

Exhibition of Wastescape Bhubaneswar & Cuttack. Posters presenting the long section, documentation and idea sketch excerpts as well as blog and films from site visits.



Waste pickers in the informal recycling hub of Muslim Sahi, Bhubaneswar.



Interviewing community in Chhatara Bazar Behera Sahi, Cuttack.

Wastescape Bhubaneswar & Cuttack is a mapping of the multi-dimensional network of waste in the twin cities Bhubaneswar and Cuttack in Odisha, India - a network which incorporates actors, locations, flows, nodes and types of waste. It was conducted as a thesis project by architects Linda Ringqvist and Oskar Gudéhn, from KTH, Sweden, in collaboration with Mahila Milan, UDRC and SPARC, India.

Wastescape Bhubaneswar & Cuttack is a collection of observations, findings, ideas and analysis of the existing wastescape; an investigation into methods for analysing and presenting challenging, complex urban processes; as well as a databank of ideas and proposed interventions.

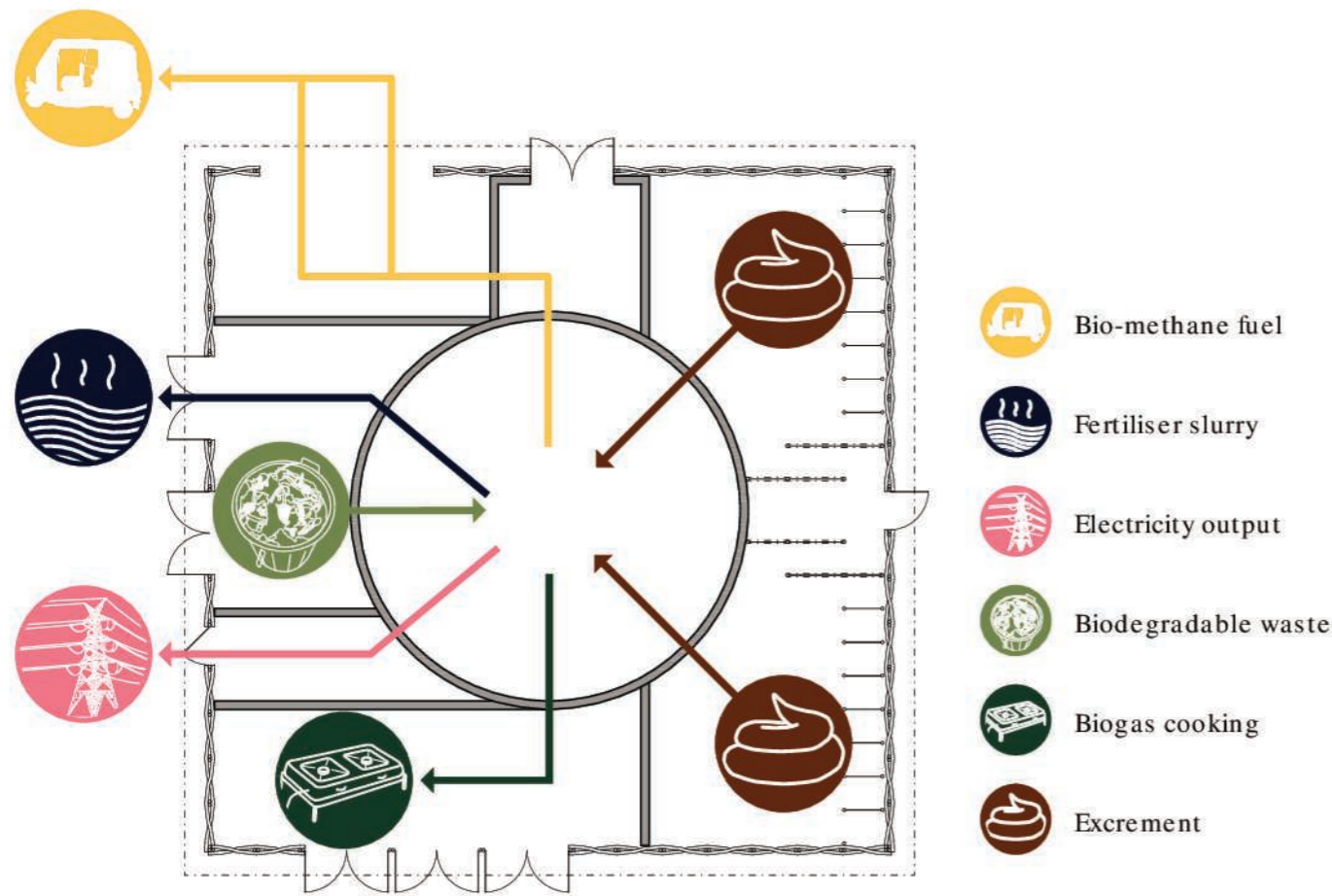
The analysis, which is based on interviews (with formal and informal actors), field observations and literature studies, aims to bring attention to and acknowledge the importance of waste pickers and the informal waste sector.

The interventions are designed as a synergetic network, addressing various actors, low to high capital investments and multiple sustainability issues.

We deem an open-ended network of interventions to holistically address the wastescape and to best function as a base for further discussion between all actors. The project exists to inspire; to be evaluated, criticised, copied, modified and fully or partially implemented.

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Biogenerator concept - diagram of inputs and outputs.



Currently the site is used for waste discarding and open defecation. There is a potential for these functions - they could be an asset instead of a problem.

“1. Cooperate for fair and sustainable development initiatives in active collaboration with disadvantaged people or communities. This process shall follow principles of human solidarity, non-discrimination and will be aimed at promoting their self-sufficiency”

The waste pickers of the informal waste sector are essential to recycling in India, picking out recyclables from the mixed waste stream by hand. This dangerous and heavy work solely relies on the material value of different types of waste. Even though they greatly contribute to waste management, which is a governmental responsibility, they are seldom paid or even supported by governmental Indian institutions. A fair and important first step is to recognise and officially support the informal waste sector and the waste pickers.

In order not to degrade the livelihood of the often marginalised informal waste pickers, any interventions to the wastescape must build on and empower these communities. The proposals of Wastescape Bhubaneswar & Cuttack aim at better connecting the formal and informal waste sectors through economic, political and social incentives.

One of the proposed interventions is a medium sized biogas plant, called a Biogenerator. By creating economic incentives for household source segregation and collection of biodegradable waste, the informal waste sector is given new possibilities for profit and self-empowerment.

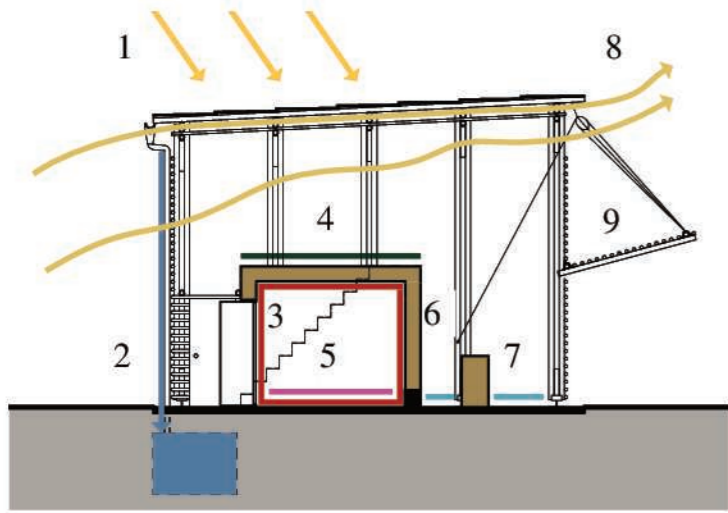
The Biogenerator provides a dynamic, synergetic network of toilet services, organic fertiliser slurry for the neighbouring agriculture, biogas for cleaner cooking and green fuel for auto-rickshaws.



Section through proposed site for Biogenerator in Salia Sahi, Bhubaneswar.

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- Waste Store concept
1. Photovoltaic panel roofing
 2. Rainwater harvesting
 3. Fire cell
 4. Production
 5. Waste storage
 6. Wall of rammed local earth
 7. Shop
 8. Natural ventilation
 9. Market building typology entrance



Waste mixed into the sediments, Bhubaneswar.



Visualisation of Stome along main commercial street in Muslim Sahi, Bhubaneswar's informal waste management hub.

“5. Facilitate the use of appropriate technologies, materials and labour adequate to local values, to the cultural specificity and responsive to the natural environment”

In India, concrete and brick constructions (known as Pucca houses) are in principle the only accepted constructions within governmental slum redevelopment programmes. They are low maintenance and associated with high status, but are not ecologically, economically or socially sustainable.

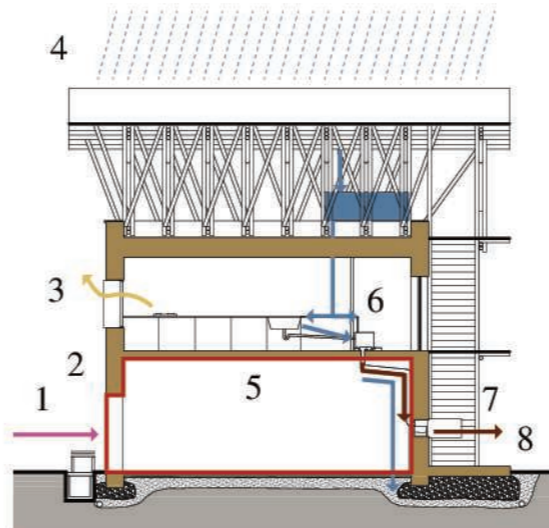
Well-constructed showcase structures of earth and bamboo, within both formal and informal areas, would promote the benefits of low embodied energy constructions and contribute towards an attitude change. It would provide experience and technical know-how to the local workforce, increase the status of traditional building techniques, serve as a full scale test of detailing and longevity, and ease the process of anchoring methods among communities.

We propose a revision of India's redevelopment programmes, promoting local labour, low embodied energy material and space not only for dwelling, but also for livelihood.

Among the detailed proposals we suggest Stome (store + home) constructed of earth walls, a bamboo roof and a fly-ash (byproduct of India's numerous coal power plants) brick base to resist monsoon and cyclones. We also propose a Waste Store (store/ sorting shed/ shop), benefiting waste pickers at Indian markets, with walls of rammed waste and earth, reflecting ground sediments.



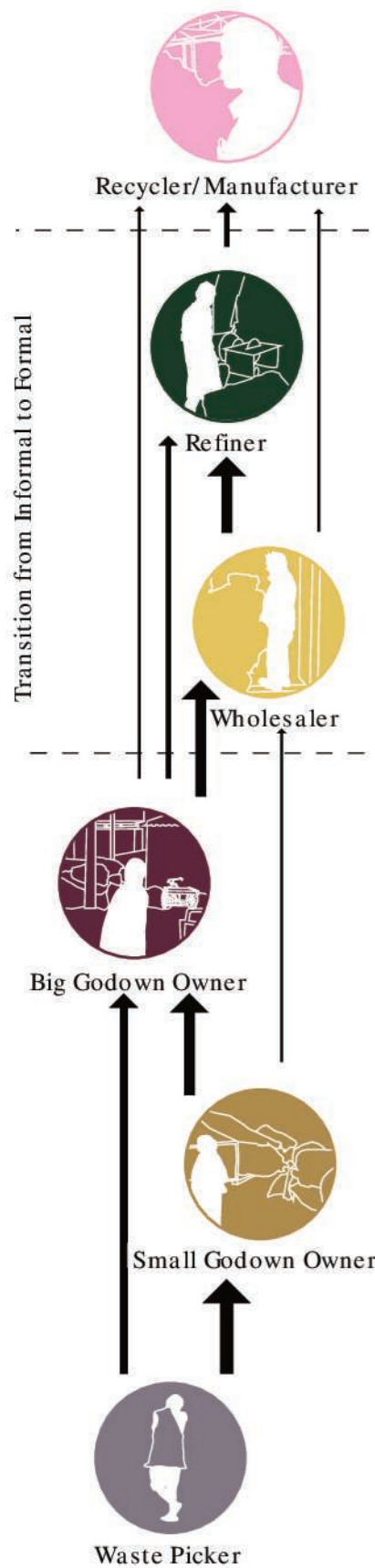
Section through Waste Store at market building, Bhubaneswar.



- Stome concept
1. Waste storage / Livelihood
 2. Rammed earth & fly-ash brick
 3. Ventilation of cooking fumes
 4. Rainwater harvesting
 5. Fire cell
 6. Waste water reuse
 7. Excrement retrieval for biogas plant
 8. Well drained gravel foundation

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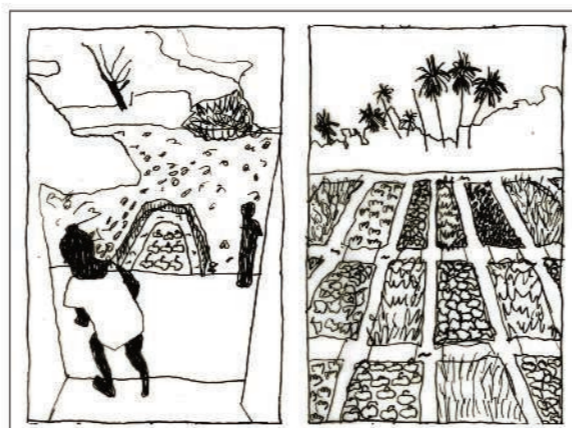
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Wastescape Bhubaneswar & Cuttack blog and documentation catalogue.

Wastescape: Intervention Items	Intervention	Mode of Operation	Time Frame	Contextuality	Target Phase	Funder	Initial Costs	Maintenance	Synergy
42	Janis: Street Waste Disposal								
43	Waste-to-Energy (WTE) Plant								
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120	Waste-to-Energy (WTE) Plant								

Matrix - categorisation of sketched proposals.



Intervention Floating Agriculture in the Irrigation Canal

Mode of Operation: Practical
 Time Frame: Process based strategy
 Contextuality: Site specific
 Target Phase: Disposal behaviour, Elimination of existing waste
 Funder: Informal, NGOs
 Initial Costs: Low initial cost
 Maintenance: High maintenance
 Synergy: Food production, reuse of waste, incentive to clean

Example from catalogue of interventions.



Presentation at KTH, Stockholm.



Visit to formal recycling plant, Cuttack.



Waste picker Merjasar and his family collect recyclables at Bhuasuni landfill.

“6. Share knowledge, promote discussion, reflection and awareness, and collaborate in the advancement of the ‘social production of habitat’”

Wastescape Bhubaneswar & Cuttack is a careful mapping and analysis of processes and services provided by informal settlements concerning waste management. These services, as well as other services provided by the informal sector, are greatly needed by the city as a whole, and should be recognised. Informal services rely on geographical and social context and cannot be uprooted without harm to its inhabitants and the services they provide.

Wastescape Bhubaneswar & Cuttack includes 50 sketches for improvements of the current wastescape (whereof a fraction have been synthesised into more detailed and concrete intervention proposals). The sketches have been categorised by various parameters, such as actors and capital needed, to simplify the process for informal, commercial and governmental actors to find an appropriate intervention to develop.

We have interviewed and discussed with waste pickers and other actors in the waste chain as well as governmental officials in Bhubaneswar and Cuttack. We have presented and discussed our findings and proposals with academic, architectural and construction professionals in Sweden and India as well as with our collaborating organisations SPARC, UDRC and Mahila Milan in India.

Wastescape Bhubaneswar & Cuttack furthers the discussion about informal sectors and inspires to new modes of collaboration.

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