

Urban Environmental Issues

Waste management linked to sustainable development



#socialopportunities #positiveimpact #circulareconomy
#behavioralscience #behavioraleconomics

Urban Environmental Issues

HOW WE STARTED

- Air Pollution
- Urban, flood, drought
- Solid Waste
- Soil Degradation
- Energy Consumption
- Inequality
- Housing
- City water Issues
- Transportation

Domains	H&W	Liveability	Multiple	Quality of Life	Walkability /PA	Wellbeing	Total
health outcomes	862	15	33	139	11	60	1120
transport	394	81	18	163	293	35	984
employment and income	254	60	11	159	7	63	554
behaviours	229	29	41	43	15	28	385
water quality	211	6	1	20	1	1	240
housing	197	52	21	147	19	33	469
air quality	195	11	1	39	1	10	257
education	178	69	16	158	8	43	472
health and social services	177	41	17	69	3	19	326
crime and safety	155	54	30	157	53	58	507
land use	146	6	4	27	55	1	239
pollutants	105	5	4	6		3	123
food environment	103	7	37	11	38	3	199
demographics	100	22	7	71	19	19	238
services & utilities	93	29	7	83	2	7	221
leisure and culture	72	62	18	97	35	34	318
natural environment	65	21	13	38	13	6	156
public open space	62	30	6	46	13	10	167
social networks	62	12	6	37	2	37	156
economy	42	39	7	76		22	186
other	42	26	4	121	14	45	252
urban design	37	9	8	37	71	7	169
waste management	33	5	4	38		7	87
local democracy	29	29	2	44	1	20	125
noise	14	11	1	11	1	2	40
disasters	4	5	3	4			16
Grand Total	3861	736	320	1841	675	573	8006

IDENTIFICATION OF URBAN ENVIRONMENTAL ISSUES

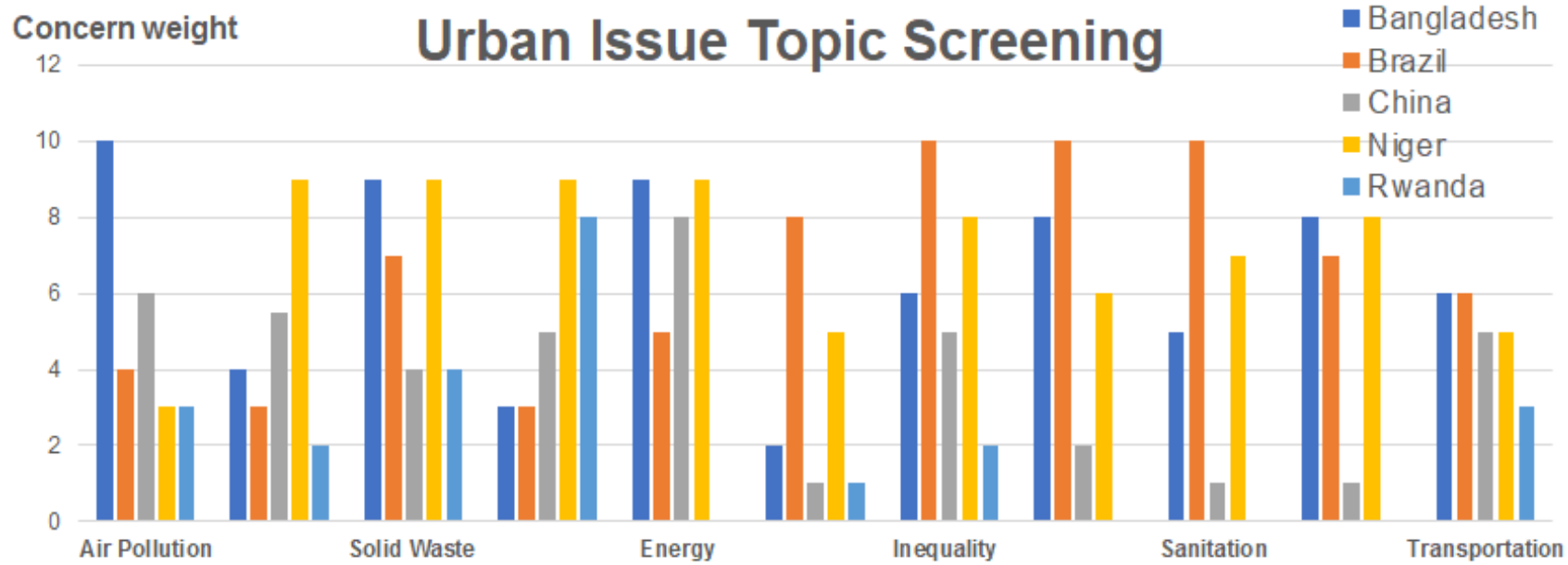


Fig 1: Countrywide urban environmental problems screened

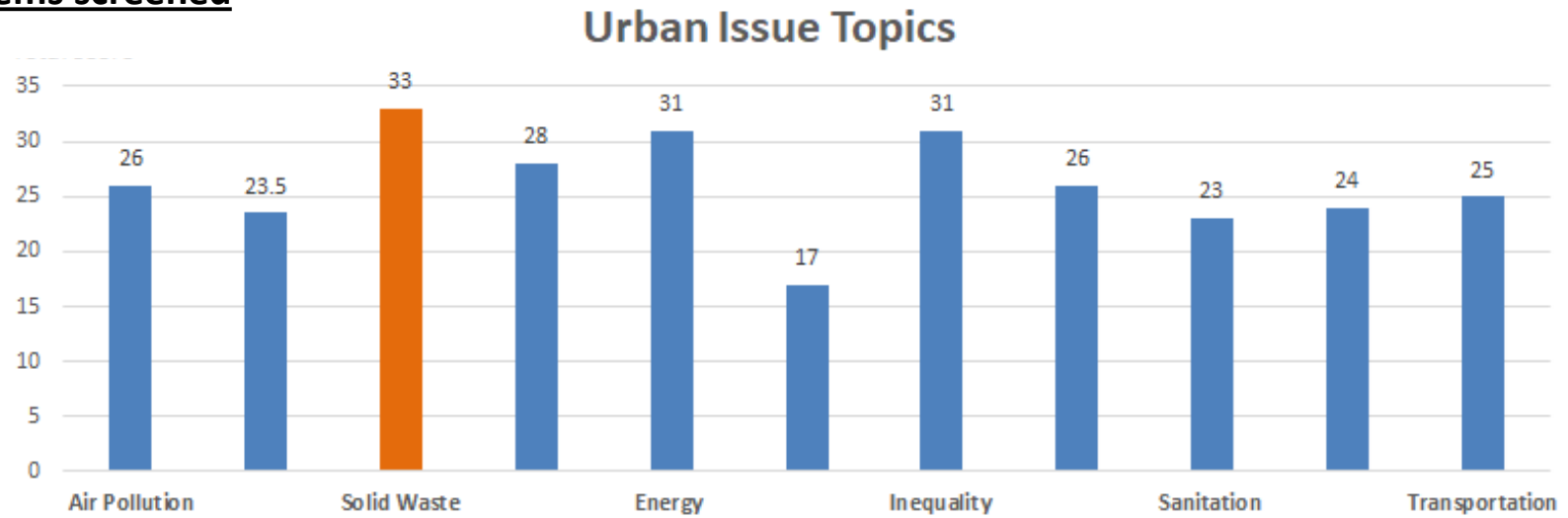


Fig 2: Urban environmental problems identified

WASTE MANAGEMENT STATUS-QUO BY COUNTRY



- ❑ **Bangladesh**- Every day, urban areas of Bangladesh generate 25,000 tons of solid waste and remains unregulated.
- ❑ **Brazil**- indiscriminate dumping in most of the cities, recycle is just 3%, there is a law but hasn't improved the enforcement on private and public sector
- ❑ **China**- Harmless treatment rate of household garbage reaches 95%. Environmental enforcement on illegal dumping. Comparative mature industry chain on handling, transport, disposal and treatment.
- ❑ **Niger**- Only 10% of urban solid waste is taking to the landfill and remaining in the environment.
- ❑ **Rwanda**- >85% of all urban waste are dumped in landfills.



Common picture of waste

OBJECTIVES

- ❑ To propose a sustainable model towards waste management based on behavior change
- ❑ To assess the impact of the model based on livelihood
- ❑ To provide international network linkages for further dissemination and wider replication of project findings through behavior change initiatives directed at the urban level

COLLABORATIVE INITIATIVE

Project planning

- Stakeholder analysis: Municipality
- Funding parties/Investment
- Technology supporters
- Households/communities
- Industry chain: sorting, holding, transport, treatment, disposal

Meeting structuring and preparation

- Understanding the habits and needs
- Understanding the Challenges
- Pin the pain points
- Encourage behavior change
- Collaboration to facilitate the process
- Target the solution

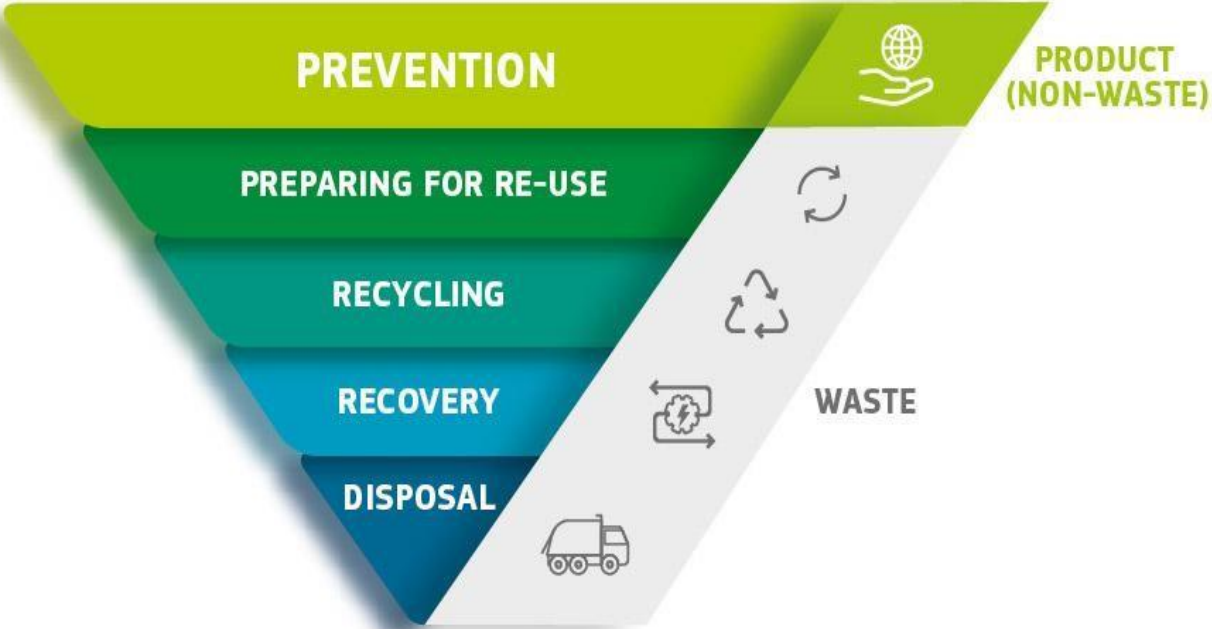
IMPLEMENTATION PLAN

Necessary components for waste management

- Legal and regulation framework
- Infrastructure / sorting centers
- Logistics
- Convertors/ Recyclers (transform waste in new materials)
- Market demand for recyclable materials
- Citizen's education, engagement, new behavior
- Scale-up and Replication

WHY BEHAVIOR APPROACH?

Waste hierarchy



3 levels of intervention for behavior change



MODEL - 'So+ma' from BRAZIL

so+ma vantagens is the 1st socio-environmental incentive program, using behavioral science and technology to promote Circular Economy in **practice** and promote social opportunities.



RECYCLE

Participants earn points per kilo of recycled material delivered



SAVE POINTS/ATTITUDES

Waste is weighted and transformed into points, that are accumulated @ **so+ma vantagens**



CHOOSE REWARD

Points can be redeemed for different benefits that participants can choose. Rewards that will improve social opportunities.



LOGISTICS RECYCLING

Materials are sent for recycling and return to the production chain to become a new product



NEW PRODUCT

RESULT: BASED ON REAL DATA

Technology enables transparency, traceability, environmental and social impacts measurement and direct communication with citizens



+11.178
families' participants



+36.795
items exchange




232
Professional Courses




872 tons
waste recycled




R\$181.856,71
Savings




7.353.952
Liters of water




3.203
trees saved



3.99.000
tons of CO2 mitigated



2.599.149
kWh electricity



9.245.540
liters of water non contaminated

CHALLENGES

There are several beliefs & common barriers (or excuses) about waste

- It's ugly, someone will do it
- It is not a priority, has another errands to run
- Laziness, it's not easy
- It is for the poor people
- Has no immediate impact on life, don't' know if it will serve for something
- Lack of knowledge, such as: where to place the recyclables, dont' know if there is recyclables collection at their building or home

REASON



EMOTION



MARKETING TOOLS WITH A BEHAVIOR SCIENCE APPROACH

- ❑ Educational events (online and in-person)
- ❑ Member get Member strategy
- ❑ SMS, WhatsApp and pushes through APP
- ❑ Testimonials from other participants as a tool to influence new participants to join the program
- ❑ Cards on social media with participants data to influence behavior seeking to establish a Social Proof.
- ❑ Environmental individual report to materialize participants' impact on the environment, aiming to influence the decision-making process
- ❑ Transform main participants doubts in information seeking to reduce barriers and leave a "nudge" for action.



BENEFICIARIES

All stakeholders are involved, and their interests are mapped to influence their behavior to change

small recyclers

- + efficiency
- + better quality materials
- + entrepreneurs



Public Power

- Reduction of waste collection and treatment costs
- Environmental and health impacts
- + Habits change for selective collection
- + Opportunities for local productive arrangements
- + Revitalization of public spaces



Consumers Citizens

- + opportunities
- + income
- + health



Local business

- + attracting new customers
- + low cost loyalty
- + strengthening the local economy



Industry

- + business
- + brand value, reputation
- + loyal customers
- + aligned to regulation



KEY PERFORMANCE INDICATORS

- Volume of waste generated
- Number of cleaning and technical staff recruited and trained in waste management by competent authority
- Amount of money allocated in the Municipality annual budget for waste management related activities;
- Number of sensitization campaign on education and information on the management of municipal solid waste conducted;
- Number of families participants;
- Volume decrease in dumping sites.

TIMEFRAME

Timeframe	Jan 2022- Dec 2022											
Activities	1	2	3	4	5	6	7	8	9	10	11	12
Protocol and ethics approval	█	█	█									
Scoping review and site selection			█	█								
Baseline survey			█	█								
Intervention					█	█	█	█	█	█		
Monthly follow-up			█	█	█	█	█	█	█	█		
End line survey											█	█
Knowledge sharing meeting		█	█	█	█	█	█	█	█	█	█	█
Data analysis and Result preparation			█	█	█	█	█	█	█	█	█	█
Public engagement, Media, Publications				█	█	█	█	█	█	█	█	█

so+ma
vantagens



with a handcart full of recyclables.
She's seeing opportunities at it.

so+ma
vantagens



JÁ QUE
O MUNDO MUDOU,
RECICLE OS SEUS
HÁBITOS TAMBÉM!

“Since the world has
changed, recycle your
habits”



Thank you.

CLAUDIA PIRES, JEAN MARIE MBONYINTWALI, REHNUMA HAQUE,
SALAMATOU ABDOURAHAMANE ILLIASSOU, XIAOYU YANG

Berkeley BEAHRs Environmental Leadership Program

