THE OCEAN CLEANUP – EIA CASE STUDY

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THE OCEAN CLEANUP'S MISSION: **TO RID THE OCEANS OF PLASTIC**

More than one billion kilograms of plastic currently pollute the oceans, creating untold damage to the largest ecosystem of our planet.

Plastic pollution does not only endanger over 200 marine species, it also helps transferring toxic pollutants into the food chain - a food chain that includes three billion people.

What if we could return to clean oceans?

Photo: Francis Perez

THE OCEAN CLEANUP®

TWO STEPS
TO THE SOLUTION

Our technologies will clean the legacy plastic in the oceans and stop plastic floating from rivers to oceans.

THE OCEAN CLEANUP

CLOSING THE TAP

OUR AMBITION
1000 RIVERS IN 5 YEARS

Our ambition is to deploy Interceptors™ in the top 1000 rivers by 2025.
We currently have Interceptors™ deployed in Indonesia and Malaysia.
Next deployments will be in Vietnam, Dominican Republic, Guatemala, Thailand and the US.

Source: The Ocean Cleanup (interactive map)

THE OCEAN CLEANUP®

CLEANING THE LEGACY

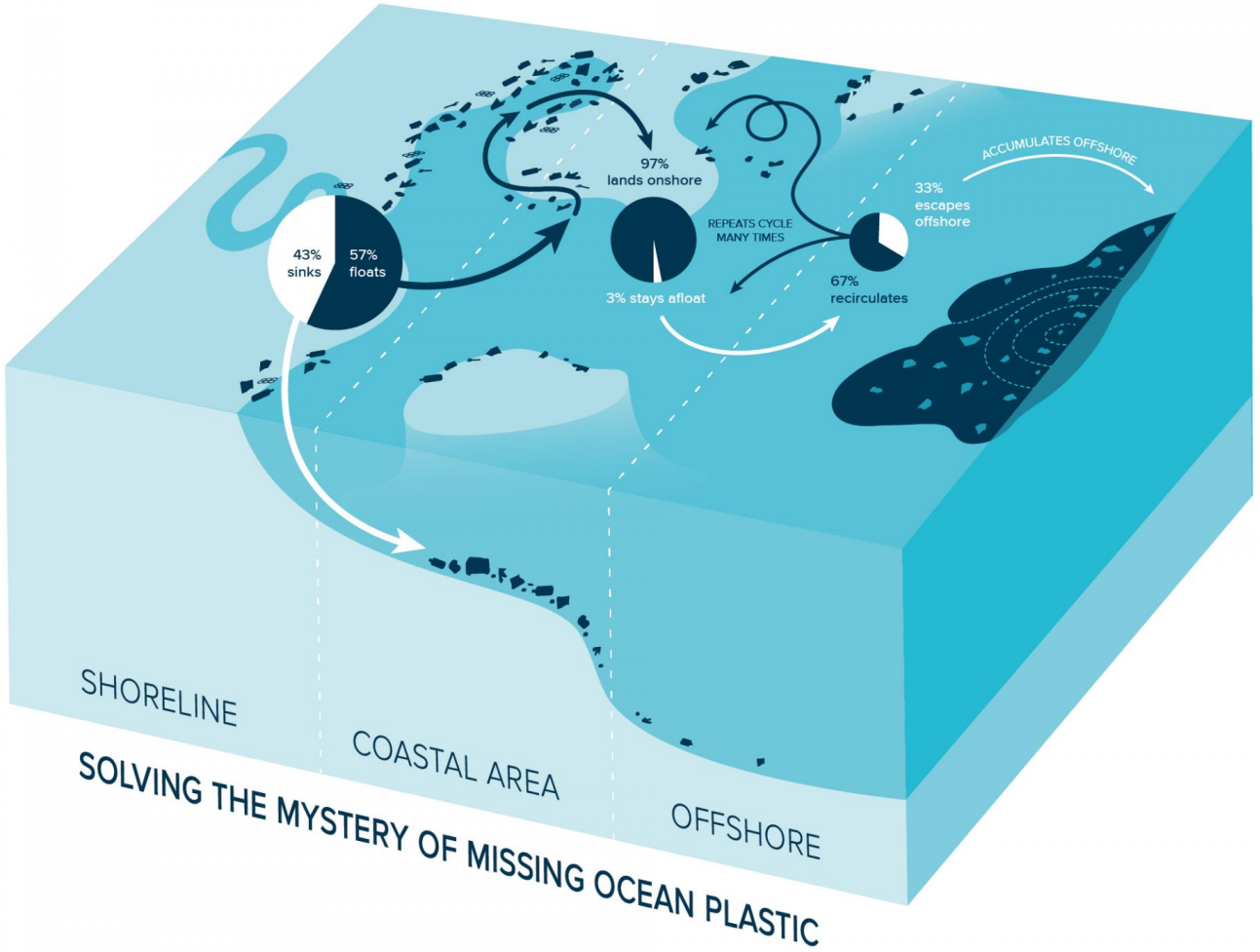
PASSIVE TECHNOLOGY TO CLEAN LEGACY

97% of floating plastic entering through rivers lands onshore

Our ocean cleanup systems resemble coastlines to allow plastic to “beach” there

We operate within the area with the highest concentration of plastic

They move passively with the forces of nature (wind, current, waves)

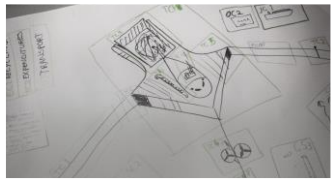


DEVELOPMENT OF THE CLEANUP TECHNOLOGY

Built 2018

Built 2019

2012

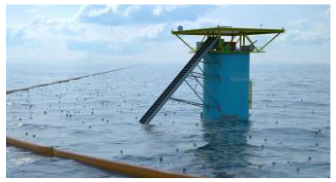


THE ORIGINAL SKETCH

2013

THE MANTA

2014



ANCHORED TO THE SEABED

2015 & 2016

Research expeditions to understand the problem

North Sea prototype

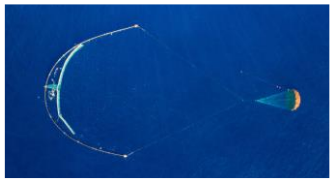
2017

SEA ANCHOR

2018

WIND AND WAVE POWERED

2019



SURFACE ANCHOR

LEGAL FRAMEWORK

Dutch Government & The Ocean Cleanup provided legal framework to project at high seas, analogous to Part XIII of UNCLOS (Marine Scientific Research)

STAATSCOURANT

Nr. 31907

6 juli 2018

Officiële uitgave van het Koninkrijk der Nederlanden sinds 1814.

Convenant tussen de Minister van Infrastructuur en Waterstaat en The Ocean Cleanup betreffende de inzet van systemen bedoeld om plastic op volle zee, dat drijft in de bovenste waterlagen, op te ruimen

Main issues covered in Covenant:

1. Maritime Safety:
   - Choice of materials
   - Traceability and visibility
   - Detection and Monitoring
   - Formal Safety Assessment
2. Protecting the Marine Enviroment:
   - Safeguarding environmental interests
   - Protection of species (**precautionary measures & monitoring plan**)
   - Processing of plastic

ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT ASSESSMENT WORK – (TO DATE)

ROYAL HASKONING DHV: ENVIRONMENTAL IMPACT EXPLORATION

- Independent report including an inventory of the possible ecological impacts.
- Ecotoxicology scan of materials (screen, pipe, potential antifouling agent).

CSA OCEAN SCIENCES: ENVIRONMENTAL IMPACT ASSESSMENT STUDY (& ENV. MANAGEMENT PLAN)

- Environmental Impact Assessment (EIA) following the 1999 IAIA (International Association for Impact Assessment) Principles of Environmental Impact Assessment Best Practices.
- Risk-based impact assessment approach that considers impact likelihood and impact consequence to determine overall impact significance.
- Identification of appropriate mitigation criteria and measures.

CE DELFT: LIFE CYCLE ASSESSMENT

- Independent research on the environmental footprint of the collection of plastic material from the North Pacific Gyre.

ENVIRONMENTAL IMPACT ASSESSMENT – SUMMARY

All activities evaluated for potential impacts:

- Biological environment
- Physical environment
- Chemical environment
- Social environment

Likelihood vs. Consequence		Decreasing Impact Consequence				
		Beneficial	Negligible	Minor	Moderate	Severe
Decreasing Impact Likelihood	Likely	Beneficial (no numeric rating applied)	1 – Negligible	2 – Low	3 – Medium	4 – High
	Occasional		1 – Negligible	2 – Low	3 – Medium	4 – High
	Rare		1 – Negligible	1 – Negligible	2 – Low	4 – High
	Remote		1 – Negligible	1 – Negligible	2 – Low	3 – Medium

In impact consequences, a group "BENEFICIAL" was added to be able to qualify the benefits to the environment of cleaning pollution

Resource areas characterized based on pertinent data sources, peer-reviewed literature, government publications, and applicable datasets. (For some specific impacts, and due to our mission to have a BENEFICIAL impact, more data is needed for future EIA updates.)

Conclusions:

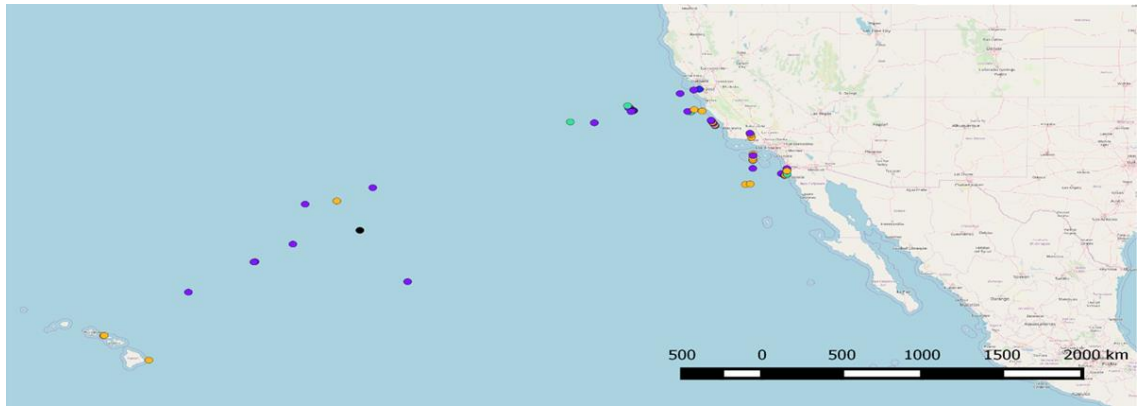
The significance of potential impacts of the proposed activities will generally be NEGLIGIBLE or LOW.

Moreover, the long-term positive impacts as a result of removing large amounts of floating plastic will likely provide a BENEFICIAL impact to biological resources in the region.

141 DAYS OF ENVIRONMENTAL MONITORING SYSTEM 001

PROTECTED SPECIES SIGHTINGS

Species	Outside GPGP (tow & transit)	Inside GPGP (during operations)
Whale	38	3
Dolphin	15	
Sealion	5	
Seal	3	
Porpoise	2	
Otter	2	
Turtle	1	
Total	**66**	**3**



SUMMARY OF CONCLUSIONS

- 25 species of marine mammals sighted:
  - 4 listed as endangered
- During the entire period, no shut down or delay to operations was required
- A remote operated vessel (AutoNaut) measured multiple water parameters (Dissolved Oxygen, Conductivity/Temperature/Salinity, pH, Chlorophyll and cDOM)
- FAD effect estimated at factor of 5.5
- No recurring accumulation of pelagic and/or neustonic species observed (200+ inspections)
- *See report on our website (https://theoceancleanup.com/updates/mission-one-environmental-monitoring-results-available/)*

NEXT STEPS

As many uncertainties remain, The Ocean Cleanup will progress on a Step-by-Step approach:

- Monitoring results of SYSTEM 001/b are being analysed (report will follow)
- Further research is being undertaken to gather information for impact(s) of deploying multiple systems.
- Environmental Impact Assessment will be frequently updated / renewed:
  - With design changes for System 002
  - With monitoring & research results
  - With multiple systems (in scale-up)
- If at any stage a potential HIGH negative impact is determined, plan will be adjusted to mitigate.

2018
Deployment System 001

2019
Fast design iterations and 001/b testing to proof technology

2020/2021
System 002(/B)

>2022
System 003 (blueprint for scale-up)

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CLEANUP