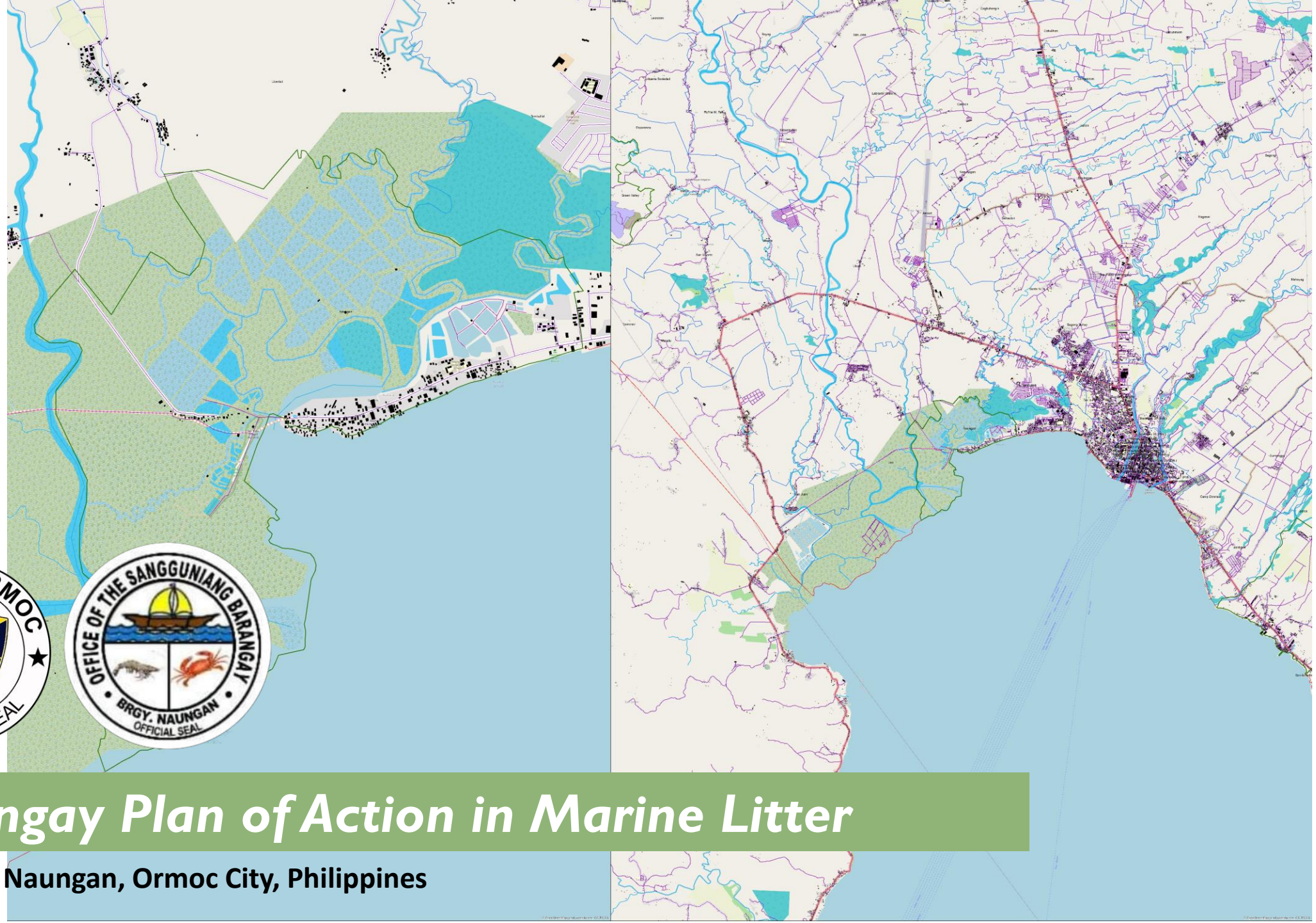
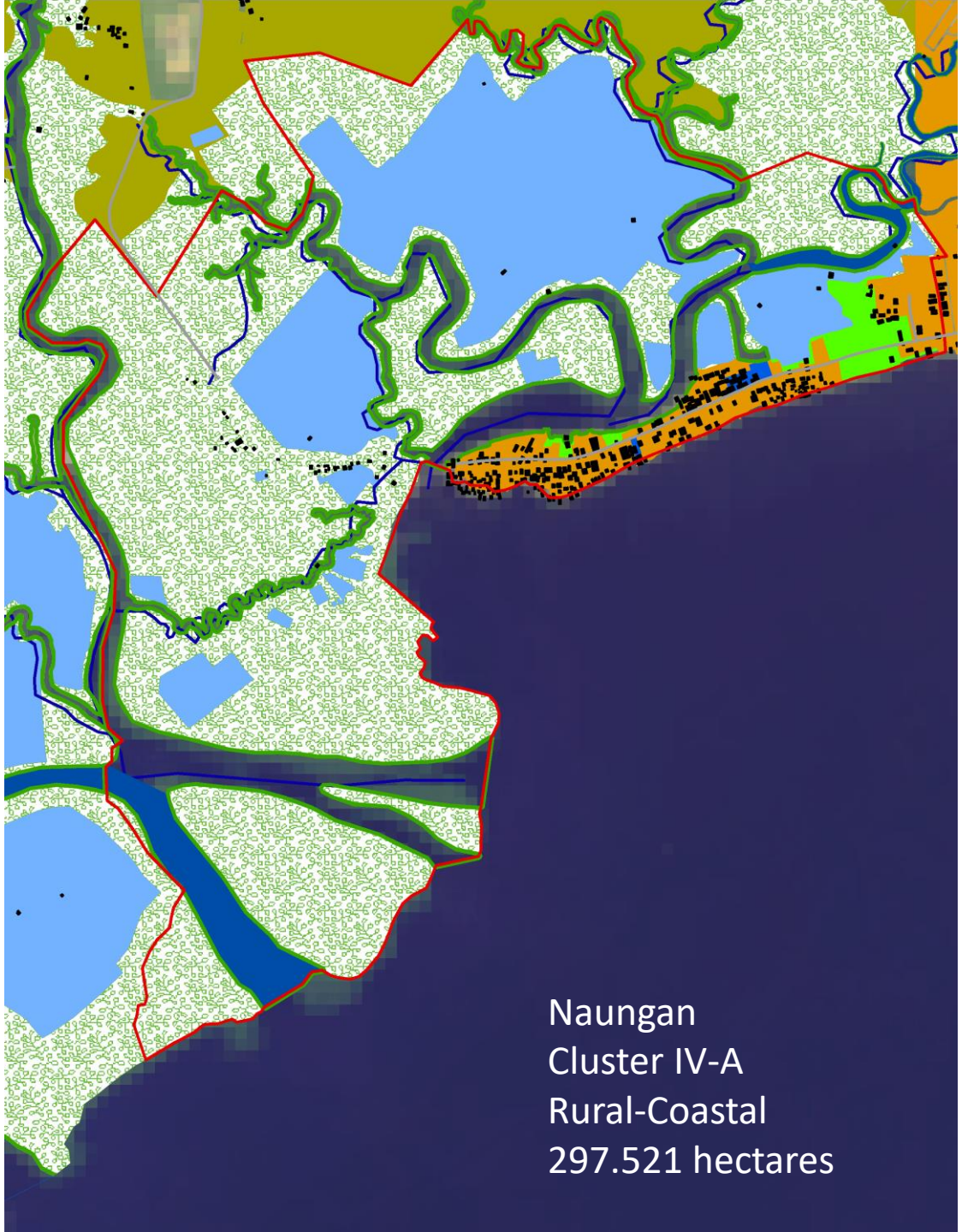


Barangay Plan of Action in Marine Litter

Barangay Naungan, Ormoc City, Philippines



Fast Facts

2600 males

2475 females

248 makeshift housing
170 informal settlers

1119 households
50 without access to safe water
10 without access to toilet facility
563 with income below poverty threshold

1030 members of labor force
105 unemployed

Source:
Community-based Monitoring System (2015)

Development Drivers

Agricultural Area Extension

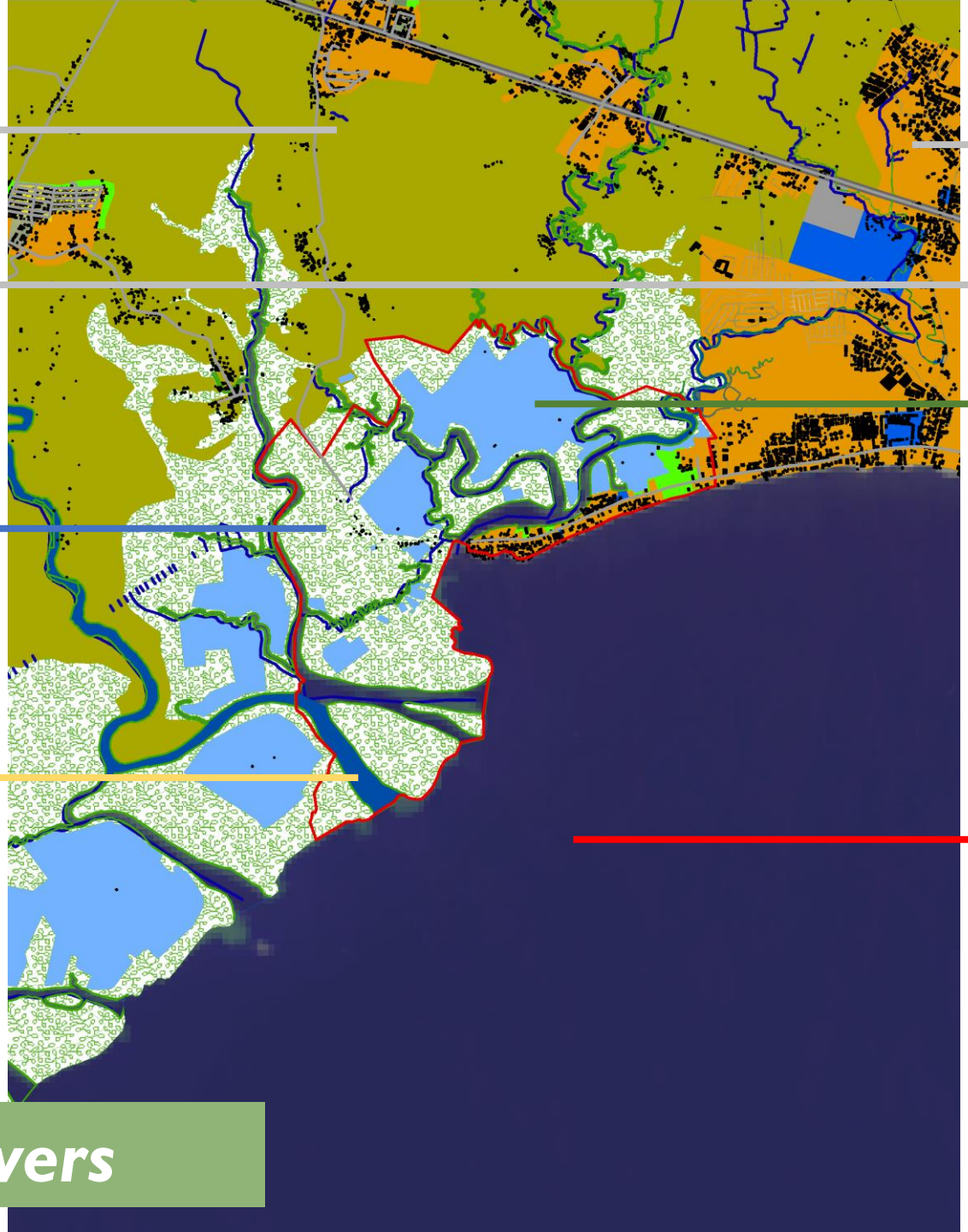
Connected to agricultural lands, the barangay is at risk to continued conversion of its mangrove forest for agricultural use. Agricultural wastes are also evident to its waterways.

Mangrove Forests

Naungan shares the remaining patches of natural mangrove forest situated along Ormoc Bay at the river delta of Pagsangaan. Currently, a section of the mangrove forest is being kept as a public park for health and leisure activities. Within the same section a road was recently opened connecting the barangay to the eastern section of the city.

Pagsangaan River

Pagsaangan River is one of the important river networks in the city. The longest city river which head waters originate from the nearby Municipality of Kananga, it cuts across agricultural lands of other barangays. It ends to a river delta connected to the mangrove forests. Sections of the river is cultivated for aquaculture production. During heavy and prolonged rains, the river overflows sinking the agricultural lands and settlements under water.



Urban Expansion

Naungan is directly linked to the main city center circulation. With the current opening of the diversion road, it is expected to take in fast tempo of urbanization. This is expected to change its land use configuration and function.

Fishponds

Fishpond production has been present to the barangay, where its residents rely for livelihood. These structures are at risk to being wiped up during flood events. The production rely on the brackish waters where Pagsangaan River tributaries connect with Ormoc Bay.

Ormoc Bay

Ormoc Bay catapulted the city as one of historical sites during the World War II in the Pacific. The bay serves as the opening of the Eastern Visayas Region with the rest of Visayas Islands. There are accounts on the passage of dolphins and sea turtles which also puts its importance in marine biodiversity. Naungan is one of the 18 coastal barangays of the city, whose settlements and livelihood directly interface with the Ormoc Bay.

Settlement Situation

Unmanaged Human Settlements Development

Settlements over the coastline.
This poses direct potential of leakage of household wastes to the marine and riverine ecosystem.

Dilapidated and unsecured housing units. Housing units made from light materials can be easily destroyed, which have direct potential to be a marine debris.

Waste Characterization

2.65%

PET (e.g. mineral water bottle body, clear cosmetic bottles)

2.23%

HDPE (e.g. juice jugs, shampoo bottles, detergent bottles, etc.)

0.83%

PVC (linoleum, plastic book cover, pipes, medicine blister packs, etc.)

1.35%

LDPE (e.g. squeezable bottles and tubes, soft lids

0.35%

PP (e.g. microwavable, ice cream/ yogurt tubs, etc.)

0.88%

PS (e.g. plastic utensils, bread tags, styrofor, disposable cups, etc.)

0.27%

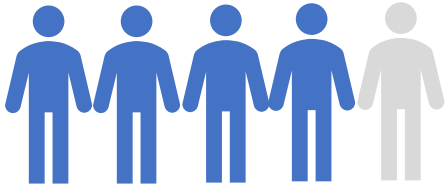
Others (e.g. PC water jugs, casings, CDs, auto parts, etc.)

Practice

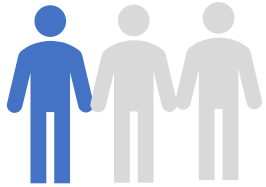
2-3 days per week collection

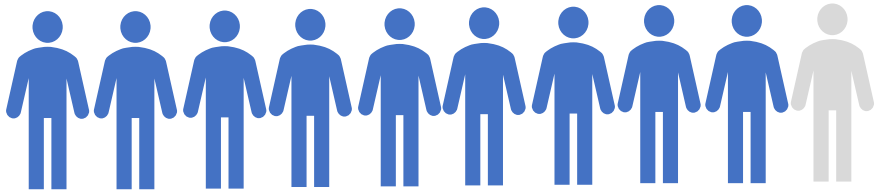
Women manage waste

4/5
population
practice
segregation



1/3
population
throw
wastes to
marine
resources

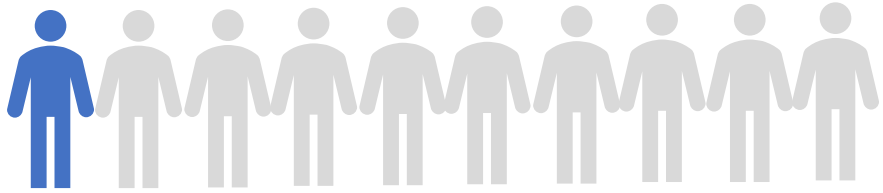




9/10
population
use eco-
bags

9/10
population
repurpose
plastics at
home

9/10
population
use plastics

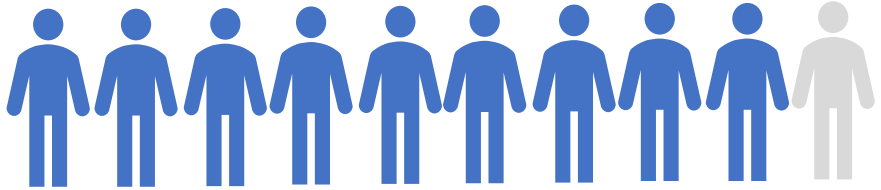


1/10
population
do open
burning

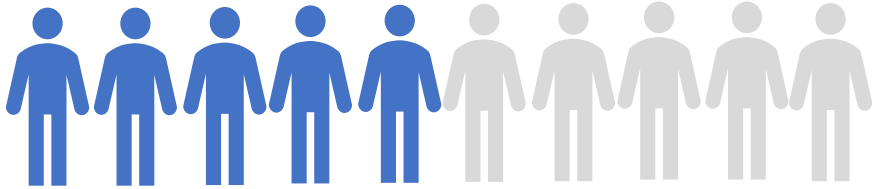
Knowledge

All are aware of segregation policy and waste as source of income

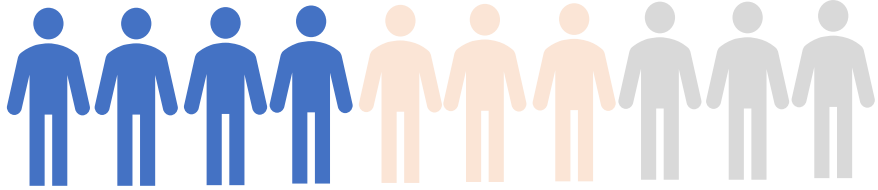
9/10 population aware on barangay programs



5/10 population aware on policy on segregation

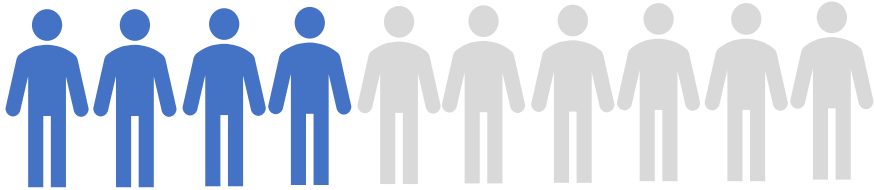


Awareness on **regular community activities**



Clean-up ● Recycling ○ Upcycling ○

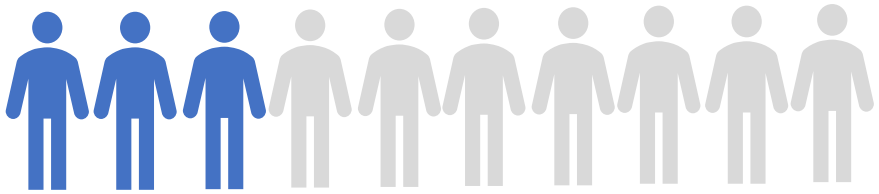
Awareness on **concept of 3Rs**

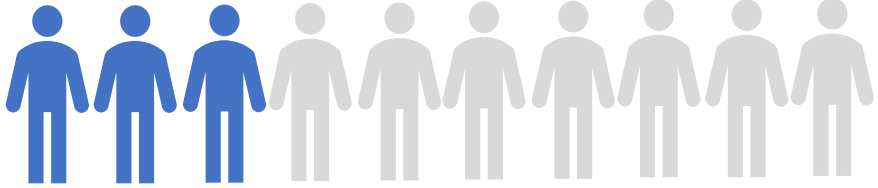


Aware ● Ambiguous ○

Attitude

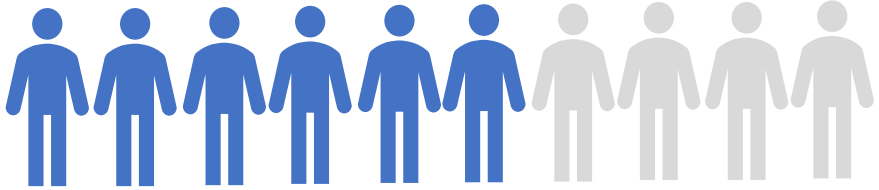
3/10 keep from segregating due to lack of trash bags and low understanding on its practice





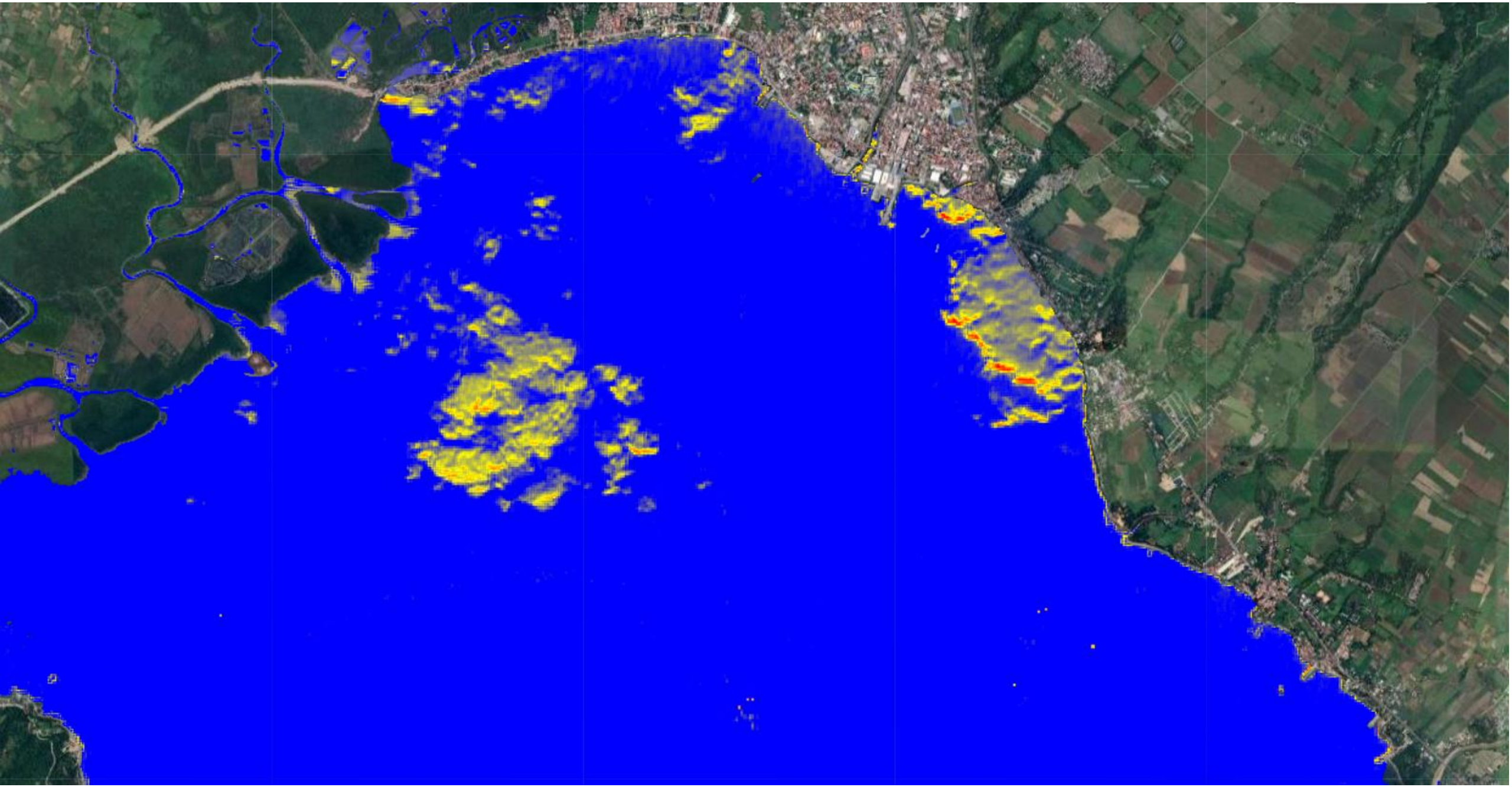
3/10 keep from using eco-bag since it requires additional costs

6/10 believe that families should be the main responsible on segregation



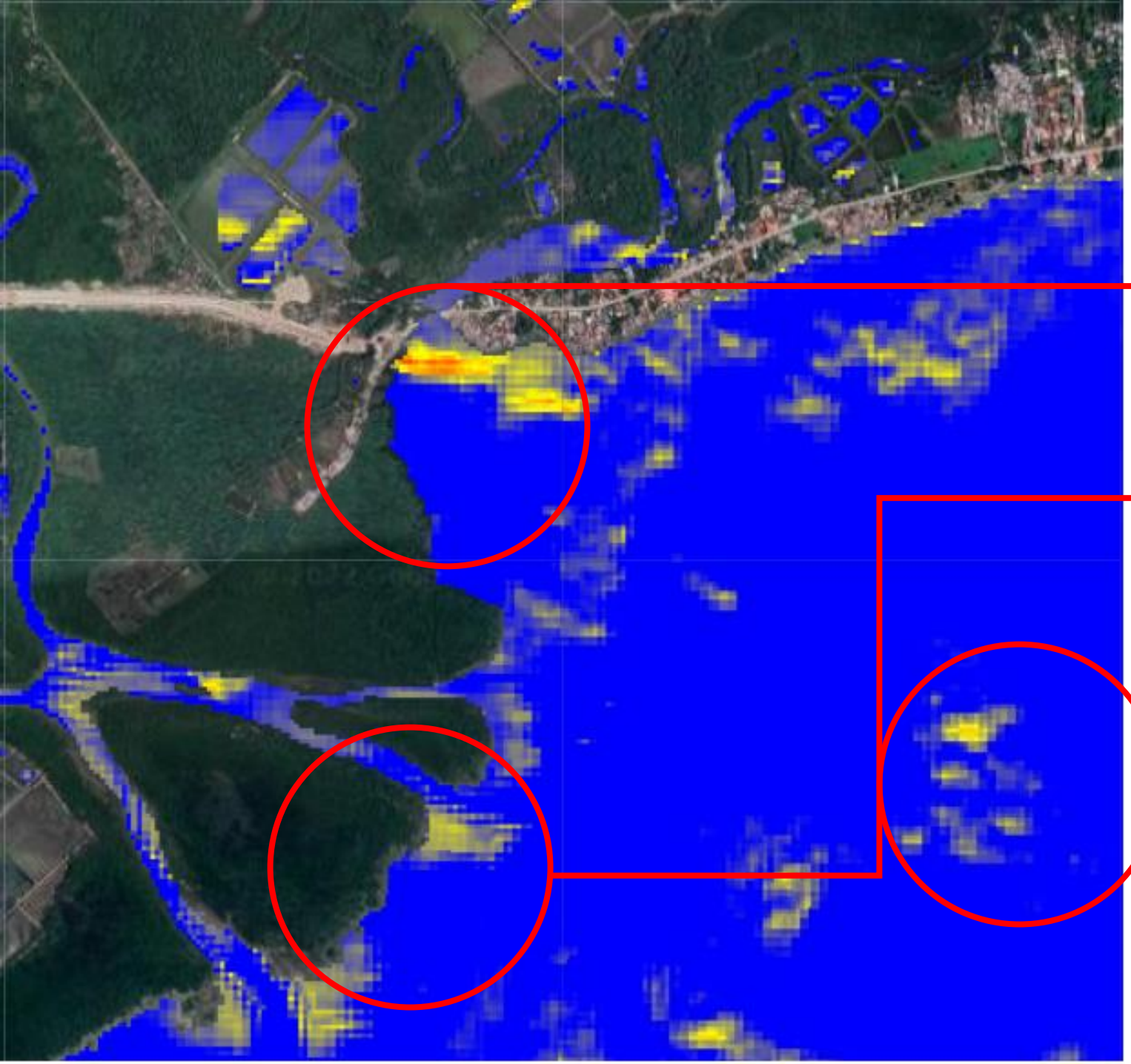
Safeguards

E. Environmental and Social Safeguards	
E1. What are values of ocean and waterbodies in the vicinity for you? (Multiple Answers)	
1. Local heritage	14%
2. Culture	14%
3. Income resource	43%
4. Tourist attraction	0%
5. Leisure spots	10%
6. water source in the daily life	19%
7. Other	0%
E2. Does your community currently have negative impacts by uncontrolled solid waste?	
1. Yes	78%
2. No	22%
If yes, what are them?	
1. Surface water contamination	0%
2. Groundwater contamination	0%
3. Air pollution	33%
4. Odor nuisance	67%
5. Other	0%
E3. What do you think are the main causes of marine litter? (Multiple Answers)	
1. Unrespectable behavior of tourist	8%
2. Drifted waste from other countries	0%
3. Microbeads from houses (e.g. cosmetic/laundry wastewater)	0%
4. Illegal dumping/ waste thrown by citizens	62%
5. Leakage from facilities (e.g. MRF/ landfills/ dumpsites)	8%
6. Loss/ leakage during transportation (including waste collection)	15%
7. Insufficient human resources to clean-ups	8%
8. No policies/ ordinances on marine litter reduction	0%
9. Inappropriate drainage systems	0%
E4. What are the negative impacts your community face due to presence of marine litter? (Multiple Answers)	
1. Less fish/seafoods	13%
2. Less tourists	6%
3. Water contamination	13%
4. Threaten marine biota and ecosystems	19%
5. Diseases and injure of human	15%
6. Damage to equipment (e.g. boat, fishing nets)	2%
7. Entanglement/digestion of wild animals	9%
8. Loss of aesthetic/local beauty	13%
9. Hazards due to marine litter (e.g. stagnant drainage)	11%
10. Other	0%
E5. Do you know some specific spaces in the community where wastes have accumulated due to waste	
1. Absolutely yes	33%
2. Relatively yes	67%
3. Amobiguous	0%
4. Not	0%



City-wide marine litter hot spot mapping. Supported by the Arcadis Shelter Program with UN-Habitat.

Hotspot



HOT SPOTS: Location of plastic leakage near river mouths and coastlines

Projects

Collection points

- Proper allocation of size and identification of location based on density of users – block, neighborhood, buildings
- Shorten routes, fuel savings
- Community-level enforcing/policing of segregation policies, local governance
- Aligns with road sizes, highlights urban spaces
- Exemplify design of collection points that deter plastic leakage

Projects

Trash traps

- Pragmatic deterrence of waste leakage to larger water body
- Provides opportunity to characterize wastes that directly leaked on marine and riverine ecosystem
- Increase source of materials for recovery and eventual recycling
- Can be designed based on the width, length, and depth of the rivers
- Can also be placed on drainage canals and other waterways connected to the ocean

Projects

Support to community-based organization on solid waste

- Continuing support to fisherfolks, women, and informal waste picker groups to formalize itself and be engaged on solid waste management

Advocacy for urban design that deter marine litter leakage

- Proper designing of houses, waterways, road networks for waste collection
- Restrictions on development above water

Site protection and management

- Declaration of site as protected areas, to consider focused management plan
- Designing spaces with relation to waste recovery – community-based enterprises on 3Rs

Design of buffers and public spaces

- Imposition of buffer zone restrictions (Water Code)
- Designing settlements and open spaces with waste receptacles and collection points

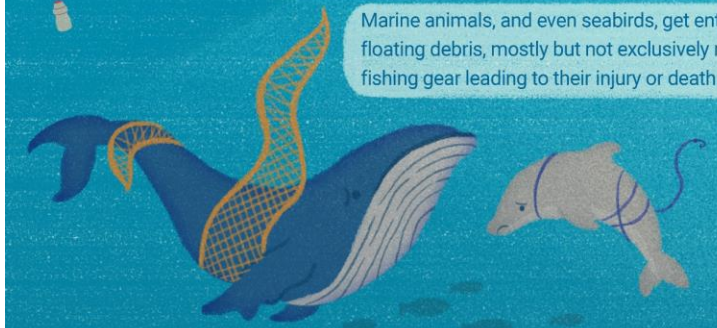
Support to marine litter education

-Continuing support to youth and general population in understanding marine litter and conduct of regular coastal clean up

IMPACTS OF PLASTIC LITTER ON MARINE ENVIRONMENT

1. ENTANGLEMENT / ENTRAPMENT

Marine animals, and even seabirds, get entangled in floating debris, mostly but not exclusively related to fishing gear leading to their injury or death.



2. INGESTION

Marine animals mistakenly ingest small plastic items such as plastic bags, product packaging, and straws, leading to their death.

3. HABITAT DESTRUCTION

Coral reefs may be physically damaged by the movement of marine plastic debris, smothering marine organisms and preventing sunlight, while mangroves may collect plastics.

4. TRANSFERRING CHEMICALS INTO FOOD WEB / BIOMAGNIFICATION

Fishes accumulate chemicals in their body after plastic intake.

5. INTRODUCTION AND SPREAD OF INVASIVE SPECIES

Some studies show that plastic debris from remote areas can be a transporter to invasive organisms which can lead a loss of biodiversity, changes to habitat structure, and changes to ecosystem functions.

50%

estimate percent of humpback whales in US waters that showed scarring from entanglement (Robbins, et al. 2007)

2050

the year it is estimated that plastics in the ocean will outweigh the fish (World Economic Forum, 2016)

663

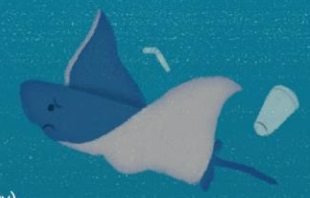
the number of species reported as having been entangled in or ingested plastic debris (Secretariat of the Convention on Biological Diversity (CBD 2012)

1,000

the estimate number of years it takes for plastic bags and Styrofoam to decompose (UNEP, Single Use Plastics: A Roadmap for Sustainability)

COMMONLY FOUND PLASTICS ON BEACHES
(Ocean Conservancy, 2017)

- cigarette butts
- food wrappers
- beverage bottles & bottle caps
- straws
- cups & plates
- single-use bags



UN HABITAT
FOR A BETTER URBAN FUTURE

From the People of Japan

HEALTHY OCEANS AND CLEAN CITIES INITIATIVE

HOW PLASTICS END UP IN THE OCEAN:

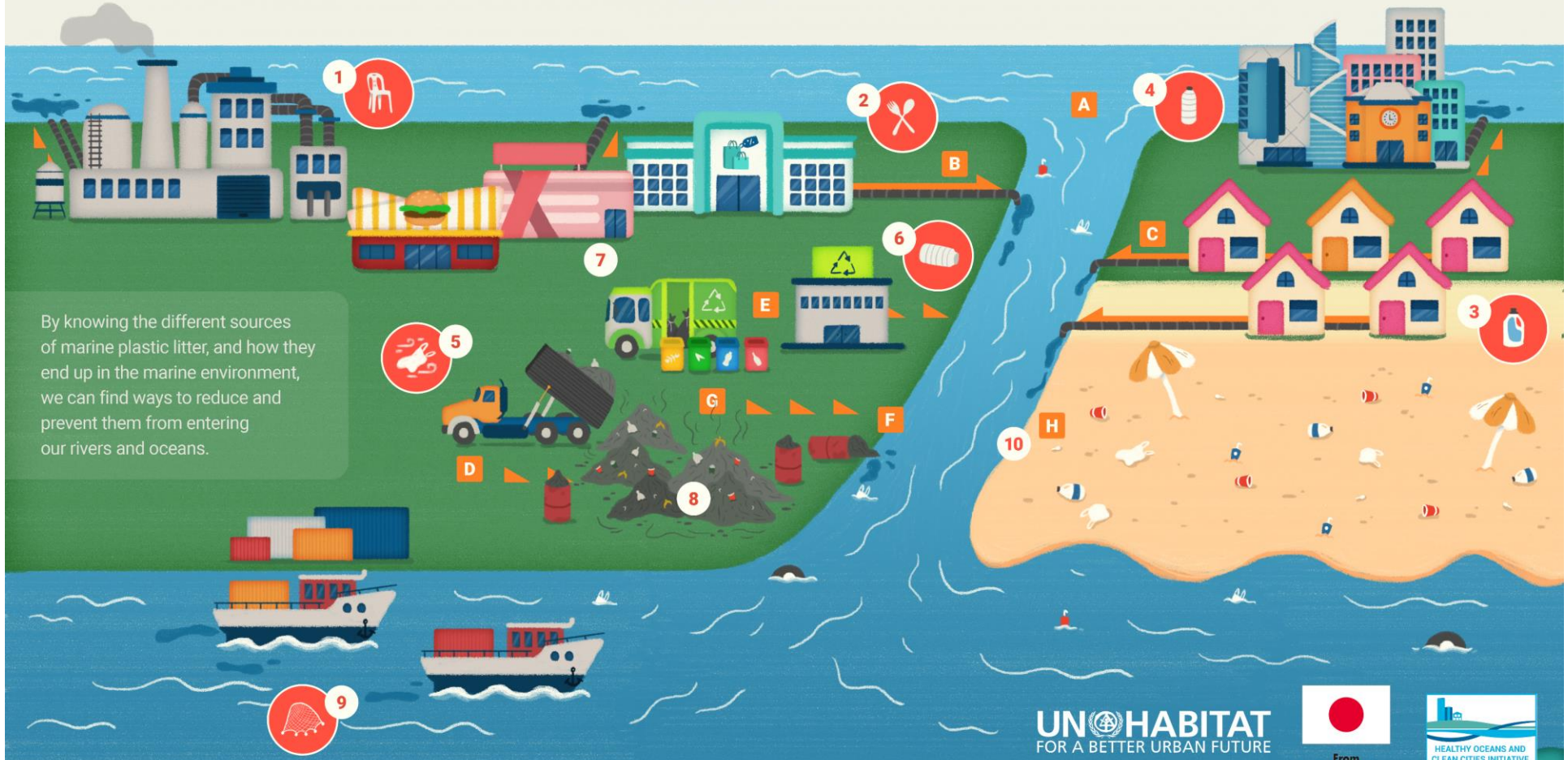
MARINE PLASTIC LITTER SOURCES & PATHWAYS

SOURCES OF LITTER

1 Manufacturing (products and packaging)
2 Distribution and retail (malls, sari-sari stores, quick service restaurants)
3 Household waste (personal and household consumption)
4 Commercial waste (schools, offices)
5 Waste collection (garbage trucks, waste pickers)
6 Materials recovery & sorting
7 Processing & recycling
8 Disposal facilities (sanitary landfills, dumpsites)
9 Maritime sources (shipping, fishing, aquaculture, ports)
10 Litter already existing in the environment sources (beaches, mangroves)

FLOW OF LITTER TO THE MARINE ENVIRONMENT

A Litter directly thrown in canals, creeks, rivers
B Household and commercial litter that gets into drainage during floods
C Microplastics from household and commercial sources that get into the sewage system
D Litter from collected garbage that get blown or discarded in transit
E Litter from poorly managed MRFs, recycling facilities, and disposal facilities
F Illegally disposed litter
G Litter from disposal facilities that get blown away by wind
H Litter discarded in beaches



By knowing the different sources of marine plastic litter, and how they end up in the marine environment, we can find ways to reduce and prevent them from entering our rivers and oceans.

UN HABITAT
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HEALTHY OCEANS AND CLEAN CITIES INITIATIVE

Planning Team of Naungan
In a series of planning workshop attended by Barangay Council, the plan of action was developed.

Supported by **Healthy Oceans and Clean Cities Initiative** implemented by **UN-Habitat Philippines** and funded by **Government of Japan**

CITY OF ORMOC OFFICIAL SEAL

OFFICE OF THE SANGGUNIANG BARANGAY BRGY. NAUNGAN OFFICIAL SEAL

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