SYSTEMS APPROACH TO DESIGN

PLASTIC WASTE

DP3 | HANSROY NEMDHARRY | IXD

FACULTY: MAMATA RAO & JAGRITI GALPHADE

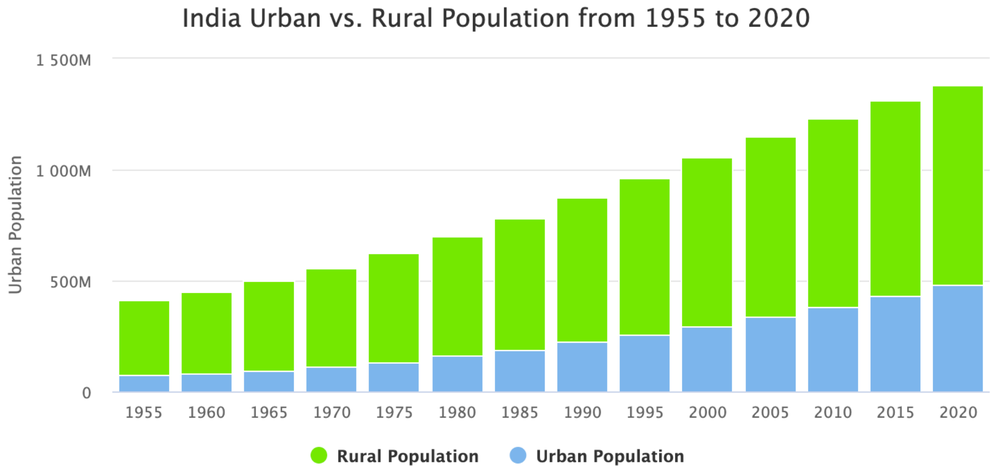
UNDERSTANDING THE REALITY OF PLASTIC WASTE ?

INDIAN POPULATION (LIVE)

1,377,547,019

India is the 2nd largest populated country in the world , carrying the 17.1% population of the world .The total land area is 2,973,190 Km2 (1,147,955 sq. miles)

FOSSIL CO_2 EMISSIONS IN INDIA WERE 2,533,638,100 TONS IN 2016.



WHY IS THERE A CONTINUOUS RISE IN PLASTIC PRODUCTION ?

This rise in plastic consumption is not surprising, as these materials provide many benefits to society through their malleability, durability and lightness, together with low production costs. For many applications, plastics can even offer lower carbon footprint alternatives compared to other materials (Boucher and Friot, 2017).

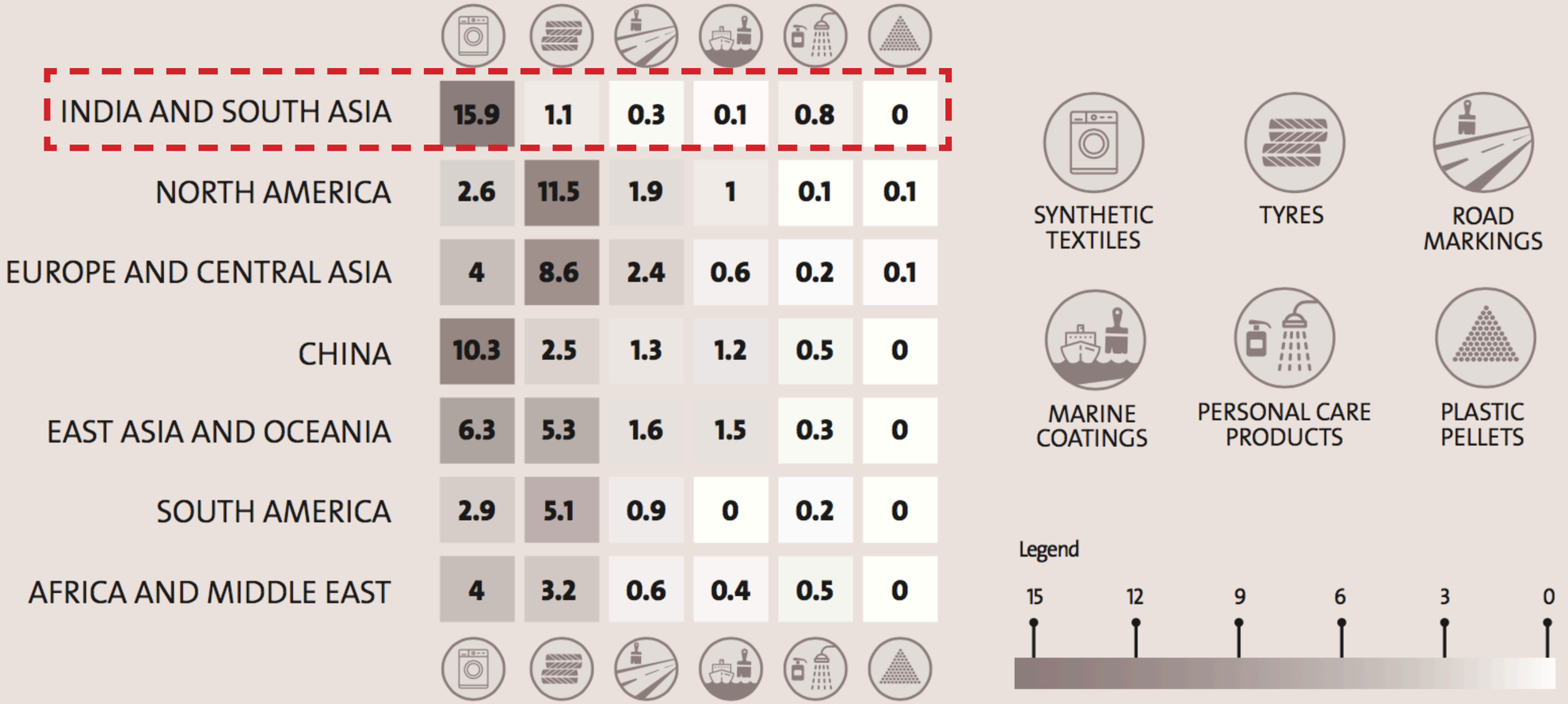
Since the 1950s, yearly production of plastics has risen from close to zero to above 335 million tonnes in 2017, with an annual increase forecast at 4% for the coming years (Geyer, Jambeck and Law, 2017; PlasticsEurope, 2017).

https://ourworldindata.org/plastic-pollution#which-countries-produce-the-most-plastic-waste

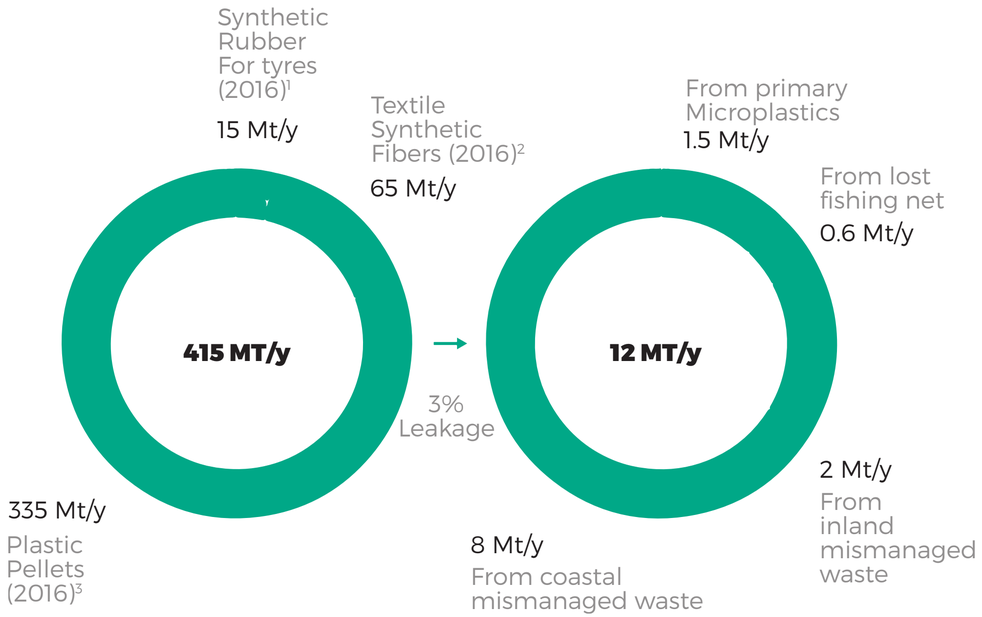
https://journals.openedition.org/factsreports/5319

MISMANAGED WASTE

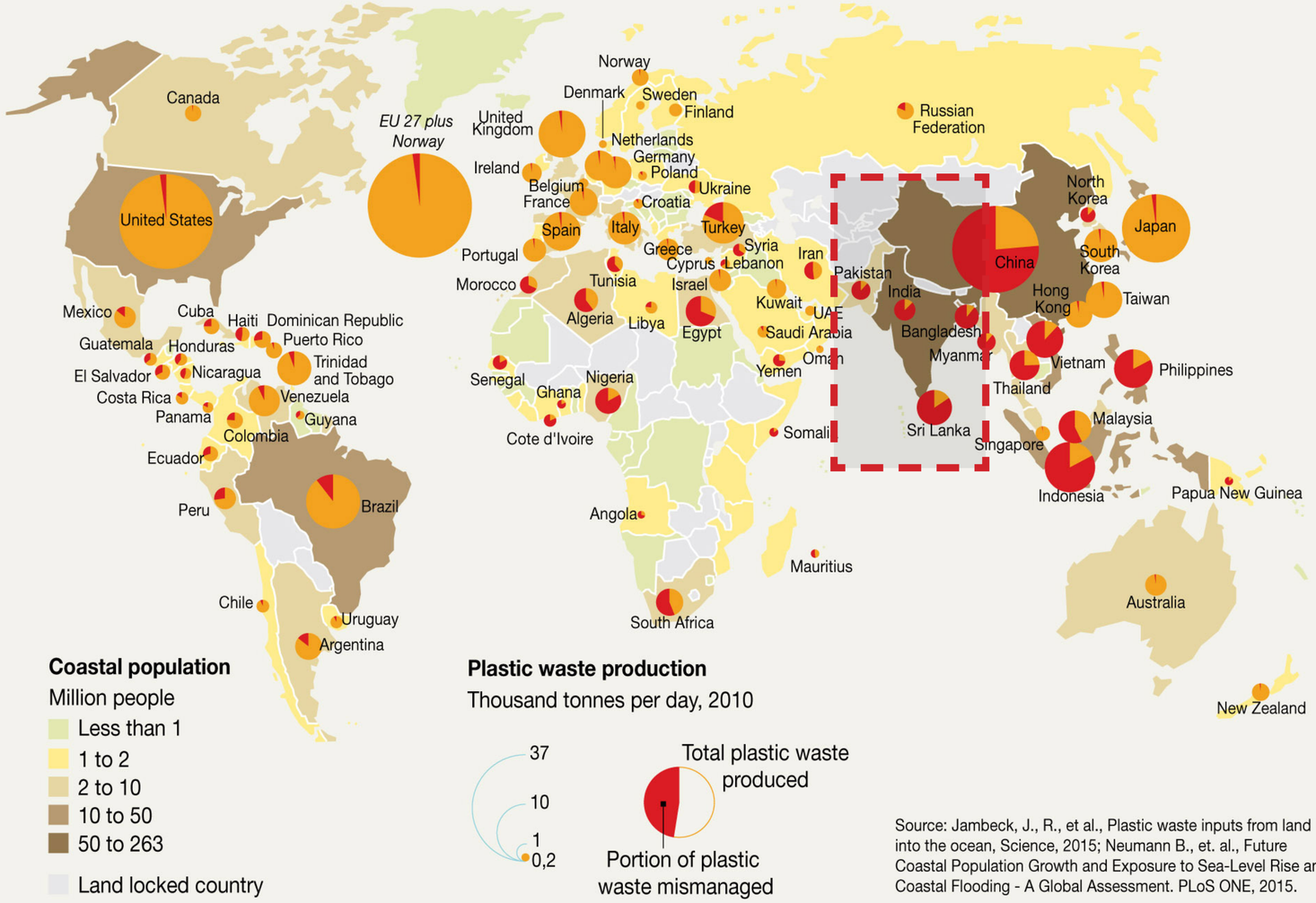
Mismanaged waste is commonly defined as plastic waste managed in a way that might include some leakage into the marine environment. This includes waste entering non-sanitary landfills, dumpsites, or tipped/littered.



PLASTIC WASTE PRODUCED & MISMANAGED



India and south east asia produces one highest plastic wastes every year

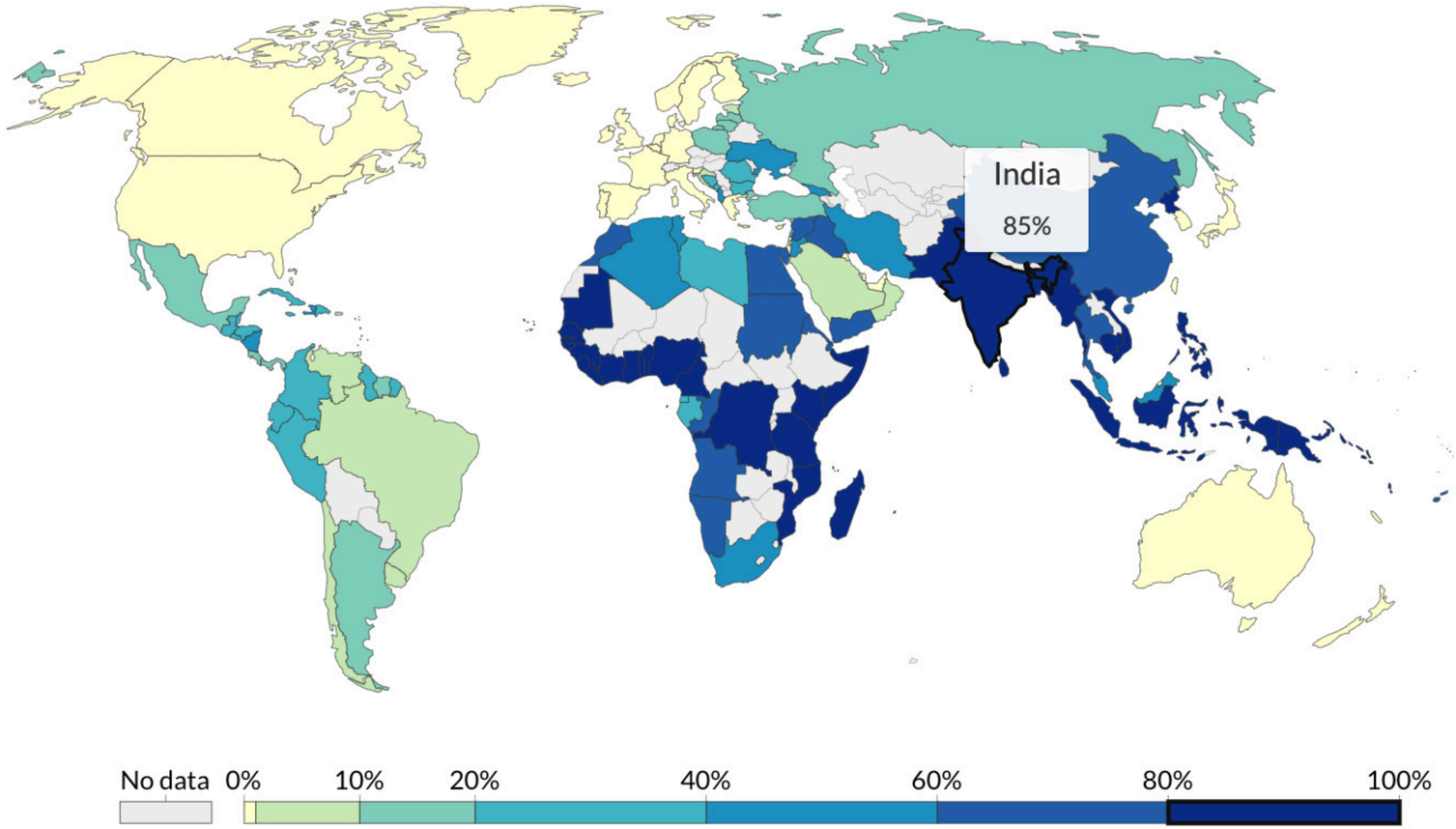


Source: Jambeck, J., R., et al., Plastic waste inputs from land into the ocean, Science, 2015; Neumann B., et. al., Future Coastal Population Growth and Exposure to Sea-Level Rise and Coastal Flooding - A Global Assessment. PLoS ONE, 2015.

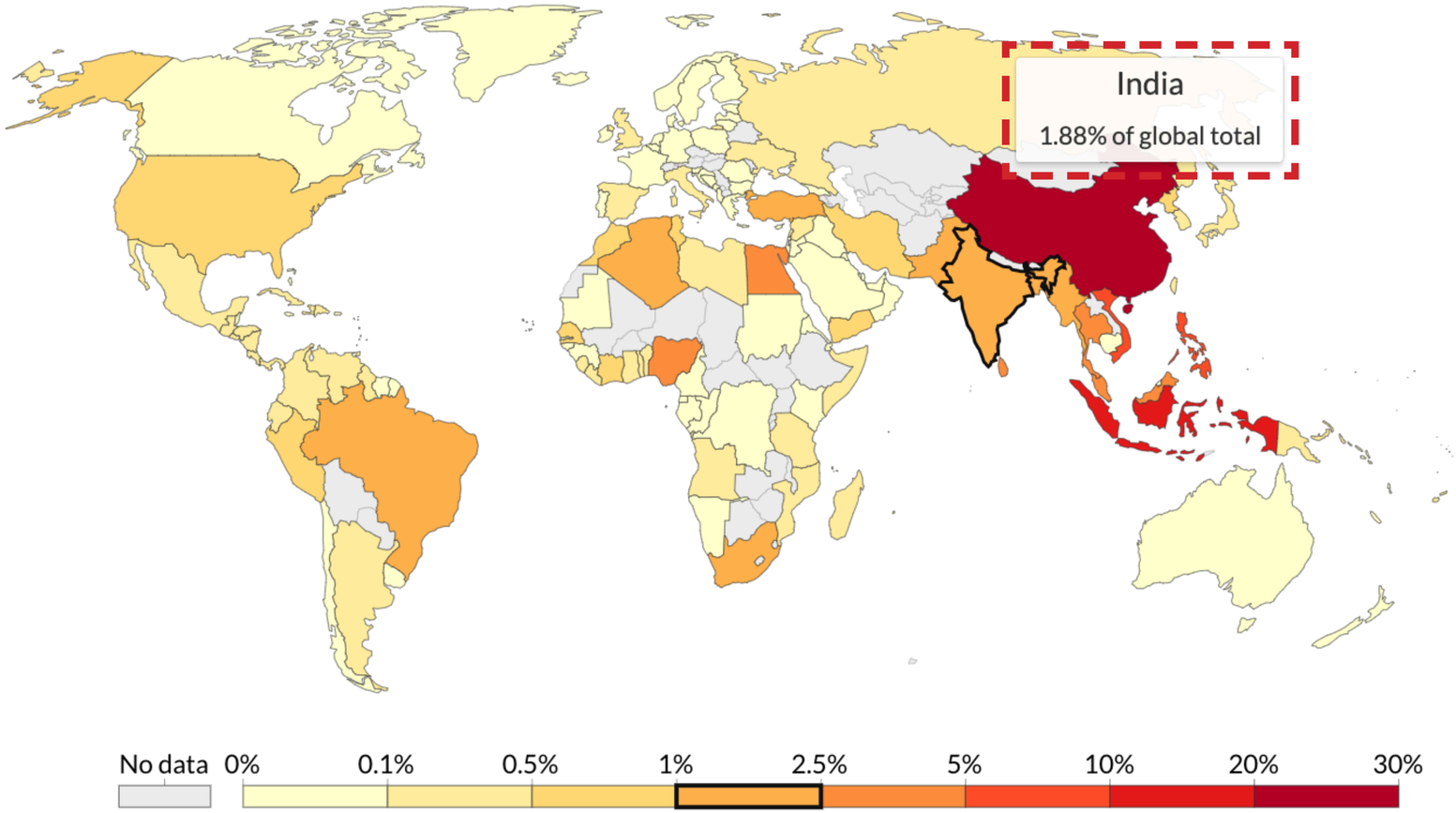
MISMANAGED PLASTIC WASTE IN MARINE

https://www.ibef.org/exports/plastic-industry-indi

Across many low-to-middle-income countries, inadequately disposed waste can be high; across many countries in South Asia and Sub-Saharan Africa, between 80-90 percent of plastic waste is inadequately disposed of, and therefore at risk of polluting rivers and oceans. This is strongly reflected in the global distribution of mismanaged waste and inputs from river systems.



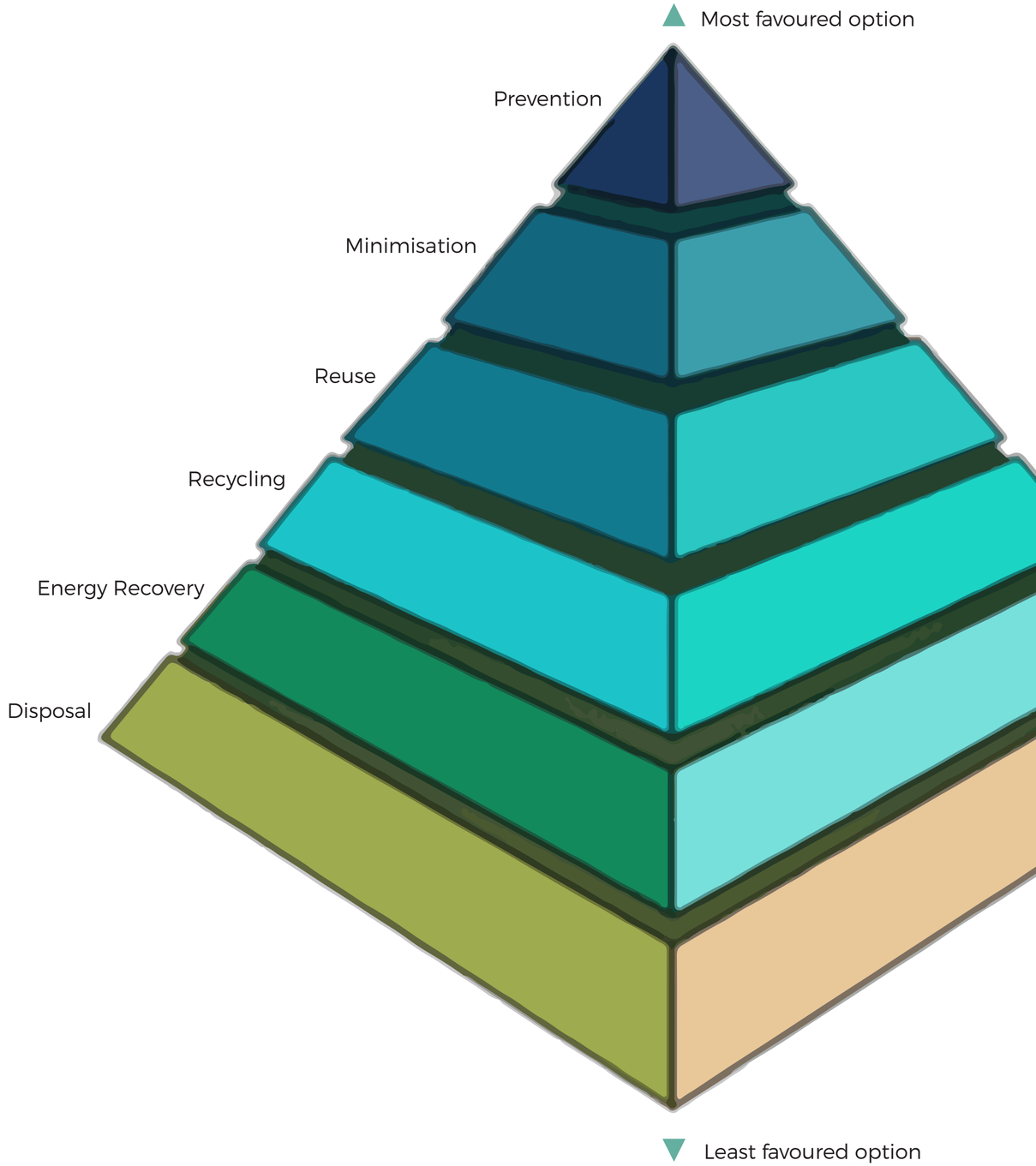
GLOBAL MISMANAGED WASTE, 2010



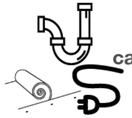
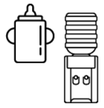
https://ourworldindata.org/plastic-pollution#impact-of-microplastics-on-humans

WASTE MANAGEMENT HIERARCHY

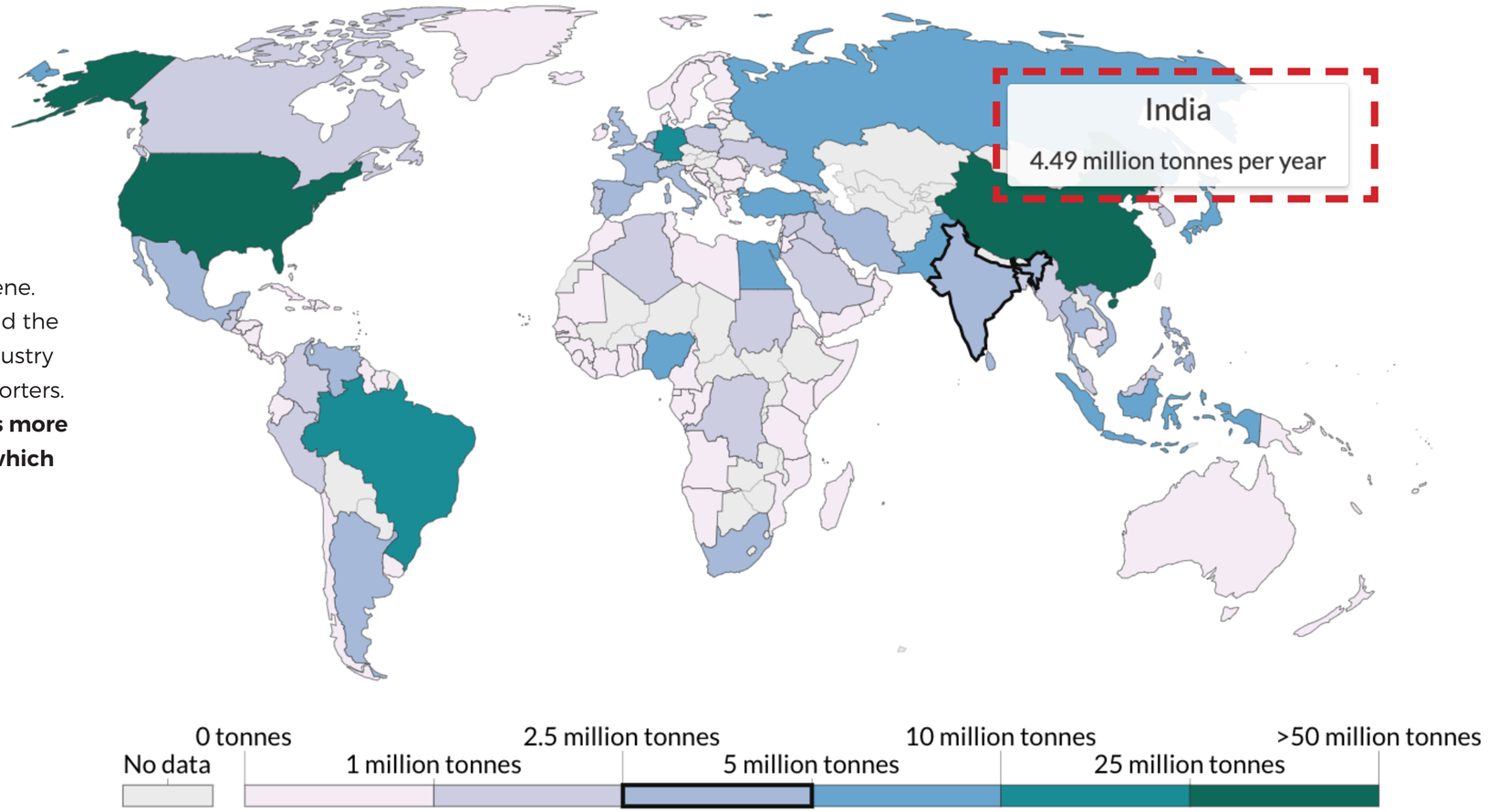
The municipal solid waste industry has four components: recycling, composting, disposal, and waste-to-energy via incineration.There is no single approach that can be applied to the management of all waste streams, therefore the Environmental Protection Agency, a U.S. federal government agency, developed a hierarchy ranking strategy for municipal solid waste.The waste management hierarchy is made up of four levels ordered from most preferred to least preferred methods based on their environmental soundness: Source reduction and reuse; recycling or composting; energy recovery; treatment and disposal.



UNDERSTANDING THE SYMBOLS OF DIFFERENT RECYCLING GRADE

Symbol	Polymer	Common Uses	Properties	Recyclable?
1 PETE	Polyethylene terephthalate	 Plastic bottles (water, soft drinks, cooking oil)	Clear, strong and lightweight	Yes; widely recycled
2 HDPE	High-density polyethylene	 Milk containers, cleaning agents, shampoo bottles, bleach bottles	Stiff and hardwearing; hard to breakdown in sunlight	Yes; widely recycled
3 PVC	Polyvinyl chloride	 Plastic piping, vinyl flooring, cabling insulation, roof sheeting	Can be rigid or soft via plasticizers; used in construction, healthcare, electronics	Often not recyclable due to chemical properties; check local recycling
4 LDPE	Low-density polyethylene	 Plastic bags, food wrapping (e.g. bread, fruit, vegetables)	Lightweight, low-cost, versatile; fails under mechanical and thermal stress	No; failure under stress makes it hard to recycle
5 PP	Polypropylene	 Bottle lids, food tubs, furniture, houseware, medical, rope, automobile parts	Tough and resistant; effective barrier against water and chemicals	Often not recyclable; available in some locations; check local recycling
6 PS	Polystyrene	 Food takeway containers, plastic cutlery, egg tray	Lightweight; structurally weak; easily dispersed	No; rarely recycled but check local recycling
7	Other plastics (e.g. acrylic, polycarbonate, polyactic fibres)	 Water cooler bottles, baby cups, fiberglass	Diverse in nature with various properties	No; diversity of materials risks contamination of recycling

PLASTIC WASTE GENERATION, 2010



The Indian plastics industry made a promising beginning in 1957 with the production of polystyrene. Thereafter, significant progress has been made, and the industry has grown and diversified rapidly. The industry spans the country and hosts more than 2,000 exporters. **It employs about 4 million people and comprises more than 30,000 processing units, 85-90 percent of which are small and medium-sized enterprises.**

Plastic production in India

https://www.ibef.org/exports/plastic-industry-india.aspx

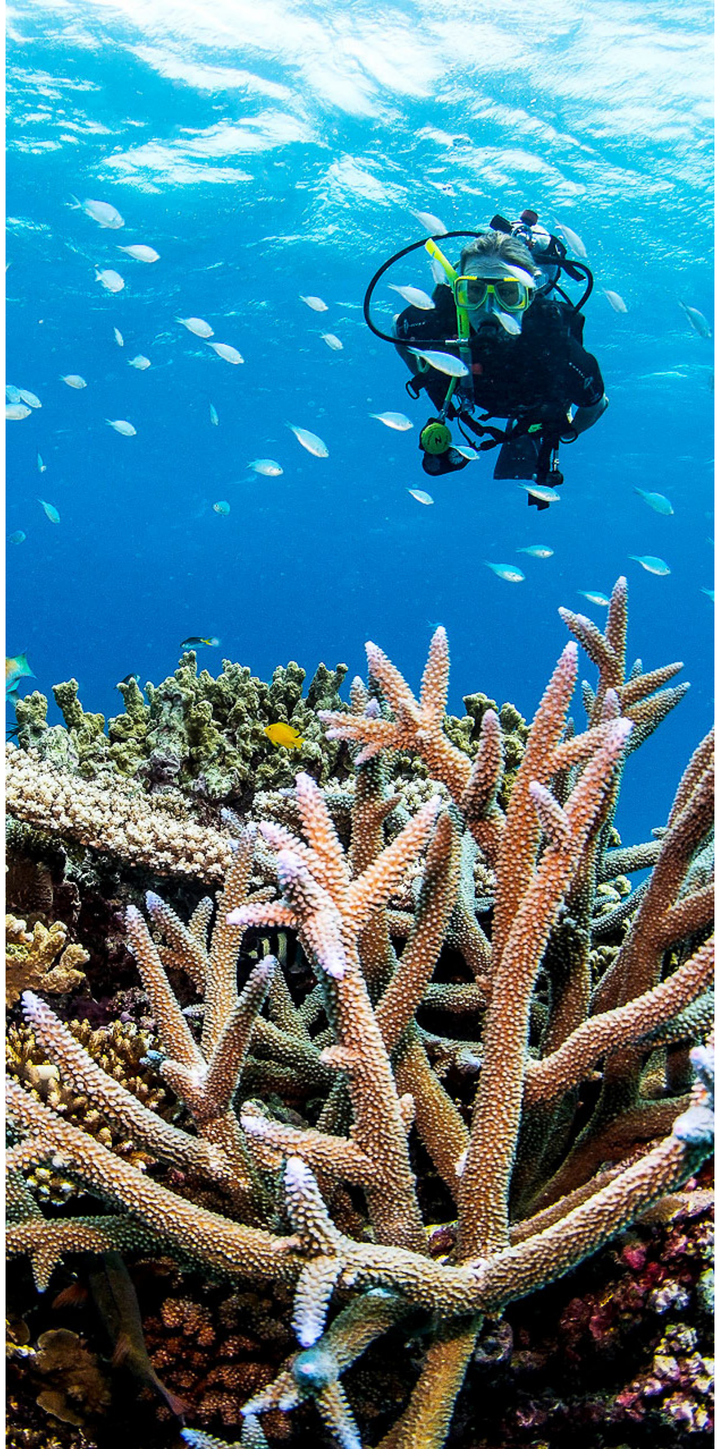
IMPACTS OF PLASTIC TO ENVIRONMENT

Entanglement – the entrapping, encircling or constricting of marine animals by plastic debris.
Entanglement cases have been reported for at least 344 species to date, including all marine turtle species, more than two-thirds of seal species, one-third of whale species, and one-quarter of seabirds. Entanglement by 89 species of fish and 92 species of invertebrates has also been recorded.
Entanglements most commonly involve plastic rope and netting and abandoned fishing gear. However, entanglement by other plastics such as packaging have also been recorded.

Ingestion of plastic can occur unintentionally, intentionally, or indirectly through the ingestion of prey species containing plastic. It has been documented for at least 233 marine species, including all marine turtle species, more than one-third of seal species, 59% of whale species, and 59% of seabirds. Ingestion by 92 species of fish and 6 species of invertebrates has also been recorded.
Very small particles such as plastic fibres can be taken up by small organisms such as filter-feeding oysters or mussels; larger materials such as plastic films, cigarette packets, and food packaging have been found in large fish species; and in extreme cases, documented cases of sperm whales have shown ingestion of very large materials including 9m of rope, 4.5m of hose, two flowerpots, and large amounts of plastic sheeting.

Interaction – interaction includes collisions, obstructions, abrasions or use as substrate.
, for example, has been shown to cause abrasion and damage to coral reef ecosystems upon collision.

HOW DOES PLASTIC IMPACT WILDLIFE ?



HOW DOES PLASTIC IMPACT WILDLIFE?

Impact of microplastics on wildlife

slower metabolic rate and survival in Asian green mussels .

reduced reproducibility and survival in copepods.

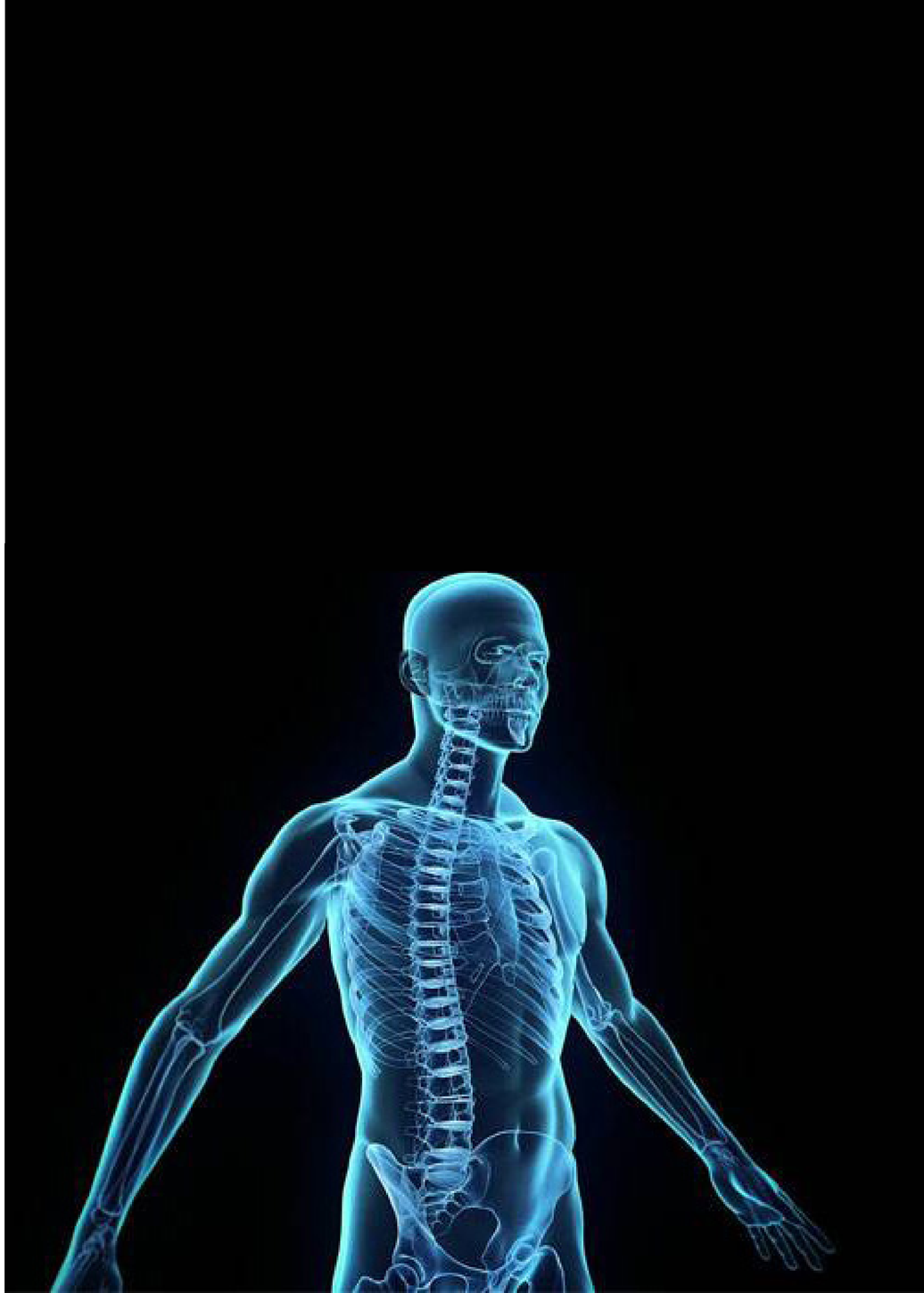
reduced growth and development of Daphnia.

reduced energy stores in shore crabs and lugworm

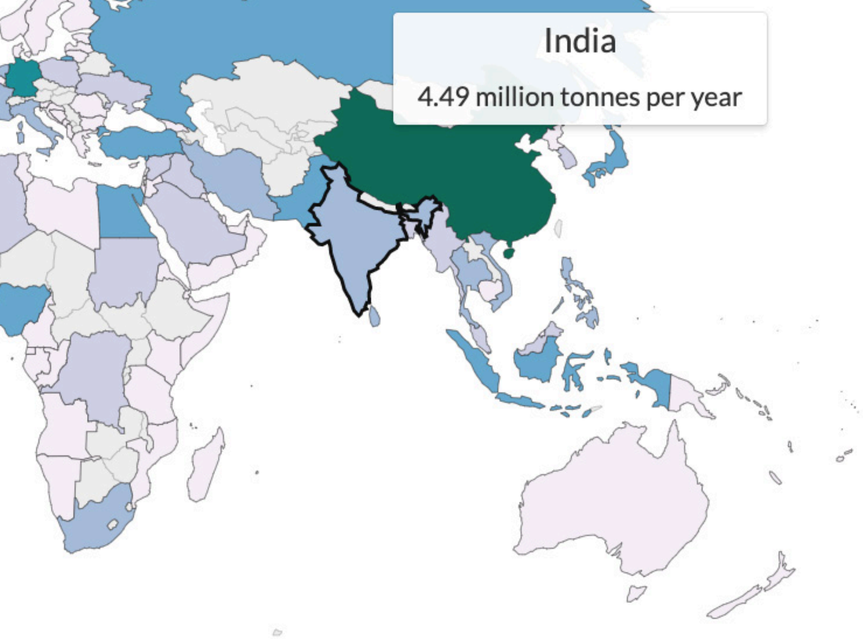
Overall, however, it's likely that for some organisms, the presence of microplastic particles in the gut (where food should be) can have negative biological impacts.

IMPACT OF MICROPLASTICS ON HUMANS

The Indian plastics industry made a promising beginning in 1957 with the production of polystyrene. Thereafter, significant progress has been made, and the industry has grown and diversified rapidly. The industry spans the country and hosts more than 2,000 exporters. **It employs about 4 million people and comprises more than 30,000 processing units, 85-90 percent of which are small and medium-sized enterprises.**



HOW MUCH OF PLASTIC THAT IS PRODUCED IS RECYCLED ?

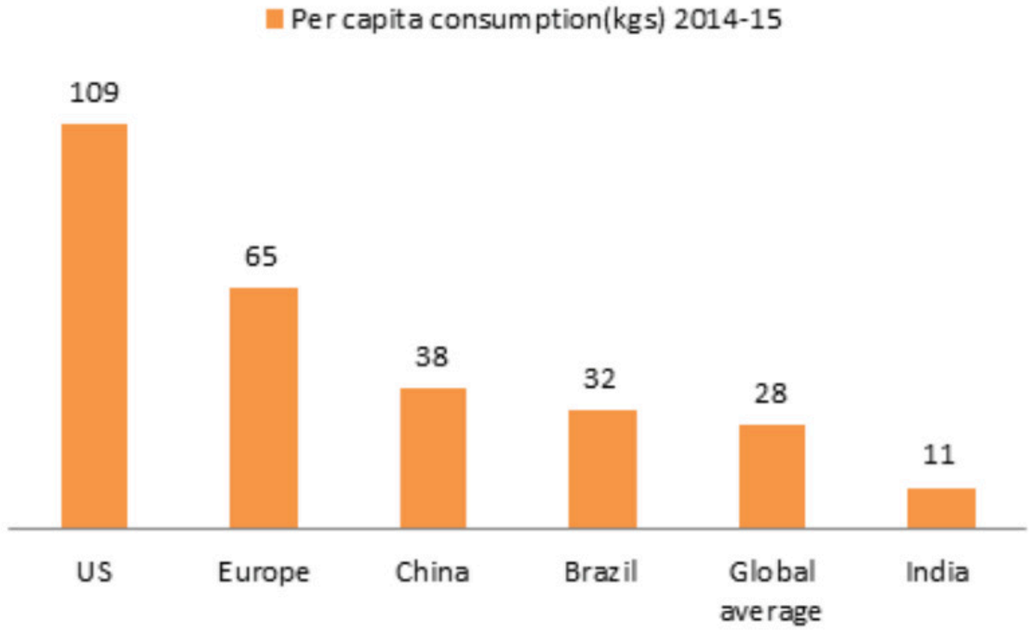


ONLY 60% OF THE TOTAL PLASTIC WASTE IS BEING RECYCLED

Households generate maximum plastic waste, of which water and soft drink bottles form a large number.

The seas near Mumbai, Kerala and the Andaman and Nicobar Islands are among the worst polluted in the world.

Several GHG gases are emitted from the landfills. Among them, carbon dioxide and methane constitute 90 to 98%.



LANDFILLS ?

carefully designed structure built into or on top of the ground in which trash is isolated from the surrounding environment (groundwater, air, rain). This isolation is accomplished with a bottom liner and daily covering of soil. A sanitary landfill uses a clay liner to isolate the trash from the environment. A municipal solid waste (MSW) landfill uses a synthetic (plastic) liner to isolate the trash from the environment.

LANDFILLS IN INDIA

Landfilling is one of the major municipal solid waste (MSW) disposal methods practiced worldwide.

Though it is considered most cost-effective means of waste disposal, but poor management practices especially in developing countries like India are the major causes of environmental pollution.

Toxic gas emissions from landfills pose a serious threat to the environment as well as on human health.

Landfills also generate a toxic soup known as leachate, formed when waste is subjected to biological and physico chemical transformation (Swati et al , 2018).

https://science.howstuffworks.com/environmental/green-science/landfill3.htm

WHAT IS THE AMOUNT OF WASTES PRODUCED IN INDIA ?

Waste management in India falls under the purview of the Union Ministry of Environment, Forests and Climate Change (MoEF&CC).

In 2016 this ministry released the Solid Waste Management (SWM) Rules, 2016, these rules replaced the Municipal Solid Wastes (Management and Handling) Rules, 2000 which had been in place for 16 years.

Urban India (about 377 million people) generates 62 million tonnes of municipal solid waste each year, of this about 43 million tonnes (70%) is collected and 11.9 million tonnes (20%) is treated. About 31 million tonnes (50%) is dumped in landfill sites.

https://link.springer.com/referenceworkentry/10.1007%2F978-3-319-58538-3_167-1

LANDFILLS

EVOLUTION OF DISPOSABLE METHODS

Ancient and medieval solid waste disposal
People on Crete in about 1500 BC put their rubbish in large pits and covered it with dirt.

The earliest laws we have concerning garbage dumps comes from Athens, Greece in about 500 BC. They mandated dumping trash at least a mile out of town. And explicitly not in the streets.

https://sustainingourworld.com/2011/09/22/the-past-present-and-future-of-solid-waste-disposal/

Medieval europe disposal

In 200AD , Rome instituted the 1st sanitization force employed 2 men to pick the garbage and dumped it into a wagon and took it way and threw in a downstream.

Similar practice continued in the in the medieval europe .

As history shows that french failed to follow the rome , as the enemy could jump on the trash piled up and invade the french.

Early dumping system is considered unhealthy , it attracted many diseases and people never knew the reason. The garbage piles attracted many mices , insects and birds, vermin was the cause of plaque

EVOLUTION OF DISPOSABLE METHODS

https://sustainingourworld.com/2011/09/22/the-past-present-and-future-of-solid-waste-disposal/

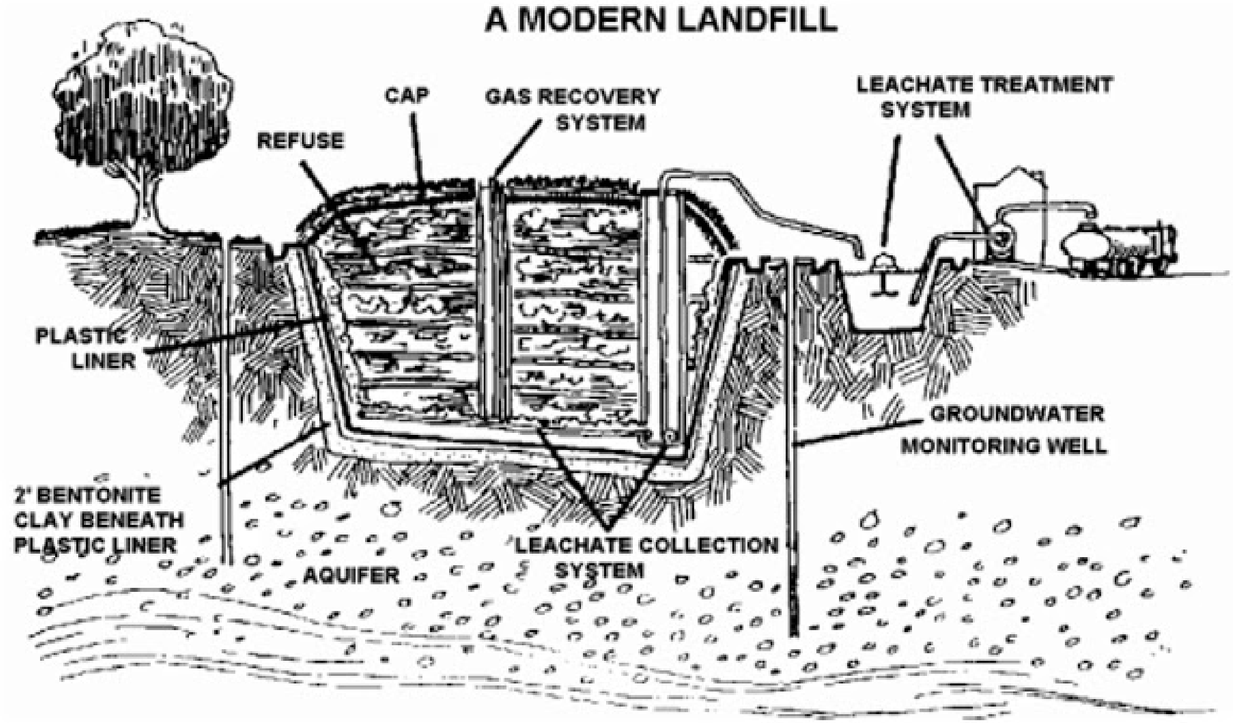
MODERN TECHNIQUES OF DISPOSAL

What we call a small town is likely to be larger than many ancient cities.

beginning of the Industrial Revolution, we must dispose of not only household wastes, but industrial wastes as well.

We recycle or compost about a third of it and burn about an eighth of it, but we send more than half of it to landfills. Landfills use heavy machinery to compact the waste. That makes it take less room in the dump. It also cuts down on foul odors and gives less encouragement to vermin.

A landfill takes care of the problems of odor, vermin, and pollution of streams.



HOW BISLERI IS USING ITS ‘BOTTLES FOR CHANGE’ INITIATIVE TO ENCOURAGE PEOPLE TO RECYCLE PLASTIC?

https://yourstory.com/socialstory/2019/12/bisleri-backed-initiative-plastic-awareness-recycling?utm_pageloadtype=scroll

Bottles for Change’, launched in 2017 by Bisleri, is changing the way Indians view plastic consumption and disposal. Under the initiative, it collects plastic waste and converts it into usable products such as fabric, handbags, window blinds, and benches.

India: Plastic Facts

Size of plastics industry
₹110,000 cr

No. of companies/units
Over 30,000

Plastics consumption
13 mn tonnes per year

Waste generated
9 mn tonnes per year

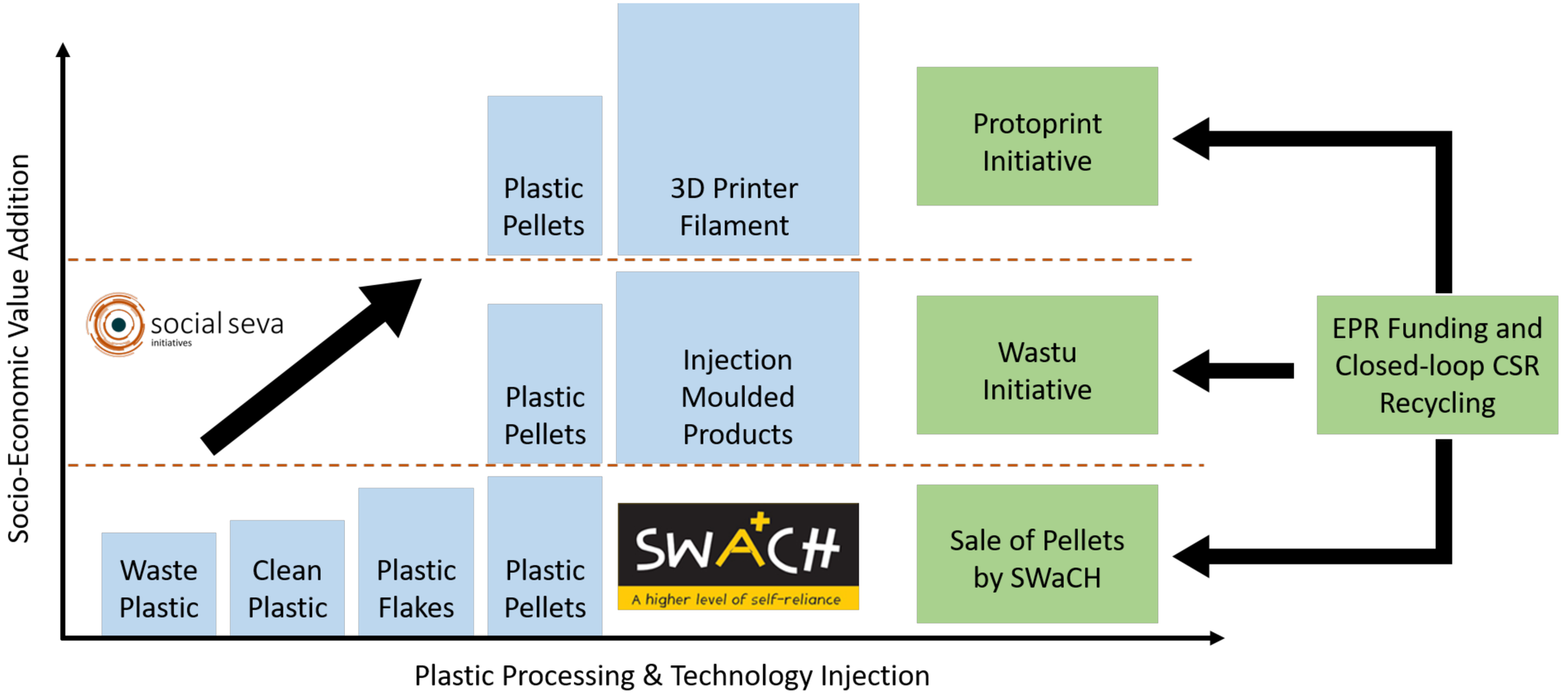
Amount recycled
60%

Source: All India Plastic Manufacturers Association, CPCB, MoEF

https://yourstory.com/socialstory/2019/12/bisleri-backed-initiative-plastic-awareness-recycling?utm_pageloadtype=scroll

IN PUNE, SOCIAL SEVA INITIATIVES IS TRYING TO DEVELOP A PROCESS TO CONVERT HIGH DENSITY POLYETHYLENE WASTE INTO FILAMENTS THAT CAN BE USED IN

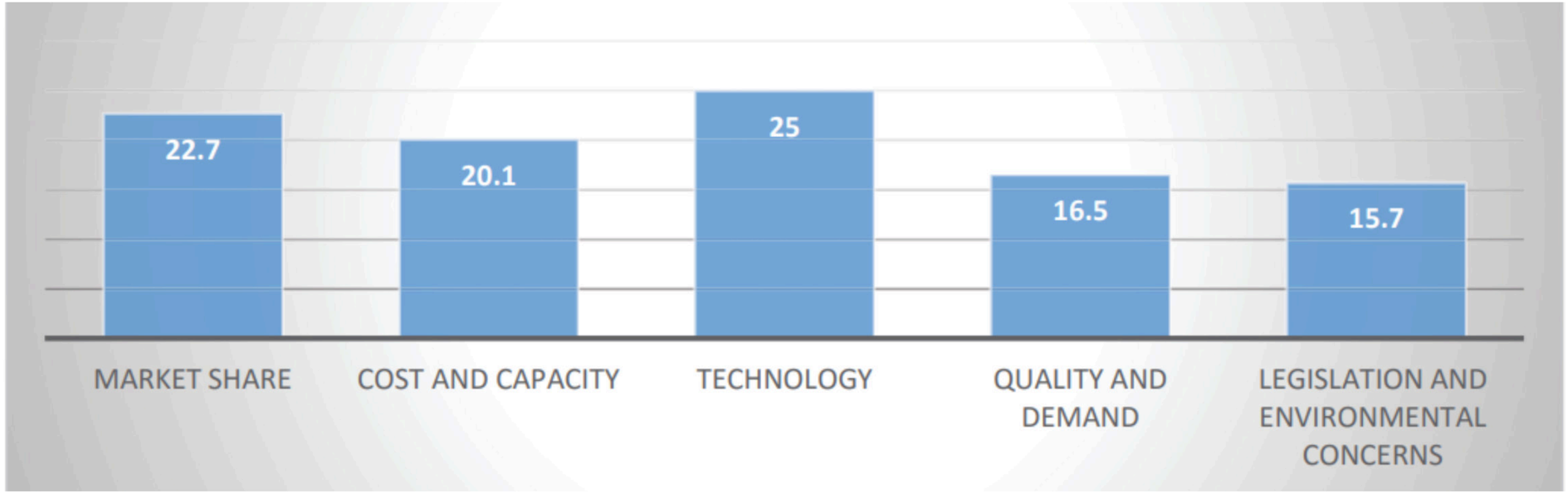
3D PRINTING


Socio-Economic Value Addition
Plastic Processing & Technology Injection
social seva
initiatives
Waste Plastic
Clean Plastic
Plastic Flakes
Plastic Pellets
Plastic Pellets
3D Printer Filament
Plastic Pellets
Injection Moulded Products
SWaCH
A higher level of self-reliance
Protoprint Initiative
Wastu Initiative
Sale of Pellets by SWaCH
EPR Funding and Closed-loop CSR Recycling

RESEARCH QUESTION

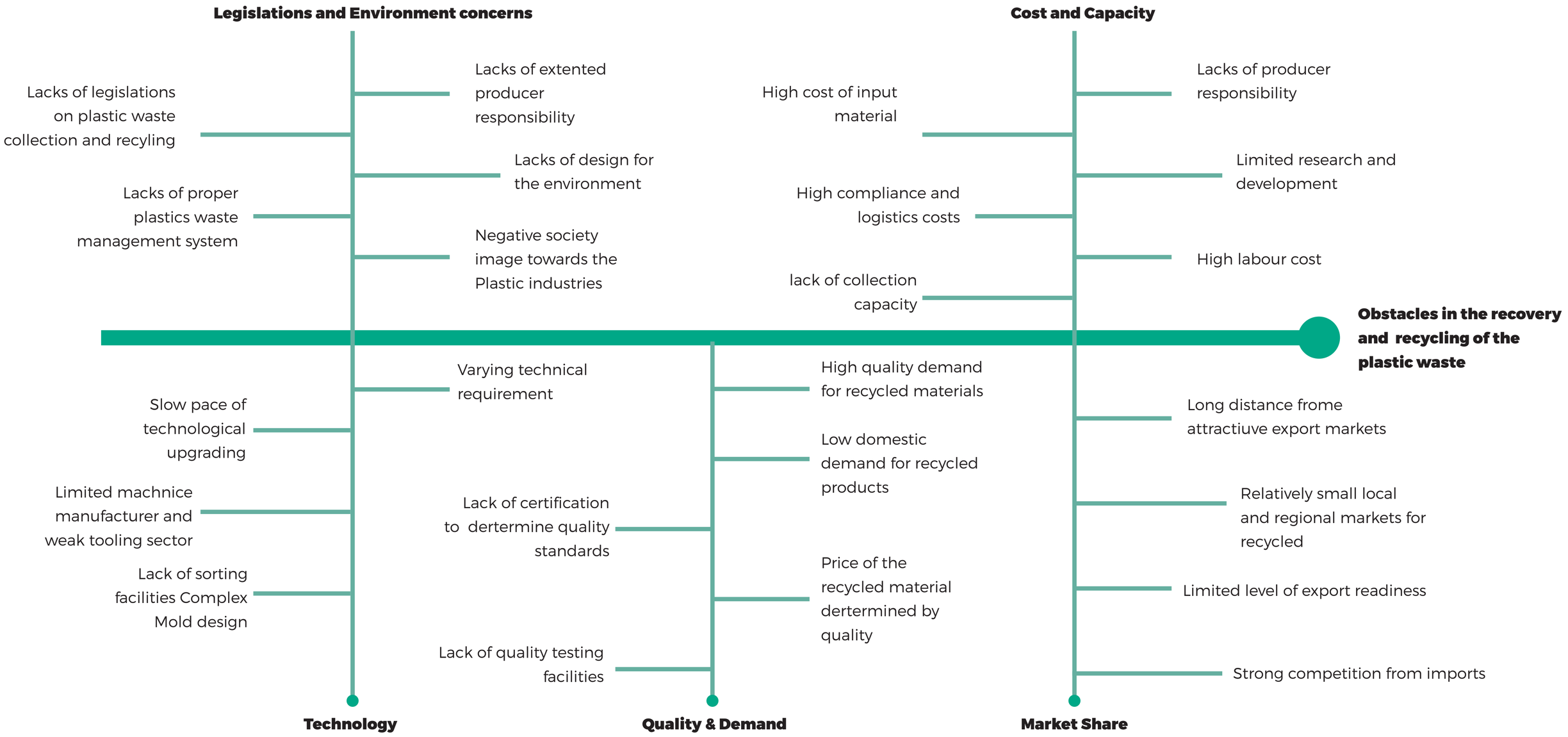
EVERYDAY THERE IS A CONTINUOUS INCREASE IN PRODUCTION OF PLASTIC AND VERY LESS RECYCLABILITY OF IT ?

OBSTACLES OF SUSTAINABLE PLASTIC INDUSTRIES



https://www.sciencedirect.com/science/article/pii/S2351978917300276

ANALYSIS


Legislations and Environment concerns
Lacks of legislations on plastic waste collection and recyling
Lacks of extented producer responsibility
Lacks of design for the environment
Lacks of proper plastics waste management system
Negative society image towards the Plastic industries
Cost and Capacity
High cost of input material
Lacks of producer responsibility
Limited research and development
High compliance and logistics costs
High labour cost
lack of collection capacity
Obstacles in the recovery and recycling of the plastic waste
Varying technical requirement
Slow pace of technological upgrading
Limited machnice manufacturer and weak tooling sector
Lack of sorting facilities Complex Mold design
Technology
High quality demand for recycled materials
Low domestic demand for recycled products
Lack of certification to dertermine quality standards
Price of the recycled material dertermined by quality
Lack of quality testing facilities
Quality & Demand
Long distance frome attractiuve export markets
Relatively small local and regional markets for recycled
Limited level of export readiness
Strong competition from imports
Market Share

RECOMMENDATION

X Creation of domestic markets for recycled plastics

X Ensuring material applicability in the manufacturing process

X Substitution of virgin materials and prevention of downcycling

X Transactional cooperation on plastic waste recycling

X Enforcement of legislations and laws on plastic waste recycling

“INDIA’S PLASTIC WASTE CRISIS IS TOO BIG, EVEN FOR MODI”

INDIA’S MOST PLASTIC WASTE PRODUCED STATE

India generates nearly **26,000 tonnes of plastic waste every day,** making it the 15th biggest plastic polluter globally.

Plastic accounts for 8% of the total solid waste generated in the country annually, with Delhi producing the biggest quantity, followed by Kolkata and Ahmedabad,” said a 2018 report (pdf) by the Delhi-based The Energy and Resources Institute (TERI), citing data from India’s central pollution control board (CPCB).

https://qz.com/india/1693117/indias-plastic-waste-crisis-is-too-big-even-for-modi/

WHY IS DELHI PRODUCING THE BIGGEST QUANTITY OF WASTES IN INDIA ?

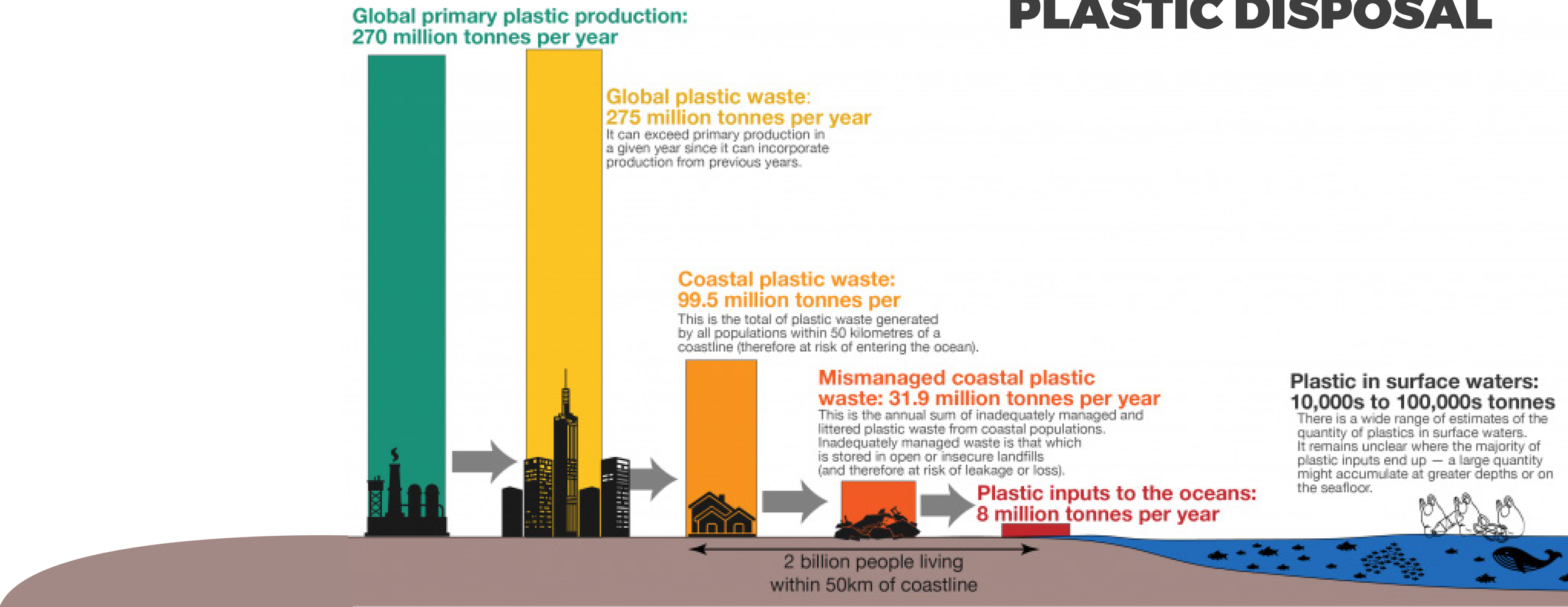
“The plastic waste we generate daily is not recycled or reused and neither is there a foolproof system of disposal”.says Kavita Ashok, president and founder of a Delhi-based NGO Tree for life.

INADEQUATE LAWS

“The various laws enacted failed due to a lack of people’s will. Until citizens are themselves aware and take a pledge to avoid plastic use, no law can be effective,” says Anand Arya, a Delhi-based environmentalist.

https://qz.com/india/1693117/indias-plastic-waste-crisis-is-too-big-even-for-modi/

LIFE CYCLE OF THE PLASTIC DISPOSAL



SINGAPORE

The country who took waste management to the next level

SINGAPORE WASTE MANAGEMENT SYSTEM

Sustainable solid waste management involves the people, private and public sectors. Working hand in hand with these key stakeholders, NEA has developed a range of initiatives and programmes to curb waste growth.

At source where the waste is generated, recyclables are sorted and retrieved for processing to conserve resources. The remaining waste is collected and sent to waste-to-energy plants for incineration.

Incineration reduces the waste by up to 90 per cent, saving landfill space, and the heat is recovered to produce steam that propels turbine-generators to generate electricity, providing up to 3 per cent of the island's electricity needs.

The incineration ash and other non-incinerable wastes are then transported to the Tuas Marine Transfer Station (TMTS) from where they are barged to Semakau Landfill for final disposal.

Though this might no be supporting in the future which is in the next 30 years singapore assure to come up with new infrastructure to fight it.

One thing to take into consideration is the involvement of the government and the innovative design created to overcome the waste disposal.

https://www.eco-business.com/news/how-will-singapore-defuse-a-16-year-waste-timebomb/

https://www.eco-business.com/news/how-will-singapore-defuse-a-16-year-waste-timebomb/

“THOUGH SINGAPORE IS AN ADVANCED COUNTRY TECHNOLOGICALLY HERE ARE SOME PROBLEMS EVEN SINGAPORE IS FACING “

One reason why Singapore’s domestic recycling rate is so low—22 per cent is that residents often believe that even if they put clean items in the blue recycling bins, they’ll be dumped in with regular waste and incinerated anyway. So how will the #RecycleRight campaign address that concern?

WHAT CAN OTHER COUNTRIES LEARN FROM SINGAPORE'S WASTE STORY?

Ong Soo San: One area is construction waste. Singapore is resource constrained, so it is imperative for the industry to look at how to close the loop and reuse as much material as we can. For every demolition project, the waste material is tracked and recycled. As such, Singapore recycles 99 per cent of our construction waste.

RESEARCH CONCLUSION

Analysing the waste production and processes followed by india which would lead to a future crisis for the next coming generations, a strong initiative should be taken by the government and authorities concerned. The proper way to do it, would be educating the public and bringing a smarter solution to be a helping hand to the plastic recycle industry.

Finalizing

DESIGN BRIEF

DESIGN BRIEF #2

REDEFINING MY BRIEF- PROJECT DOMAIN

THE BATTLE OF PLASTIC BOTTLES

(WHY THE PLASTIC BOTTLE IS STILL AFFECTING OUR ENVIRONMENT)

Context

After my research on understanding the situation of the waste management system, I took interest in one particular subject which has been affecting the environment since the dawn of technology.

The Plastic bottle industry: an industry that thrived on consumerism and exceeded the boundaries of luxury by becoming an essential item in an average person's life. Despite the fact that tap water is declared safe for consumption by the EPA, 1500 plastic water bottles are being used every second in the United States alone. These stats make the United States the biggest bottled water market in the world, strongly profiting the likes of Coke, Pepsi, and Nestle who own and commercialize some of the largest bottled water companies.

However, this multimillion-dollar industry does not come without a cost - a different type of cost that is, unfortunately, being paid for by the environment.
While the reduction of plastic bag usage has been holding the spotlight, plastic bottles play just as big of a role in this global situation. A few examples of how plastic bottle usage is impacting the environment include overflowing landfills, requiring high amounts of fossil fuel for production, and covering the ocean surface with plastic products.

DESIGN BRIEF #2

Design Brief

Rethink a new way to encourage people to dispose of it in the right way. Bring a smart city initiative and use smart technology to improve the system. Build a platform where authorities(public or private) concerned can join forces to avoid these waste to end up in our environment.

Consideration

- Make people dispose of plastic in the right way
- Design a rewarding system to keep the public engagement to repeat the same behavior
- Identify hotspots places where intervention is necessary
- Help to ease the segregation of plastic bottles waste

BUILDING PERSONAS

Who are they ? / What are their main Goals & what do they want? /
Pain points / What motivated them to do the right gesture ?

Who are they ?

General Public at public places Malls/ Supermarket/ The beach/ Educational premises/ Work environment..etc

Food industries / business who are involved in selling and manufacturing plastics Ex: Beverages Manufacturer- Coca Cola,Nestle,PEPSICO

Private or Public organization who is in charge of the transportation, disposal, and recycling of these bottles

What are their main Goals & what do they want?

General Public
Dispose of plastic waste in an effortless manner.

Food industries / business
Collecting and disposal of plastic waste

Private or Public Organization
Waste Segregation and Recycling

Pain Points

General Public
How easily the user can find a disposal medium

Food industries / business
Expenses for disposing of the plastics waste

Private or Public Organization
Bringing awareness to the public and have the proper technology and manpower to collect the waste and recycle them.

What motivated them to do the right gesture?

General Public/Food industries or business/Private or Public Organization
Maintain cleanliness and protect the environment

STAKEHOLDER IN PLASTIC PRODUCTION AND RECYCLING

Public

Household

Public Places (Mall,supermarket,theaters)

Business

Food business (Restaurant, Delivery services)

Packaging (cosmetics,beverages,general food)

The Plastic bottle

Government

Municipal waste management

Recycling factory

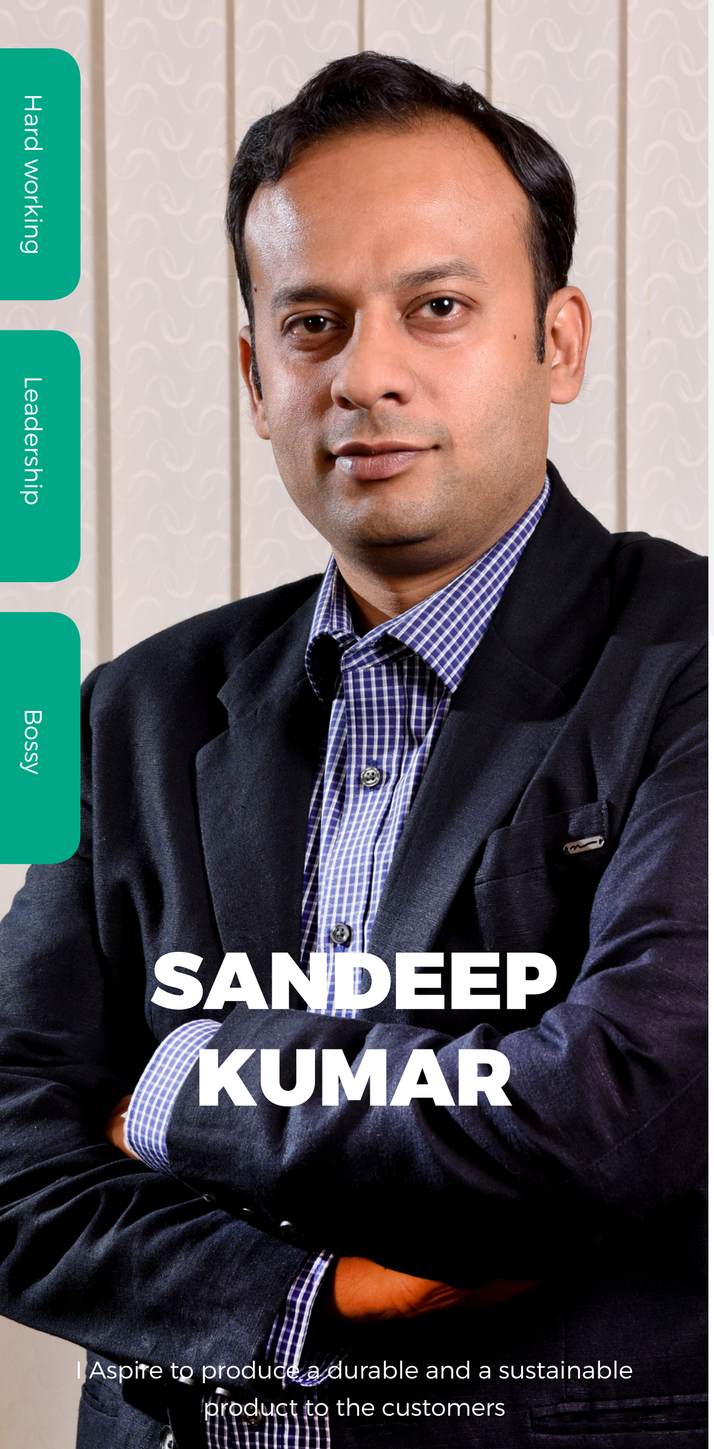
NGOs

Recycling factory

Awaerness center/group

Factories

Packages/ General plastic items



Hard working

Leadership

Bossy

SANDEEP KUMAR

I Aspire to produce a durable and a sustainable product to the customers

Motivation

- Insensitive
- Fear
- Achievement
- Growth
- Power
- Social

Personality

Extrovert	Introvert
Sensing	Intuitive
Thinking	Feeling
Judging	Perceiving

Bio

Sandeep is a one of the leading parties in the plastic manufacturing industry in india. Having an experience of 30 years in this field some years back he started facing a problem , due to the high increase in the biodegradable and tupperware products people started to have a negative views on the plastic industry which is leading to the loss in the profit of plastic industry. So sandeep kumar wants to make his industry look more sustainable for the environment and to do so he needs a technological advancement for the quality recycling.

Age: **56**

Occupation: **industrialist**

Status: **Married**

Location: **Mumbai**

Frustration
Negative image created on the plastic industries.

Goals
Sandeep want to start recycling plastic and to do so he will have to employ knowledgeable people and purchase new machines

PERSONA #1

EMPHATY MAPPING

THINK

How will i make my industry self-sustainanal

How will i change people mind regarding the plastic industry

How expensive is it to sustain a recycle industry

SAY

Promise in the coming years to adotp sustainable system so that his employee job is not threaten

Will parthner will recyle industry

FEEL

Will i be force to close down in future because the environment issues

Do i risk going bankrupt if the society doesn't need my product

Did i make a good decide to enroll in this field. Was it a waste of money or time

SANDEEP KUMAR

DO

Adotp sustainable initiative

Starts recycling his plastic that he produce

Inform himself about the recycle industries

HEAR

Plastic product should be completely ban.

Plastic industry is an environmental treat

All industry should follow a sustainable approach

SEE

Not much development in plastic industry

Numerous industries providing other kind of material like metal or wood are growing better

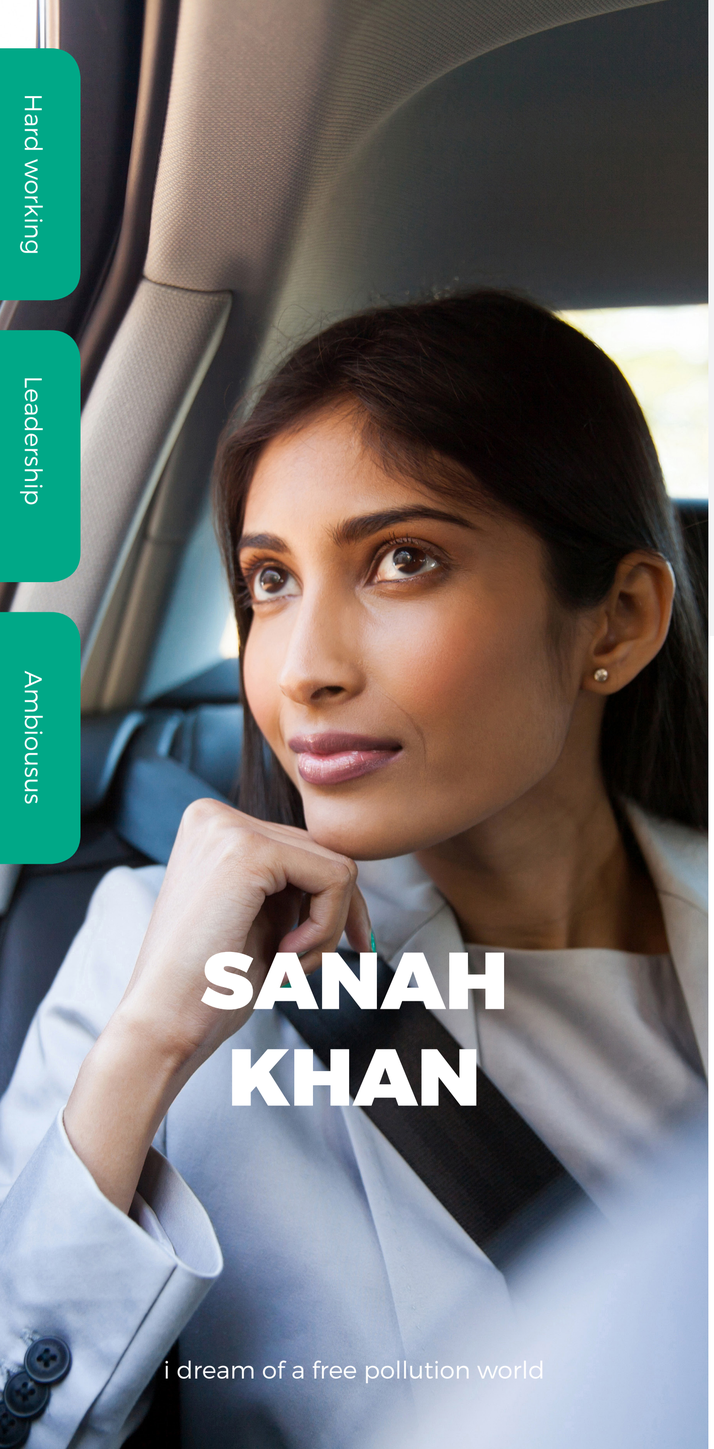
Lots of campaign being held to target plastic industry and its impact to the environment

JOURNEY MAPPING

Tasks and Goals	Consult an existing recycle industry	Partnership with plastic waste supplier	Purchase the location and machinery	Employ new people	Gather plastic waste	Start the recycling process
Actions	Identify the right industry	Contacting the local waste management authorities and NGO concern	Locating the safest zone and away from the local people	Using online communication tool and promoting in the local market	Gather the plastic from the plastic waste supplier	Making sure everything is in order before starting
External factor	Not finding the proper person to get information	Not getting any partnership to work with	Cost higher than expected	Not getting qualified people	Unavailability of proper plastic for the recycling process	Breakdown in the system resulting in slowing the process
mindset	Gathering information and insights on how the recycle industry works	Trust would be an issue	Is he getting the best quality in the market	Trust issues: will these people do their jobs properly	Will it come in time Will the quantity scherfy	Questioning himsel if everything is in place and will everything run smoothing as planned
Opportunity	Making new contact in the business	Making new contact and also he doesn't need to find the waste himself	Getting the latest machine with a good price	Opportunity for new ideas and increase in the manufacturing process	Cleaning the environment	Changing people's mindset about the plastic industry

Sandeep want to start recycling plastic and to do so he will have to employ knowledgeable people and purchase new machines

Goals
-change people mindset about the plastic industry
-Start recycling for the benefit of the environment
- Generate new profits



Motivation

- Insensitive
- Fear
- Achievement
- Growth
- Power
- Social

Personality

Extrovert	Introvert
Sensing	Intuitive
Thinking	Feeling
Judging	Perceiving

Bio

Sanah a passionate defender of the wellbeing of nature, she started her business of plastic recycling 7 years ago. She came a long way from having a group of friends roaming around the streets picking up plastics waste to owning her own plastic recycling factory. One of the problems that Sanah has been facing throughout the year is the segregation of waste. She spends lot of money employing people and getting machine to separate and clean the plastics from the other waste.. Even if there is a proper system for segregation the public is very stubborn to follow it.

Age: **29**

Occupation: **Run a Recycle company**

Status: **Single**

Location: **Pune**

Frustration
Encourage the public to segregate their waste so that she doesn't waste money to pay people to do it

Goals
Sana inspire she will correct the way people throw their waste

PERSONA #2

EMPHATY MAPPING

THINK

What can i do to spend less time in collecting plastic waste

Who can help me collecting waste more efficiently

new product she can make with the recycle plastic

SAY

I am confidence i will change the country environmental status

i will make india a sustainable country

i believe that indian people will realise their mistake about nature and do something about it

FEEL

Will she one day lose her motivation defending nature

Will she make a big change in protecting the environment

Is she doing the right thing.

SANAH KHAN

DO

Recycling plastic waste and create innovative product

Does research for the development of recycle material to create better products

Create employment for needy people

HEAR

New and better initiative for the environment is being done

Plastic is problems is just increasing in developing country like india

Plastic is problems is just increasing in developing country like india

SEE

Marine life is greatly affected by plastic waste.

Very little is being done by the gouvernment to protect the environtment

Increase in deseases and deathly virus in the society due to unsanitary

JOURNEY MAPPING

Tasks and Goals	Use social media to spread awareness	Target youngsters and educate them about being sustainable	Help inventors of environmental crisis to achieve their goal	Help in the research and development of plastics recycling
Actions	Specify blog instagram/facebook Website page	Organize workshop in college and school to educate the young people	Help them to advertise them to show the world what they are creating	Give students the opportunity to work with her
External factor	Possibility of negative response from the public	Facing student lack of interest and failure on how to convince them to do the right things	Financial problem to develop their ideas till their final stage	Student having different goals
mindset	How will she convince the people who doesn't want to listen	What she will have to tell these student to make them connect with her and understand her passion for preserving the environment	How will she discover these inventors ?	Will she find people as passionate as her ?
Opportunity	Connect on a globe scale	Assure the sustainability drive for the coming generation	Having innovative device to solve environmental crisis of tomorrow	Developing her own industry and bring to the next level

Sana inspire she will correct the way people throw their waste

Hard working

Friendly

Bossy

RAJESH MALOU

Empathy and safety of our workers is the first priority

Motivation

- Insensitive
- Fear
- Achievement
- Growth
- Power
- Social

Personality

Extrovert	Introvert
Sensing	Intuitive
Thinking	Feeling
Judging	Perceiving

Bio

Rajesh is an employee of Orion mall located in the City of Bangalore. He has 30 people under him to manage for the well maintenance of the building. Much of his time is being present in the mall making sure everything is running smoothly. One of the major problem that Rajesh face is managing the trash of the building. Specially the trash coming from the food court all these wastes are dumped and burned all together in a specific place by the staff members of orion mall and they are breathing in the toxic gases while burning them , which is leading to health complications such as clogged lungs , cancers , asthma and other diseases. His concern is to protect the health of his workers.

Age: **27**

Occupation: **Orion Mall employer**

Status: **Single**

Location: **Bengaluru**

Frustration
Pollution affecting the health of his employees.

Goals
To protect the health of his employee and also the environment around. employees.

PERSONA #3

EMPHATY MAPPING

THINK

How to dispose these toxic plastics properly.

I need to protect the health of the people who work for me

I should talk to the owner to change the our disposal method

SAY

i will say to the owner to change the waste management system

i will arrange for safety equipment for my workers

i will contact the local municupality for our waste issue.

FEEL

i feel bad for the health of my people

The landscape of the buring site is really unpleasant to look at.

We all gonna get in trouble one day for the pollution we cause.

RAJESH MALOU

DO

Trying a waste segregation system

I will let the worker who are already sick to go to dispose the waste of the building1

Try his best to provide safety equipment for his workers

HEAR

neigboring people complain about the burning

The place is attracting rats

His people want to change job.

SEE

The place is attracting rats

Local slum dwellers roam on the site in search of anything eatable

Smells coming from the site and disturbing the ambiance of the local market

JOURNEY MAPPING

Tasks and Goals	Give better equipment for his employees	Identify and segregate the waste plastic waste which produce toxic air when burned	Contact a recycle factory to tell them come and collect the waste	The remaining organic waste can be buried instead of burning
Actions	Get mask and gloves for his employees	Use of different bins for different waste	Ask the authority concern to get the waste dispose properly	Get permission for his new idea
External factor	Get permission for his new idea	People not throwing the proper waste in the proper bin	Authorities not accepting his request	Disapproval of his idea
mindset	Will these equipment be sufficient to protect his employees	What other idea can he think of to make people throw waste properly	Will they accept his request	Will she find people as passionate as her ?
Opportunity	Connect on a globe scale	Protect the environment and the people around	Contributing the recycle waste industry	Making the ground fertile

Rajesh want to protect the health of his employee and also the environment around.

Designing a smarter way for users to dispose their pet bottles thus contributing in reducing the amount of plastic thrown away in nature.

Introducing BINX the smart bin

BINX is a whole system of its own promoting the proper disposal of plastic bottles. Its encourage user to dispose bottle properly where the bottles will end up in the recycle factory.

User are awarded with **BINX credits** for every bottles they dispose. BINX credits can be exchange for real money

PROPOSED SOLUTION

UNDERSTANDING THE CREDIT SYSTEM (THE BINX CREDIT)

The BINX credit is a credit system in the BINX app. User have different ways to aquired BINX credit. These credits can be exchange for real money.coupons and can be earn from other users by playing the BINX game.

1 bottle=10 credit
30 credit= Rs5

Money Exachange
Recycle factory
Beverages company
Government
Local Municipality

Provide

BINX credits

Possible Sponsor
Swiggy
Zomato
Bookmyshow
Restaurant
(Dominos)

Provide

Coupons

BINX BIN
User earn BINX credit by diposing pet bottles using the BINX bin

BINX PLAY
User earn BINX credit by betting who can dispose more amount of bottles in a define timeframe

User

How the user earn credit through the BINX app

GETTING SUPPORT FOR BINX

Coca Cola India Private Limited

Our plastic bottles and cans are already 100% recyclable, including the caps and labels. We've also reduced plastics use by doing things like reducing the plastic per bottle. We've also made a nationwide switch to biodegradable paper drinking straws.

https://www.coca-colacompany.com/au/faqs/coca-cola-plastic-crisis

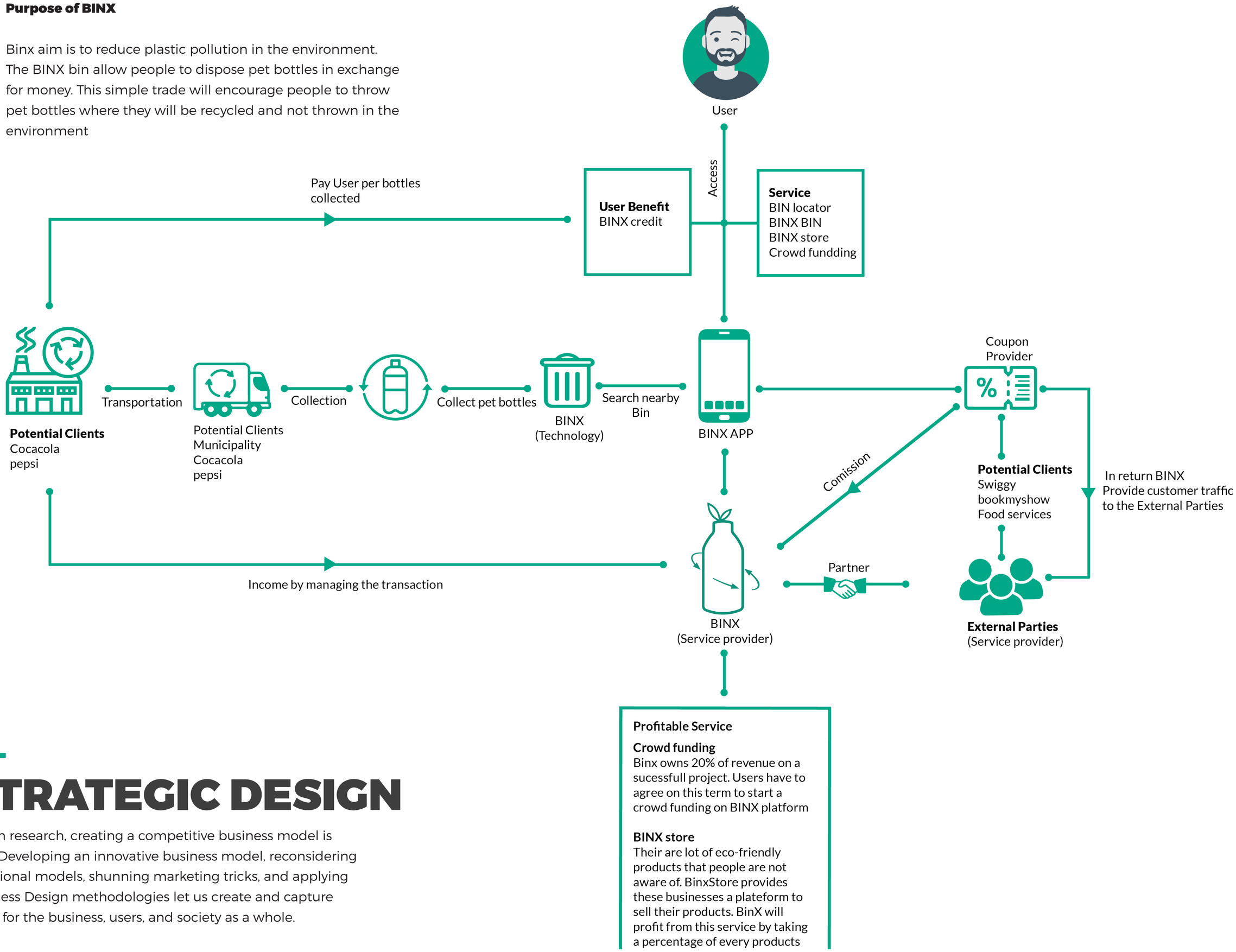
Kyra India

We are "Virat Kraft House" one of growing plastic recycling unit placed out in Southern part of India. We are into manufacturing of granules, preforms and films from our facility. We are looking for PP, HDPE and LDPE regrind, granules supplier, and we are looking forward to associate with you for a long term. We are dealing in the below mentioned plastic regrind, granules

https://www.scrapmonster.com/company/kyra-india/95353

Purpose of BINX

Binx aim is to reduce plastic pollution in the environment. The BINX bin allow people to dispose pet bottles in exchange for money. This simple trade will encourage people to throw pet bottles where they will be recycled and not thrown in the environment



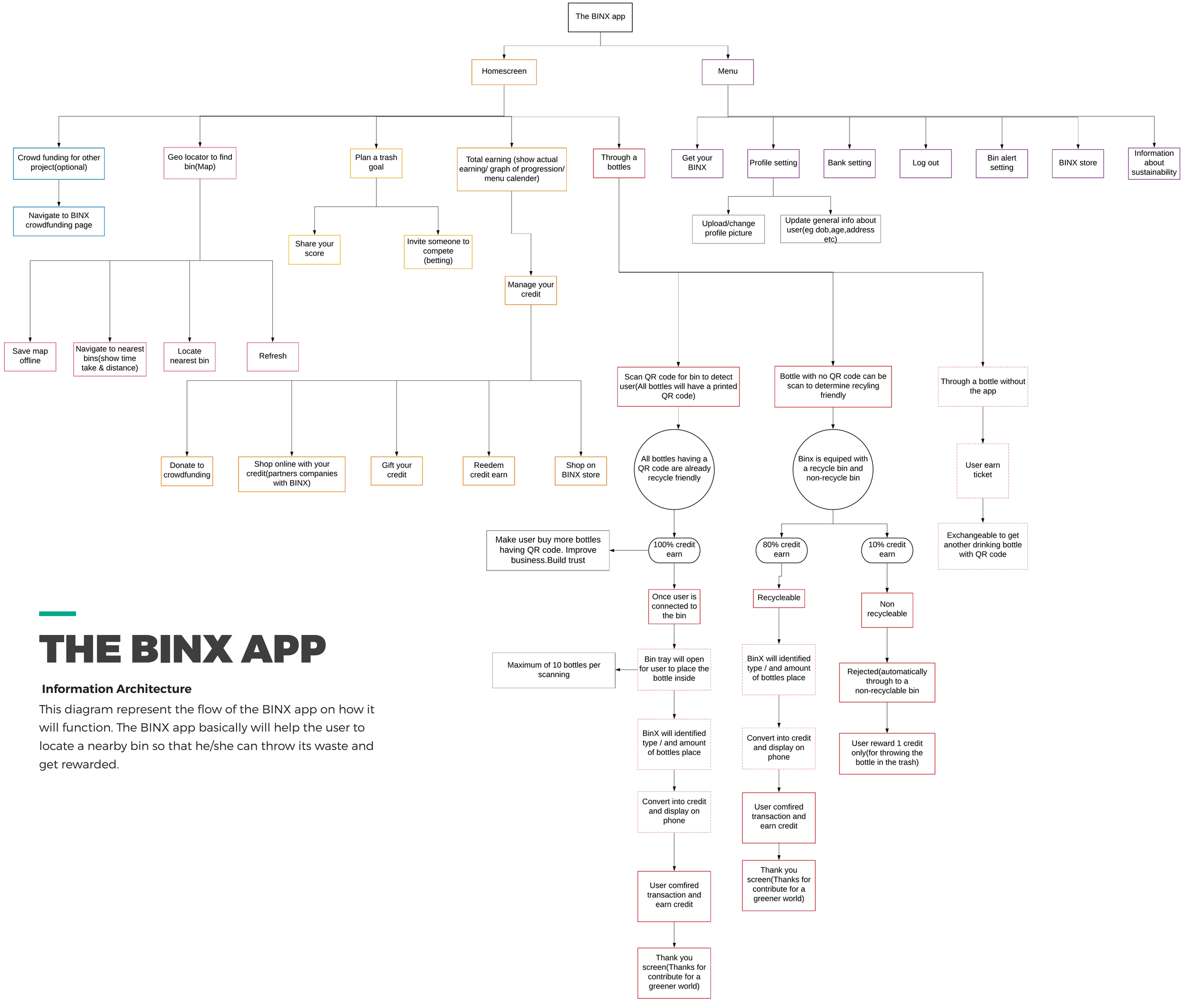
STRATEGIC DESIGN

Like in research, creating a competitive business model is vital. Developing an innovative business model, reconsidering traditional models, shunning marketing tricks, and applying Business Design methodologies let us create and capture value for the business, users, and society as a whole.

THE BINX APP

Information Architecture

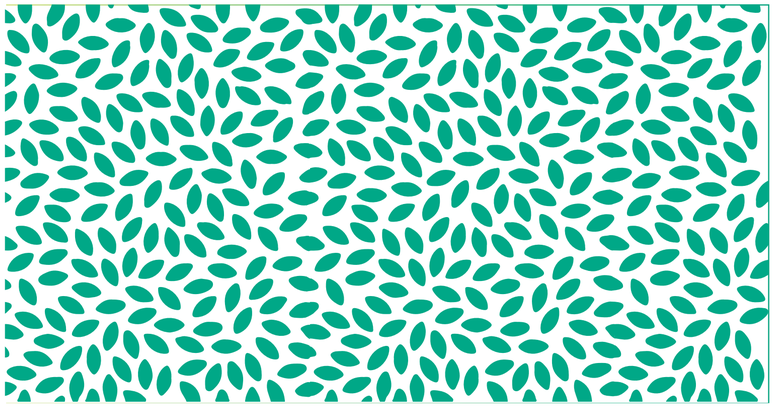
This diagram represent the flow of the BINX app on how it will function. The BINX app basically will help the user to locate a nearby bin so that he/she can throw its waste and get rewarded.



Color Palette

A complement of green colors combination has been used to show the relation with nature and BINX philosophy of protecting it.

Patterns Design



The leaf element was taken from the Logo to create the pattern above

Typography

Lato regular Lato Light **Lato Bold** **Lato Black**

COLORS AND TYPOGRAPHY

BRANDING

Lets make a change

BINX

Why BINX ?

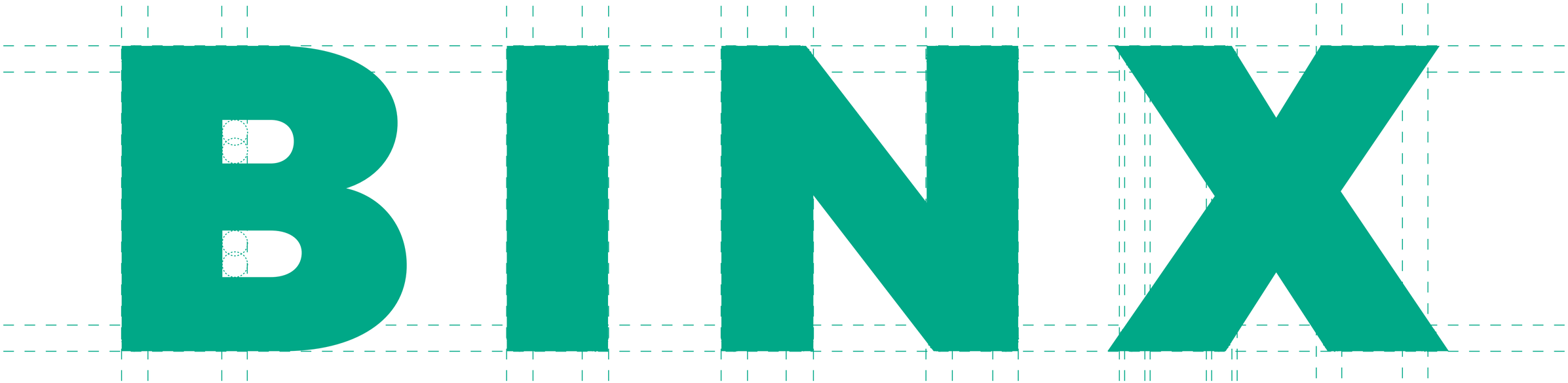
One of the main reason people throw their bottles anywhere they feel is because they can’t find a bin near to them.
The X in the BINX mark the location nearby the user.

FONT NAME : Trueno Black (Modified)

Changing the original type, lining the height of the letters, applied visual kerning, curving the endpoints in order to create a visual balance when used in combination with the mark.

BINX
Modified

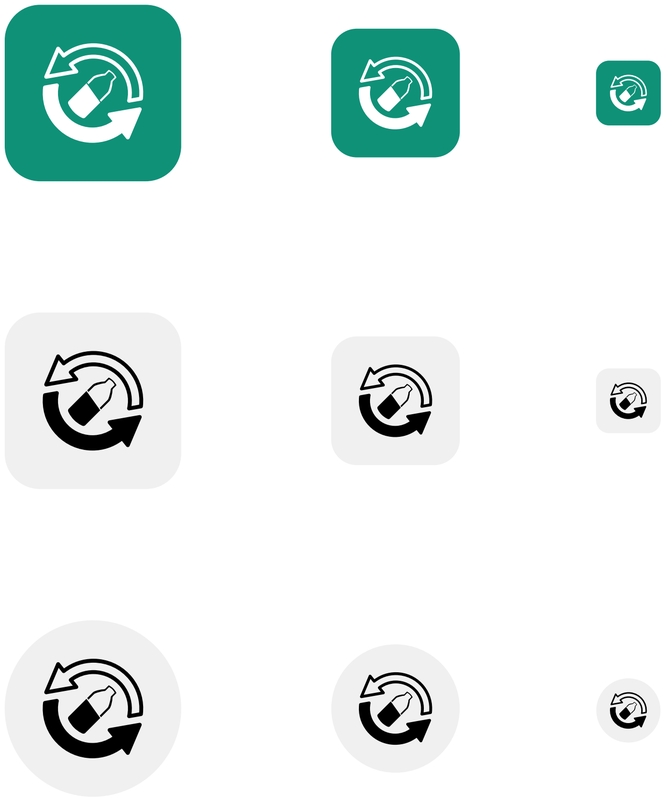
BINX
Original



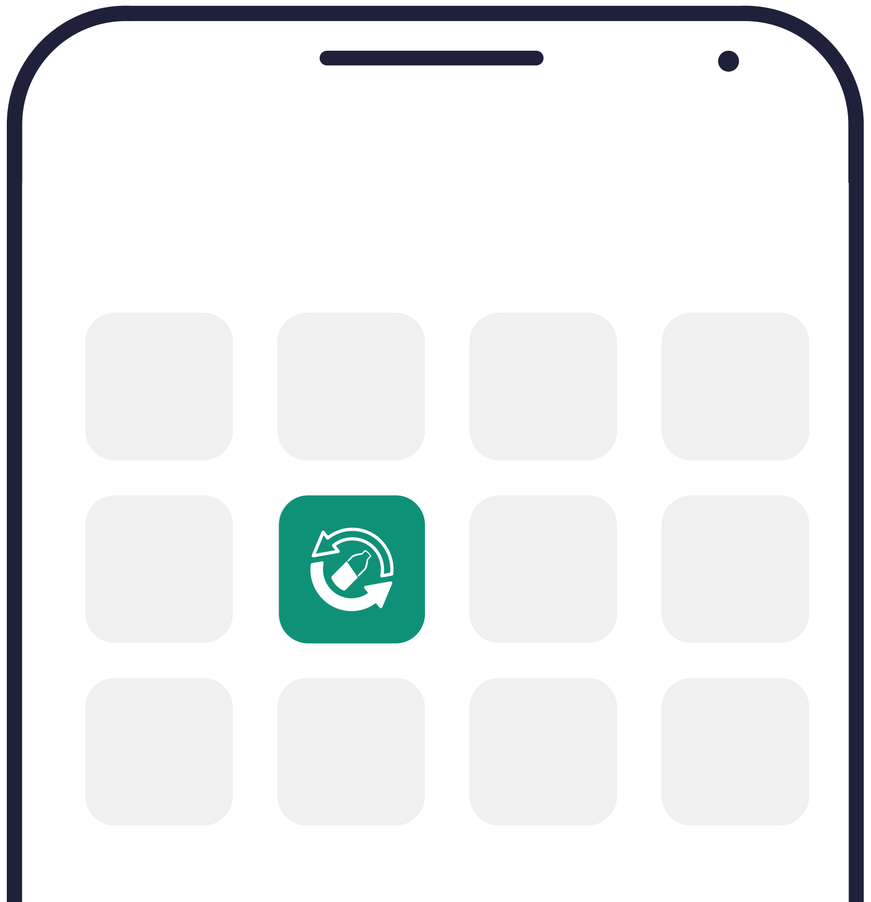
BINX

Color Code: #1f213b

PHONE ICON TESTING



BINX



ILLUSTRATION

The illustrations below are used in the app. These illustrations are for the betting game in BINX, the BINX credits, and illustration that represent the BINX care scheme

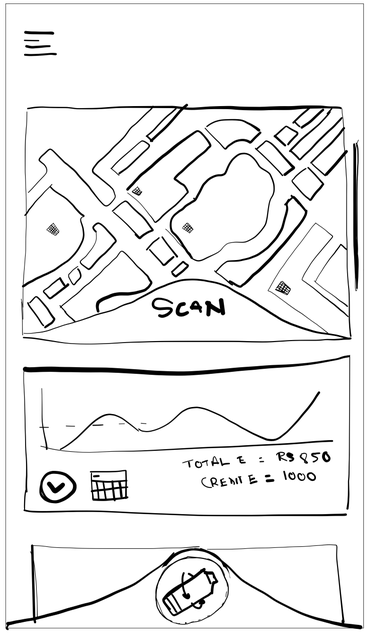


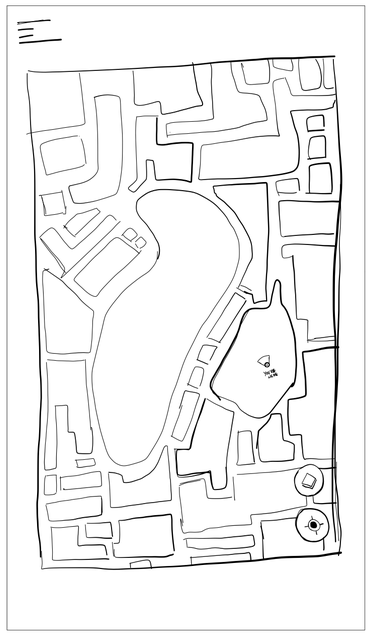






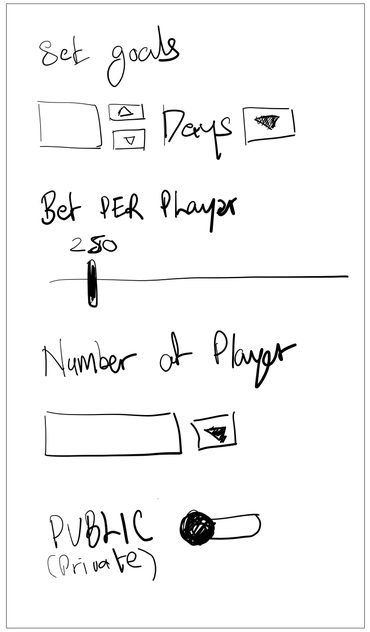
WIREFRAMES





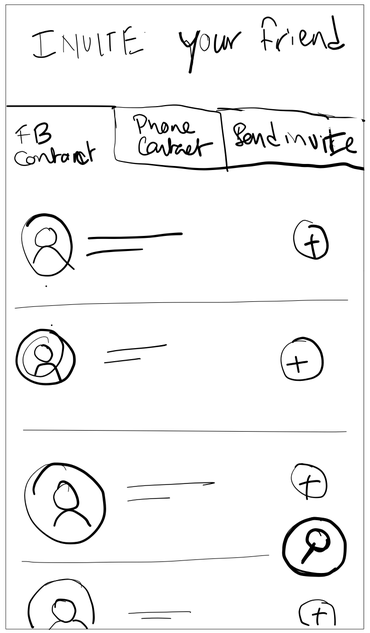
Home Screen

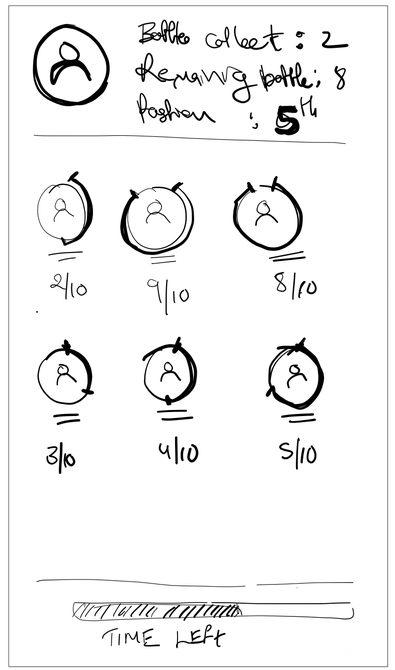
The Home screen give the user direct access to BINX bin locator. The can scan the nearest BIN in the area.



BINX Play

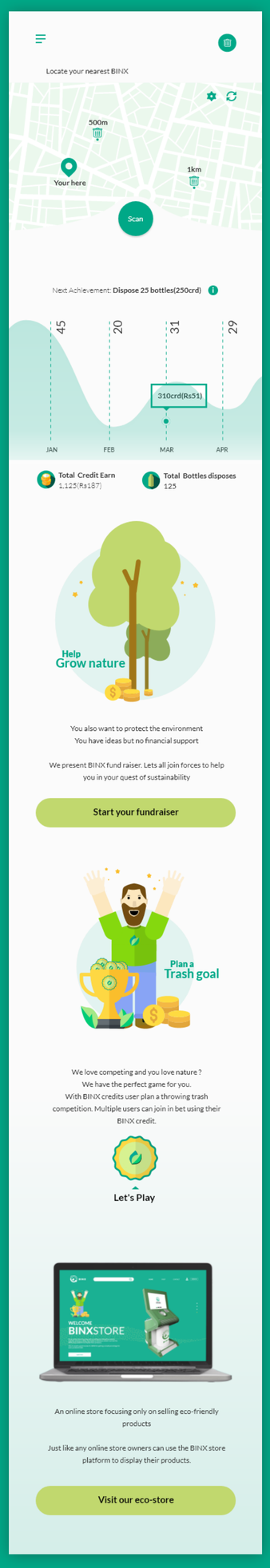
The Home screen give the user direct access to BINX bin locator. The can scan the nearest BIN in the area.

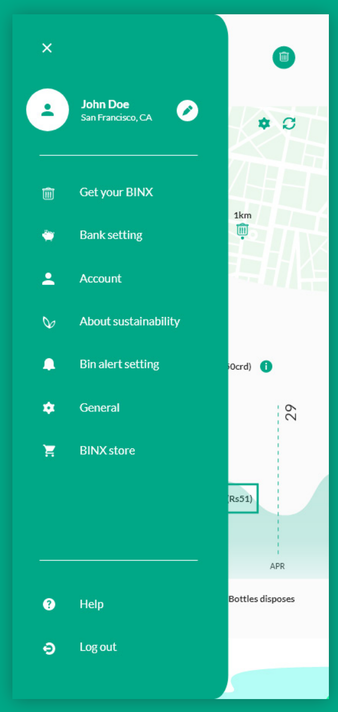


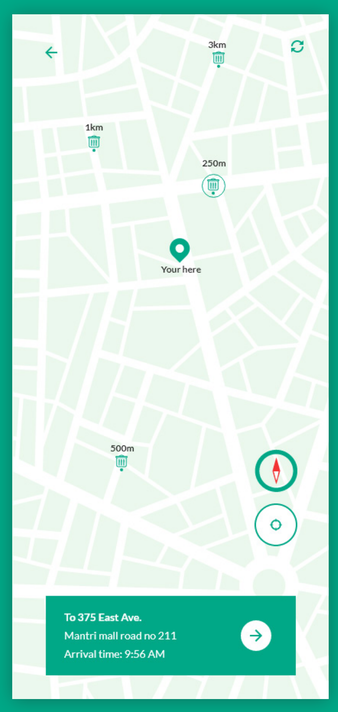


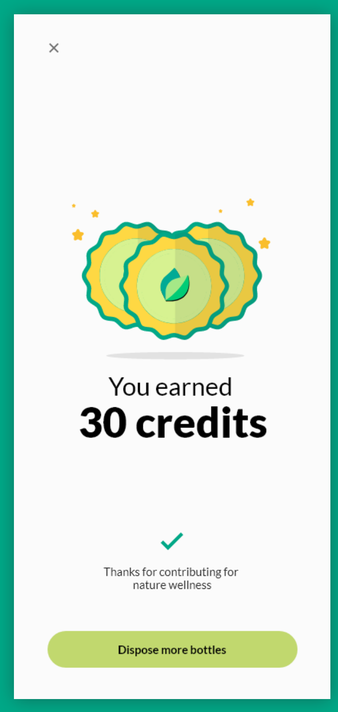
Dashboard

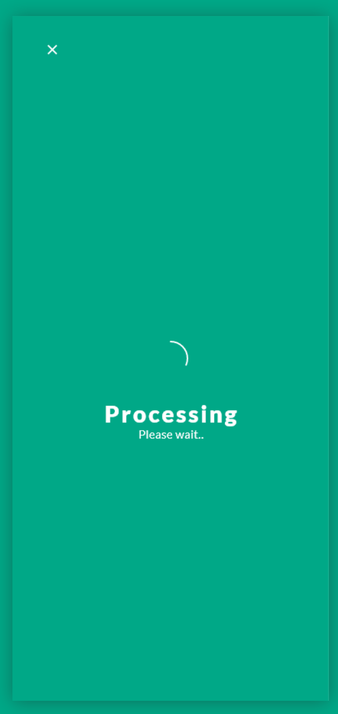
FINAL SCREENS DESIGN

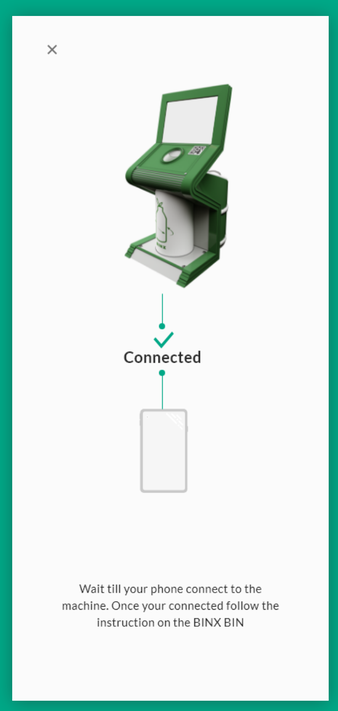


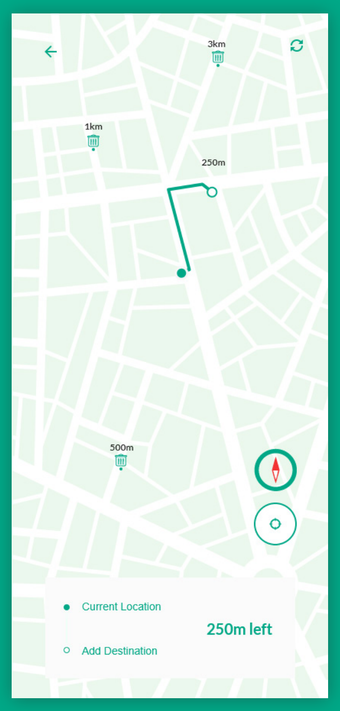


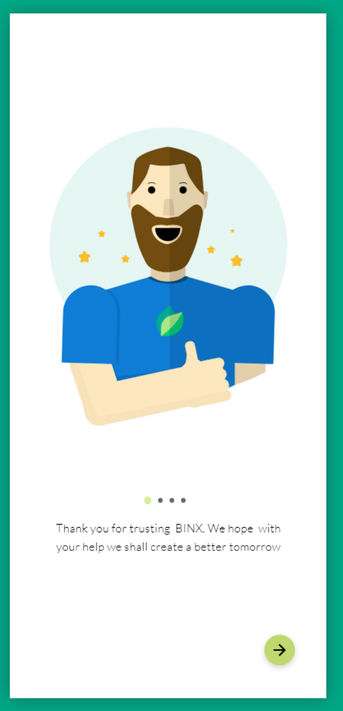


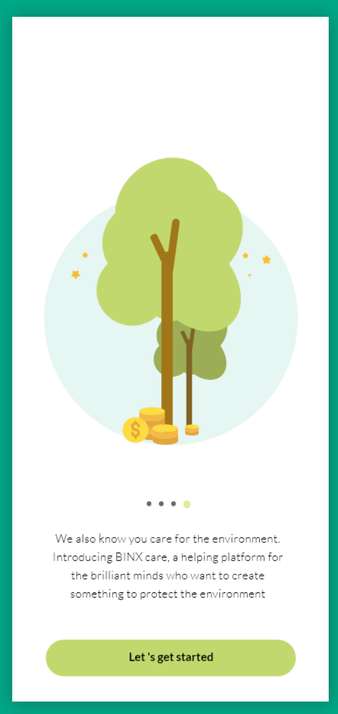


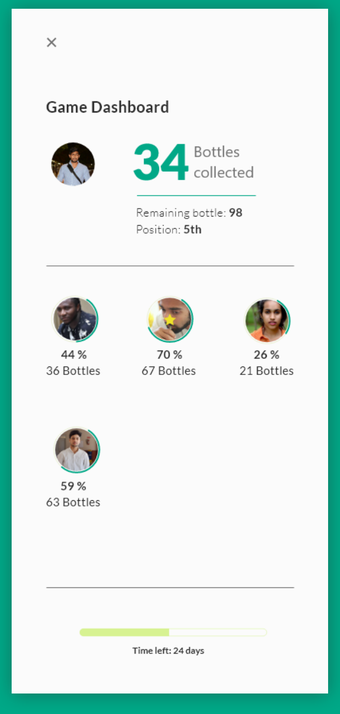


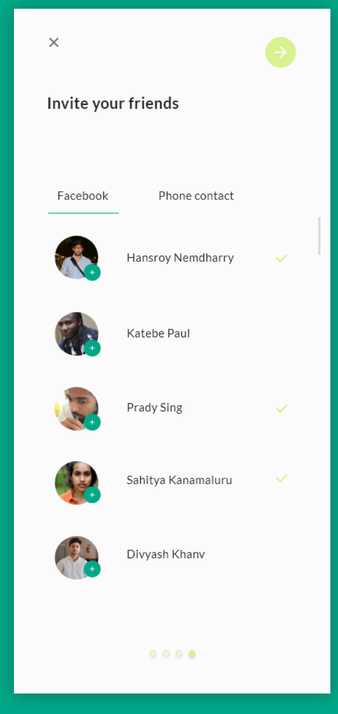


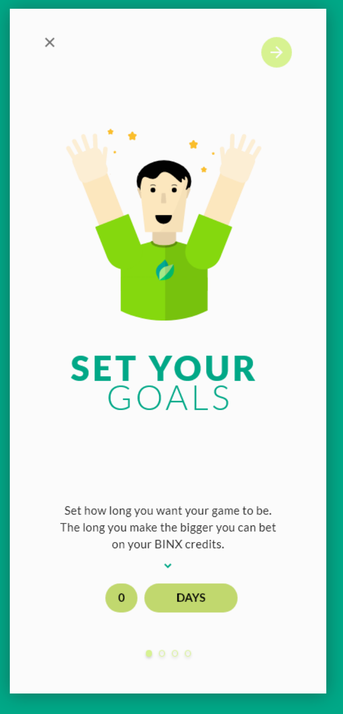






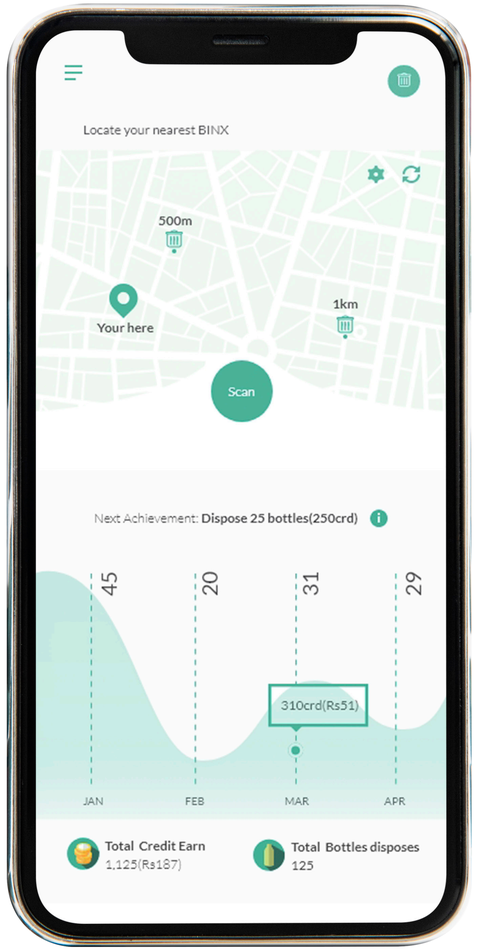






THE BINX BIN

The BINX bin is a smart machine that collects plastic bottles. The user gets connected to the machine through the BINX app so that they can dispose of bottles and get rewarded. Also to maximize the capacity of the bottles the machine can take, the machine is equipped with the crushing mechanism to crush the bottles to save space.



THE BINX APP

The app allows users to use the services provided by BINX. These services are:

- locating BINX bin

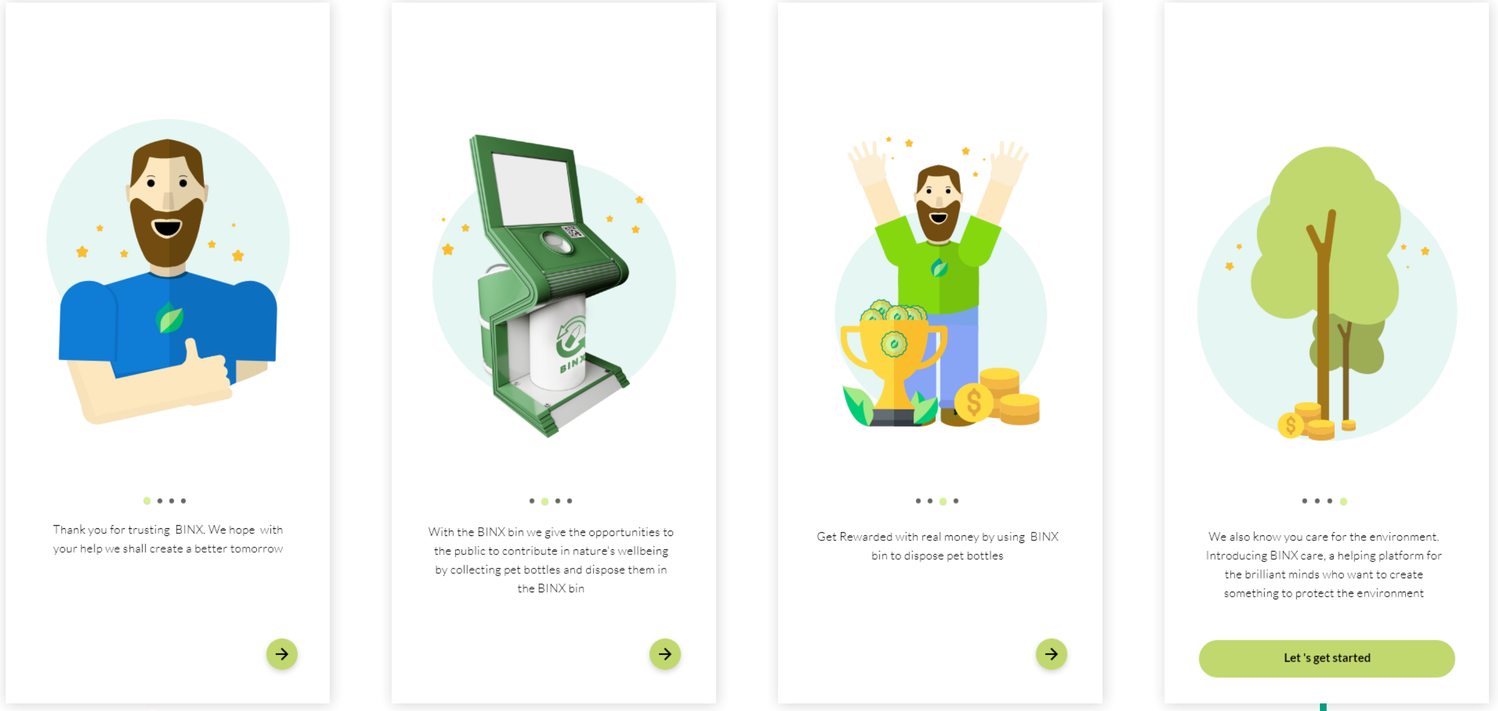
- Accessing BINX bin

- Transaction of BINX credits

- Participate in sustainable schemes

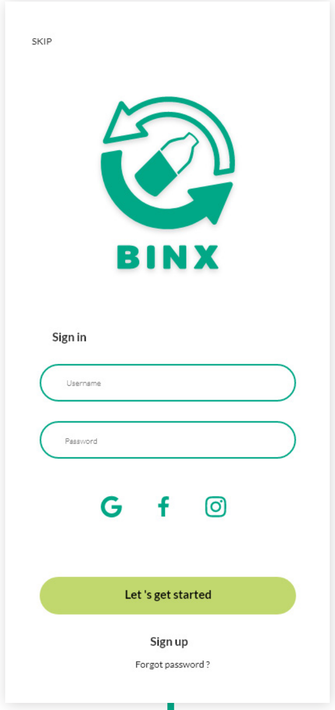
ONBOARDING

🤔 It is very important to let your user get a brief understand of your app so that your user is not overwhelmed with information and quit your app



Intro to the app

Thanking the User for choosing BINX
Explain about the BINX bin
How user can play game and earn more money
The crowdfunding of BINX



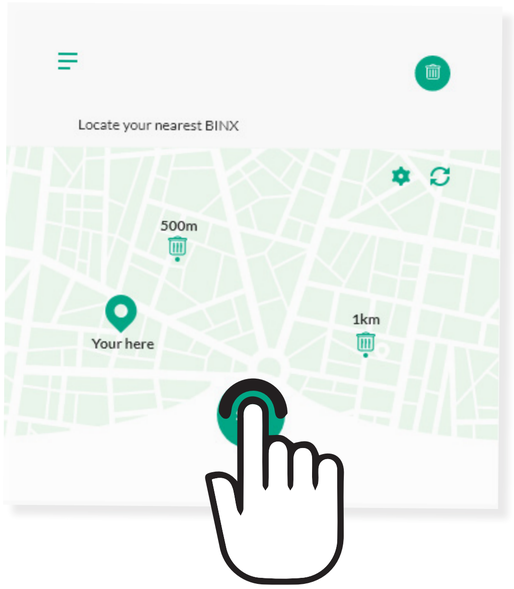
Sign in/Register

Here the user can sign in through different social media and add his/her bank details.

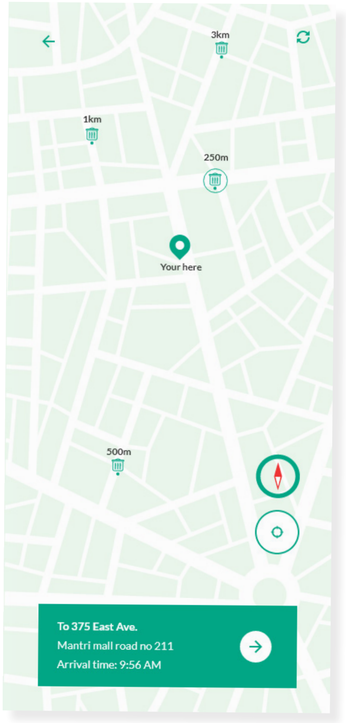
SCENARIO #1

HOW USER FIND A BINX BIN ?

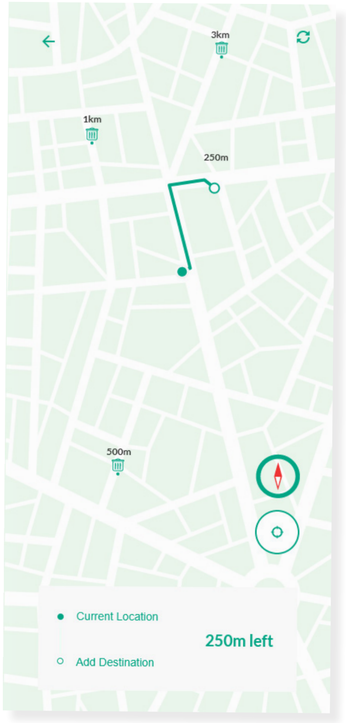
🤔 When your traveling around with an empty bottle in hand and can't find a bin. You are sometimes prompt to just throw it anywhere you want.



1 Scan
User scan his/her surrounding to detect the nearest BINX bin



2 Auto-Detect
App will auto suggest the nearest bin around



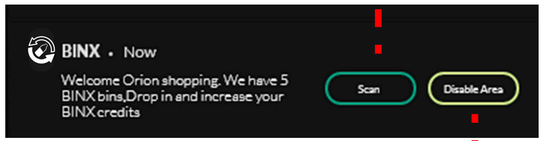
3 Navigate
Just like Google map user will navigate to the nearest bin.

Arrive to Destination

SCENARIO #2

USER GET NOTIFIED WHEN ENTERING A ZONE WHERE BINX BINS ARE AVAILABLE

🤔 Dropping a message to your user sometimes reminds them about the good deed they can do today.



Scenario

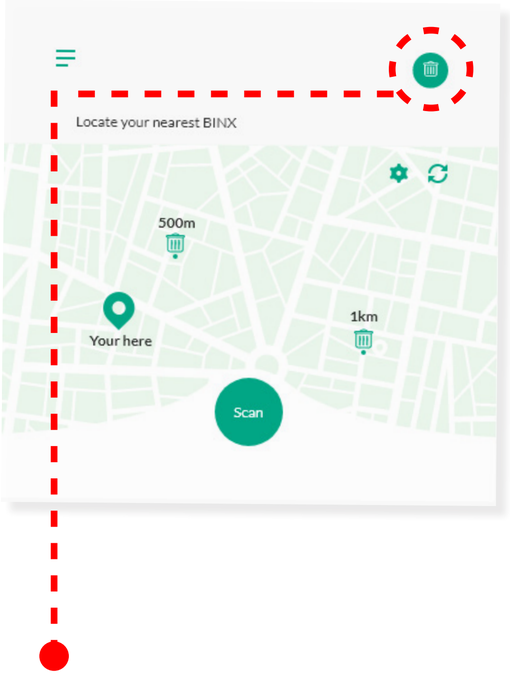
User enter a shopping center. He/she will receive a notification that BINX bin are install in this zone.

But what if the user is an employer of the shopping center and its his daily travel commute.

SCENARIO #3

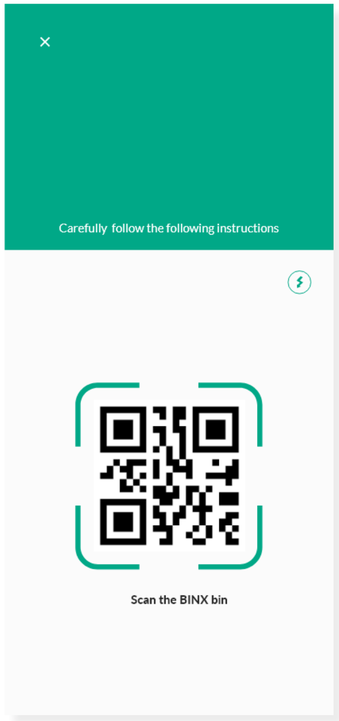
HOW USER USED THE BIN ?

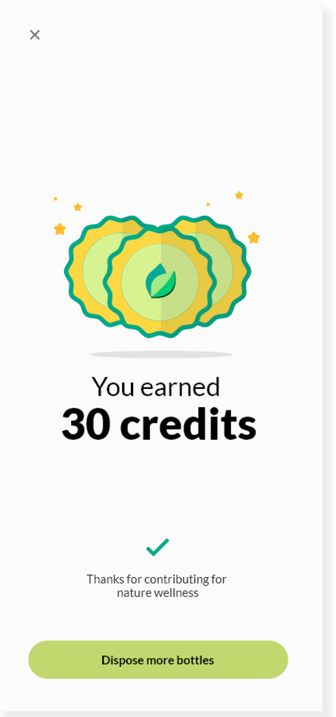
We all make money by working hard. Imagine now with BINX its as simple as to throw a bottle in the bin to earn money. How awesome is that ?



1 Activate Scanner
User can open the scanner to start the syncing process to the BINX bin

2 Scan
Locate the QR code to connect your phone to the bin



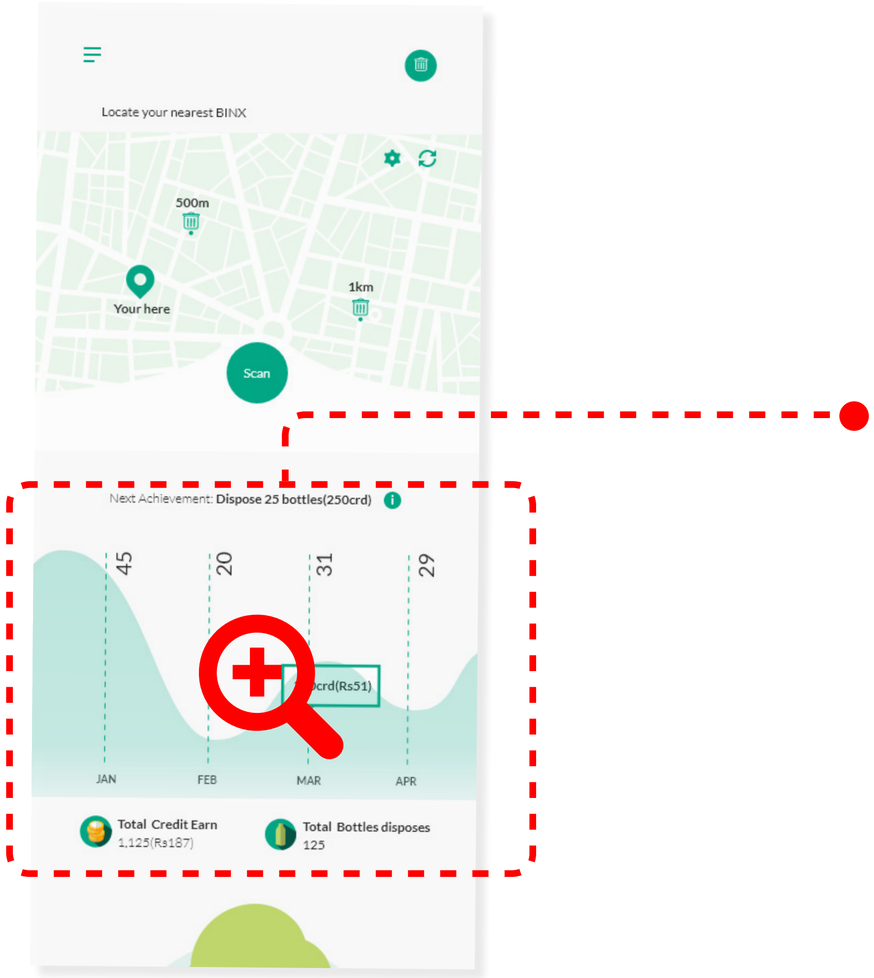


3 Earn Credit
After disposing your bottles earn your credits.

SCENARIO #4

THE GRAPH

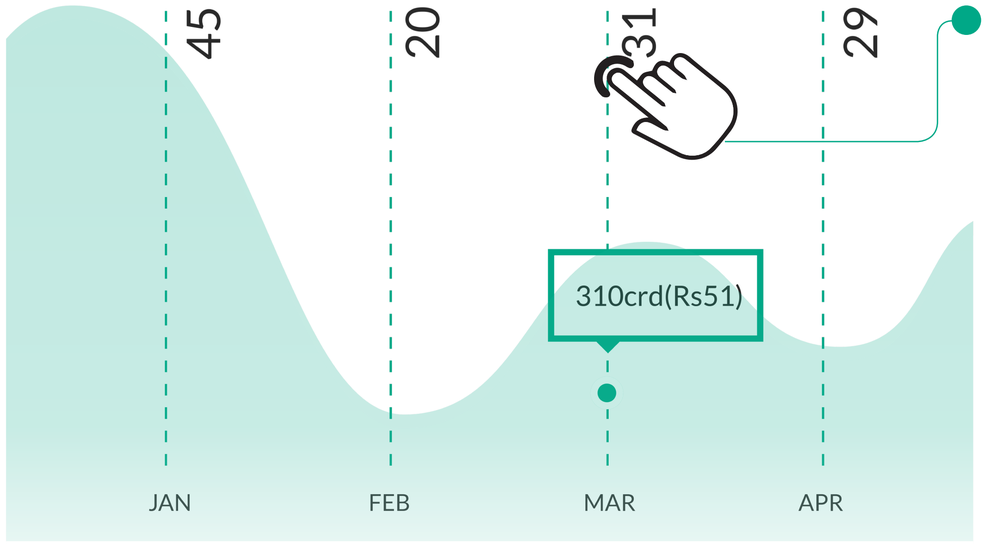
Visualizing your progress is a good way to encourage and motivate ourselves to repeat the same action



The app provide a list of personal achievements the user can aim to earn extra credits.(Ex: Dispose 25 bottles in a week and win 250 credits)

Next Achievement: **Dispose 25 bottles(250crd)**

Get to know how many bottles you dispose in particular month so you can compare your activity



Total Credit Earn
1,125(Rs187)

Total Bottles disposes
125

Quick View of user credits and bottle's disposed

SCENARIO #5

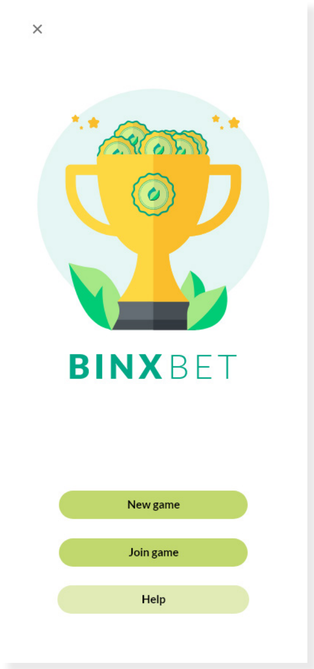
BINXPLAY

(How to encourage user to dispose more bottles)

The BINX play allow multiple user to bet an amount of credits in an amount of time.

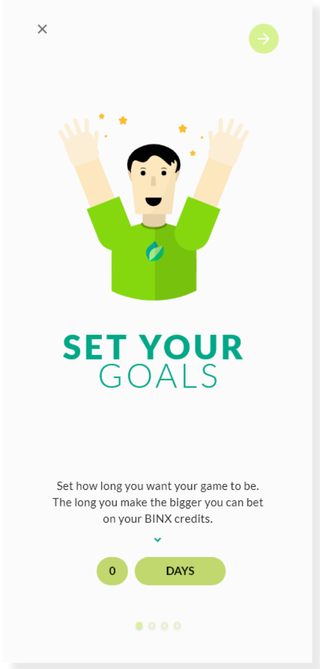
> 🤔 Gamification of a tasks encourage users to be competitive with each other. Thus changing the mindset of a boring task and make it more entertaining.

1



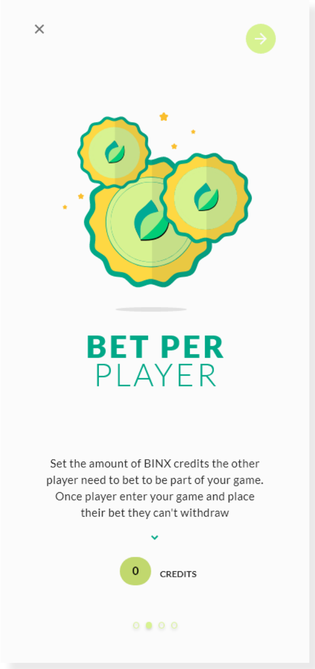
User start a new game

2



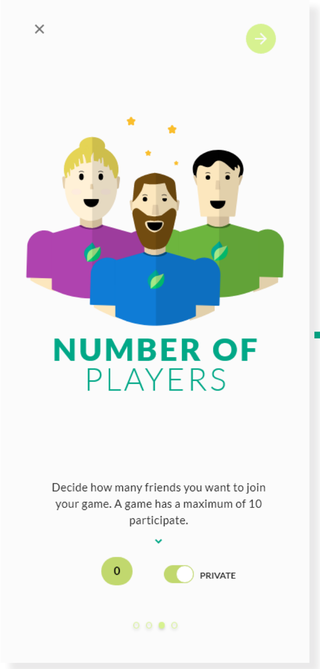
1st part the User need to define the amount of bottles he can dispose in a given timeline

3



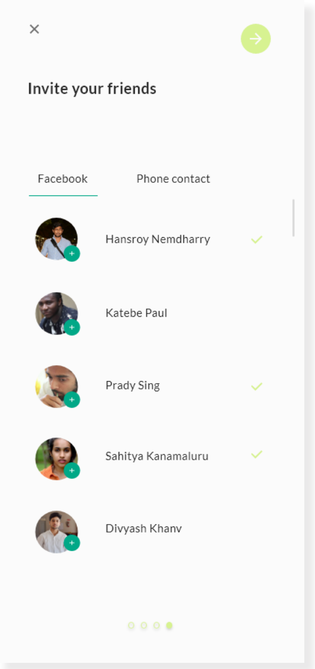
Secondly the user need to decide the amount of credit all players need to bet to enter the game

4



Here the user decide how many players can participate. User may choose the game to be private and public. Public game external users can join.

5

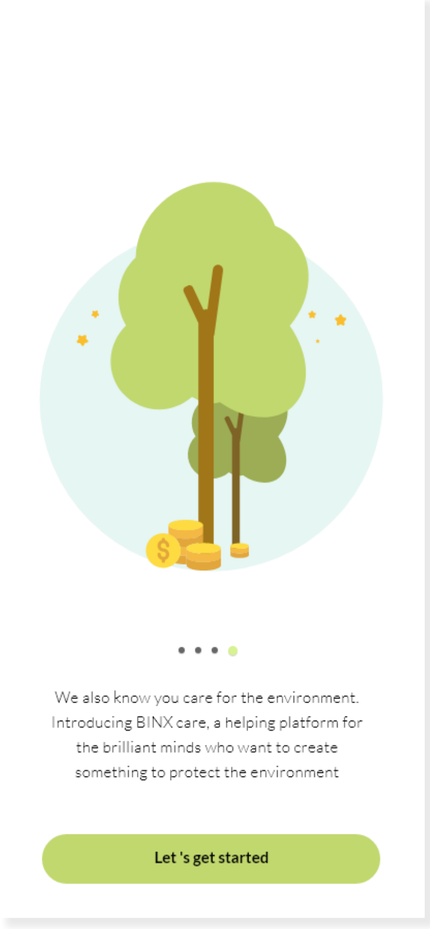


Finally the user choose in his contact list who will participate in the game if the game is not public.

SCENARIO #6

HOW CAN BINX TAKE ADVANTAGE OF ITS PLATFORM TO ADOPT MORE SUSTAINABILITY SCHEMES ?

INTRODUCING BINX CARE



BINX care is a crowdfunding initiatives provided in the Binx platform

As the platform get more users practising the BINX move, BINX allow these users to go a step further to support the environment.

They are many talented mind also passionate about protecting the environment. BINX invites these people on the to show their ideas and get funded by the generosity of the BINX community.

Why BINX crowdfunding initiatives is better than other crowdfunding platform

- BINX care is specifically oriented to only one type of project. That is project which will only benefit for the wellbeing of nature
- Environmental project are also easily funded by Government parties.
- User can also donate their BINX credits

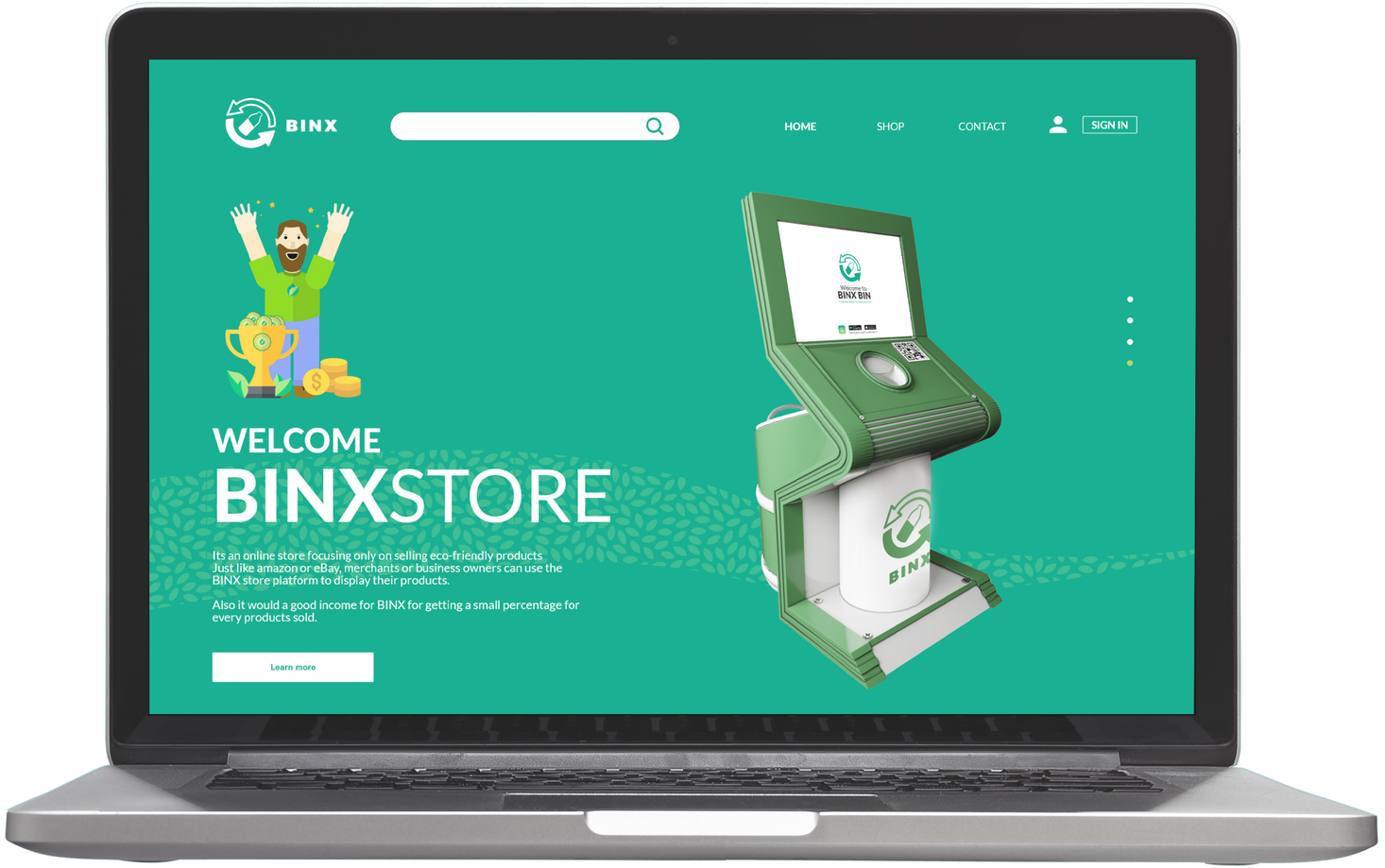
Ever wonder where to buy solar water heater any solar energy source ?

Do you need equipment for starting your composting ?

Your starting a garden and you need the basic tool ?

You wanna buy LED bulbs which can do wonders for conserving energy ?

You wana purchase a BINX BIN ?



INTRODUCING BINX STORE

Its an online store focusing only on selling eco-friendly products

Just like amazon or ebay, merchants or business owners can use the BINX store platform to display their products.

Also it would a good income for BINX for getting a small percentage for every products sold.

THANK YOU