

Management of Municipal Solid Waste in Shimla with Community Participation



Implementation of Door to Door Garbage Collection System in Hilly Region



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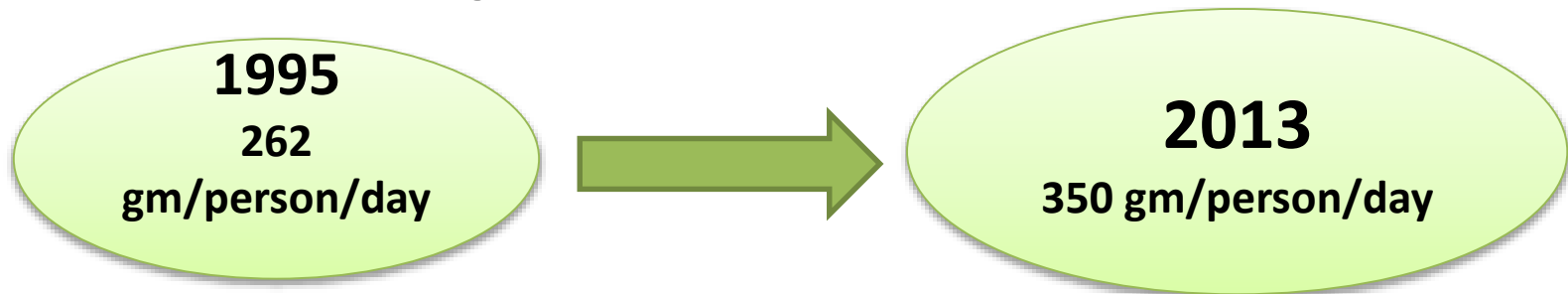
Shimla Profile

- “Summer Capital” of the British India located in Western Himalayas
- Capital of Himachal Pradesh & most favoured tourist destination in peak summers
- A JNNURM and ICLEI South Asian City
- $31^{\circ} 04'N$ - $31^{\circ} 10'N$ Lat & $77^{\circ} 05'E$ - $77^{\circ} 15'E$ Long & at altitude of 2130m
- Population 1,69,758 (Census, 2011), average decadal growth 35%
- **Area 35 sq. km divided into 25 ward.**
- Average annual rainfall 900mm
- Temperature varies from $15-20^{\circ}C$ in summers and $0-13^{\circ}C$ in winters (Therefore local composting is difficult)



Solid Waste Generation

(Existing & Projected)

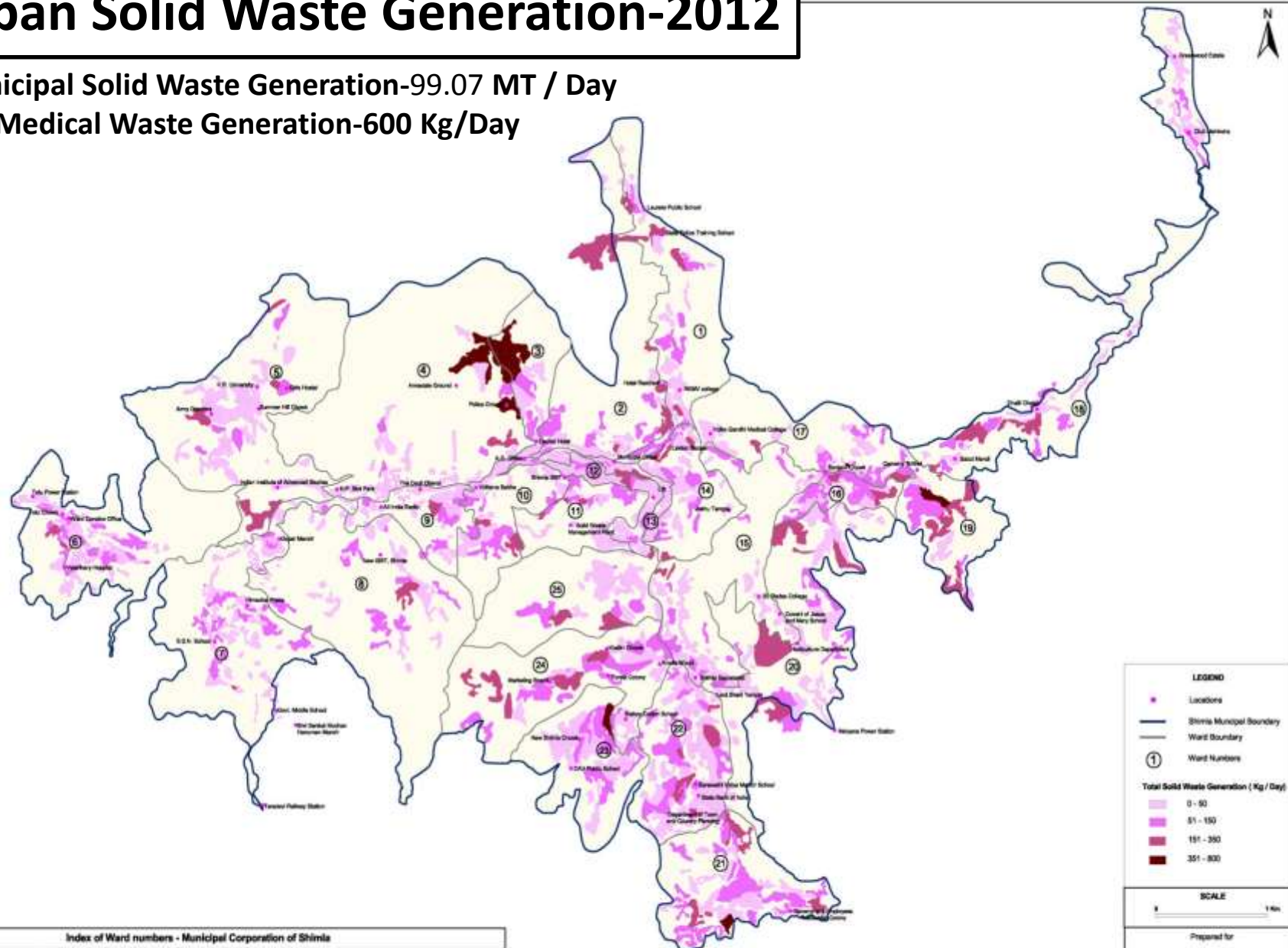


	2010	2013	2021	2031	2041
Resident Population (no.)	1,98,717	2,07,063	2,56,883	3,49,361	4,18,296
Floating Population (no.)	70,000	76,000	1,00,000	1,25,000	1,50,000
Solid Waste Generation (MT)	87.00	92.05	124.91	166.03	198.90

Urban Solid Waste Generation-2012

Municipal Solid Waste Generation-99.07 MT / Day

Bio-Medical Waste Generation-600 Kg/Day



Index of Ward numbers - Municipal Corporation of Shimla

1. Bharari	6. Totu	11. Krishnanagar	16. Enginagar	21. Kasumpti
2. Raibudhatha	7. Boileuganj	12. Ramnagar	17. Sanjauli	22. Chotis Shimla
3. Kaithu	8. Tutkandi	13. Lower Bazaar	18. Dhali	23. Paterjog
4. Annadale	9. Nalhe	14. Jakhoo	19. Chamyani	24. Khalni
5. Summer Hill	10. Phagli	15. Banmore	20. Malyani	25. Karlog

Earlier Attempts for Implementing Door to Door Garbage Collection

- “Door to Door Garbage Collection Scheme” was started in the year 1999 with help of NGOs
- Rs. 20/- per household/month was fixed as service charges
- Equal amount was charged by the NGO to MC Shimla
- As the household coverage increased, MC faced many financial constraints
- Later the user charges were fixed as per kg waste from the establishments in an attempt to sustain this scheme financially
- This method failed and again fixed amount of household was increased to Rs. 30/- per month

Reasons of Ineffective Implementation

- No user category based charges
- NGO's Profit based approach
- Absence of Complaint Redressal System
- Lack of Community partnership.
- No legal obligation
- Inefficient recovery of user charges
- Inadequate pay to staff
- Inadequate human recourses
- Community dustbins still favoured



Waste littered on hill slopes

Further efforts done were....

- Hon'ble High Court intervention pushed for:
 - Involving professional agencies for improvement
 - Floating Expression of Interest (EOI) for execution of scientific treatment and disposal of waste
 - rates of user charges for different categories were fixed
 - Infrastructure development
 - Establish of compost treatment plant
 - **Courts advocated “Polluter Pays” Policy, and charge people based on this principal**

Environment Legislations

- The Constitution of India provides the bedrock for environmental legislation in the country.
- The Parliament has enacted Environment Protection Act, 1986 under Article 253 of the Constitution.
 - ❖ Hazardous Wastes (Management & Handling) Rules, 1989
 - ❖ Bio-medical Wastes (Management & Handling) Rules, 1998
 - ❖ **Municipal Solid Wastes (Management & Handling) Rules, 2000**
 - ❖ Batteries (Management and Handling) Rules, 2001
 - ❖ Plastic Waste (Management and Handling) Rules, 2011
- **State/Local Legislations are-**
 - ❖ **Himachal Pradesh Municipal Corporation Act, 1994**
 - ❖ **Himachal Pradesh Non- Bio-degradable Garbage (Control) Act, 1995**
 - ❖ **Door to Door Garbage Collection Bye-laws (MC Shimla)- 2006**

Legal Framework

- Implementation of Door to Door Garbage Collection Bye-laws (MC Shimla)- Drafted in 2006 was made legal binding on public.
- There is provision of withdrawal/ disconnection of the basic amenities like water & sewerage connection as well as electricity connection for the defaulters.
- Ward level committees are being formed to manage MSW at ward level.
- Those who fail to hand over the garbage to SEHB worker are fined by the corporation under various acts

Inauguration of Door to Door Garbage Collection System

- Shimla Environment Heritage Conservation and Beautification (SEHB) Society was created by MC Shimla in 2009
- Ward level committees were formed for managing MSW at ward level
- D2D Started operation in April 2010
- Door to Door Garbage Collection By laws 2006 made legal binding on public for co-operation.
- Financially Sustained Society with more than Rs 24 Lac revenue generation per month

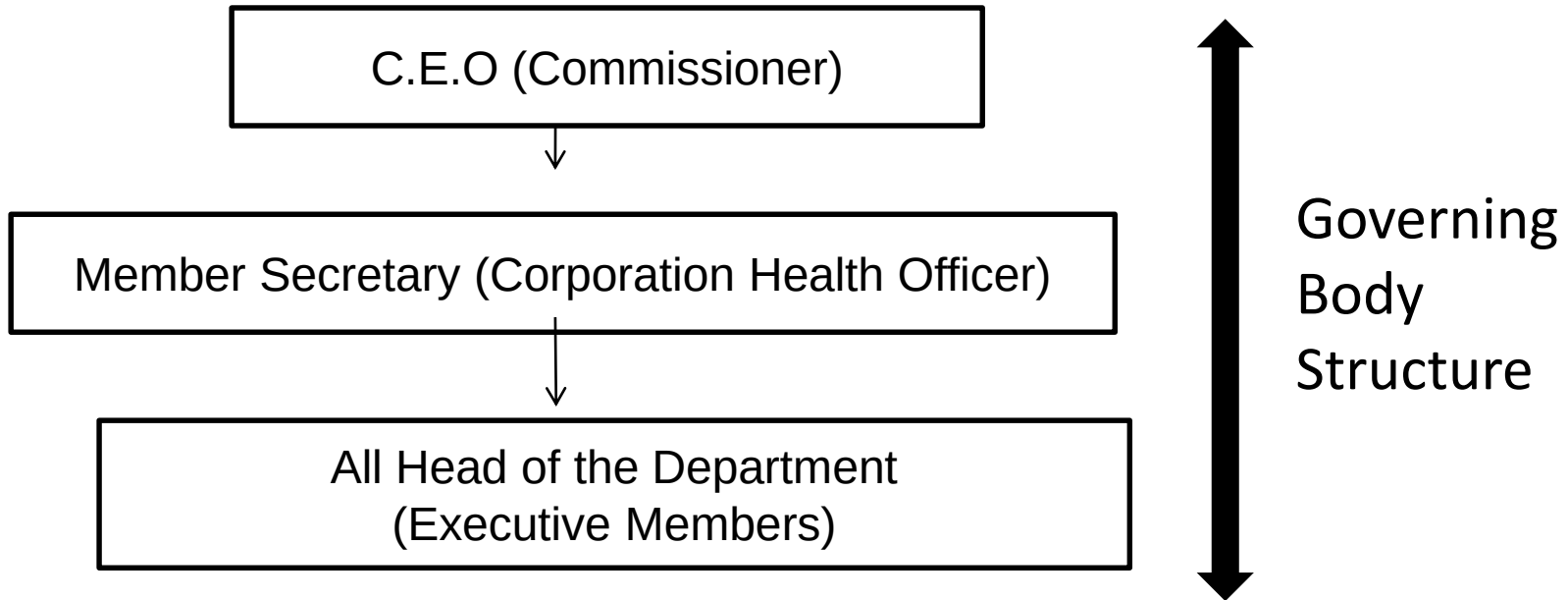


Inauguration of Door to Door Garbage Collection System Cont..

- Door-to-door garbage collection scheme is operational with 385 personal
- Two different colored bins (Green & Yellow) to each household
- User charge ranges from Rs 40 – 1000/- per month
- 85% of the Households are covered
- MSW collection of 70-75 MT/day with collection efficiency of 80-85%



SEHB Society Organogram



SEHB Society- Human Recourse

- Office staff- 6
- 26 Supervisors
- 376 Door to door garbage collectors
- 98 Street Sweeping staff
- 34 Drivers

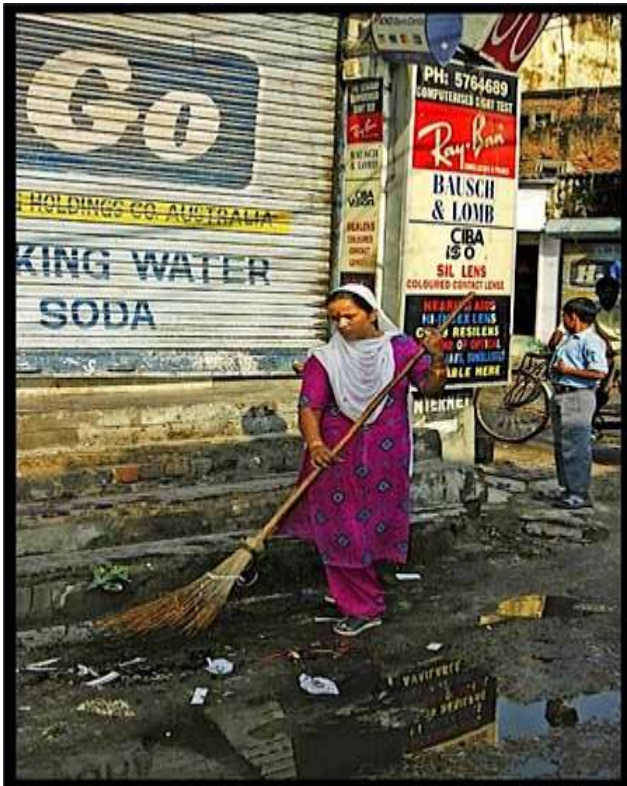
User charges and people's participation

- There is overwhelming response to the D2D scheme and not only the graph of collection is going up each year, more and more neighbouring panchayats are approaching for inclusion into the scheme for garbage collection.
- In the year 2010-11 collection was 1.34 Cr. That increased to 2.03 Cr. In 2011-12 and then to 2.99 Cr. In the year 2012-13.

BRIDGING THE GAPS of manpower through SEHB Society..

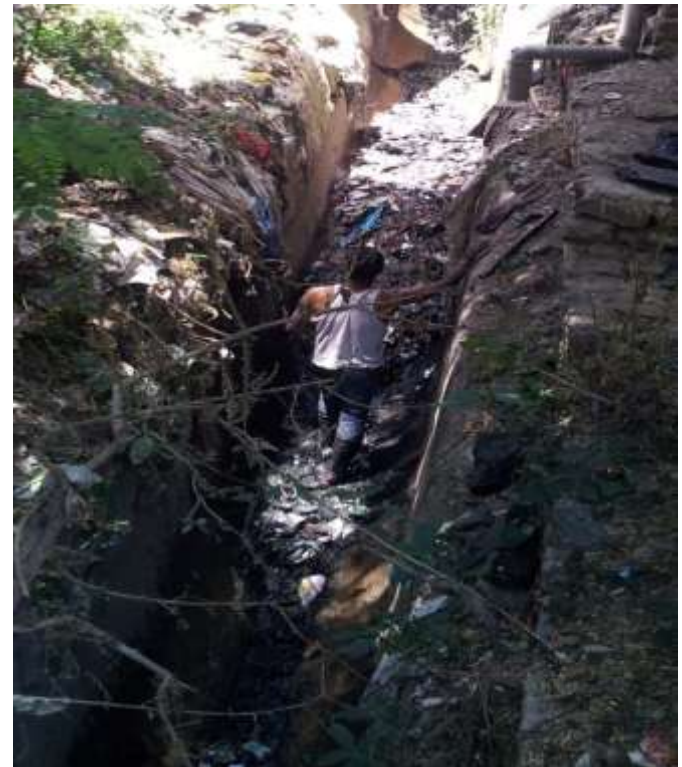
Street Sweeping

- Outsources in 6 Ward
- Covering 50 KMs



Cleaning of Nullahs

- Cleaned 6 Nullahs out of 60
- 70 MT garbage cleaned out of 1000 MT



Control of Monkey Menace

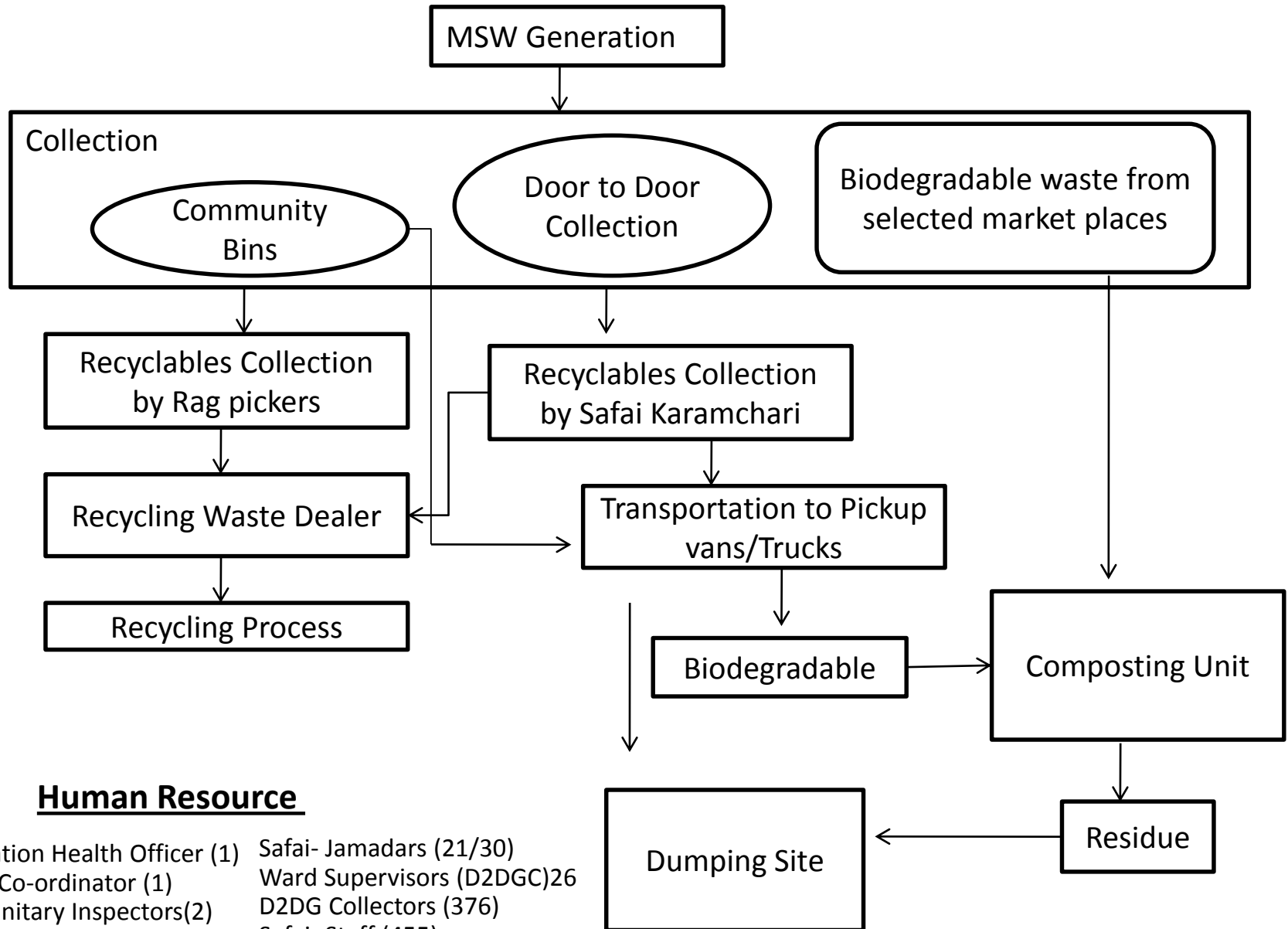


Waste Collection & Transportation

Type of Vehicle	Quantity	Capacity (in tonnes)
Pick-Ups (Hydraulic)	25	1-1.5
Pick-Ups (Non Hydraulic)	5	1
Dumper Placer	5 +3	Single + Twinned
Compactor	2	8-10
Auto Tipper	3	1
Auto Tipper	3	5
Backe-Loader	1	



Current MSW Management Practices



Complaint Redressal System

Contact for Redressal
Grievance

Level III
After 48 Hrs

Level II
After 24 Hrs

Level I
Within 24 Hrs

Commissioner
Mon-Sat (1000-1700 hrs)

Corporation Health Officer
Mon-Sat (1000-1700 hrs)

Chief Sanitary Inspector
MC Shimla (CHO)
Register I

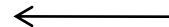
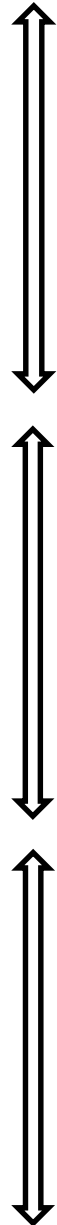
SEHB Office
Mon-Sat (1000-1700 hrs)
Register II

Sanitary Inspector

Ward Supervisor
(1 per Ward)

Ward Level
Office/Councillors

Safai Karamchari



Welfare measures for Door to Door Garbage Collectors

- PF Contributions
- Enrolment of SEHB workers in RSBY scheme for their health insurance
- Leave Entitlements
- Regular Increments
- Regular trainings on health and hygiene
- Performances Allowances
- Salaries at par with skilled labourer
- Incentives from sale of recyclables
- Integration with informal rag picker sector

Immunization of Rag pickers against Rabies



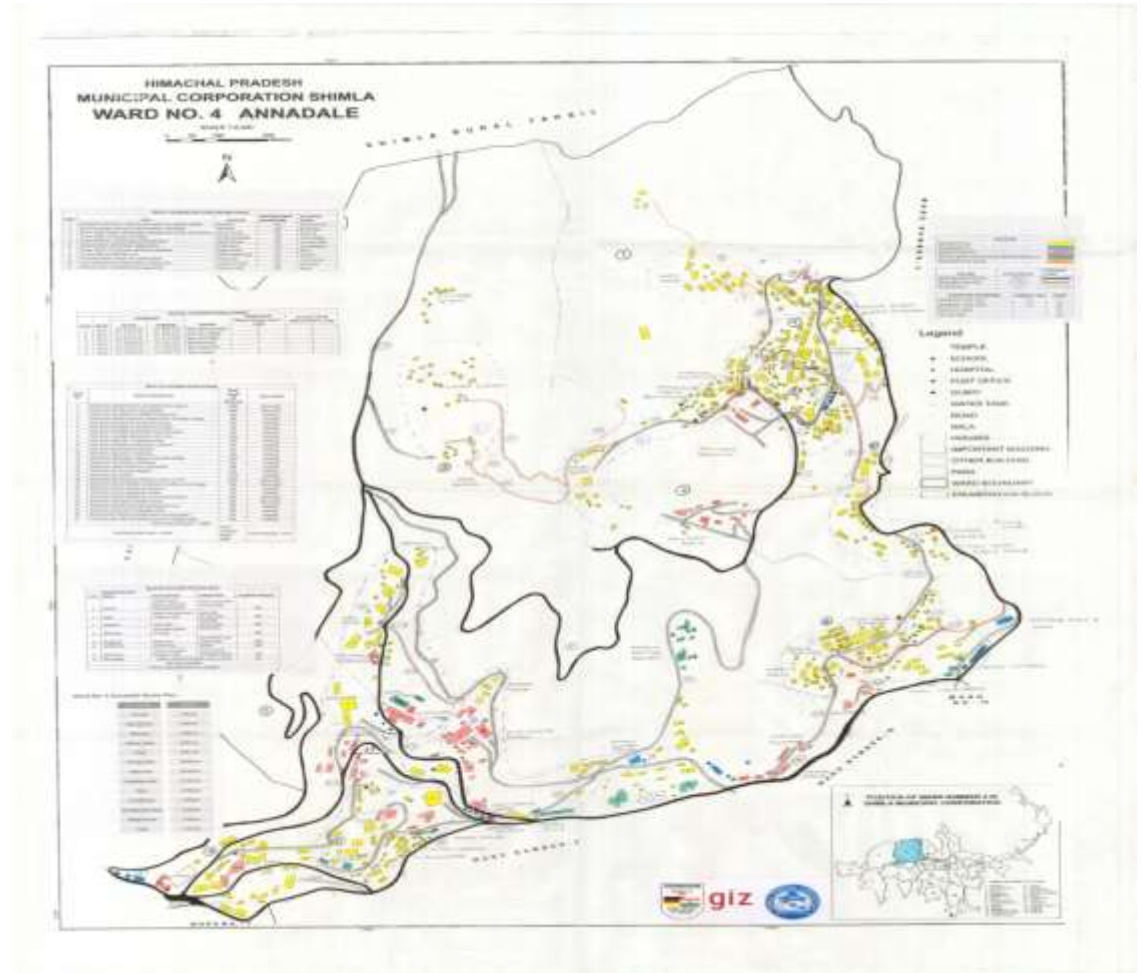
Regular Health Checkups of Garbage Collectors



शिमला। डोर-टू-डोर गार्बेज कलेक्टर कर्मचारियों के लिए स्वास्थ्य शिविर का आयोजन किया गया। नगर निगम के स्वास्थ्य विभाग की टीम ने 130 से ज्यादा कर्मचारियों की स्वास्थ्य की जांच की, जिसमें 20 मामले उच्च रक्त चाप के और 4 मामले मधुमेह के पाए गए



PPE for Garbage Collectors and vehicular routing and loading plan



IEC Initiatives by MC Shimla to increased household level coverage

- Citizen Charter by Health Department
- City Sanitation Plan & SWM Plan on the MC Shimla website
- Information dissemination through Pamphlets/Leaflet
- Booklets
- Signage/Posters
- Newspapers/Local Media/Radio
- Jingles and awareness messages on AIR
- Ridge Screen
- Nukkad Nataks

Tableau on Republic Day Celebration



Awareness Raising Program



School Children

Communities



Proposed Improvements

- Setting up of Waste Transfer Station
- GPS enabled routing and loading system
- Chutes systems for inaccessible areas at higher reaches
- Decentralized waste treatment units for inaccessible areas at downstream
- Efforts are on to segregate waste and collect the dry waste at one place to cut costs of transportation and tipping fee
- Poo bags for horses littering horse- dung all over the Ridge
- Install Bio-converters at places like Sabzi Mandi/ Big Hotels
- Door to Door Waste Collection-Monitoring through Radio Frequency Based System
- Free Intercommunication through Closed User Group Schemes

Constraints

- Implementation of Source Segregation
- Reluctance to hire manpower by the governments
- Sufficient funds not available
- Stacking of old garbage dumped on hill slopes and nullahs downhill
- Ignorance of safety measures by the workers
- Littering of garbage by Tourists and taxi drivers on hill slopes
- Littering of garbage by nearby areas and
- Burning of garbage by locally hired workers of commercial establishments/offices
- Choked drains overflowing into natural water sources

Innovations

Trainings

- All the SEHB workers trained with funding from MoUD through SULABH on personal hygiene and how to handle waste and wash hands.
- How to have a value addition to the rags collected by the workers
- Bad effects of alcoholism on home economy and marital relations
- Importance of education and immunization

Workers welfare

- Steps have been taken for the provision of ID cards and EPF/ESI facility for each garbage collector of SEHB society.
- Ways are being explored to compensate their families in case of sudden death as two of the workers died recently due to heart attack and accident, respectively
- Next of kin employed in SEHB society on compassionate ground

Involving adjoining cities and panchayats for MSW mgmt.

- Proposal received from neighboring Solan City for treating its Solid Waste at newly installed plant at Bhariyal in Shimla.
- Proposals received from neighboring panchayats to deploy SEHB door to door persons for garbage collection being considered to reduce greenhouse emission due to unscientific garbage disposal in neighboring panchayats and cities.

Benefits

- Neat & Clean Environment
- Compliance to Municipal Solid Waste (Management & Handling) Rules 2000
- Employment generation for more than 500 individuals with collection of more than 24 lac/month
- Socio-economic up-liftment of urban poor
- Decreased nuisance resulting in decreased public health problems
- Aesthetically better looking city
- Hygienically better work culture
- Community participation- more than 35000 households registered

Recognition



- SEHB Society received Skoch Order of Merit Award and Medal in the year 2013 being among the India's Best- 2013 initiatives.

Challenges

Short term

- Source segregation of waste
- Compactors for long distance transport with Routing & Loading Plans
- Formation of waste transfer stations & collection points
- Construction of choutes or conveyor belt system in difficult / inaccessible areas

Long term

- Implementation of City Sanitation Plan
- Use Of Polythene/ plastic In Road Tarring
- Selling of compost from New BCP
- Engineered Landfill Site Near BCP
- Monitoring procedures for SWM functional elements

Thanks