Final Report

Promotion of Countermeasures against Marine Plastic Litter in Southeast Asia and India

Clean up drive at Charkop, Kandivali
2nd March 2020

Suggested format for citation

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Promotion of Counter Measures against Marine Plastic in Southeast Asia and India- Clean Up Drive 2019- Charkop, Kandivali west, Mumbai

Mumbai: The Energy and Resources Institute.

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1.1 Introduction:

The threat and impacts of marine debris have long been ignored. The trash and other waste that drifts around the global ocean and washes up on the nation's shores, pose a serious threat to fishery resources, wildlife, and habitat, as well as human health and safety. While marine debris is a global problem requiring international cooperation, many of its negative impacts are experienced at the local level and require local involvement. In this backdrop, the new initiative by Japanese government and the United Nations Environment Programme, "Promotion of countermeasures against marine plastic litter in Southeast Asia and India", launched in 2019 would develop a simulation model for plastic leakage and monitor to determine leakage hotspots along the Ganges and Mekong rivers. Additionally in India, provincial and local governments in Mumbai, Agra, and selected cities along the Ganges will receive support to stop plastic pollution.

The project will seek 1) to identify the sources and pathways of major plastic leakage in India and to foster local partnerships for leakage reduction, 2) to promote a partnership to share the project outcome with other countries in Asia to be replicated. Mumbai generates around 700 metric tonnes of plastic waste per day and the growing plastic menace has led to several problems in the city – right from clogging drains, polluting beaches to air pollution caused due to burning of plastic.[1]

As a part of the project, a plastic waste collection and segregation drive was organized by The Energy and Resources Institute's Western Regional Centre (TERI-WRC), in Mumbai in collaboration with National Productivity Council (NPC). The main objective of the activity was to collect waste from specified leakage point and carry out source apportionment. The activity was organized on 2nd March 2020 at Charkop in Kandivali in North Mumbai.

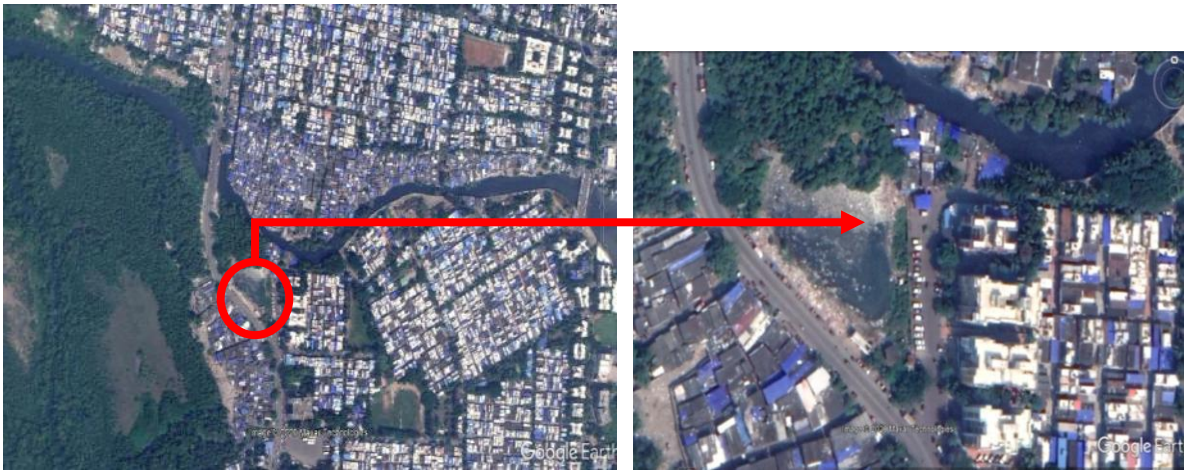
1.1.1 Methodology:

The methodology for selection of site, preparation of grid, waste collection and segregation were as per UNEP guidelines.

1.1.2 Site selection

In order to combat marine plastic litter, it is important to check the key leakage points of plastic waste going in to the sea. The site at Charkop, a low lying area, near Gorai creek, where water gets collected during high tides is one such point, where all types of waste from the nearby area is disposed. A preliminary survey was carried out by a consultant to identify an appropriate site and after consultation with TERI and NPC; Charkop low lying area was finalized as the location for the waste collection and segregation activity.

[1] https://swachhindia.ndtv.com/mumbai-maharashtra-plastic-ban-status-after-two-months-20294/



Map No. 1: Site location for clean-up drive

Picture No. 1: Charkop low lying area (clean up site)

1.1.3 Activity:

The activity started with Registration of the volunteers. National Service Scheme (NSS) students from Jogeshwari Education Society's (JES) College of Science, Commerce and Information Technology, Jogeshwari East volunteered and registered for the activity. In all, 14 students participated in the activity.

After registration, the volunteers and participants from TERI and NPC were provided with PPEs - pair of reusable of rubber gloves and mask) for the safety during the waste collection and segregation activity.

The event started with an orientation session by Mr. Lalit Kamde, Assistant Director, Environment, NPC explaining in detail the activities to be carried out, its objectives, and methodology including the grid area and waste collection and segregation to the volunteers. He also explained to the students about challenges in plastic waste management due to unscientific disposal of plastic waste and how marine plastics and micro plastics are a threat to world's oceans. During the orientation, it was made clear to the student volunteers to focus on the grid area only and collect all types of waste from the grid.

After orientation, the grid was marked with small bamboo sticks and demarcated with the white nylon strip. The grid taken for the activity was **315.53 sq. ft**. (length: 22.7 ft and breadth: 13.9 ft)

Picture No. 2: Orientation of Volunteers

Picture No. 3: Measurement and Demarcation of Grid for Activity

1.1.3.1 Collection of waste and quantification:

All the volunteers were instructed to wear PPE's. The volunteers were divided into 3 teams each with 4 members. In all eight jute gunny bags were numbered and the weight of empty gunny bags was noted. Each team was given and one jute gunny bag for collection of waste from the grid.

After waste collection in their respective gunny bags, the teams brought the bags to a designated collection point. All the collection bags filled with mixed waste were weighed individually and the weights were noted against the labelled ID on the bag (Table No. 1).

Table No. 1: Weights of waste in Gunny bags

Collection bag no.	Weight after collection (In kg)* excluding gunny bag weight
1	6.68
2	6.51
3	6.47
4	5.21
5	6.246
6	6.54
7	8.82
8	12.525
Total	**59.001**

Picture No. 4: Labelling of gunny bags for waste collection

Picture No. 5: Collection of Waste by Volunteers in the grid

Picture No. 6: Weighing of waste

1.1.3.2 Separation, Segregation of types of plastics and quantification:

Blue Tarpaulin sheets (size approx. 5m*5m) were spread at designated area and arrangements for suitable weighing balance were made. (Electronic weighing balance and spring balance)

Due to time constraint, only 5 bags (4 gunny bags and 1 bag of woven bag waste) of collected waste were segregated where each type of plastic as per the classification of plastic in Annexure 1 is separated and segregated on the blue sheet.

Each type of segregated plastic items were counted and weighed accurately. The number of plastic items and their total weight was recorded as per Annexure 2**.**

Picture No. 7: Segregation of waste carried out by volunteers

Picture No. 8: Category of segregated waste

Table No. 2: Summary of Segregated waste

S.No.	Types of Plastic found in Clean up	Number	Net Weight (in kg)
1	Cigarette Butts	12	0.005
2	Multilayered packaging material	575	1.065
3	Bottle Caps (Plastic)	42	0.06
4	Straws	2	0.005
5	Grocery Bags (Plastics)	86	1.07
6	Milk Pouches	35	0.095
7	Plastic Tubes	9	0.115
8	Footwear & Slippers	6	0.26
9	Thermocol	18	1.16
10	Metal	8	0.98
11	Bottles	15	0.225
12	Polythene Bags	412	1.175
13	Woven Bags (Cement)	11	12.525
14	Silver Foil	8	0.06
15	Hard Plastics (Toys)	48	0.475
16	Playing Cards	21	0.035
17	Cigarette Packaging Wrap	8	0.06
18	Medicine Packaging	4	0.015
19	Diapers	2	0.04
20	Glass Pieces	11	0.37
21	Fabrics & Bags	2	0.21
	Total	1333	20.005

After the segregation of waste (Table No. 2), the total plastic waste quantified was **20.005 kg**, whereas total mixed waste used for segregation was quantified **39.705** kg, thus Percentage of Plastic waste was **50.384%.**

The MCGM R Central ward officer sent a solid waste collecting vehicle at the site after the completion of activity to dispose the segregated waste.

Picture No. 9: Weighing of Segregated plastic waste (top) and Segregated waste being disposed in MCGM's Waste collection vehicle (bottom)

1.1.4 Key Observations:

- Waste segregation from all collected bags was not feasible due to time constraint.
- Lack of awareness on part of local residents as they dispose their waste in the low lying area.

1.1.5 Conclusion

The waste clean-up activity was carried out to understand the types of plastic waste going into the sea in Mumbai and the data collected would help the stakeholders to prepare policies to check and manage this source of plastic pollution in to the sea.

Annexure 1: Details of total waste collected

Table showing distribution of total waste collected and Plastic weight details over no. of collection bags(UNEP)				
Gunny Bag No. (label ID's)	**Total Weight in kg (with gunny bags**	**Plastic Weight in kg (with gunny bags)**	**Non Plastic Weight in (kg)**	**Emptied gunny bags Weight in (kg)**
1	6.905	2.645	4.26	0.225
2	7.135			0.625
3	6.74	1.055	5.685	0.27
4	5.47	2.23	3.24	0.26
5	6.501			0.255
6	6.75			0.21
7	9.06	2.44	6.62	0.24
8	12.525	12.525	0	0
Total	**61.086**	**20.895**	**19.805**	**2.085**

Note: Waste from 4 gunny bags were segregated due to time constraint. Bag No. 8 was woven bags waste which was weighed 12.525 kg.

Annexure 2: Ocean Trash Data Form

VOLUNTEER-
Ocean Trash Data Form

Ocean and waterways trash rank as one of the most serious pollution problems choking our planet. Far more than an eyesore, a rising tide of marine debris threatens human health, wildlife, communities and economies around the world. The ocean faces many challenges, but trash should not be one of them. Ocean trash is entirely preventable, and data you collect are part of the solution. The international cleanup is the world's largest volunteer effort on behalf of ocean and waterway health.

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SITE INFORMATION:

Clean up Site Name: Charkop
State: Maharashtra
Zone or County: Mumbai
Country: India
Landmark: Gorai Bridge

MOST UNUSUAL ITEM COLLECTED:

Type of Clean up	**Number of Volunteers Working on this card**
Land [x]	adults [14]
Under water [ ]	
Water [ ]	**Date:** [02.03.2020]

TRASH COLLECTED

Citizen scientist: ***Pick up all trash and record all items you find below. No matter how small the items, the data you collect are important for Trash Free Seas***

S. NO		Total No.	Total weight in Kg
MOST LIKELY TO FIND ITEMS			
1	Cigarette Butts	12	0.005
2	Multilayered packaging material	575	1.065
3	Milk Pouches	35	0.095
4	Water Pouches		
5	Disposable cups		
6	Razor toys Plastics (Hard Plastics) Bottle caps	48	0.475
7	Cloth type-polypropylene Bags		
8	Ritual Material e.g. Plastic Chains, Gods frame, Plastic moulds		
9	Low density plastic packaging material e.g. Tea packs, Sanitary packs		
10	Rubberised sleeper	6	0.26
11	Medicine Packaging	4	0.015
12	Food wrappers (Biscuits, Chips etc)		
13	Take Out/ Away containers (Plastic)		
14	Take Out/ Away containers (Food)		
15	Bottle Caps (Plastic)	42	0.06
16	Bottle Caps (Food)		
17	Lids (Plastic)		
18	Straws	2	0.005
19	Beverage Bottle (plastic)	13	0.225

20	Beverage Bottle (glass)		
21	Beverage Cans		
22	Grocery Bags (Plastics)	86	1.07
23	Other Plastic bags (Polythene)	412	1.175
24	Woven Bags (Cement)	11	12.525
25	Cups & Plates (paper)		
26	Cups & Plates (plastics)		
27	Cups & Plates (foams)		
28	Playing Cards	21	0.035
29	Tubes	9	0.115
FISHING GEAR			
1	Fishing Buoys pots & traps:		
2	Fishing Net & Pieces:		
3	Fishing Line (1 Yard/ meter)= 1 piece		
4	Rope (1 Yard/ meter)= 1 piece		
OTHER TRASH			
1	Appliances (refrigeration, washers etc)		
2	Balloons		
3	Silver Foils	8	0.06
4	Cigarette Lighters		
5	Metals	8	0.98
6	Fireworks		
7	Tires		
8	Shoes		
9	Thermocol pieces (Expanded polystyrene (EPS))	18	1.16
PACKAGING MATERIALS			
1	6- Packs Holders		
2	Other Plastic/Foam Packaging		
3	Other Plastic Bottle		
4	Strapping Bands		

5	Cigarette Packaging Wrap	8	0.06
PERSONAL HYGIENE			
1	Condoms		
2	Diapers	2	0.04
3	Syringes		
4	Tampons/Tampon Applicators		
TINY TRASH LESS THAN 2.5 CM			
1	Foam pieces		
2	Glass pieces	11	0.37
3	Plastic pieces		
ITEMS OF LOCAL CONCERN			

DEAD/INJURED ANIMAL	**STATUS**	**ENTANGLED**	**TYPE OF ENTANGLEMENT ITEM**
	Dead or **injured**	**Yes** or **No**	

CLEANUP SUMMARY

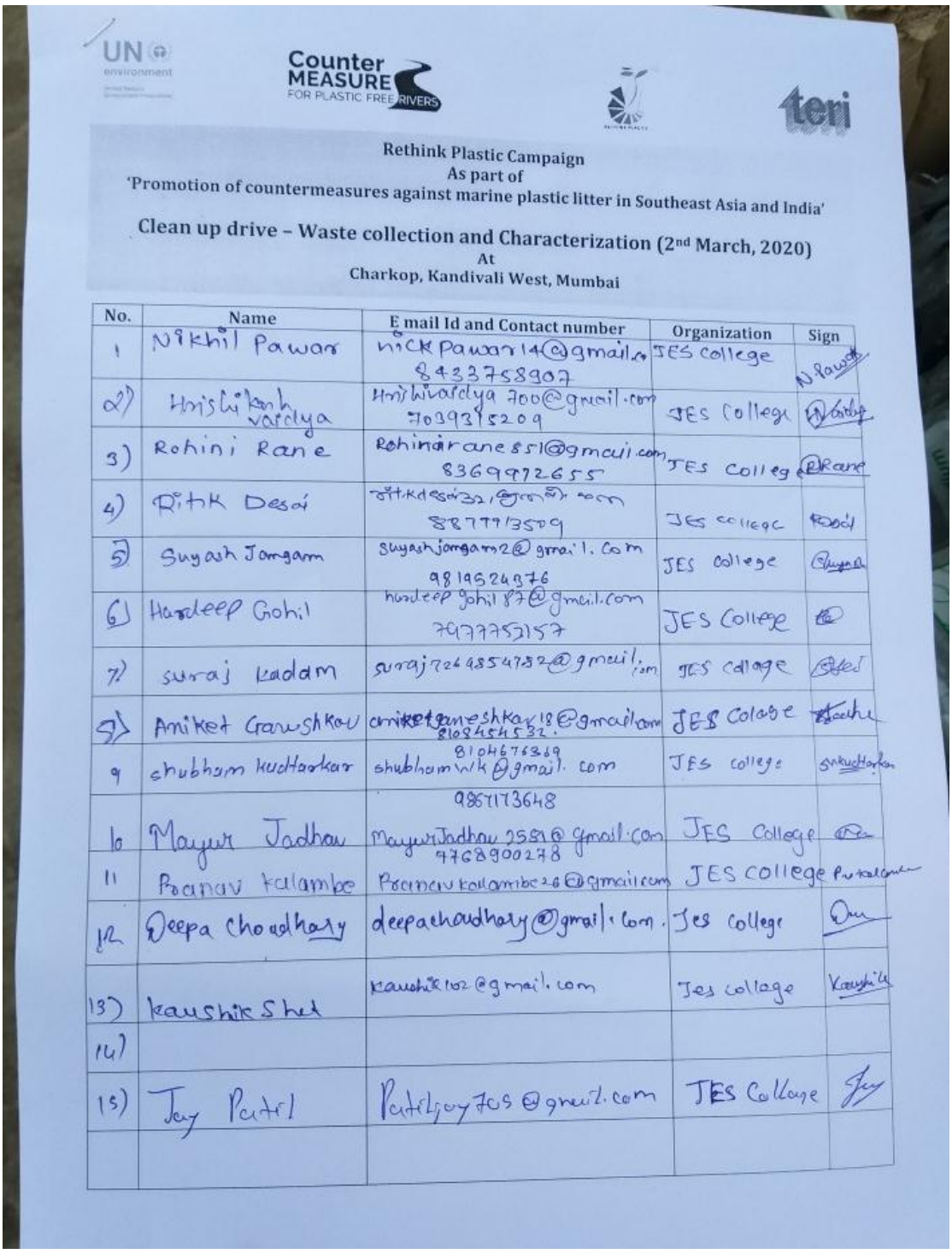
Number of Bags Filled	Weight of Trash Collected	Area cleaned
8 No.	59.001 Kgs	315.53 sq ft

Annexure 3: Collection of plastic trash would be quantified and recorded in such a way as follows

S. No.	Plastic Category*	Plastic Type	Quantity (in nos.)	Segregated plastic aggregate Weight (in kg) with black trash bag	Intermediate Weight (in kg) With Gunny Bag	Original aggregate Weight (in kg) in gunny bag	Short Name/ recycling code available	Scientific Name of plastic type
1	PW-1	Packaging Material e.g. Tobacco, Biscuit,Safal, Surf excel, Rusk						
2	PW-2	Milk Pouches					HDPE & LDPE	High Density Polyethylene (HDPE) Low Density Polyethylene (LDPE)
3	PW-3	Water Pouches					HDPE & LDPE	High Density Polyethylene (HDPE) Low Density Polyethylene (LDPE)
4	PW-4	Disposable Plastic Cup					PS	Polystyrene (PS)
5	PW-5	Multilayer Plastic e.g. Namkeen Pouches, Snacks, Biscuitspacketsetc.						
6	PW-6	Plastic Bottles e.g. Bisleri, Cold Drinks					PET	Polyethylene Terephthalate (PET)
7	PW-7	Soap case, razor toys Plastics (Hard					PP	Polypropylene (PP)

		Plastics) Bottles caps						
8	PW-8	Ritual Material e.g. Plastic Chains, Gods frame, Plastic moulds						
9	PW-9	Low density plastic packaging material e.g. Tea packs, Sanitary packs						
10	PW-10	Cloth type-polypropylene Bags					HDPE & LDPE	High Density Polyethylene (HDPE) Low Density Polyethylene (LDPE)
11	PW-11	Poly Bags (Different Colours) Green, Blue, Black						
		A-Thin						
		B-Moderate						
12	PW-12	Plastic Sheet & other thicker plastic bags. Colour-Black & White					HDPE & LDPE	High Density Polyethylene (HDPE) Low Density Polyethylene (LDPE)
13	PW-13	Readymade dress packing						
14	PW-14	Rubberized sleeper						
15	PW-15	Plastic tubes E.gDantkanti , Face wash cap etc.						
16	PW-16	Medicine Packaging						

Annexure 4: Volunteer Registration Sheet



UN environment

Counter MEASURE FOR PLASTIC FREE RIVERS

teri

Rethink Plastic Campaign
As part of
'Promotion of countermeasures against marine plastic litter in Southeast Asia and India'

Clean up drive – Waste collection and Characterization (2nd March, 2020)
At
Charkop, Kandivali West, Mumbai

No.	Name	E mail Id and Contact number	Organization	Sign
1	Nikhil Pawar	nickpawar14@gmail.com 8433758907	JES College	N Pawar
2)	Hrishikesh vardya	Hrishivardya700@gmail.com 7039315209	JES College	Vardya
3)	Rohini Rane	Rohinirane851@gmail.com 8369972655	JES College	Rane
4)	Ritik Desai	[illegible] 8879713509	JES college	Desai
5)	Suyash Jangam	suyashjangam2@gmail.com 9819524376	JES college	Suyash
6)	Hardeep Gohil	hardeep gohil87@gmail.com 7977753157	JES College	
7)	suraj kadam	suraj72648547527@gmail.com	JES college	Suraj
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