr.
COMPUTATION OF VARIABLE COST:		
Operation and Maintenance (O&M) cost:		
For the STP	INR 4.17 crore per annum (compounded for 8% yearly inflation from the 2013 value of INR 2.844 crore) ⁴	INR 4.17 cr. INR 0.417 cr.
For conveyance rehabilitation	INR 0.417 crore per annum (calculated as 10% of STP O&M costs)	
III. Total variable cost per annum		INR 4.58 cr.
IV. TOTAL COST PER ANNUM (II + III)		INR 18.03433 cr.

Considering an optimistic average of 80 % capacity utilisation throughout its life, the plant with the designed capacity of 33 MGD, will treat 80% of 33, i.e., 26.664 MGD.

A. Total sewage treated per day= 26.664 MGD = 121,054,560 litres

B. Total cost of treatment per day = INR 500,953

C. Thus, cost of treating 1 litre per day = B divided by A = INR 0.004138241 per litre, per day = INR 4.138 per kilo litre per day

DECENTRALISED TREATMENT

COMPUTATION OF FIXED COST: ¹		
Conveyance system: Internal sewers	346.757 km in length at INR 0.242398523 crore per km = Peripheral and trunk sewers will not be required under a decentralised system.	INR 84.05338 cr.
	A.	INR 84.05338 cr.
Sewage Pumping Stations at:	SPSs are not required as per NCRPB sewerage design for these decentralised plants as sewer lines lie within (.91 -1.5) meter range.	
	B.	Nil
Sewage Treatment Plant at: Zindpur	33.33 MGD (Cost per MGD for decentralisation is assumed same as that of centralised system, because, multiple setups for decentralised system can increase the per MGD construction cost but the decrease in lag time of construction from usual 5 yrs. to 2 yrs. will result in interest saving of 25% setting off any significant increase.)	
	C.	INR 211.11 cr.
I. Total Fixed Cost (A + B + C)		INR 295.1634 cr.
II. Total annual fixed cost written off in a particular year (depreciation charged at straight line method)		INR 9.838 cr.
COMPUTATION OF VARIABLE COST: ³		
Operation and Maintenance (O&M) cost: For the STP	INR 6.255 crore per annum (The value is derived from the corresponding value for centralised system but assuming 50% increase in STP operations due to multiple site management under decentralised.)	INR 6.255 cr.
For conveyance rehabilitation	INR 0.2214 crore per annum (calculated as 50% of corresponding costs in centralised systems)	INR 0.2214
III. Total variable cost per annum		INR 6.4764 crore
IV. TOTAL COST PER ANNUM (II + III)		INR 16.31518 cr.
Assuming capacity utilisation of 90 % throughout its life, the plant with the designed capacity of 33 MGD, will treat 90% of 33, i.e., 29.997 MGD.	A. Total sewage treated per day= 29.997 MGD = 136,186,380 litres B. Total cost of treatment per day = INR 453,092 C. Thus, cost of treating 1 litre per day = B divided by A = INR 0.00332731 per litre, per day = INR 3.327 per kilo litre per day	
Percentage of cost saved in decentralised systems, vis-à-vis centralised systems = (4.138 - 3.327 divided by 4.138)*100 = 19.57%		

Note

- Calculations are based on life cycle hypothesis.
- Internal sewers have a diameter of 100-400 mm, peripheral 400-700 and trunk sewer lines 750-1100 mm.
- Calculations are based on Activated Sludge Process.
- The value has been estimated from Operation and Maintenance costs of the Okhla STP which is similar in MGD capacity (30 MGD)
- Operating cost for both the systems has been calculated assuming same process of tertiary treatment which seeks to achieve the quality standard: BOD <10 mg/l

Appendix 5: Questionnaire

QUESTIONNAIRE – RESIDENTS OF SOUTH DELHI

1. Do you know about the scientific quality standards set by CPCB (Central Pollution Control Board) like Biological Oxygen Demand, Dissolved Oxygen, Chemical Oxygen Demand for domestic water?
2. How much do you trust the Domestic Water supplied by Delhi Jal Board (DJB), for normal use purpose?
3. Do you think you are affected by Yamuna Pollution?
4. Do you think there is scarcity of clean water in Delhi?
5. Will you consume crops irrigated from treated (residential) wastewater?
6. If no, please select from amongst reasons stated below:
 - Not confident of treatment quality
 - Not acceptable because it is treated from sewage (social factor, impure)
 - Health issues
7. Do you think there should be a community check on wastewater (residential) treatment process?
8. Would you like to be involved in the monitoring of the treatment plant as a volunteer?
9. Are you willing to use DJB monitored, treated wastewater?
10. If yes, what are factors driving your willingness? (choose proximate reasons)
 - Environmental concern
 - Economic benefits (cheap water)
 - Regular water demands not met
11. To what purposes, is it acceptable to use treated wastewater?
 - Drinking
 - Bathing
 - Washing (clothes, vehicles etc.)
 - Gardening
 - Flushing
12. If no for question 10, please state the reasons for the same:
 - No trust on Delhi Jal Board (DJB)
 - Adopted quality parameters are not enough
 - Low social acceptance
 - Won't cause much environmental benefit
13. What measures can influence the above choice?
 - Adequate benefit of cheap water
 - Improved transparency of treatment operation
 - Community check
 - Won't be changed at all

About Researching Reality Internship

An effort to identify and address lacunas in everyday governance, Researching Reality is an annual six-week internship program which offers intensive training in research and public policy to undergraduate and graduate students across various disciplines. Over the course of the internship, interns are expected to draft research papers that rely on primary and secondary data. Interns conduct an analysis of the feasibility, impact and outcomes of various policies. This is achieved through engagement with modular legislations and relevant literature, interaction with key stakeholders, and extensive field surveys. This includes the study of various agencies, boards, corporations, departments, schemes and programs of the state governments and Municipal Corporations; evaluating existing systems to recommend sustainable and long-term policy improvements in the functioning of government structures. Each year, interns identify core areas of governance and assess the efficacy of prevailing institutions and propose policy recommendations.

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About the Interns

Researching Reality Internship 2017



[Aashi Srivastava](#) is currently pursuing Masters in International Relations from Jawaharlal Nehru University, New Delhi. A driven social worker, Aashi has worked extensively with National Human Rights Commission and Asmat, an NGO that mobilizes country's youth in order to bring about change at the grassroots. She wishes to advance her career in research with her primary area of focus being politics and society of India.



[Aditya Raj Bhandari](#) is a second year undergraduate student at Shaheed Bhagat Singh College pursuing a degree in Economics. He is currently the Vice-President of Enactus at SBSC, where the team works towards addressing the issues of Food Insecurity in Delhi and towards uplifting the living conditions of the Specially Abled Sections of Society. He has also volunteered with Teach For India to further the agenda for spreading quality education to all children. He wishes to pursue a Masters as well as a Doctorate in Economics. His objective in life is to be able to contribute to areas of policy-making, instilling proper wealth distribution and economic growth in a changing global economic scenario.



[Anubhuti Kakati](#) is studying Political Science (B.A. Hons.) with sociology as an elective at Lady Shri Ram College for Women. She is passionate about debating and is a member of the Debating and MUN Societies at LSR. She has honed her skills in organising and leading and holds the position of President of the Political Science Department. She has previously volunteered with SEWA as a mentor for the Youth Connect Program. She enjoys teaching children and loves to work on new ventures with them. She also spends her time dancing, exploring new forms of music and watching Late Night Talk Shows.



[Asma Khan](#) is currently pursuing her Masters in Political Science from the University of Delhi. She has previously held the position of the Chairperson of the Advocacy Council and headed the India-Australia Youth Forum in an organization called Global Youth India. With an interest to analyse public policy processes in India and to make the research in this area more refined to produce feasible policies, she hopes to contribute towards good governance and a well-informed citizenry in her country. She aims to focus her research and contribute towards rural development in India in the future. She is hardworking, curious to learn new facts and always ready to help others with her knowledge and skills.



Baksheesh Sachar thinks of himself as a laboratory scientist who is constantly experimenting. Research is one of his passions, but he also experiments with film-making, photography, teaching, and debating. He completed a Bachelors degree from Ambedkar University Delhi and his post-graduation in the Lady Shri Ram College's course on conflict transformation and peace-building. His free time is generally consumed in contemplating the various facets of life.



Chetna Ahuja is currently pursuing her Bachelor's Degree in Economics from Kamala Nehru College, Delhi University. She has previously interned with Teach For India and as a research assistant under Delhi University's Innovation Project. She is interested in pursuing a Master's degree in Economics.



Deveshi Chawda, a second year student of Economics at Shri Ram College of Commerce, strongly believes that Economics when applied in sync with other socially essential aspects of knowledge possesses the ability to change the world for the better. Her areas of interest include learning about economics of the poor and the interaction of psychological and cultural influences and economic decision making. She is also greatly interested in the processes of policy formulation, international relations and global diplomacy and wishes to pursue a Masters course that runs along these lines.



Dhruv Gupta is an explorer – of knowledge, experience, and learning. He has diverse interests ranging from entrepreneurship, public policy, social upliftment, corporate management and basketball. As Enactus member in college, he made use of his attained management knowledge to solve the complex problem of sanitation. He has also worked pro-bono as an active member in Internet entrepreneurial firms- Smartcube and Decormart. Dhruv is a management student from Shaheed Sukhdev College of business studies (DU). He believes that social action does not require charity and every action, whether done as manager of a small business unit, as an entrepreneur, an engineer, or as a policy maker, if done with social integrity, honesty, commitment and excellence can ensure social transformation.



Easha Guha has done her Master in Economics from Delhi School of Economics and she now looks to further her academic ambitions in the field of public policy aiming to develop a progressive education system. Her free time is dotted with reading, writing, baking, cooking and most importantly, playing with her dog. She dreams of a time when she will teach Economics to a horde of eager kids and have a home with comfortable seating and an open door for all her students to discuss everything academic or philosophical or anything else that might please them.



Ishan Bhardwaj is a first year student pursuing an Honors degree in Economics from Ramjas College, University of Delhi with a plan to pursue a Masters in the same. He is fascinated by various economic theories and is still exploring this vast science. Having been a debater in his first year of college, he has learnt to take a rational approach towards the various sides of an argument. Being a part of Enactus Ramjas gave him the chance to work with and learn from the transgender population of Delhi.



Khushboo Chattree is a second year Economics student at the Shri Ram College of Commerce. Her course has led her to develop an interest in political economy, international relations, problems posed by information asymmetry and policy issues. She likes writing about contemporary issues and having abstract and meandering conversations about everything under the sun. A fan of rock music, especially of the folk variety, and she likes sitcoms, waffles and long walks. She wishes to pursue a graduate degree in economics and further explore the subject and allied fields.



Naman Jain is a second-year student of Economics at Ramjas College. He developed an inclination towards understanding micro-economic attributes of the society, while doing a research project on 'Piracy in Delhi University'. He has worked as Production Manager for first TEDxRamjasCollege chapter and currently handles 'Internship and Alumni Cell' along with the 'Social Media Team' of his college department. He also enjoys working with data and wishes to pursue his masters in economics.



Rashmi Muraleedhar completed her first year of Masters in International Relations from Jawaharlal Nehru University. She originally did her graduation in engineering from IIT - Guwahati. After graduation, she was part of a book-writing project, and developed content in the field of India's bilateral relations with neighbors. This piqued her interest in foreign policy and international relations and directed her choice in postgraduate studies. She is looking to study the dynamics between foreign policy choices and responses from society.



Ria Goyal is a student of Political Science at Lady Shri Ram College for Women. She is interested in public policy and administration, and hopes to affect positive change in society through concentrated effort and will. Passionate about volunteer work, especially in the field of children's education, she also has a deep affinity for reading and loves to travel. Trained in Russian classical ballet, Ria is currently channeling her love for dancing through the dance society of her college.



Ruchi Avtar is pursuing an undergraduate degree in Economics Honours from Shri Ram College of Commerce, University of Delhi. She is also the Chief Coordinator of the Shri Ram Economics Summit hosted by the Economics Society, SRCC. Her interest in economics started early with her research paper on "An Analytical Study of the Present Status of E-waste Disposal System in Delhi and NCR" which won her an award from Dr APJ Abdul Kalam. She intends to pursue a career in Applied Economics and International Relations.



Sarda Sinde studied Mechanical Engineering, but also loves to read and learn about Economics and Mechanics. He believes that any knowledge and skill acquired must have real life implementation. He enjoys identifying patterns and believes that ideas, patterns and economics are what drive everything around us.



Sharon Jose is a student of Bachelors in International Relations at OP Jindal Global University. She has attended various conferences, organised events in her University and visited orphanages. As a young student she has developed a keen interest in research and analytical studies. Her research interests include foreign policy, education and economic development, among others. She also has a keen interest in issues focused on economics and philosophy.



Shruti Appalla is pursuing undergraduate studies in Political Science at Kamala Nehru College. A convener of her college's Youth Empowerment Society, she is an avid reader and competitive debater. In the past, she has worked as a volunteer/intern for The Centre For Social Research, The Wordsworth Project and National Institute of Social Defense. She also writes policy pieces for online magazines like GOI Monitor and The Indian Economist. Currently working towards a career in research and advocacy on issues of international relations and public policy, she hopes to study conflict resolution and gender dynamics.



Simren Nagrath is a sophomore at Smith College in Massachusetts, USA. Though she is majoring in Comparative Literature, she is interested in policy related issues pertaining to India. She has also taken classes in economics which further increased her interest in the workings of public policy.



Srishti Sharma is pursuing her Masters in Economics from Shiv Nadar University. After completing her undergraduate studies, she took an internship at UNESCO MGIEP. She worked on a project establishing an online learning pedagogy. She is currently working on a paper that investigates online interventions and their role in change of attitudes towards gender stereotypes. Her interest in social work paved way for her community service projects as the President of Rotaract Club of her college. One of her most cherished experiences is establishing a primary school for slum kids and a vocational centre for women.



Sunidhi Sawhney is currently pursuing a law degree. She is a humanist and has a keen interest in debating. Sunidhi is an active participant in moot court competitions and is also a part of the Centre for Advanced Studies in Human Rights at RGNUL. She wishes to pursue a career in International Humanitarian Law.



Tanvi Bansal is pursuing a Bachelors in Economics at Hindu College, University of Delhi. Apart from being crazy about theatre, travelling, music, literature, and shows, Tanya is obsessed with the concept of Economics of Happiness, and is excited to one day have her name penned down in the textbooks for an economic breakthrough. Tanya hopes to revolutionize the economic well-being after she one day completes a Masters in Development and Applied Economics course.



Trisha Pande completed a Bachelors in Sociology from Lady Shri Ram College for Women in May 2017. Previously, she has worked as a commissioning editorial intern at Oxford University Press India. Her forte is writing, editing and research – she has also served as the Editor-in-Chief of the LSR College Magazine. She wishes to pursue a Masters in Public Policy or Sociology. Her research interests lie in the direction of social stratification, inequality and gender. Her undergraduate dissertation was on 'Religious Conversion as a Movement in Social Life: A Case Study of Religious Conversion to Christianity in Kochi, Kerala'.



Utsav Kedia is a current B.A. student at UC Berkeley studying Political Economics and Arabic. He has a deep interest in developmental economics and Middle Eastern geopolitics. Having spent most of his formative years abroad, he is excited to work in public policy in India and to learn more about the realities of life in Delhi.



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