



Under the aegis of Rurban Initiatives

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Construction & Demolition (C&D) Waste Management,

Construction and demolition (C&D) waste is generated from construction, renovation, repair, and demolition of houses, large building structures, roads, bridges, piers, and dams. C&D waste is made up of wood, steel, concrete, gypsum, masonry, plaster, metal, and asphalt. C&D waste, including chemicals and hazardous materials, can leach into the soil and water bodies when not managed properly. This can contaminate water sources, harming aquatic ecosystems and posing risks to public health.

Causes

No system of Collection and Illegal Dumping

C & D waste is Illegally dumped, often at night on roadsides and empty plots due to Lack of proper mechanism for

- Collection of waste from construction sites
- Monitoring of illegal dumping
- Issuing of challans to violators
- Recovery of money for challans issued
- Secondary points- The biggest bottle neck is lack of dedicated demarcated zone wise secondary dropping points.

Only one Plant for processing, has Low Capacity

Only 1 one Processing Plant

- Initial Capacity was 300 tons, increased to 1500 Tons per day, not completely used
- Amount of waste generated is more than 2000 Tons
- It has a limit of 15 km radius and that is a big constraint

Proposed Solution

- A system of Compulsory Direct collection of C&D waste on minimal charges under the arrangements of MCG through hired agency
- Identify about 30- 35 pts for dumping all over city 7 to 8 in each zone.
- Utilisation of BASAI plant to the full capacity from 300 TPD to 1500 TPD
- Mandate by state government for purchase of buy product of the plant by all builders of Haryana and strict enforcement of such a mandate.
- 10 to 20 percent of by products to be purchased by Government departments.
- Creation of additional Plants in every zone
- Relaxation of 15 km limit for C&D waste collection till additional plants are setup.
- Enforcement drive to be made more effective by involving the Police.
- Heavy penalties for the offenders.
- Corporates may be approached for giving wide media publicity and awareness under CSR.

Resources

Government staff for

- Identify Vendors
- Tendering and awards
- Identifying Locations

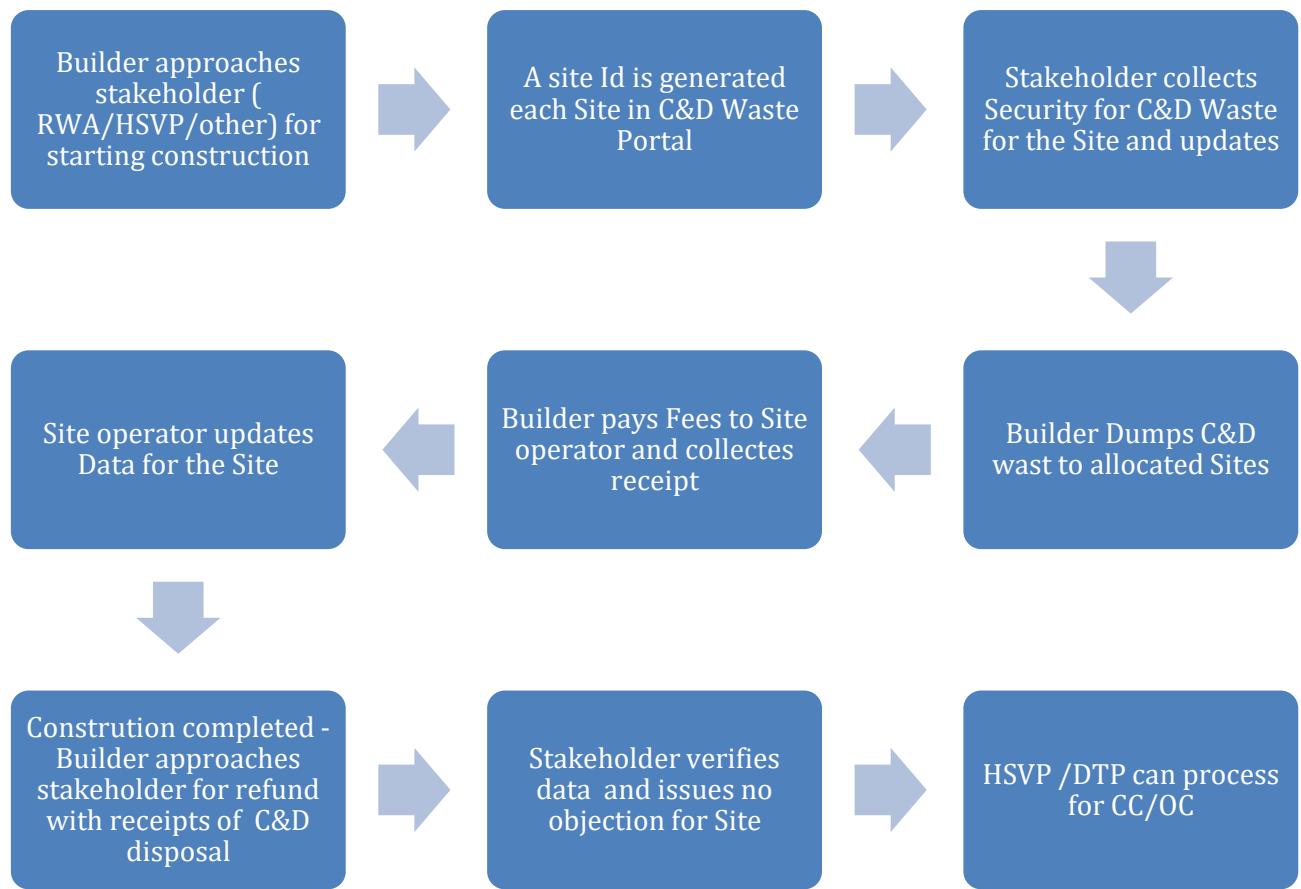


- Approving Monitoring mechanism
- Design and Implementation of Grievance Redressal

Workflow

Roles

1. Site Stakeholder (HSVP/RWA/Other)
2. Builder
3. Site operator for dumping locations
4. HSVP/DTP for Completion/Occupation Certification



Monitoring Mechanism

C&D Portal for

1. Master list of Official Dumping Sites
2. Master List of Stakeholders
3. Issuing Site IDs for all construction sites
4. Capturing all dumping Data
5. Issuing Receipts



Grievance Mechanism

- Anyone citizen can register complaints for unauthorised dumping for C&D waste.
- Transparent workflow with defines escalations
- Closure to be approved by complainant (Max 3 working days, else automatically closed while noting that closure is by Department and not the complainant)

Standard Operating Procedures to be designed for:

1. Creating a portal for monitoring C&D waste across Gurgaon.
2. MCG/Government to identify the dumping spots and notify fees based on type and quantity of C&D waste.
3. MCG to identify private vendors to operate designated dumping spots. The private vendor will be responsible for transporting the waste to the C&D processing plant.
4. The C&D waste to be dumped at designated spots by all after giving the notified fees.
5. Designated spot to provide receipt once C&D waste is dumped on location.
6. Collection needs to be captured using an online system by the agency which is collecting at dumping spots.
7. Round the clock CCTVs to monitor dumping activity at the designated spots.
8. The construction company/builder/owner/contractor to intimate the RWA in case the works are within an existing colony for monitoring.
9. RWA should be allowed to collect a Security Deposit before construction activity can start at any site.
10. Registration to be done on portal along with security deposit for ensuring tracking.
11. Only on providing all receipts of dumping, and RWA will release the security deposit to the builder. In case not done both security deposit and penalty to be applied.
12. Timely (Monthly) payment to private vendors for operating the dumping spots is a key incentive.
13. Any dust created while demolition, uploading or dumping needs to be mitigated by sprinkling, covering or ensuring min spread.
14. All C&D waste transportation must be done using truck that are completely covered with tarpaulin (Large trucks to be used as much as possible).
15. RWA / Estate office needs to be educated with Guidelines for compliance and can enforce compliance by complaining on portal or helpline.
16. Reuse of material - mud, crushed stones, bricks etc by others can be facilitated by creating an **Exchange Mechanism** on the C&D Waste portal.
17. OC process to incorporate compliance related to C&D waste with defined penalties for non-compliances.
18. It may be a good idea to recover overdue challan amount through water bills.

Lists/Formats/Processes to be created for C&D waste

- List of Zone wise Personnel and Contractors
- Daily Roster for Collection and Route Plans
- Data entry mechanism for live or Daily capture of vehicle route and collection
- Metrics and Dashboard for zone/site/vehicle/contractor performance
- Mechanism for issuing and tracking of challans daily to be incorporated in the dashboard.



Grievance reporting and Tracking

- Monitoring for GMDA portal for C&D waste complaints
- Closure to be done only by the originator.



Road Dust/Pothole Management,

Background

The problem of Air pollution has however only grown, Delhi NCR is one of the most polluted places on the entire planet today.

One Critical area that has escaped any improvement is Dust control measures in road construction, repair and maintenance activities. Perhaps it is because that this key area is owned and managed by the local Government, but it is also a huge opportunity for improvement as responsibility is also limited to ONE agency.

The scope of this paper is limited identify some key shortcomings and recommend few mitigation measures in the above subject for the city of Gurugram.

Causes

1. Road cleaning and maintenance. No proper SOPS for Road digging and cutting
2. Design level issues
3. Construction phase issues

Cleaning and maintenance

- Cleaning schedules are not followed regularly.
- Encroachment causes problems for sweeping staff.
- Sweeping staff make piles of swept dust and trash on the medians or footpaths or on sides of the road.
- These piles are dispersed again by traffic movement.
- Pavements are broken, therefore there is no defined boundary for road, traffic often spills on unmetalled surface causing huge amount of dust pollution.
- No clear SOPs for digging by external agencies
- Lack of paving on footpaths across most stretches in Gurgaon.

Suggestions

- All cleaning schedules of all roads should be in public domain.
- The details of the concerned staff should also be on the website.
- Ensure no building material is stored or transported without cover and no construction is undertaken without proper measures having been taken for stopping spread of dust.
- There should be a system to carry away swept trash and dust from the roads at the time of cleaning itself.
- All roads, big or small should have pavements on the sides, and these pavements need to be maintained and kept free of encroachment. Only that will assure better pedestrian safety, smoother traffic movement and containment of dust pollution.
- Area-wise Manpower for brooming and sanitation should be clearly defined and mentioned in workorder given to contractor.
- Equipment & Machinery like tractor trolley, cart/ rickshaws, JCB should also be properly mentioned therein.
- Work order copy should be available and easily accessible on govt website. Ideally these details should also be given to local RWA as a norm.
- A lot of waste on roads is tree leaves, branches and same stuff is also thrown on roads by residents who have private gardens or trees outside their homes. Sanitation contractors often refuse to pick it and it remains there for days until someone burns them. **Therefore, horticulture waste pickup and disposal should be a part of sanitation contract.**



- There should be biometric attendance machine at a community centre / govt building/ and attendance should be taken thrice daily (morning, afternoon and evening).
- Monitoring / Report of biometric attendance should be shared between RWA and MCG
- Area wise temporary pickup and drop points be identified in consultation with RWA. These points should be cleared on daily basis.
- There should be specific MCG helpline number for sanitation, waste pickup and waste burning.
- Complaint format should be made available on MCG portal. Complaint should not be closed without the checking status with complainant. if complainant not responding back, then there should be certain time-period after which the complaint should be closed.
- There should be quarterly evaluation of contractors based on RWA feedback / citizen complaints penalty system should be implemented. The details should be shared with RWA.
- If local RWA is willing to take the responsibility on same terms they should be given opportunity to maintain sanitation in their area. During HSVP administration sector sanitation was taken care by sector RWAS wherein they were paid for manpower by HSVP, and machinery facility was provided by HSVP

Design Level

A leaf needs to be taken from large infrastructure projects where consultants with deep domain knowledge are employed and detailed DPRs are made. The consultants are made accountable for compiling all the ground level realities and solutions thereof.

Tending should be carried out only after all designs are as per existing ground realities.

Will help resolve the issue of half complete projects strewn with dug up dust that keeps on getting stirred by passing vehicles and strong winds.

In Gurgaon the experience is of majority of the projects delayed or abandoned due to litigation. The resultant half-baked roads that are constructed after much delay are riddled with design problems that cause huge traffic jams and resultant air pollution.

- Digital mapping of all infrastructure should be complied and maintained at the master level.
- Any digging approval should only be given if no other facilities are interfering in design of current work.
- If any shifting of any other infrastructure is required, then it should be known **PRIOR** to defining scope of the current project.

Construction phase

- There are no safety and traffic management protocols in place during construction phase.
- Dug up earth is not removed from the site, leading to even further bottlenecking of traffic.
- Constant traffic stirs up this dust and causes humongous amount of dust pollution
- Lots of this dust gets washed into the sewer and storm water drainage systems, reducing their carrying capacity and increasing flooding.
- Increased flooding causes stagnation of water on roads, leading to settling of dust on roads and breakdown of tarred surfaces, further leading to more dust pollution



- Project delays due to bad planning and litigation with contractors leads to prolonged high pollution levels.

Suggestions

- Any road construction or road cutting activity should mandatory have protocols /SOPs which ensure that the construction site is barricaded while ensuring that enough space is given for pedestrian and traffic movement .
- There should be no traffic movement where untarred surface exists.
- All the dug up earth should be transported to a holding site , if needed the earth should be brought back for refilling when the rest of construction activities have been completed.
- Removal of earth will also increase area for traffic and thus reduce pollution and hardship for people.
- Delhi Metro has successfully carried out major digging and construction activities, while containing pollution from the activity. **There is no reason that best practices of DMRC cannot be studied and followed.**
- Construction contracts should be drafted after due diligence and should have incentives for timely performance and heavy penalties for delays.
- Officers in charge of projects should also be made accountable for delayed or disputed projects.

Grievance management system

- There is a system to lodge complaints it is neither user friendly, nor does it place any accountability on those in charge.
- Junior officers mark complaints as resolved without doing anything.
- The citizen ultimately tires because of non-performance of system, leading to even more cynicism.

Suggestions:

- Websites and apps should be more user friendly.
- Simply geo tagging a location on the map should provide all details like zone, ward, concerned official etc.
Currently too many fields are required to be filled to lodge any complaint. A citizen may not have all information and thus is unable to lodge his grievance.
- There should be accountability.
No complaint should be deemed closed till citizen has fed in a happy code received by OTP on his mobile.
- There should be a timetable for resolution, non-closure should be reviewed by an authority which is at least 2 levels above.
- Officers with more than a specified number of open complaints should be penalised.

Credit: Anu Jain, Lalit Suraj Bhola, Smita Ahuja, Kundan Sharma

Horticulture Waste

Horticulture waste constitutes over 60% of the garbage during November to January and March to May every year. Of this, a smaller fraction pertains to private Bulk waste generators and the majority belongs to individual households and MCG/GMDA. The absence of



protocols and adherence to the sketchy ones that exist is a major problem and root cause of this concern.

- While guidelines are already there for BWGs and these can be further refined, the main problem is the complete laxity and lack of accountability on the part of MCG/GMDA who have not initiated any scientific process for disposal of green waste. The waste is removed to final dumping sites through secondary collection centres along with garbage or is invariably burnt on the site of its generation.
- In the process, since the transport is in open vehicles, a lot of dust and even waste spills enroute. The green waste, which could otherwise be a rich resource to rejuvenate the soil health, becomes a source of pollution.
- The green areas are generally at a higher pedestal as compared with the road. As a result the soil and the water spill onto the roads.

Compilation of Solutions Proposed for Horticulture Waste:

- Local disposal of local green by bio-composting and its plough back to enhance soil health will eliminate the problem completely.
- Active usage of mesh bins at every 300 meters placed on green belts with proper markings to put only leaves and other horticulture waste.
- Usage of choona and other accelerators with some water to reduce the mound over a reasonable period of time.
- Installing shredders in green belts or MRF facility to further break them into smaller bits for quick processing.
- Active usage of shredded or decomposed leaves for mulching in *kyaris* and for plants.
- Setting up of 3 to 4 feet deep pits in green belts / corner of parks to store the dry leaves as seen in Sundar Nursery etc...
- Whatever is balance to dig them back into empty plots or green belts so that nothing goes out of the township.
- Stricter laws with imprisonment if anyone found burning them.
- A lot of waste on roads is tree leaves, branches and same stuff is also thrown on roads by residents who have private gardens or trees outside their homes. Sanitation contractors often refuse to pick it and it remains there for days until someone burns them. **Therefore, Horticulture waste pickup and disposal should be a part of sanitation contract.**
- One- two trolleys allocated for pickup of leaf waste. Funded by mcg/CSR/resident funds.
- MCG/GMDA/HSVP should set up high-capacity machines in all public parks for bio-composting preferably in PPP mode. It will reduce the volume significantly and make ready to use compost available for use in the parks and also marketing for agricultural use.
- The Greenbelts/area should be at least six inches lower than the road so that the water can seep into the soil to improve the water table and prevent its spilling over to the roads.

Plotted colonies SOP Outline

- Every 200 houses to have one Waste unit in the large Park or approved Green belt - total units may be 5 to 15 depending on the size of colony



- Model of waste unit - one 100 kg shredder, 3- 5 aero bins, use of dry leaves or cocopeat, enzymes, gardener / extra Manpower, bamboo gazebo, surrounded by plants.
- Wet waste picked up by vendor and deposited to site.
- A defined amount (say Rs .5/sq yard and .5 for 10 sq feet) per household for pickup of segregated both - covers part cost of shredder, Manpower.
- Compost generated in colony to be used in parks / home / terrace gardens.
- Encourage home Composting by incentivising it.
- No pickup of non-segregated Waste after one month and training of helps in each block.

Horticulture waste SOP outline:

- Leaf bins at every 200 metres in colony parks or roadside
- One sanitation contractor for pickup of all to put in leaf bins
- Use the waste by gardener in compost and shredder in some cases.
- One- two trolleys allocated for pickup of leaf waste.
- Funded by mcg / csr / resident funds.
- External roadside- leaf bins - sanitation workers to drop it, separately picked up in trucks and taken to compost units of empanelled Wet waste private vendors.

Burning of Garbage

Problems:

- Across Gurgaon, in jhuggis clusters and many urban villages garbage/waste is dumped there and burnt by residents
- Garbage also burnt to reduce mosquito menace
- These areas also see unauthorized dumping by carts/tractors from nearby colonies.
- In many cases, C & D waste, the garbage is also mixed, dumped there.
- Fire is lit by locals regularly.

Proposed Solutions:

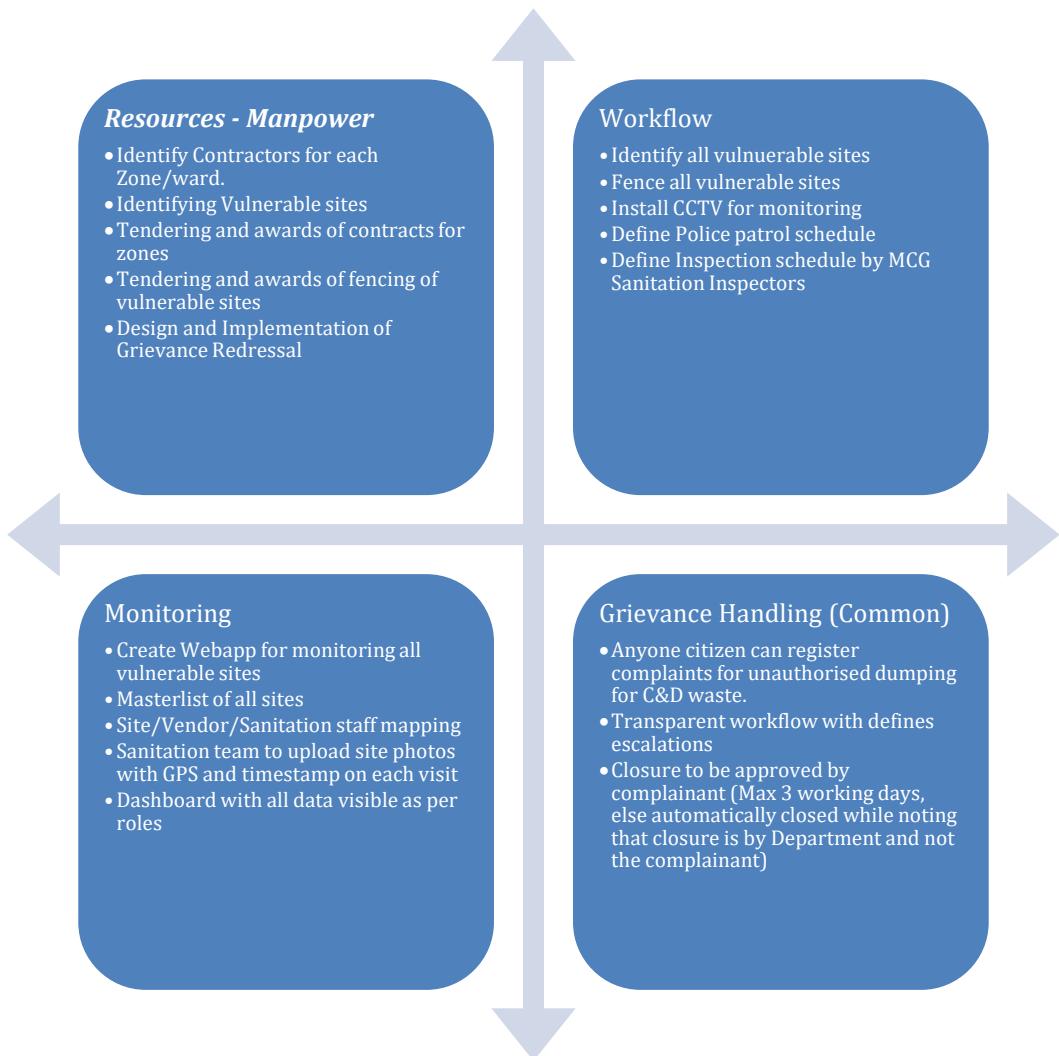
Garbage Burning

- Identify all vulnerable spots where garbage is being burnt.
- Proper fence in all such areas
- Regular Police patrol in these areas
- Installation of CCTV cameras for monitoring
- Regular fumigation of all empty plots every month

Ensuring all Garbage processed as per norms and not thrown on empty sites

- Garbage bins should be kept there and Garbage collection from bins at regular intervals.
- Segregation of c & d waste, garbage and waste must be done at source point.
- Proper monitoring by Sanitary Inspectors and responsibilities be fixed for negligence.
- Vendor/ Sanitary Inspectors to ensure cleanliness in the area.

Guidelines for Standard Operating Procedures



Accountability:

- Vendors and Sanitary Inspectors should be held responsible.
- Issue challans to offenders.

Citizens Environment Action Steering Committee of Gurugram - Gauri Sarin

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