The origin and occurrence of plastic bottles on beaches in Norway and South Africa

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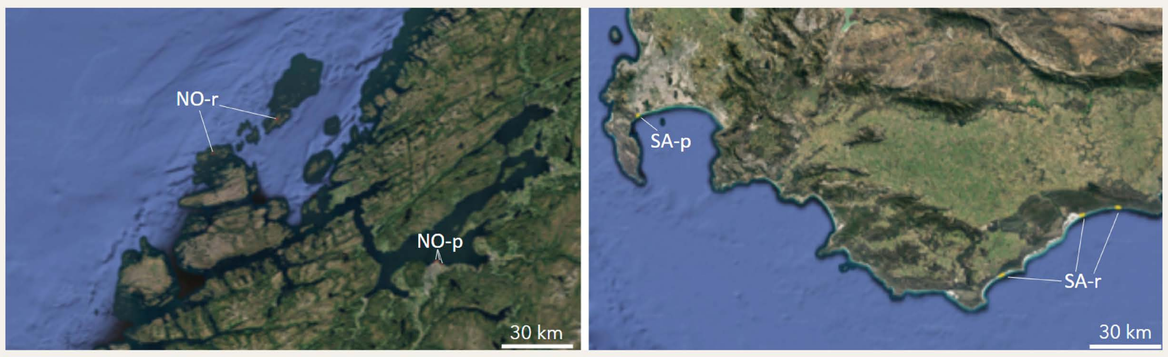
Introduction

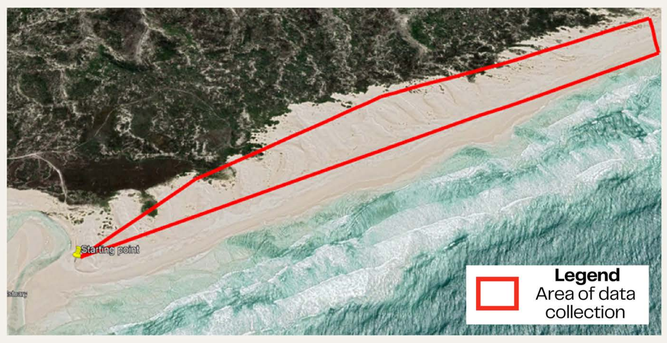
- Marine pollution is an increasing global environmental concern, and the circular economy of plastic products needs further development
- Extent of plastic bottle pollution and pathways of plastic bottles to beaches yet to be determined
- A comparative study of two countries with different consumption patterns, geography and policies were conducted

Geographical areas



Unpopulated beach

De Mond Nature Reserve



Unpopulated beach

Oksholmen

Populated beach

Muizenberg Beach

Populated beach

Rotvollfjæra

OBJECTIVE

Collect plastic bottles on populated and unpopulated beaches in both Norway and South Africa.

Determine the extent (quantities) of the plastic bottles found within populated and unpopulated beaches in Norway and South Africa.

Determine the origin of the plastic bottles.

METHODOLOGY AND DATA COLLECTION

Plastic bottles were collected in populated and unpopulated coastal locations in each country from December 2022 – May 2023 using standing stock survey

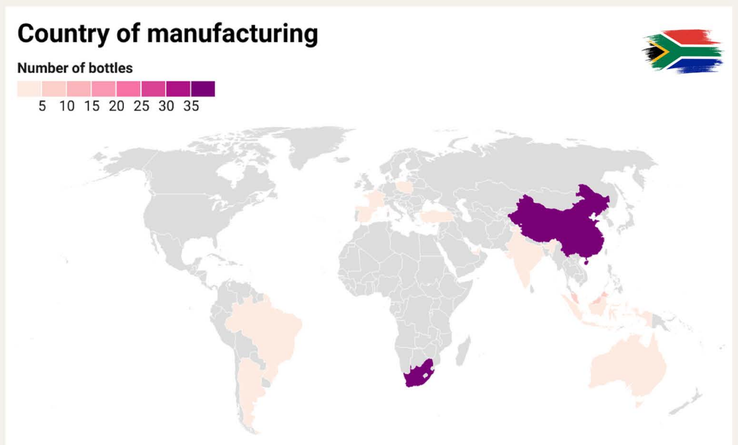
PARAMETERS

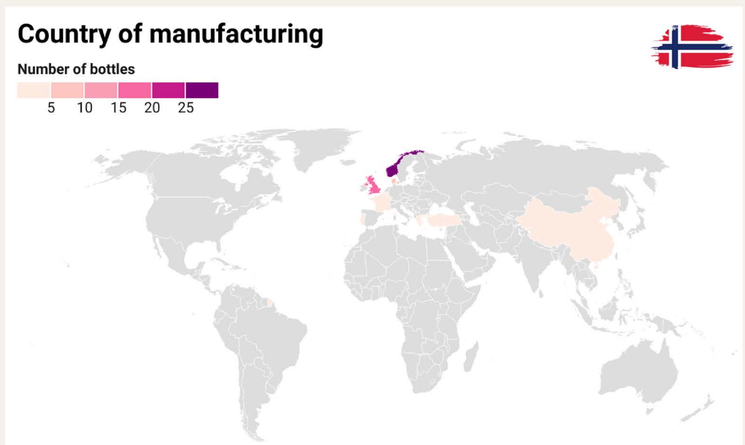
- All types of plastic bottles (used for statistics)
- Collect as many as possible
- Only plastic drinking bottles used for the study
- Geographical area: 600m length of beach and 50m width of beach (from the edge of water to the back of the beach).

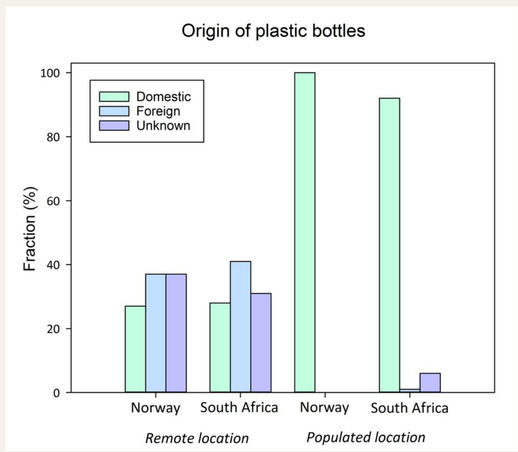
DETERMINING THE ORIGIN

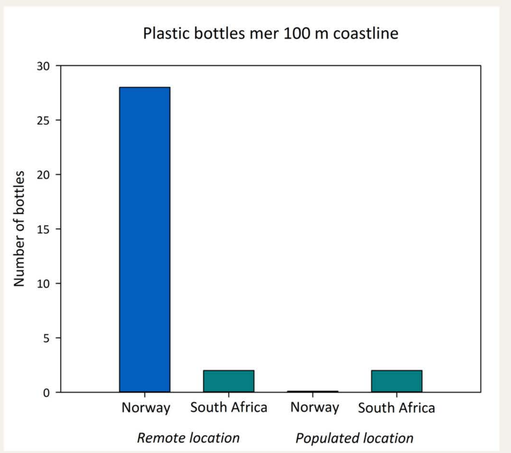
- Bottle brand (Coke, Imsdal, Bonaqua etc.)
- Lid
- Label
- Inscription (where applicable)
- Weathering

Results









Conclusion

- Low concentration of plastic bottles in the populated areas in Norway compared to South Africa highlight the efficiency of the Norwegian bottle deposit system
- High concentrations of plastic bottles in unpoulated coastal locations in both countries indicate that additional measures are needed to reduce pollution, particularly from sea-based sources
- The results should be interpreted with caution due to the limited size of the study, significant geographic differences, and lacking information regarding previous beach cleaning on the sampling locations

Recommendations

- Investigation of transport pathways – land vs. ocean sources
- Focus on waste handling practices at sea
- Implementation of deposit system for bottles in other countries, and potentially for other plastic products