CLEAN EUROPE NETWORK

INTERPRETING MONITORING DATA

15th OCTOBER 2019

HELENE VAN ZUTPHEN

Director NederlandSchoon

SWOT OF THE DAY

STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS

"HOW DO WE, AS ORGANIZATIONS FIGHTING LITTER AND LITTERING ACROSS EUROPE, ENSURE THE USAGE OF MONITORING DATA BEING A SMART TOOL FOR THE EFFECTIVE PREVENTION OF LITTER AND LITTERING?"

CLEAN EUROPE NETWORK

NederlandSchoon

LISE KEILTY GULBRANSEN

Chair Clean Europe Network

CLEAN EUROPE NETWORK

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MONITORING IN EUROPE

Lise Keilty Gulbransen

CEN Monitoring Symposium

15th October 2019, Den Haag

CLEAN EUROPE NETWORK

- **Waste Framework Directive**
- **Single-Use Plastics Directive**

Waste Framework Directive

Article 9 includes the following obligation:

Member states must identify products that are the main sources of littering, notably in the natural and marine environments, and take measures to prevent and reduce litter from such products.

Single-Use Plastics Directive

Paragraph 30:

It is important to monitor the levels of marine litter in the Union in order to assess the implementation of this Directive. In accordance with Directive 2008/56/EC, Member States are required to regularly monitor the properties and quantities of marine litter, including plastic marine litter. That monitoring data is also to be communicated to the Commission.

Littering in Europe

EUROPEAN CITY SURVEY 2019

Seven European cities

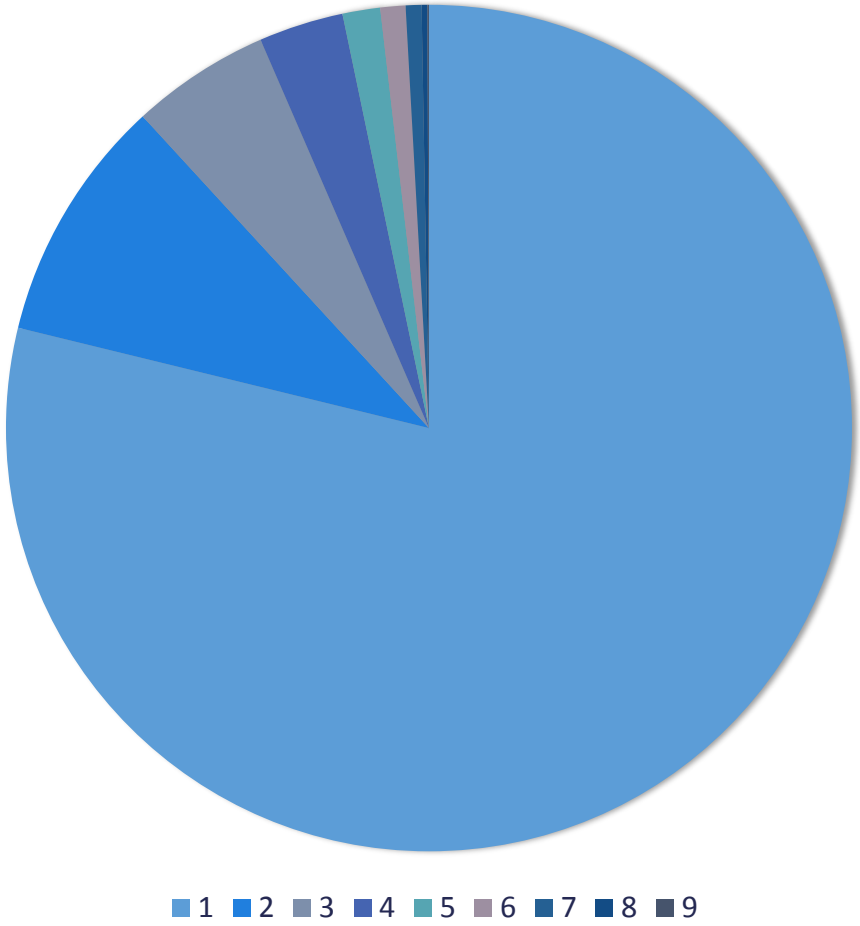
Five areas in each city

TOP FIVE ITEMS

1. Cigarette butts
2. Small pieces of paper
3. Pieces of plastic 2,5 – 5 cm
4. Confectionary/snack bags/wrappings
5. Snuff pouches

LOCATIONS

1. Main rail/bus station (2102)
2. Social residential area (1862)
3. Park (1799)
4. Iconic monument (1671)
5. City centre/shopping area (1316)


1
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PROF. DR. GRADUS

Vrije Universiteit Amsterdam

Garbage dumping and unit-based pricing: what does the literature tells us?

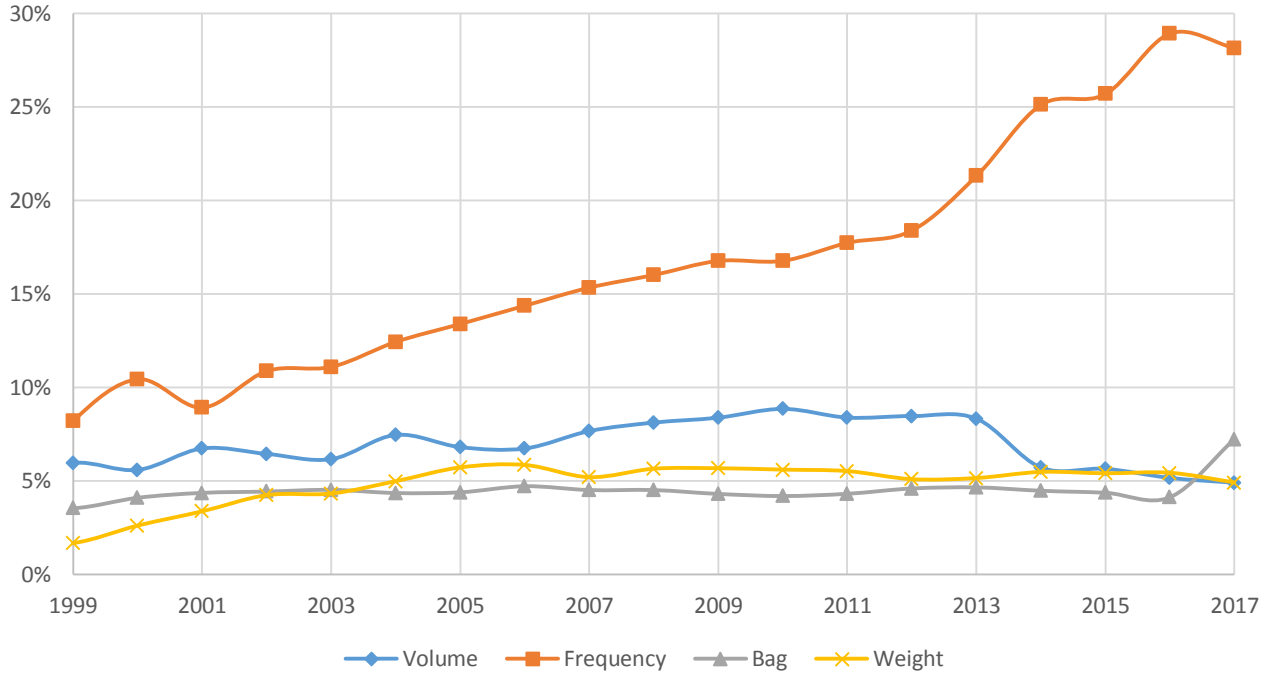
Raymond Gradus (*) (***)
Elbert Dijkgraaf (**) (***)

(*) VU University Amsterdam
(**) Erasmus University Rotterdam
(***) Tinbergen Institute

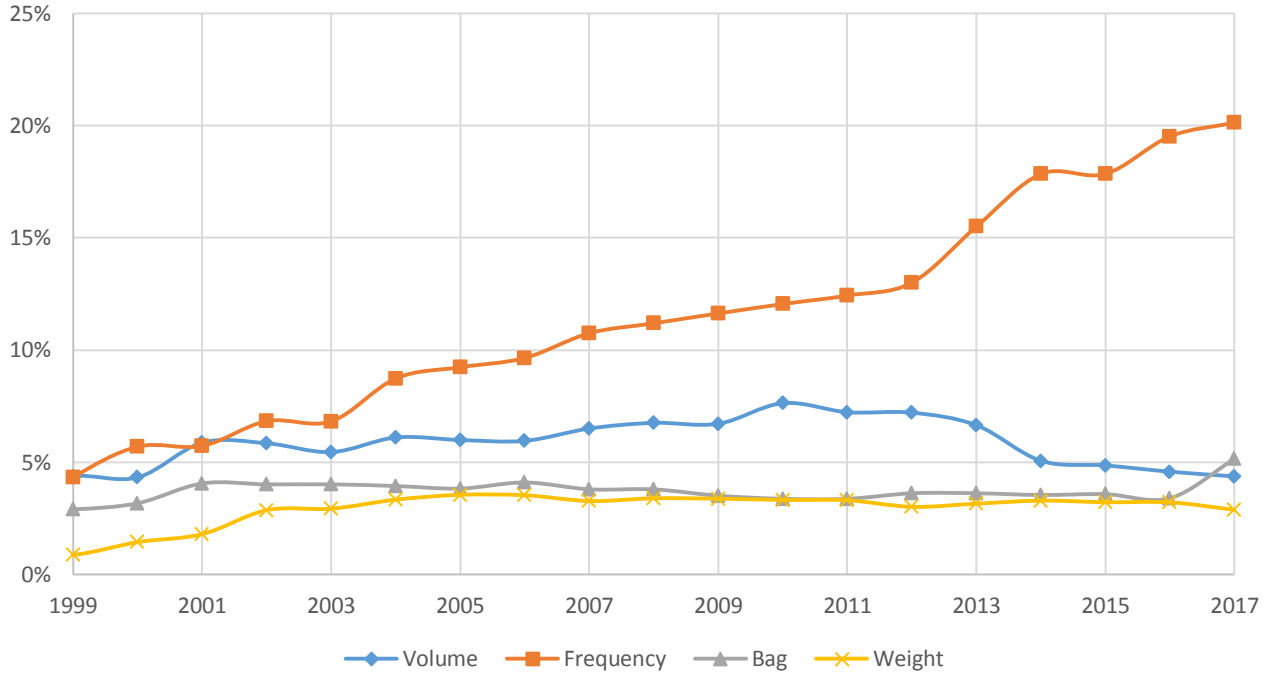
Dutch recycling context

- #municipalities with unit-based pricing raised from 20% in ‘99 to 45% in ‘17 (Gradus&Dijkgraaf, WM, ‘19)
- 4 systems ranging from most to less effective in recycling: (1) weight, (2) bag, (3) frequency, (4) volume
- Analyzing shifts: 83% implement a more effective UBP system and 17% change back

Unit-based pricing systems, 99-17



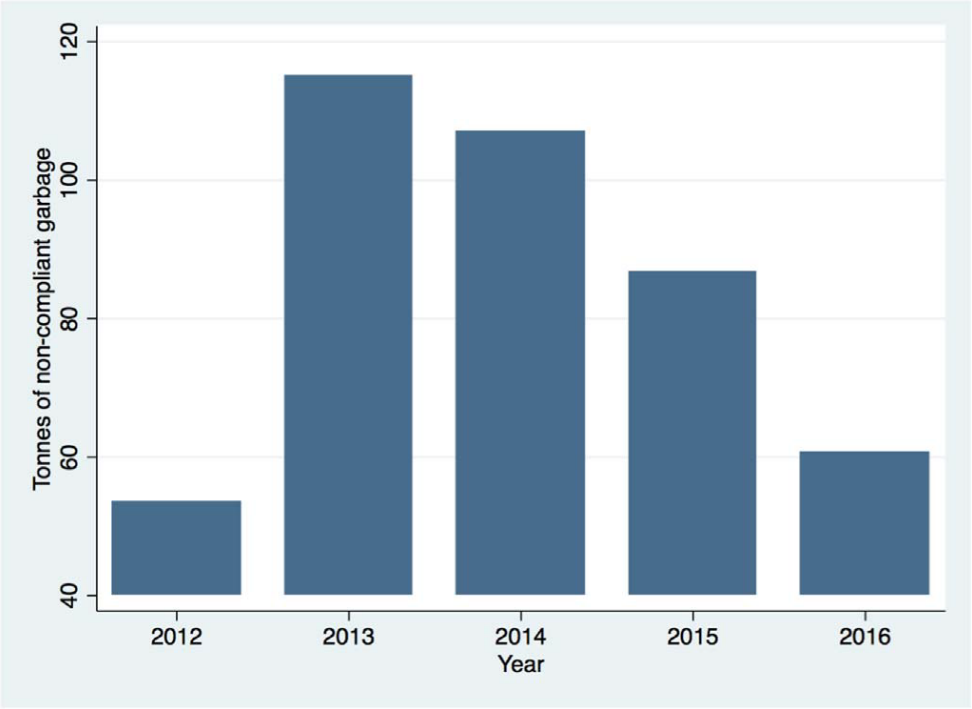
Unit-based pricing systems, weighted by inhabitants, 99-17



Effects of unit-based pricing

- Effect on unsorted waste depending on system (weight: -40%, bag: -30% and frequency: -20%) (D&G, ‘14)
- Why? More separation (50%), but other 50%: illegal or illicit dumping or less packaging material
- For last effect, there is less empirical evidence (D&G, ‘16)

What is evidence for illegal dumping? –I (Lausanne)



What is evidence for illegal dumping? –I (Lausanne)

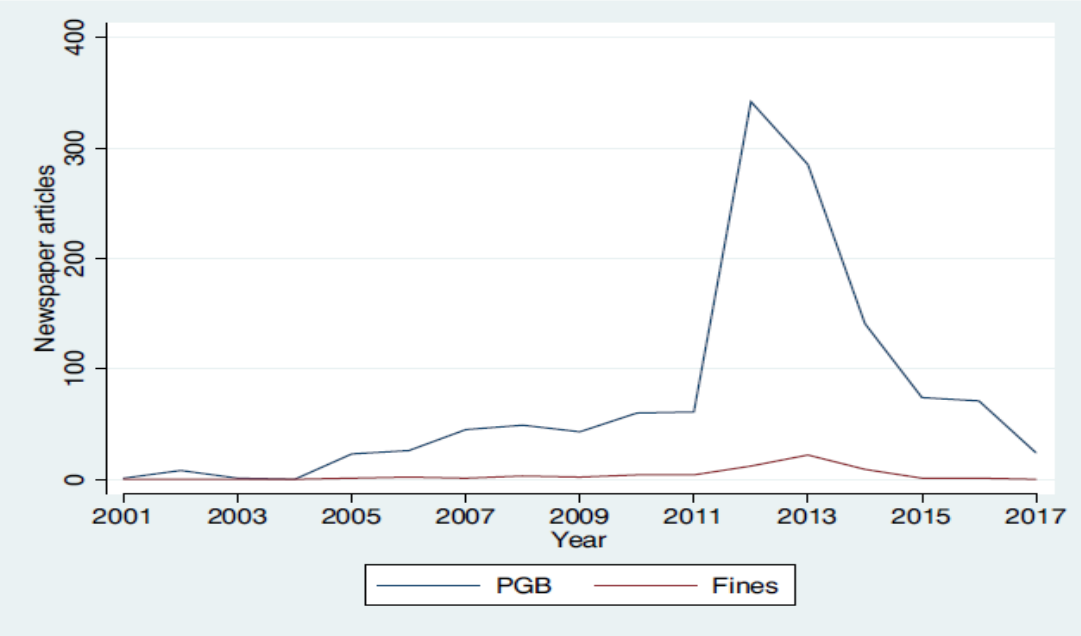


Fig. 6. Media data: local coverage of PGB and illicit behaviour.

What is evidence for illegal dumping? -II

- Empirical indication for more waste havens in case of UBP for Swiss municipalities (Erhardt, 2019)
- Dijkgraaf and Gradus (2016) found no evidence for a packaging effect in UBP-municipalities with post separation of plastics
- Heller and Vatn (2017) question the justification of an economic incentive scheme, and as a result the scheme can be counterproductive

Conclusions and further research

- Dutch municipalities with UBP separates more waste but is there more illegal dumping?
- Based on data of *NederlandSchoon* for 2016-2018 on Dutch shopping-centres for 75 municipalities the effect of UBP and **other aspects** on a neighborhood can be analyzed
- Behavior consumers (‘packaging-effect’) should be invest in more detail

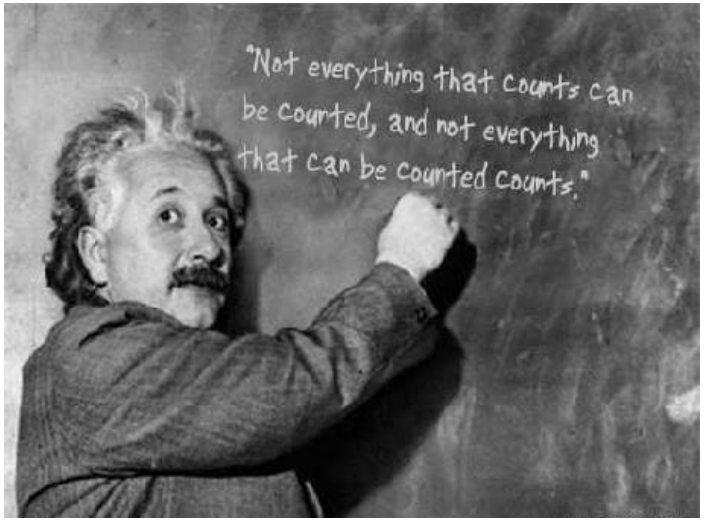
Literature-references

- Allers, M., C. Hoeben (2010) “Effects of unit-based garbage pricing: a differences-in- differences approach”, *Environmental and Resource Economics* 45:3, 405–428.
- Abbott, A., S. Nandeibam, L. O'Shea (2013) “Explaining the variation in household recycling rates across the UK”, *Ecological Economics* 70:11 2214–23.
- Carattini, S., A. Baranzini, R. Lalive (2018) “Is Taxing Waste a Waste of Time? Evidence from a Supreme Court Decision”, *Ecological Economics* 148: 131–51
- Dijkgraaf, E., R. Gradus (2017) “An EU recycling target: what does the Dutch evidence tell us?”, *Environmental and Resource Economics* 68:3, 501–526
- Dijkgraaf, E., R. Gradus (2016) “Post Separation of Plastic Waste: Better for the Environment and Lower Collection Costs”, *Tinbergen Discussion Paper Series* 2016-103/VI
- Dijkgraaf E., R. Gradus (2014) Waste management in the Netherlands. In: Kinnaman T and K Takeuchi (eds.) *Handbook on Waste Management*. Edward Elgar Publishers, Cheltenham (UK): 287–315
- Erhardt, T. (2019) “Garbage In and Garbage Out? On Waste Havens in Switzerland”, *Environmental and Resource Economics*. 73 (1): 251–282.
- Gradus, R., E. Dijkgraaf (2019) "Poorer and less political fragmented Dutch municipalities take tighter waste reduction decisions", *Waste Management* 88:3, 328-336.
- Heller, M., A. Vatn (2017) “The divisive and disruptive of a weight-based waste fee”, *Ecological Economics* 131: 275-285.

CEES RIKSEN

Rijkswaterstaat

Rijkswaterstaat
Ministry of Infrastructure and Water Management



Monitoring the effects of litter

Cees Riksen

October 15th 2019

Agenda

- National monitor, objective
- National monitor, subjective
- Monitoring the effects

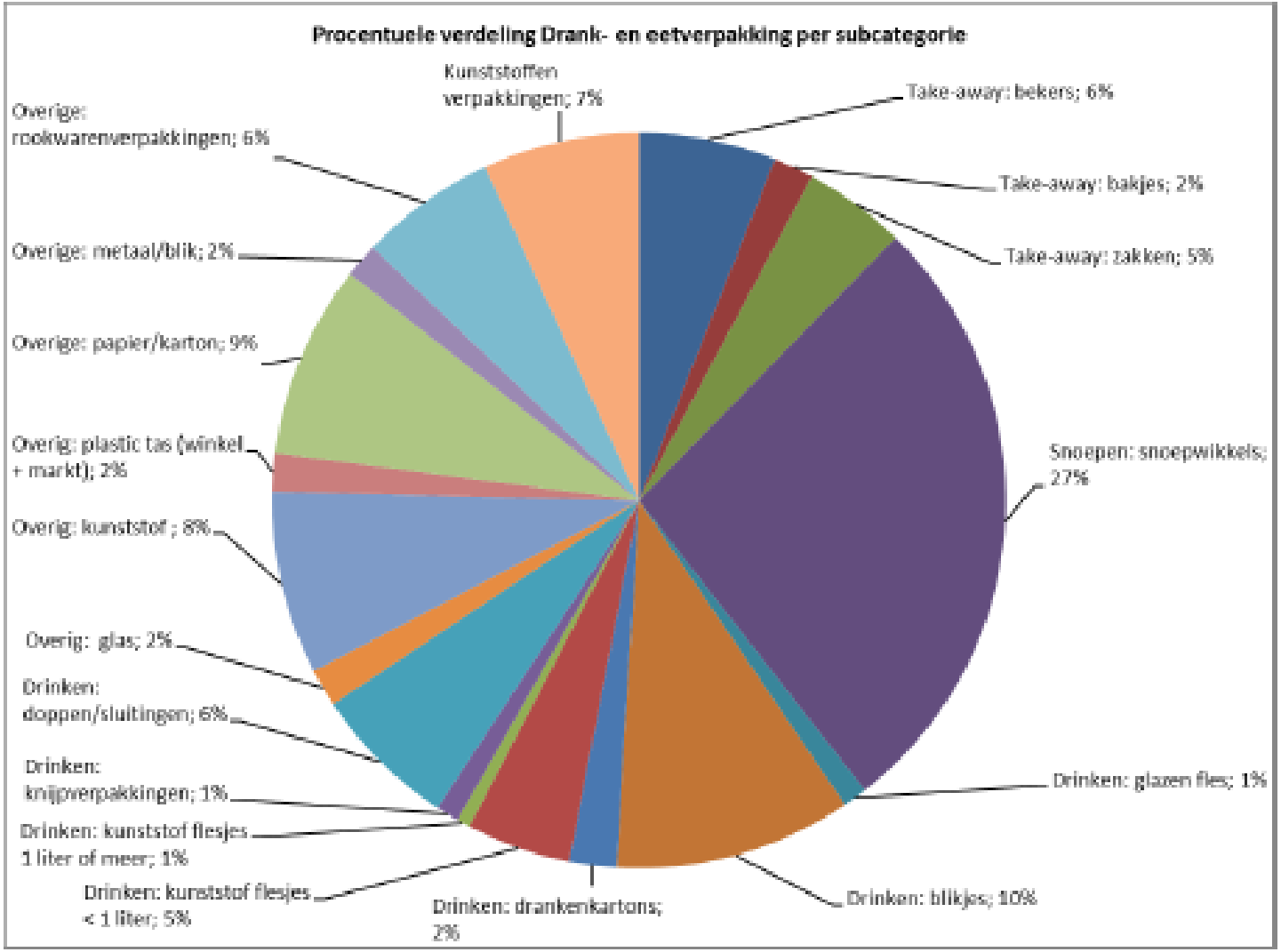
National monitor litter, objective

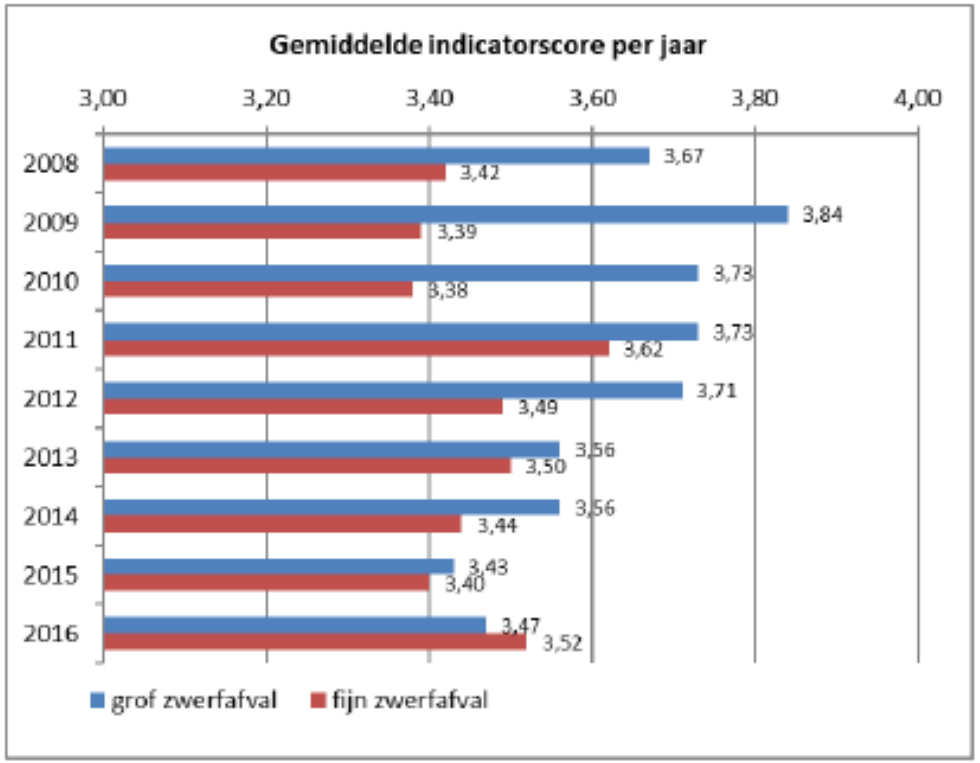
Why this monitor?

- Monitoring ambition “Impulsprogramma zwerfafval”
- *"The ambition of the program and therefore of the collaborating parties is to take the prevention of litter, enforcement and cleaning up in such a way that the public space is visible and measurably cleaner."*

In de afgelopen twee jaar is gemeten op meer dan 1.000 locaties in heel Nederland. >

Schoonheidsgraad ←	Eenheden zwerfafval ←	Normeringsbeeld CROW
A+ zeer schoon	0	
A schoon	1 tot en met 3	
B matig schoon	4 tot en met 10	
C vuil	11 tot en met 25	
D zeer vuil	Meer dan 25	


Procentuele verdeling Drank- en eetverpakking per subcategorie
Kunststoffen verpakkingen; 7%
Take-away: bekers; 6%
Take-away: bakjes; 2%
Take-away: zakken; 5%
Snoepen: snoepwikkels; 27%
Drinken: glazen fles; 1%
Drinken: blikjes; 10%
Drinken: drankenkartons; 2%
Drinken: kunststof flesjes < 1 liter; 5%
Drinken: kunststof flesjes 1 liter of meer; 1%
Drinken: knijpverpakkingen; 1%
Drinken: doppen/sluitingen; 6%
Overig: glas; 2%
Overig: kunststof ; 8%
Overig: plastic tas (winkel + markt); 2%
Overige: papier/karton; 9%
Overige: metaal/blik; 2%
Overige: rookwarenverpakkingen; 6%


Gemiddelde indicatorscore per jaar
3,00
3,20
3,40
3,60
3,80
4,00
2008
3,67
3,42
2009
3,84
3,39
2010
3,73
3,38
2011
3,73
3,62
2012
3,71
3,49
2013
3,56
3,50
2014
3,56
3,44
2015
3,43
3,40
2016
3,47
3,52
grof zwerfafval
fijn zwerfafval

National monitor litter, subjective

Monitoring of effects

- Project ‘Versterken beleidsbasis, meten is weten’
  - Translated ‘Strengthening policy basis, measuring is knowing’

Projectgoals

1. Realizing a shared policy information basis for (the consequences of) litter
2. The development of an adequate monitoring method for litter. Linked to four goals
3. Developing and advising on national policy goals for litter

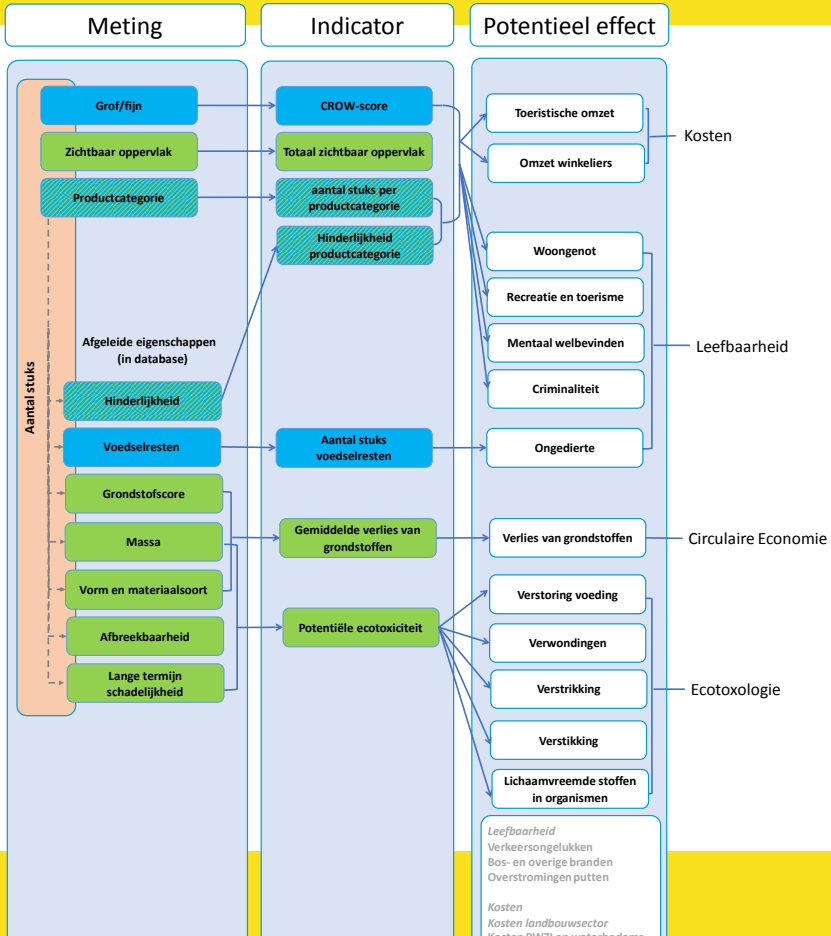
The four effects of litter

1. Livability effects.
   - Increase in quality of life, perception of safety.
2. Preventing and reducing negative effects on human health and nature.
3. Circular Economy.
   - Preventing and reducing the loss of raw materials.
4. Reducing costs.

- Cleanliness must become the norm for everyone!
- Good monitoring can contribute to this

Proces

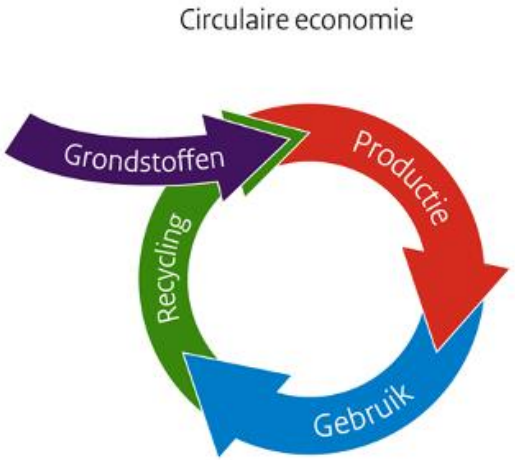
- Inventory of the effects of litter
- Drawing up a broad list of indicators for the effects of litter
- Selection indicators
- Mapping costs and implementation process


Meting
Indicator
Potentieel effect
Aantal stuks
Grof/fijn
Zichtbaar oppervlak
Productcategorie
Afgeleide eigenschappen (in database)
Hinderlijkheid
Voedselresten
Grondstofscore
Massa
Vorm en materiaalsoort
Afbreekbaarheid
Lange termijn schadelijkheid
CROW-score
Totaal zichtbaar oppervlak
aantal stuks per productcategorie
Hinderlijkheid productcategorie
Aantal stuks voedselresten
Gemiddelde verlies van grondstoffen
Potentiële ecotoxiciteit
Toeristische omzet
Omzet winkeliers
Kosten
Woongenot
Recreatie en toerisme
Mentaal welbevinden
Criminaliteit
Leefbaarheid
Ongedierte
Verlies van grondstoffen
Circulaire Economie
Verstoring voeding
Verwondingen
Verstrikking
Verstikking
Lichaamvreemde stoffen in organismen
Ecotoxologie
Leefbaarheid
Verkeersongelukken
Bos- en overige branden
Overstromingen putten
Kosten
Kosten landbouwsector

Livability effects.

Effects on human health and nature.

Circular Economy



Costs

- Direct costs

- Indirect costs

MARLOES HEEBING & DICK AYRES

Go Clean De Liemers

Litterati

CLEAN EUROPE NETWORK

NederlandSchoon

IT ALL STARTED

#LITTERATI

A COMMUNITY OF PEOPLE

CLEANING-UP

THE PLANET

INTO A

GLOBAL COMMUNITY

IN 115 COUNTRIES

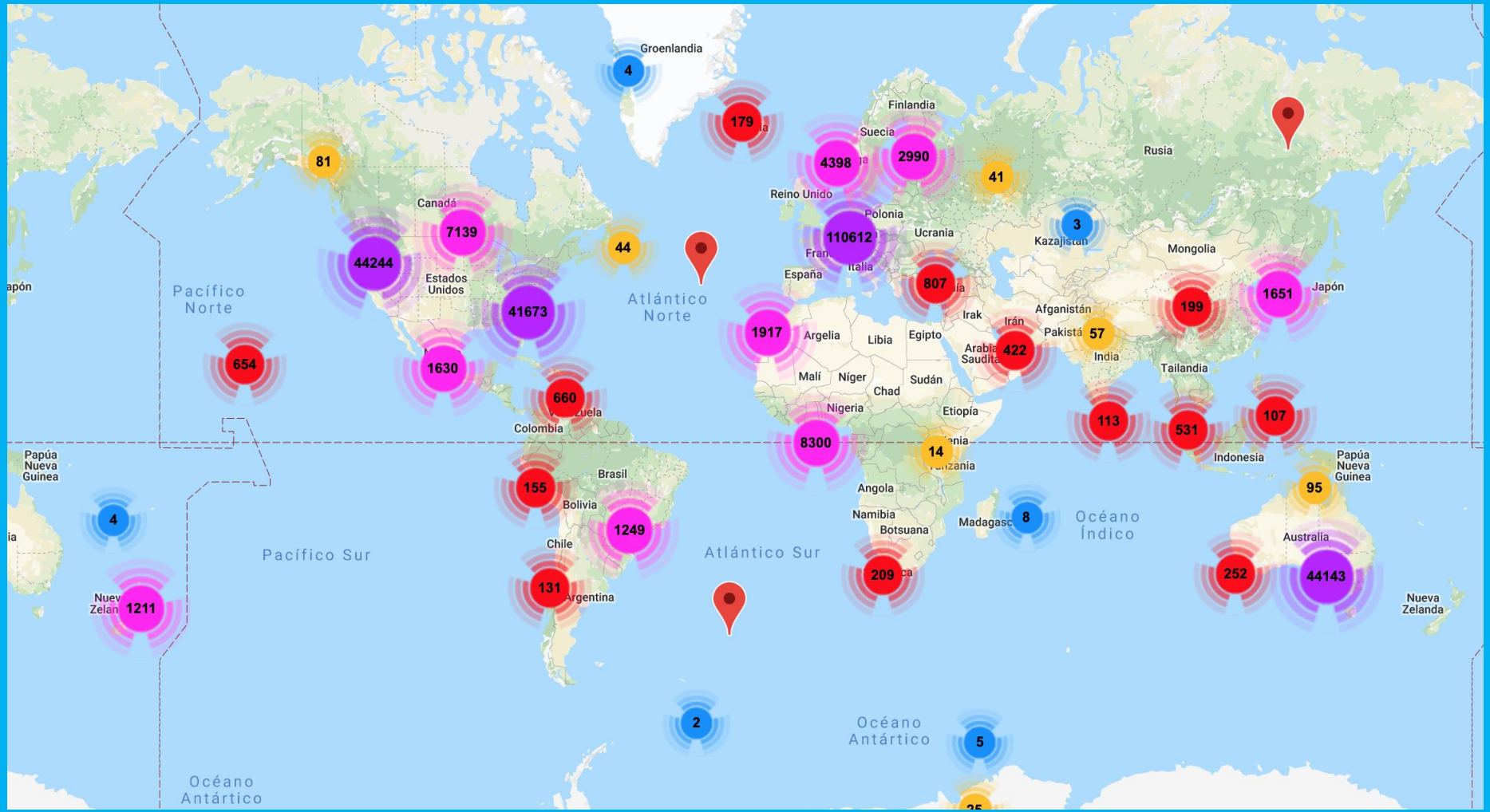
MAKING A

GLOBAL IMPACT

TO CREATE A

LITTER FREE WORLD


Map
121
North Pacific Ocean
North Atlantic Ocean
South Pacific Ocean
South Atlantic Ocean
Indian Ocean
Canada
United States
Mexico
Venezuela
Colombia
Brazil
Peru
Bolivia
Chile
Argentina
Iceland
Finland
Sweden
Norway
Russia
United Kingdom
Poland
Germany
Ukraine
France
Italy
Spain
Turkey
Kazakhstan
Mongolia
China
South Korea
Japan
Iraq
Iran
Afghanistan
Pakistan
India
Thailand
Algeria
Libya
Egypt
Saudi Arabia
Mali
Niger
Chad
Sudan
Nigeria
Ethiopia
Kenya
DR Congo
Tanzania
Angola
Namibia
Botswana
Madagascar
South Africa
Indonesia
Papua New Guinea
Australia
Google
Map data ©2016
Terms of Use


Groenlandia
4
179
81
Canadá
7139
44244
Estados Unidos
41673
654
1630
660
Colombia
155
Brasil
Bolivia
1249
Chile
131
Argentina
4
1211
Pacífico Norte
Pacífico Sur
Atlántico Norte
Atlántico Sur
Océano Antártico
Océano Antártico
Océano Índico
Finlandia
Suecia
4398
2990
41
Rusia
Reino Unido
Polonia
110612
Ucrania
3
Kazajistán
Mongolia
44
España
807
Irak
Irán
Afganistán
Pakistán
199
1651
Japón
1917
Argelia
Libia
Egipto
Arabia Saudita
422
57
India
Tailandia
Malí
Níger
Chad
Sudán
Nigeria
Etiopía
8300
14
113
531
107
Indonesia
Papúa Nueva Guinea
95
Angola
Namibia
Botsuana
Madagascar
8
Australia
209
252
44143
Nueva Zelanda
2
5

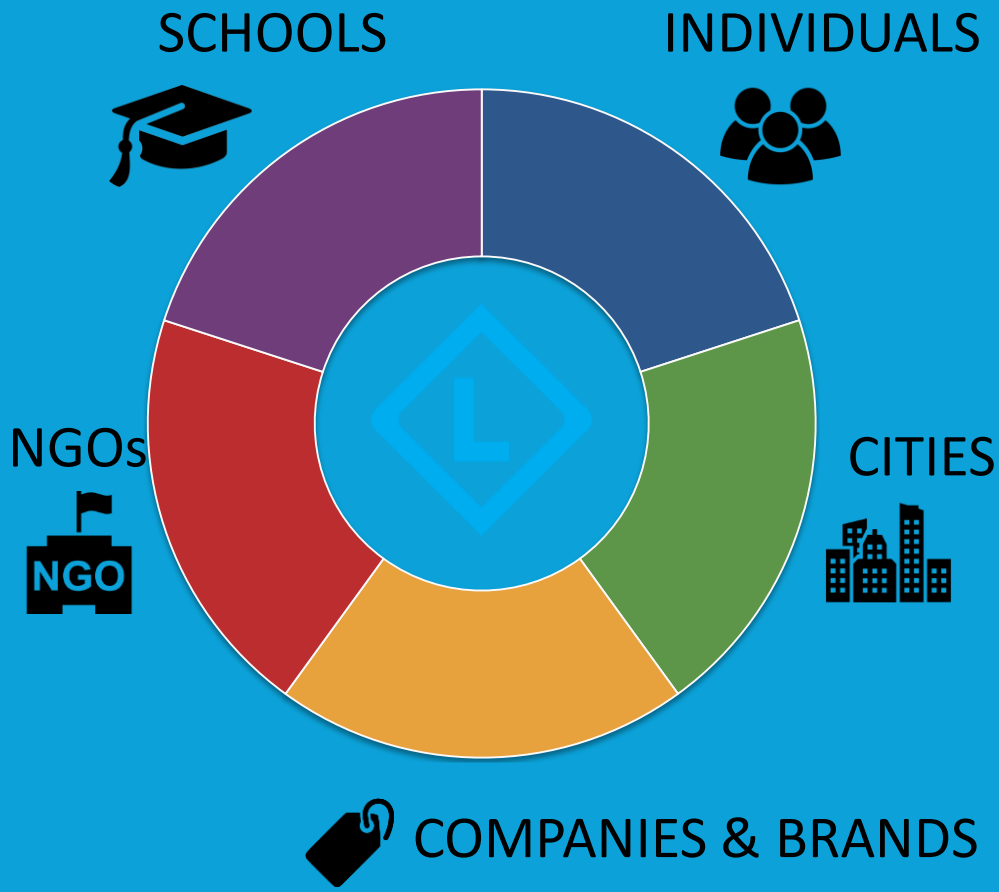
LITTERATI IS THE PLATFORM THAT

CONNECTS, QUANTIFIES & EMPOWERS

A COMMUNITY TO CREATE A LITTER FREE WORLD.

WE’RE CONNECTED IN AN

ECOSYSTEM



A TOOL TO

MEASURE IMPACT

INCORPORATING MACHINE LEARNING AND A TAXONOMY

BUILDING A

GLOBAL DATABASE

OF LITTER

COMMUNITY + DATA = CHANGE

IN SAN FRANCISCO, OUR DATA GENERATES

$4,000,000

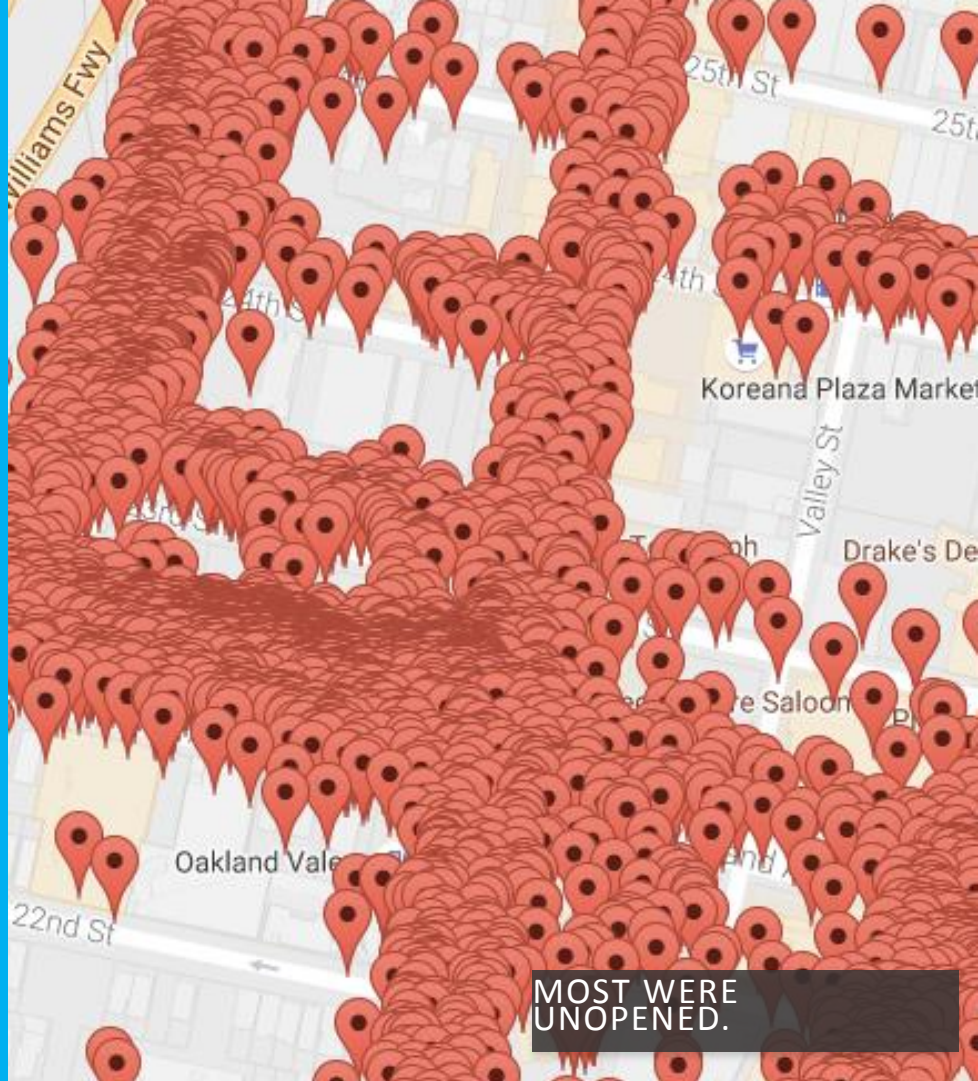
IN ANNUAL TAX REVENUE

FUNDING THE CITY'S CLEANING EFFORT.

IN OAKLAND, OUR COMMUNITY PICKED-UP

1,500 TACO BELL

HOT SAUCE PACKETS.



FROM

PLASTIC TO PAPER

ACROSS THE NETHERLANDS

WE CALL THESE

STORIES OF IMPACT.

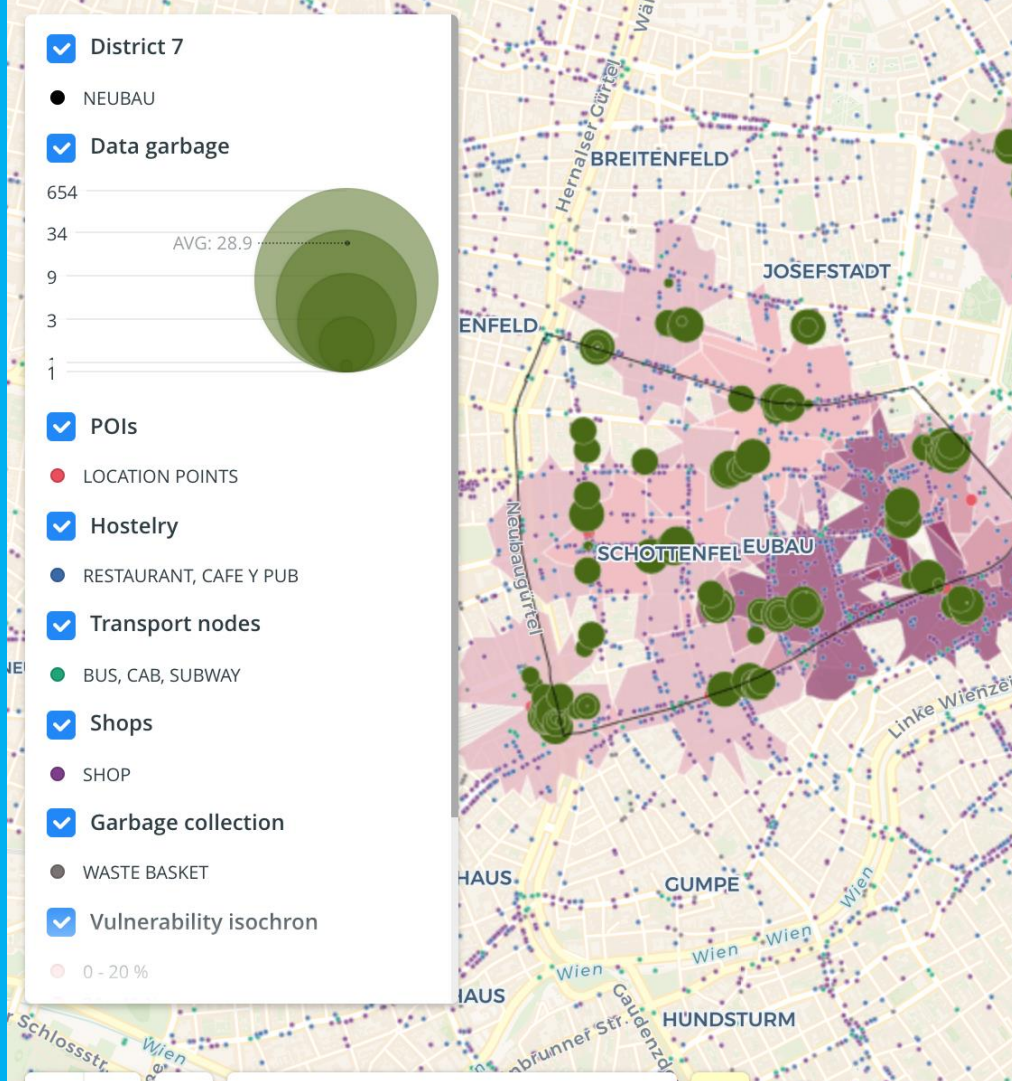
COMMUNITY ENGAGEMENT

CONNECT & EMPOWER

YOUR COMMUNITY

WE MEASURE

IMPACT



SO YOU CAN

DRIVE CHANGE.

- LEARN FROM PATTERNS & TAKE ACTION
- RECOGNIZE & REWARD THE COMMUNITY
- CONTINUED MONITORING

MAKING THE

INVISIBLE VISIBLE.

JOIN US.


GOCLEAN

From Symptom Control to Source Control

Register litter

Litter Compass

Menu GoClean Afvalgegevens inzien

Filters

Datum vanaf/tot

01-09-2017 t/m 11-10-2019

Categorie

Selecteer tags

Object

bottle, can

Materiaal

Selecteer tags

Merk

Selecteer tags

Tag aantal

0 8

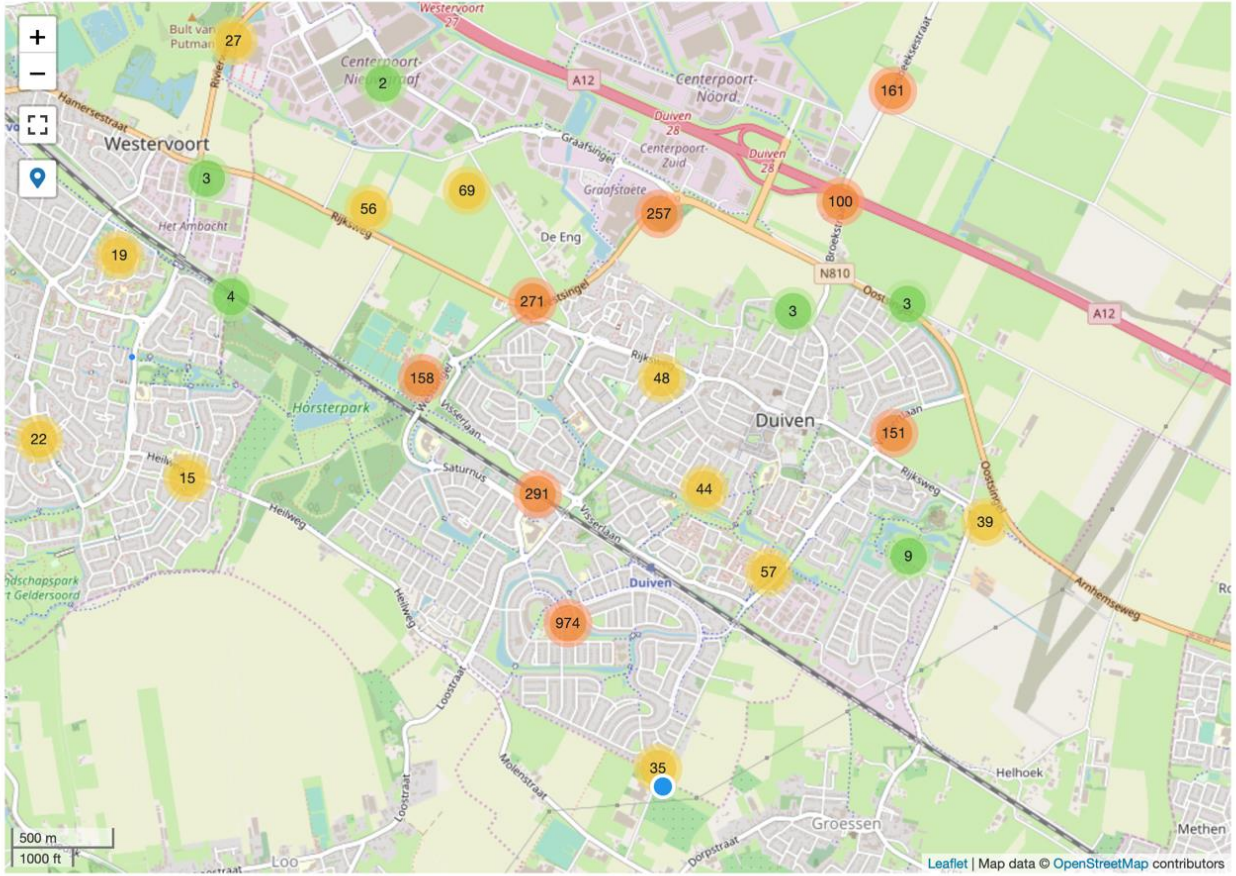
Tags

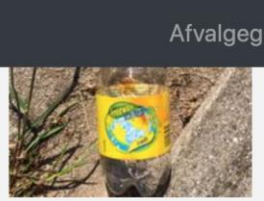
Selecteer tags

Uitdaging

Selecteer uitdaging

Kaart Tabel Diagram Grafiek Statistieken



	
(Drinks) drink, (Drinks) icetea, bottle, lipton, plastic, (ice tea) icetea	
(Drinks) energydrink, can, (red bull) redbull, aluminum	
(Drinks) energydrink, can, (red bull) redbull, aluminum	

Menu GoClean Afvalgegevens inzien

Datum vanaf/tot

01-09-2017 t/m 11-10-2019

Categorie

Selecteer tags

Object

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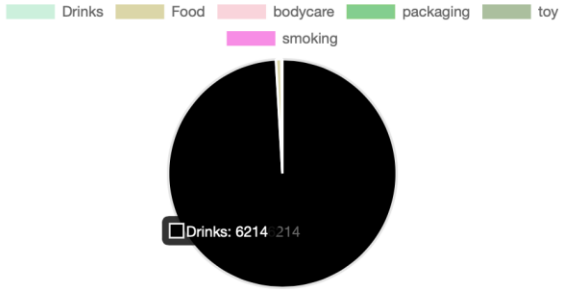

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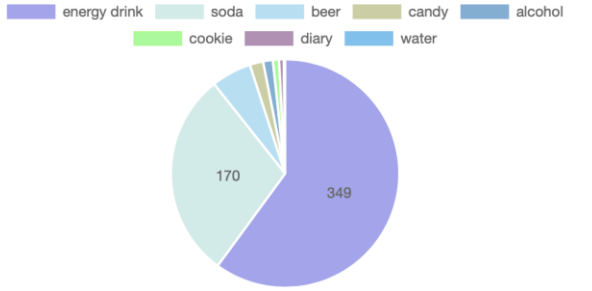
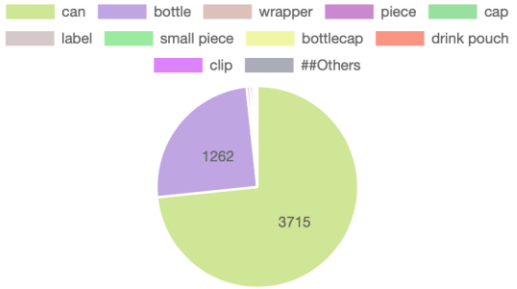


Materialen



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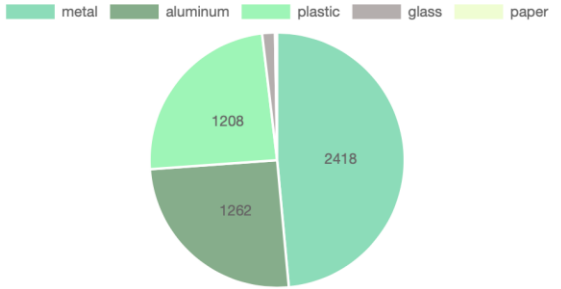

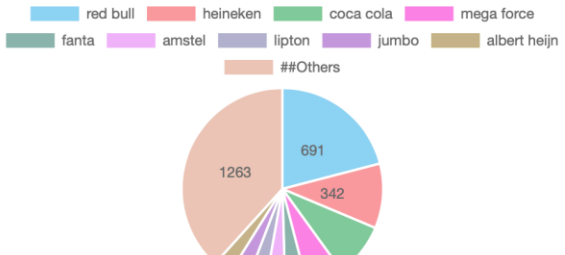

Categorie

Selecteer tags

Object

bottle, can

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Tags

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Uitdaging

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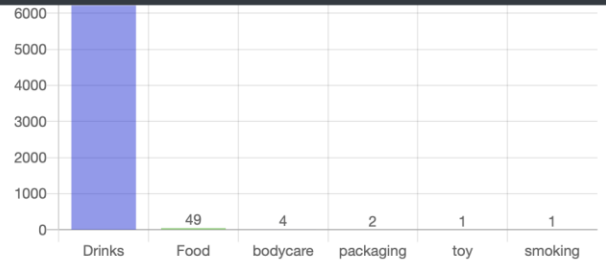
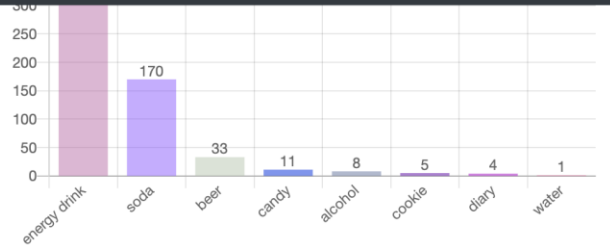
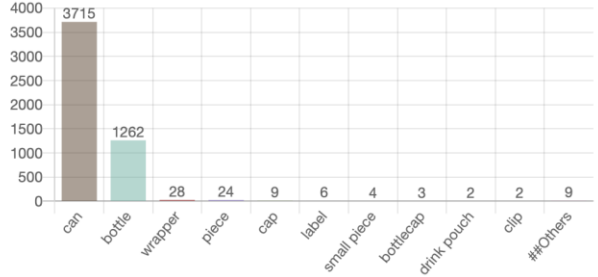
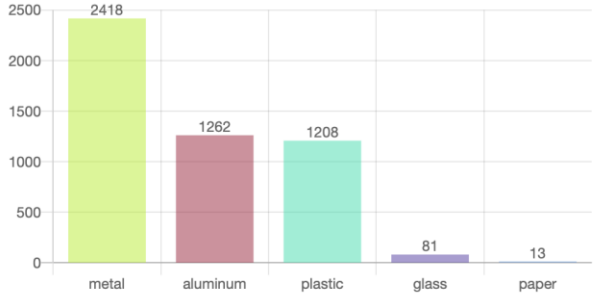




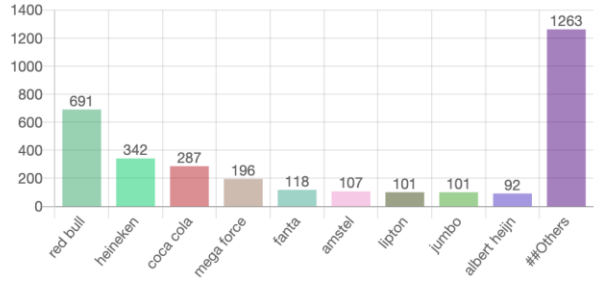
Objecten



Materialen



Merken



Menu GoClean Afvalgegevens inzien

Selecteer tags

Merk

Selecteer tags

Tag aantal

0 8

Tags

Selecteer tags

Uitdaging

Selecteer uitdaging

Gebieden

Selecteer gebieden

Filters toegepast

Opslaan filters

Filter is zichtbaar voor anderen in

37048 totaal afval.

365 gebieden.

4968 gefilterd afval.

365 geselecteerde gebieden.

C - (Categorieën)	
Drinks	6789
Food	49
bodycare	4
packaging	2
toy	1
smoking	1

SC - (Subcategorieën)	
energy drink	349
soda	170
beer	33
candy	11
alcohol	8
cookie	5
diary	4
water	1

O - (Objecten)	
can	3715
bottle	1262
wrapper	28
piece	24
cap	9
label	6
small piece	4
bottlecap	3
drink pouch	2
clip	2
candy wrapper	2
water bottle	2
glass piece	1
glass bottle	1
plastic bottle	1

M - (Materialen)	
metal	2418
aluminum	1262
plastic	1208
glass	81
paper	13

B - (Merken)	
red bull	691
heineken	342
coca cola	287
mega force	196
##Others	168
fanta	118
amstel	107
lipton	101
jumbo	101
albert heijn	92
pitt bier	80
bullit	75
slammers	66
grolsch	58
golden power	58

In Depth Monitoring

Menu GoClean Afvalgegevens inzien

Datum vanaf/tot

01-03-2019 t/m 02-10-2019

Categorie

Selecteer tags

Object

Selecteer tags

Materiaal

Selecteer tags

Merk

Selecteer tags

Tag aantal

0 8

Tags

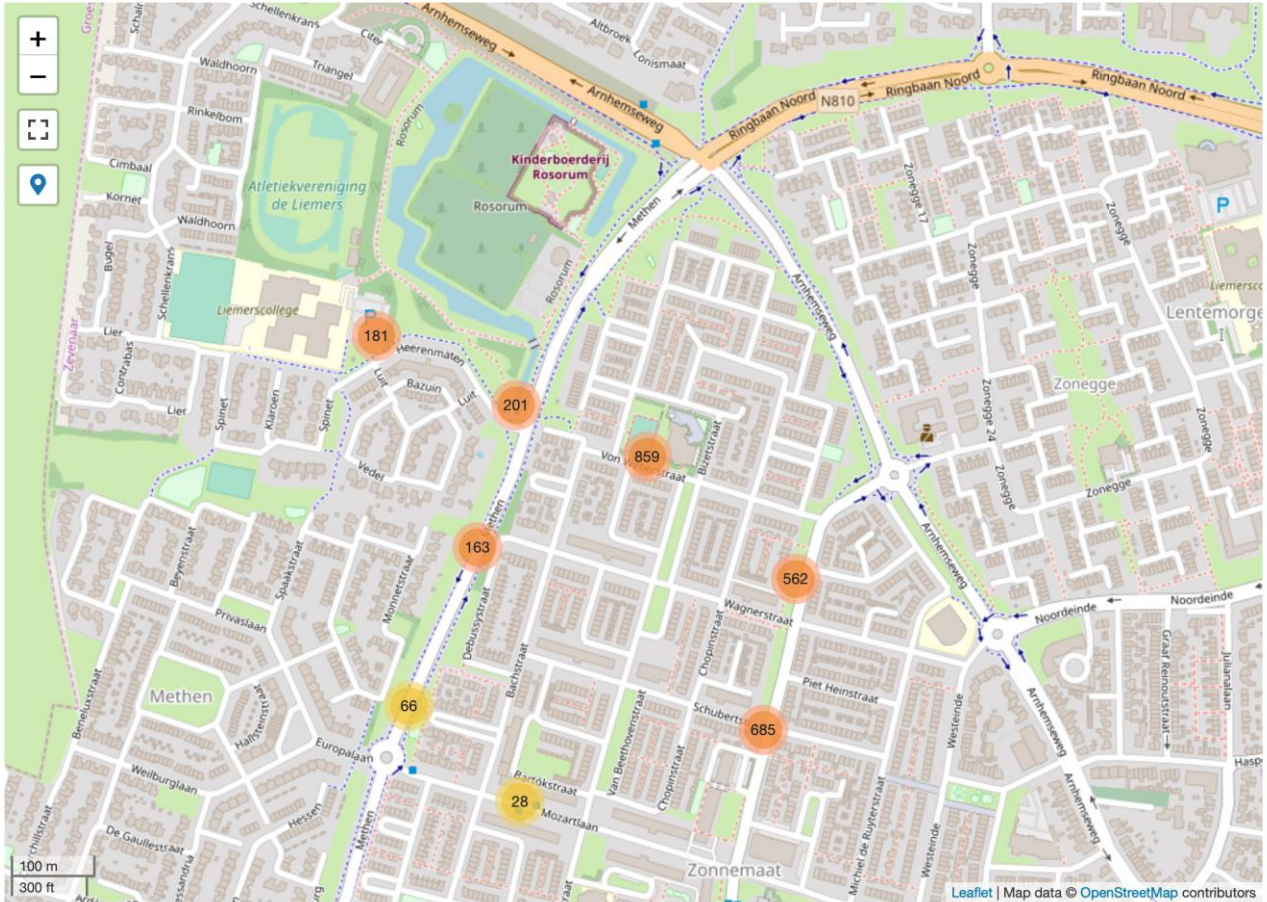
Selecteer tags

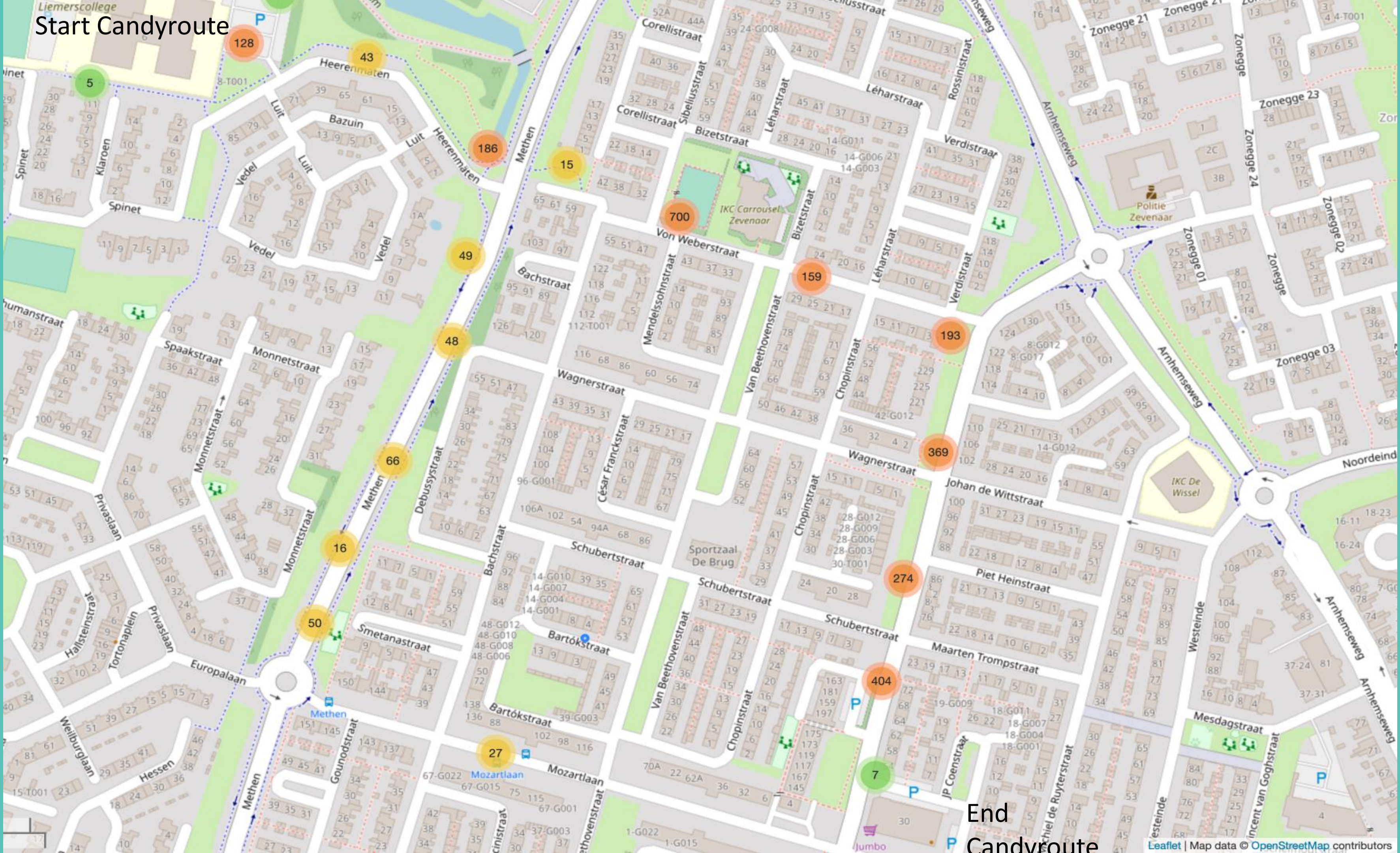
Uitdaging

Monitoring Heerematen GC

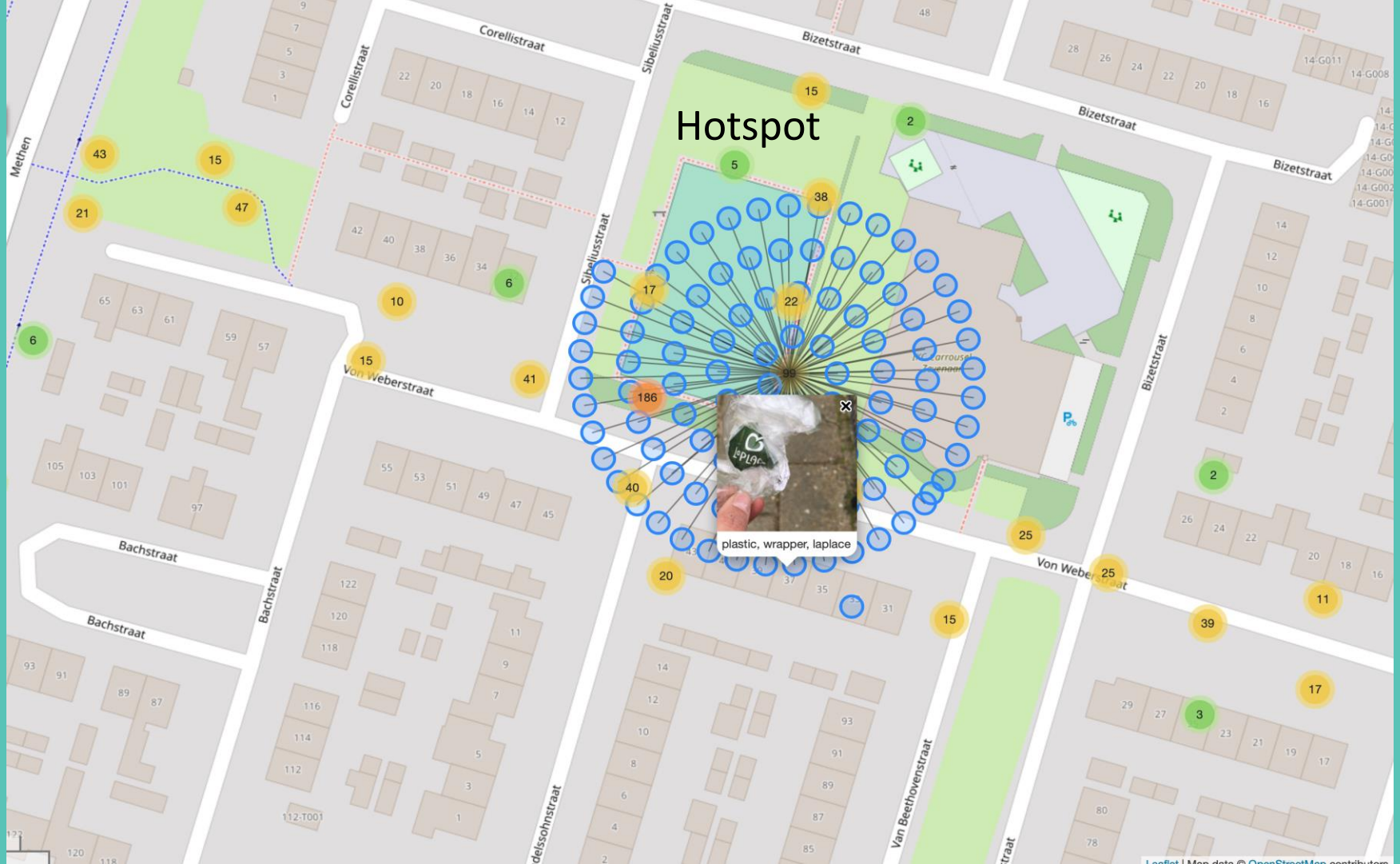
Gebieden

Kaart Tabel Diagram Grafiek Statistieken




Start Candyroute
End Candyroute
Liemerscollege
128
43
5
186
15
700
159
193
369
49
48
66
16
50
274
404
27
7
Heerenmaten
Bazuin
Luit
Vedel
Spinet
Klaroen
Methen
Corellistraat
Sibeliusstraat
Bizetstraat
Léharstraat
Verdistraat
Rossinistraat
Arnhemseweg
Zonegge
Zonegge 21
Zonegge 23
Zonegge 24
Zonegge 01
Zonegge 02
Zonegge 03
Politie Zevenaar
IKC Carrousel Zevenaar
Von Weberstraat
Bachstraat
Mendelssohnstraat
Van Beethovenstraat
Chopinstraat
Wagnerstraat
Spaakstraat
Monnetstraat
Privaslaan
Debussystraat
César Franckstraat
Johan de Wittstraat
Noordeind
IKC De Wissel
Schubertstraat
Sportzaal De Brug
Piet Heinstraat
Maarten Trompstraat
Westeinde
Smetanastraat
Bartókstraat
Europalaan
Hallsteinstraat
Tortonaplein
Weilburglaan
Hessen
Gounodstraat
Mozartlaan
Mesdagstraat
JP Coenstraat
Jumbo
Leaflet | Map data © OpenStreetMap contributors


Hotspot
Corellistraat
Sibeliusstraat
Bizetstraat
Von Weberstraat
Bachstraat
IKC Carrousel Zevenaar


Hotspot
plastic, wrapper, laplace
Corellistraat
Sibeliusstraat
Bizetstraat
Von Weberstraat
Bachstraat
Van Beethovenstraat
Methen

Students in the Field


JUMBO
Jan Heemskerk
Elke zondag geopend!
van 10.00 uur tot 18.00 uur.
Welkom bij de
allergoedkoopste
van Zevenaar!

MARI MO OSTERHEIDER

Hold Norge Rent

CLEAN EUROPE NETWORK

NederlandSchoon

holdnorgerent.no

hold Norge rent

Clean Europe Network, Den Haag 15th October 2019

Monitoring Symposium

Monitoring in Norway

Civil society as a source of knowledge and a basis for policy making

Mari Mo Osterheider, Keep Norway Beautiful


KEEP NORWAY BEAUTIFUL'S
MISSION IS TO END LITTERING

CAMPAIGNS

- Before the Birds Return
- Coastal Clean Up Week
- Keep the Autumn Beautiful
- My Part of Norway

AIMS

- Remove litter
- Awareness raising
- Collect data

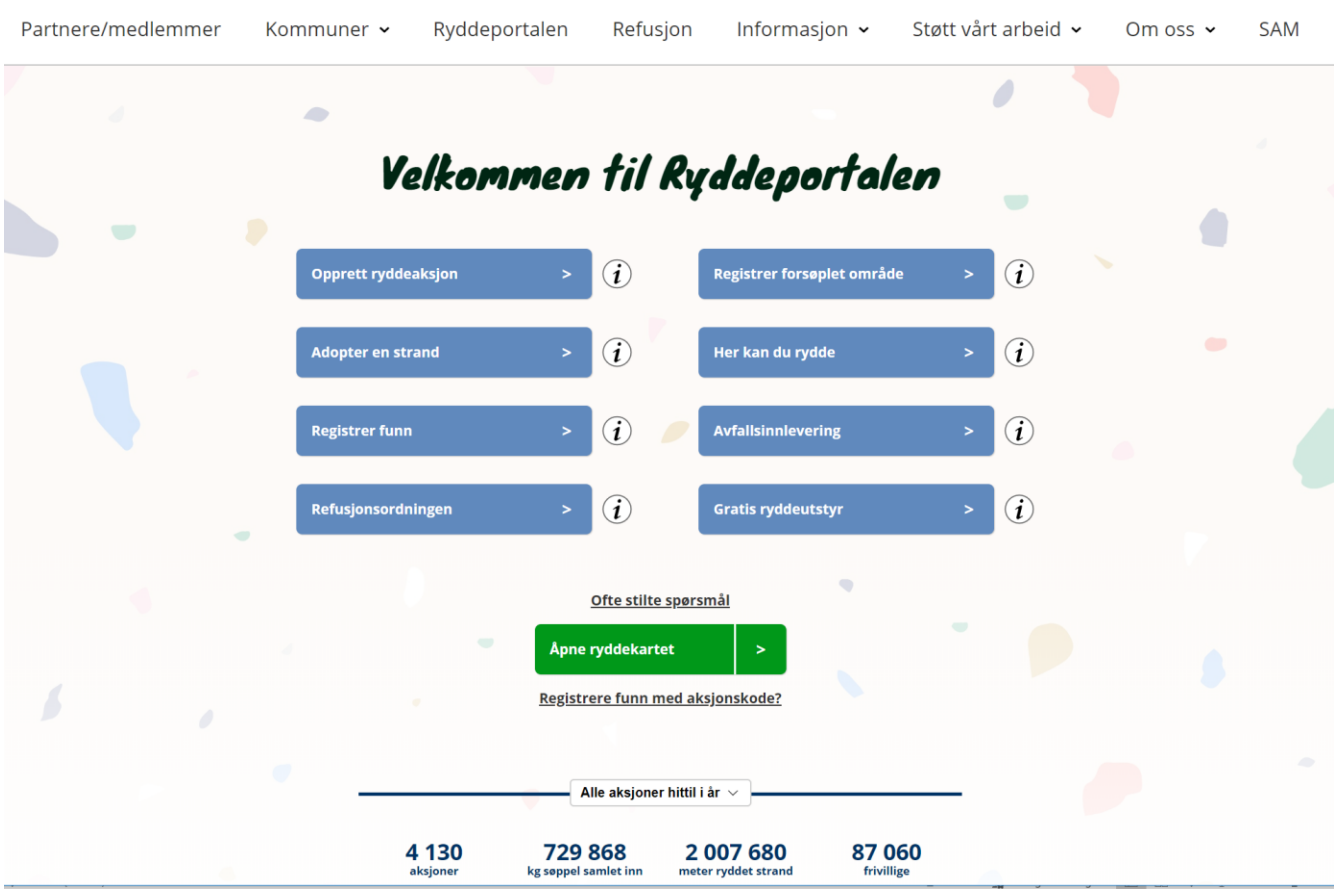

OSPAR
COMMISSION

PROGRAMMES

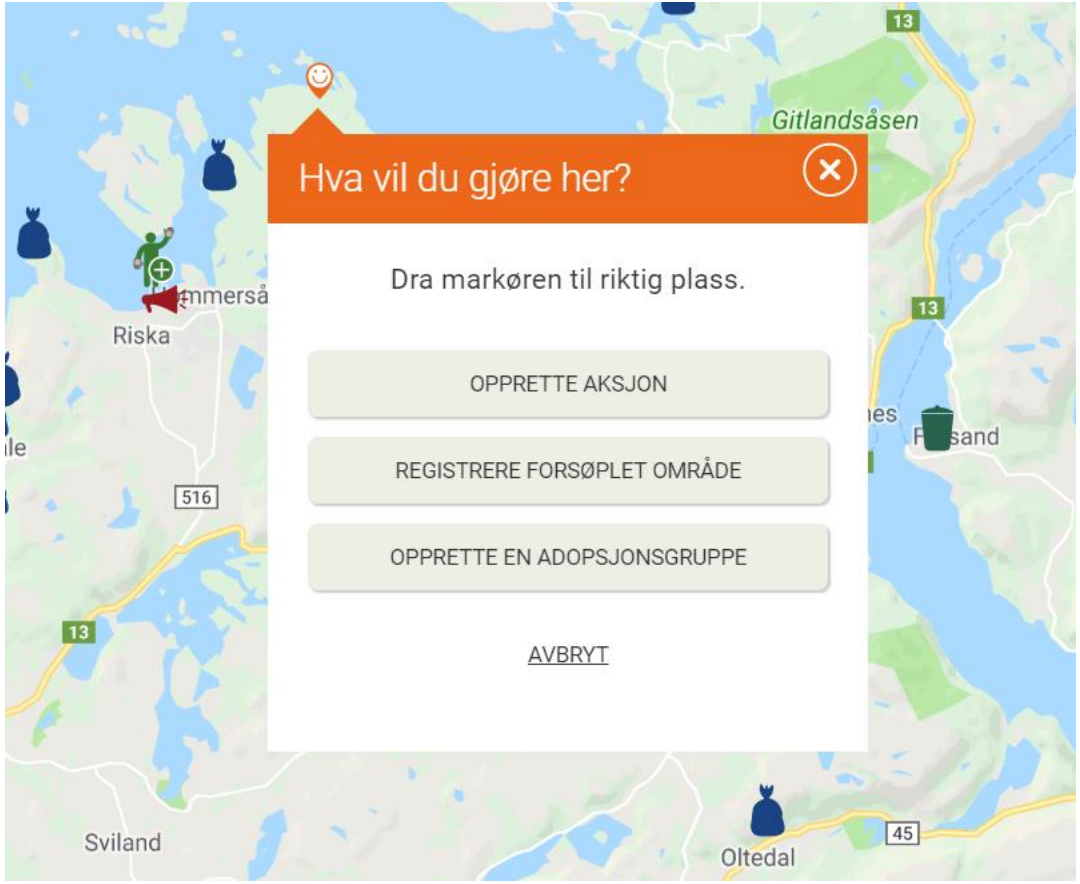
- Citizen Science
- Nordic Reference Beaches
- Rivers and Lakes

CITIZEN SCIENCE

	2011	2012	2013	2014	2015	2016	2017	2018
Volunteers	1 978	4 166	10 020	12 191	19 173	18 489	48 702	142 810
Clean-ups			389	522	855	1 364	2 845	5 738
Tonnes	19	60	116	132	250	377	1 374	2 793


Partnere/medlemmer
Kommuner
Ryddeportalen
Refusjon
Informasjon
Støtt vårt arbeid
Om oss
SAM
Velkommen til Ryddeportalen
Opprett ryddeaksjon >
Registrer forsøplet område >
Adopter en strand >
Her kan du rydde >
Registrer funn >
Avfallsinnlevering >
Refusjonsordningen >
Gratis ryddeutstyr >
Ofte stilte spørsmål
Åpne ryddekartet >
Registrere funn med aksjonskode?
Alle aksjoner hittil i år
4 130
aksjoner
729 868
kg søppel samlet inn
2 007 680
meter ryddet strand
87 060
frivillige


Planlagte aksjoner
Åpen for påmelding
Avsluttede aksjoner
Forsøplede områder
Avfallsinnlevering
Adopterte områder
Utlevering ryddepakker
Strandryddeuka 2019
Vis år 2019
Vigra
Giske
Godøya
Alnes
Hoffland
Ellingsøya
Alesund
Hessa
Langevåg
Vedde
Fiskarstrand
Eidsnes
Mauseidvågen
Solavågen
Sula
Brandal
Flø
Hareid
Barstadvik
Hundeidvik
Tusvik
Blindheim
Magerholm
Lerstad
Myklebost
Hamnsund
Uggedal
Gamlem
Brattvåg
Taftasundet
Årset, Ålesund
Brusdalsvatnet
Øvsøyrevet


Hva vil du gjøre her?
Dra markøren til riktig plass.
OPPRETTE AKSJON
REGISTRERE FORSØPLET OMRÅDE
OPPRETTE EN ADOPSJONSGRUPPE
AVBRYT
Gitlandsåsen
Riska
Sviland
Oltedal
13
516
45

Funnregistrering i kystsonen

Skjemaet er basert på Ocean Conservancys protokoll.

Antall Frivillige	Ca. kg ryddet	Ca. timer brukt	Ca. meter ryddet

* Dette er bare omtrentlige tall. En full søppelsekk tilsvarer ca. 10 kg. Husk å gange timer med antall frivillige.

Fremkomstmåte (Hvordan kom du/dere til ryddestedet?)

☐ Til fots ☐ Bil ☐ Båt, kano, kajakk ☐ Dykking ☐ Surfebrett/SUP

Skriv inn antall du/dere fant av hver type funn under

TOPP 12

Husholdningsflasker/ kanner som såpe/matolje: .....
Bomullspinner (q-tips): .....
Isopor (biter over 5 cm): .....
Pakkebånd og strips: .....
Sigarettsneiper og snus: .....
Tau under 50 cm: .....
Lokk/korker/ drikkeboksringer: .....
Drikkeflasker og bokser: .....
Matemballasje/take-away: .....
Plastposer: .....
Tau over 50 cm: .....
Uidentifiserbare plastbiter: .....

PERSONLIG FORBRUK

Engangsdekktøy som bestikk/kopper/tallerkener: .....
Ballonger: .....
Glassflasker: .....
Klær og tekstiler: .....
Lightere: .....
Matemballasje/take-away: .....
Sigarettsneiper og snus: .....
Snus- og røykpakker: .....
Husholdningsflasker/ kanner som såpe/matolje: .....
Drikkeflasker og bokser: .....
Engangsgriller: .....
Leker og smokker: .....
Lokk/korker/drikkeboksringer: .....
Plastposer: .....
Sko: .....
Sugerør og rørepinner: .....

holdNorgerent

FISKERI OG MARITIMT

Agnemballasje/bokser: .....
Fiskegarn: .....
Fiskekroker: .....
Olje- og bensinkanner: .....
Tau under 50 cm: .....
Bøyer og flottører: .....
Fiskekasser/isoporkasser: .....
Fiskesnøre: .....
Tau over 50 cm: .....
Teiner: .....

INDUSTRI OG NÆRINGSAVFALL

Armeringsfiber: .....
Landbruksplast: .....
Plastpelletts (råplastkuler/nurdles): .....
Byggematerialer/behandlet trevirke: .....
Isolasjonsmateriale: .....
Sprengkabler/skyteledning: .....

HYGIENE OG SANITÆRARTIKLER

Bind og tamponger: .....
Bleier: .....
Sprøyter og sprøytespisser: .....
Emballasje til hygieneart. som linser/tamponger/kondomer: .....
Biomedier/rensefiltre: .....
Bomullspinner (q-tips): .....
Kondomer: .....
Våtservietter: .....

ANNET

Batterier: .....
Dekk: .....
Hvitevarer: .....
Lyspærer: .....
Oljefat: .....
Paller: .....
Presenning/plastduker: .....
Bildeler: .....
Elektriske artikler: .....
Isopor (biter over 5 cm): .....
Malingsspann o.l.: .....
Pakkebånd og strips: .....
Patronhylser: .....
Uidentifiserbare plastbiter: .....
Annet dere har funnet: .....
.....
.....

Logg inn på din aksjon på holdnorgerent.no/ryddeportalen eller bruk aksjonskoden din for å registrere funn i Ryddeportalen når du har fylt ut skjemaet.

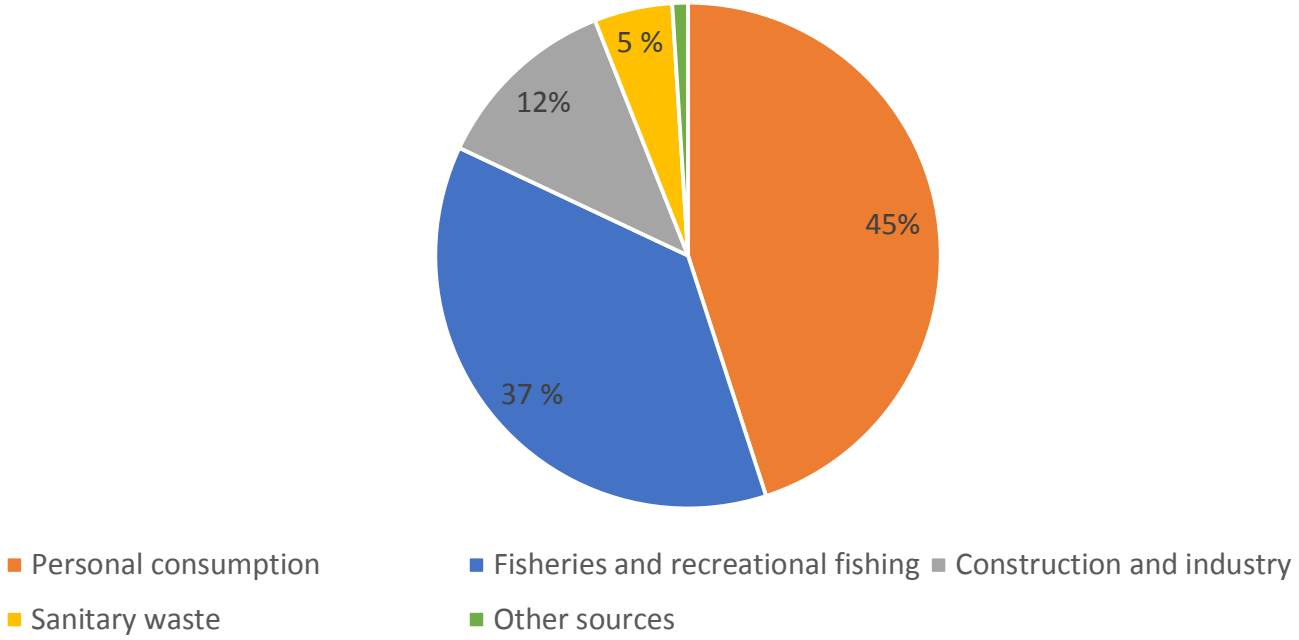
Tusen takk for din verdifulle innsats med å rydde og registrere funn!

Adresse: Øvre Vollgate 6, 0158 Oslo **E-post:** post@holdnorgerent.no **Telefon:** +47 40001438 **Nettside:** holdnorgerent.no

BASIS

- 6 975 active users
- 2 423 clean-ups
- 2015 - 2018

SOURCES MARINE LITTER 2017



NORDIC COASTAL CLEAN-UP 5 MAY 2018

The Nordic countries –
surrounded and connected by water

HOLD DANMARK RENT
hold Norge rent
HALL SVERIGE RENT
LANDVERND
ÅLANDS NATUR & MILJÖ
RINGRÁS

NORDIC COASTAL CLEAN-UP 2019

DATA CARD

Date of monotoring: _____

Beach surroundings
- ☐ URBAN
- ☐ PERI-URBAN
- ☐ RURAL

Geography
- ☐ WEST COAST
- ☐ EAST COAST
- ☐ SOUTH COAST
- ☐ NORTH COAST

Location and type
Name of beach: _____
County/region/province: _____
Municipality: _____
Type: _____
(e.g. "rocky" or "sandy")

Aggregated data

KILOGRAMS*	HOURS SPENT**	NUMBER OF PARTICIPANTS

*One trash bag is approximately 10 kilos

** Multiply hours spent with number of participants

Indicate the number of each litter type below:

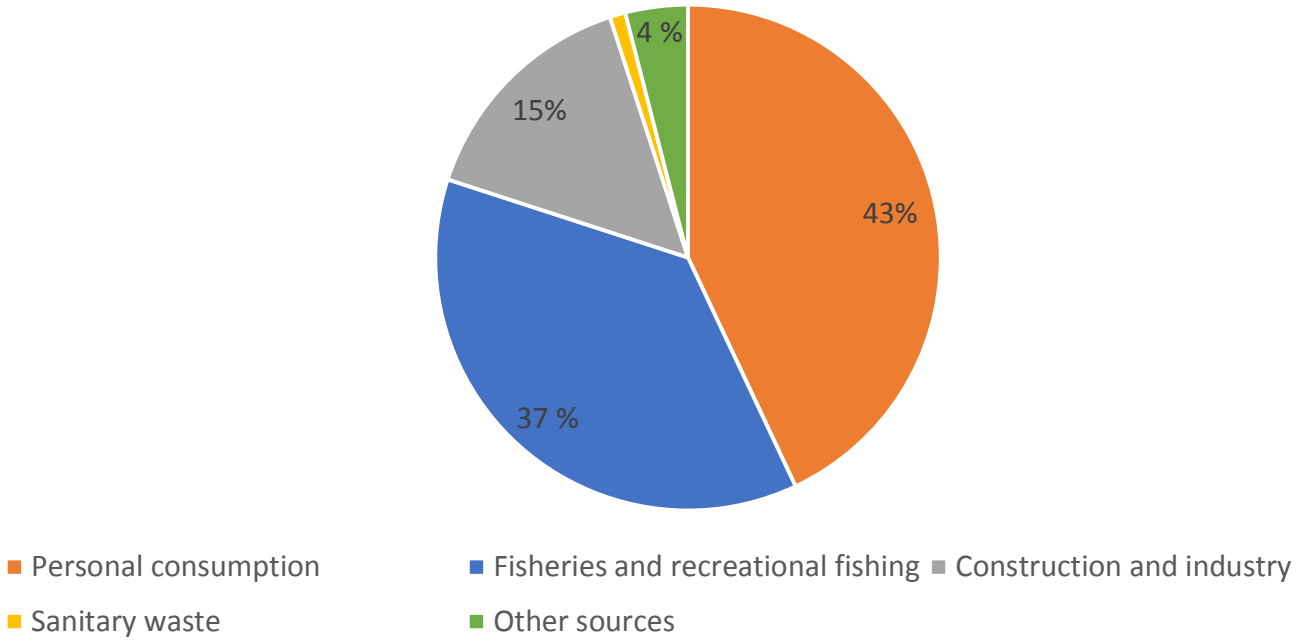
	Rope		Plastic bottles
	Plastic bags		Aluminum drinking boxes
	Cigarette butts and snus		Foamed plastic and Styrofoam
	Fish nets		Wood
	Food packaging/wrappers, disposable tableware in plastic		Sanitary waste (e.g. q-tips, wet wipes, tampon applicators)
	Metal bottle caps, lids and pull tabs		Paper and cardboard
	Metal (other)		Rubber (e.g. tires, shoe soles)
	Lumps of paraffin		Textile (e.g. clothing, cloth, shoes)
	Glass and ceramics		Electronics
	Litter sourced overseas*		Unidentified plastic pieces

(*PLEASE NOTE! Overseas items are counted twice, both as "sourced overseas" and as their item category (e.g. "bottle"))

Comments

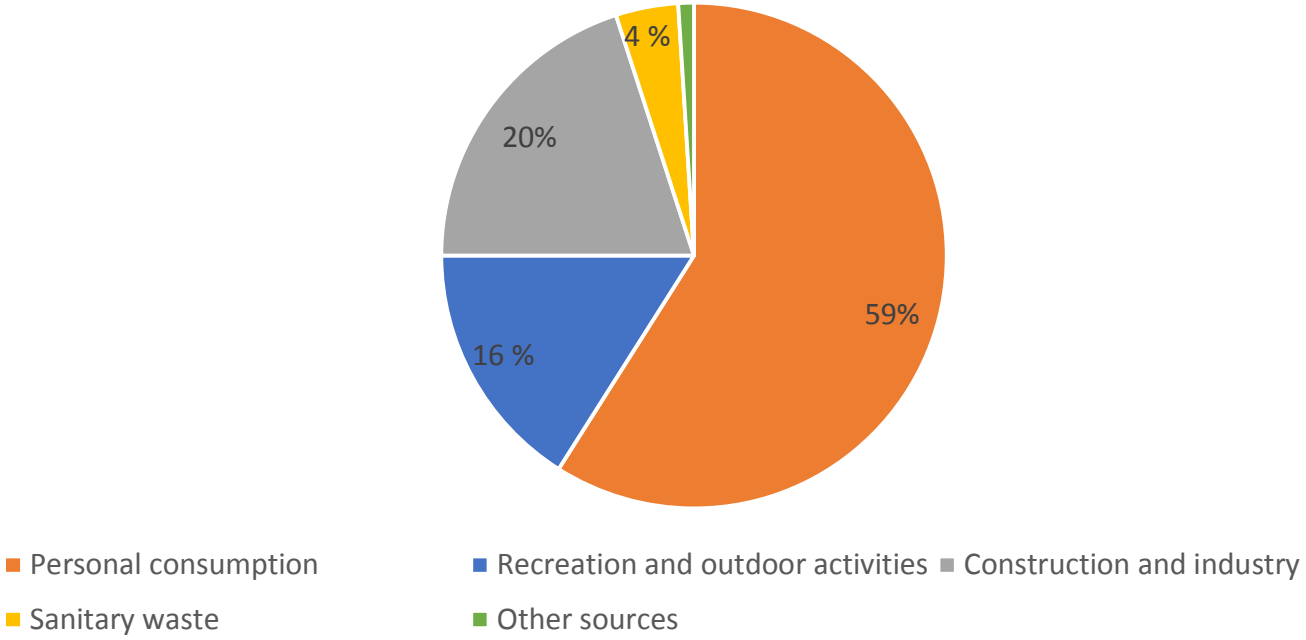
HOLD DANMARK RENT · hold Norge rent · HALL SVERIGE RENT · Blái herinn · CSR

NORDIC SOURCES MARINE LITTER 2017

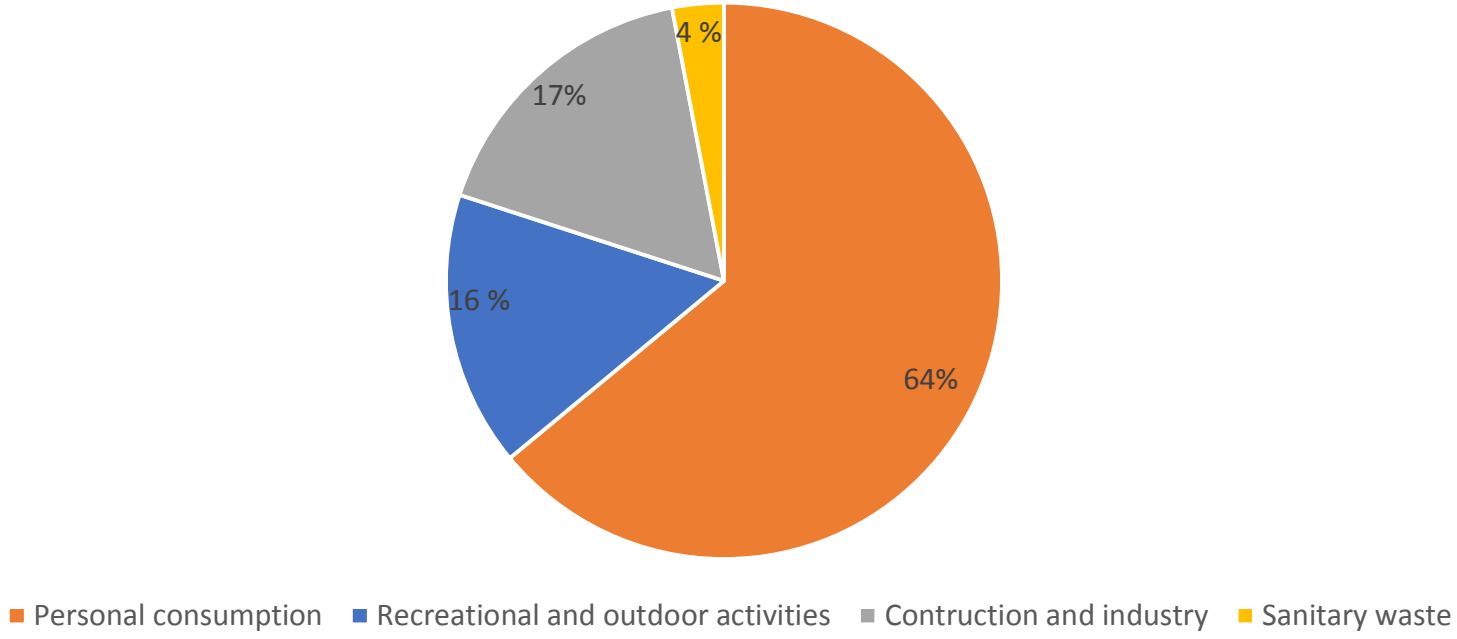


MONITORING RIVERS AND LAKES

SOURCES ALONG RIVERS AND LAKES 2017



CITIZEN SCIENCE RIVERS AND LAKES 2018




VALIDITY
INTERIØR 15


POLICY

MILJØ-
DIREKTORATET

Overordnet vurdering av kilder og tiltak mot marin forsøpling

Marin forsøpling - konsekvenser og skadepotensial

ELEKTRONISK SØKNADSSENTER

MILJØ-DIREKTORATET

Logg inn

Tilskudd til tiltak mot marin forsøpling

Årets søknadsfrist var 31.januar 2019.
Informasjon om søknadsfristen 2020 kommer i Q3/Q4 2019.

Developing a tool for data collection and monitoring in Norway

Thank you for your attention!

Twitter
@holdnorgerent

Instagram
@holdnorgerent

Facebook
facebook.com/holdnorgerent

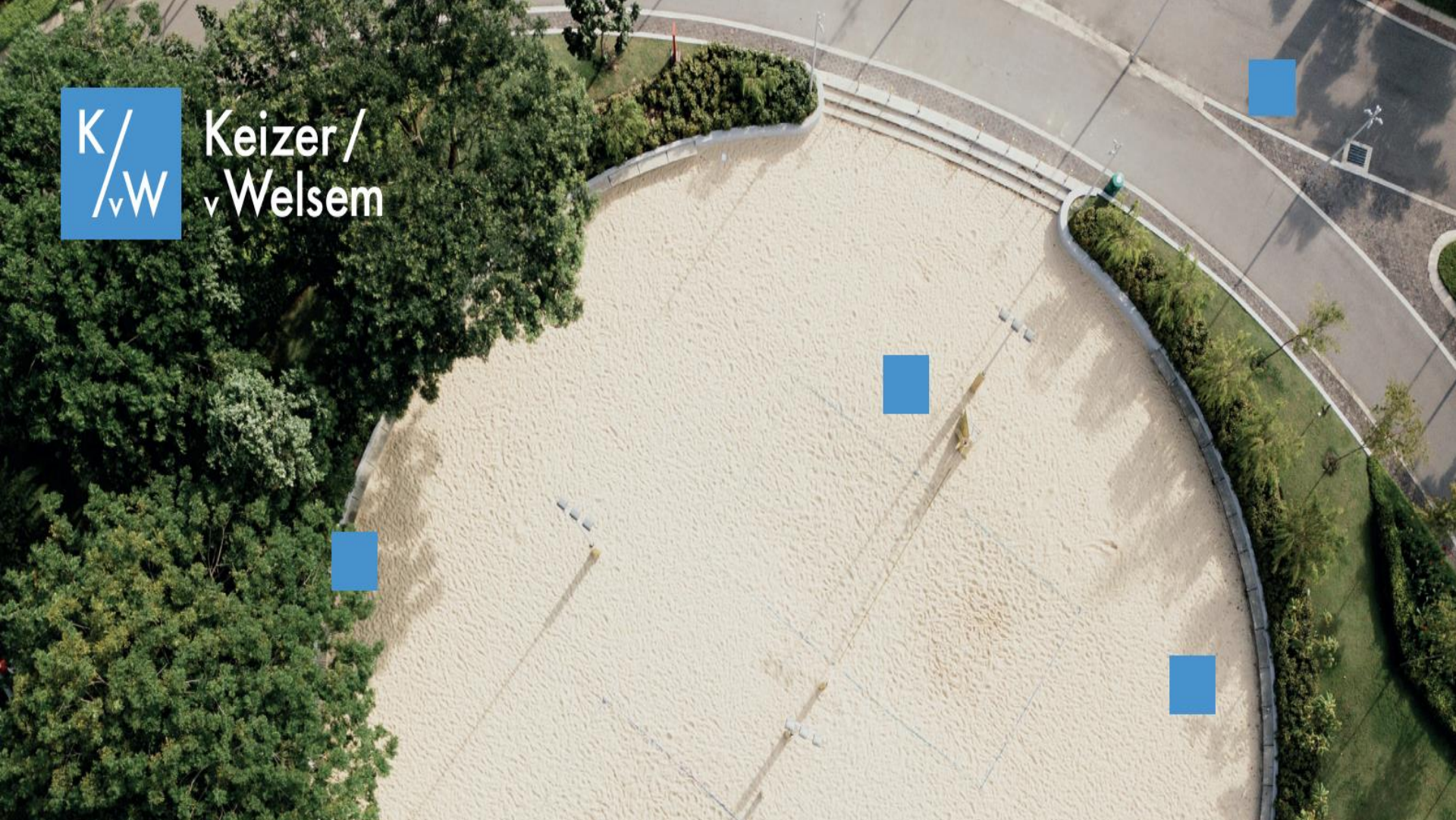
holdNorgerent

DR. KEES KEIZER

Keizer & Van Welsem

CLEAN EUROPE NETWORK

NederlandSchoon


K/vW
Keizer /
v Welsem

(Monitoring) the impact of litter on behavior and perception

Kees Keizer

Clean Europe Network 15 October 2019

Keizer / v Welsem

Today

- Litter ➡ impact / causes
- Interventions

Testing + Monitoring

- Experimental – Survey/ correlational
- Goal ➡ establish + convince

Keizer / v Welsem

Litter

Impact/ causes

Causes / spread

Causes / spread <clip>

Causes / spread

33% VS 69%

Causes / spread

Causes / spread

Effects / spread

Effects / spread

Satisfaction

Keizer / v Welsem

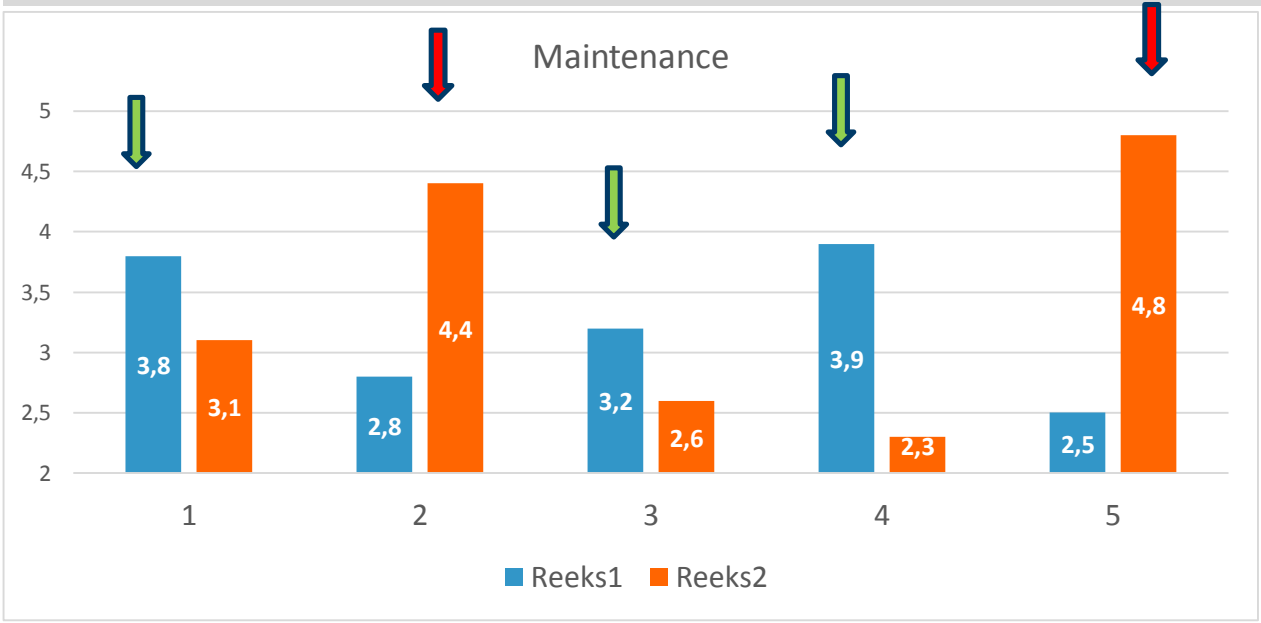
Technical quality vs Satisfaction

Very satisfied

Satisfied

Neutral

Dissatisfied



A+

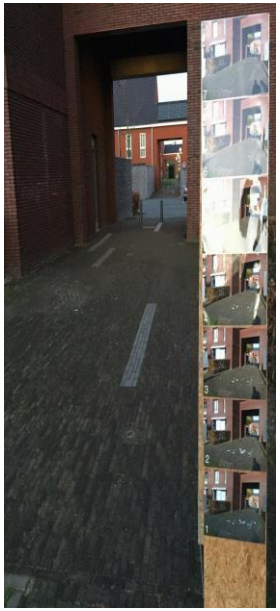
A

B

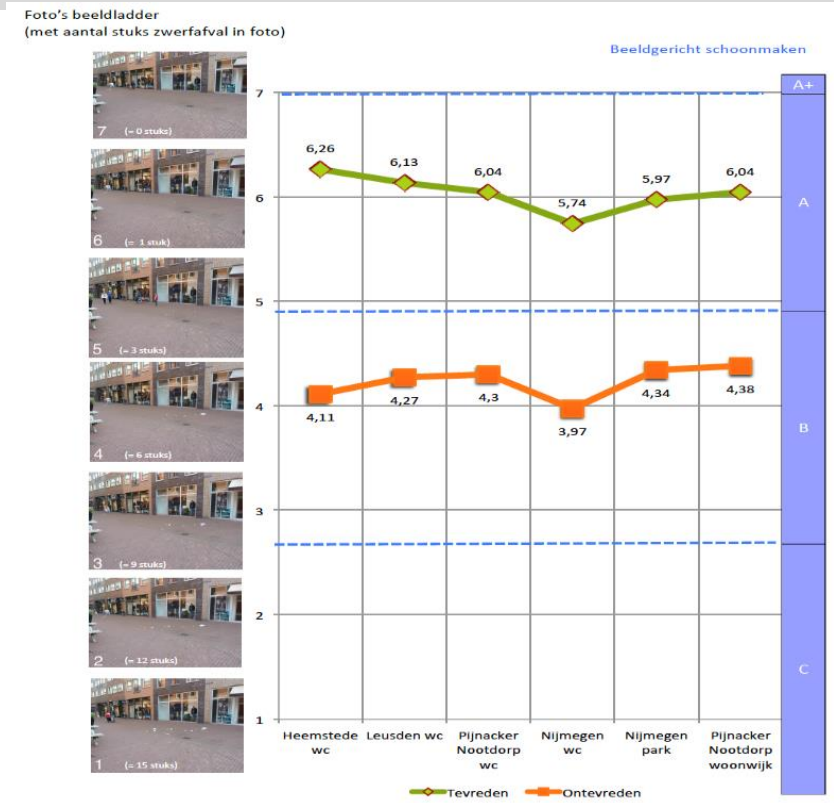
C

Keizer / Welsem

Amount of litter + (dis)satisfied



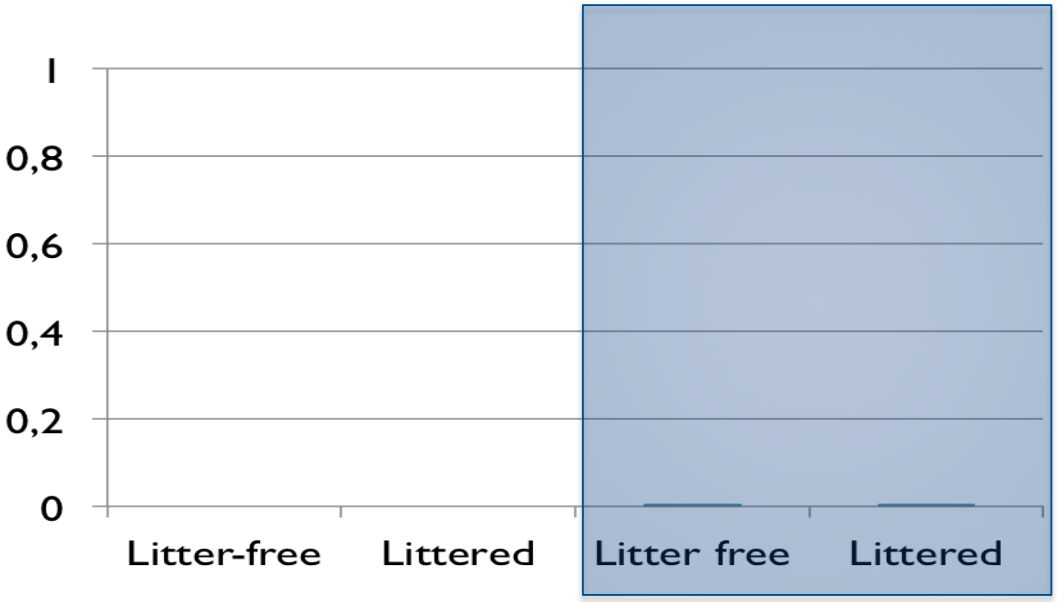
Amount of litter + (dis)satisfied



Interventions

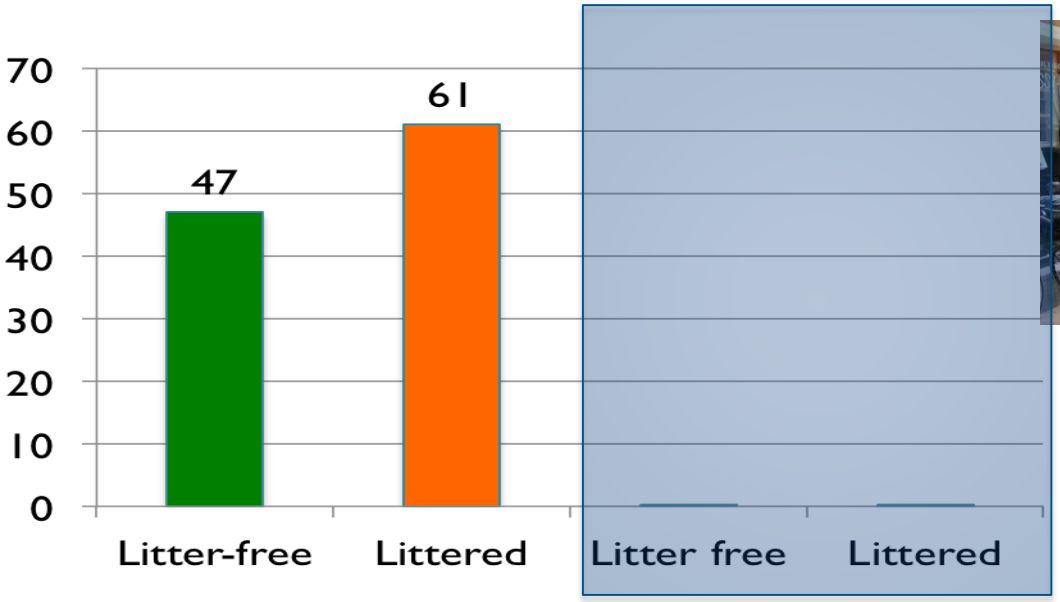
Prohibition signs

Prohibition signs



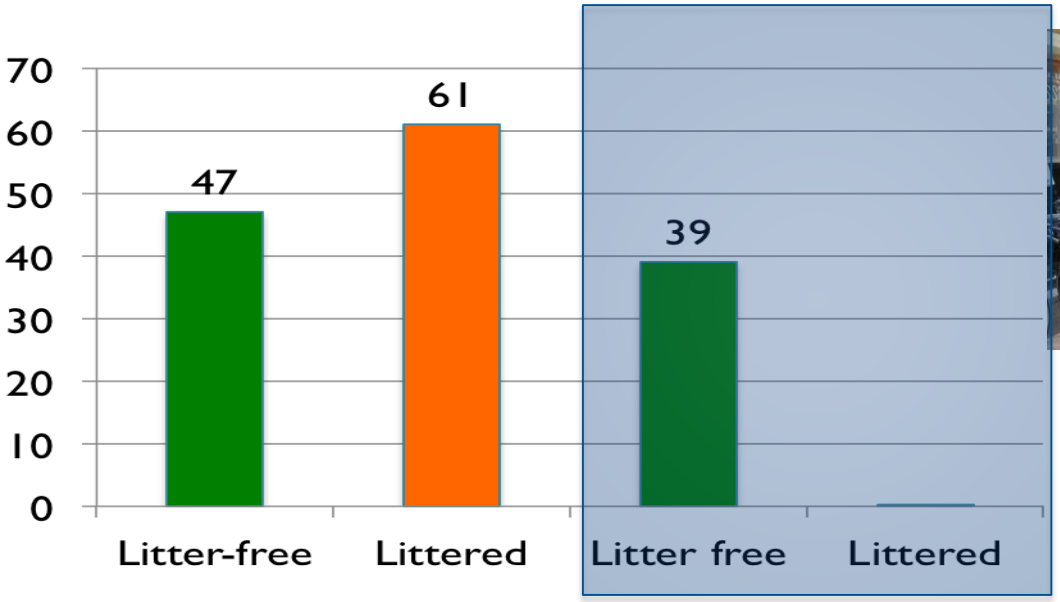
Prohibition sign: no litter!

Prohibition signs



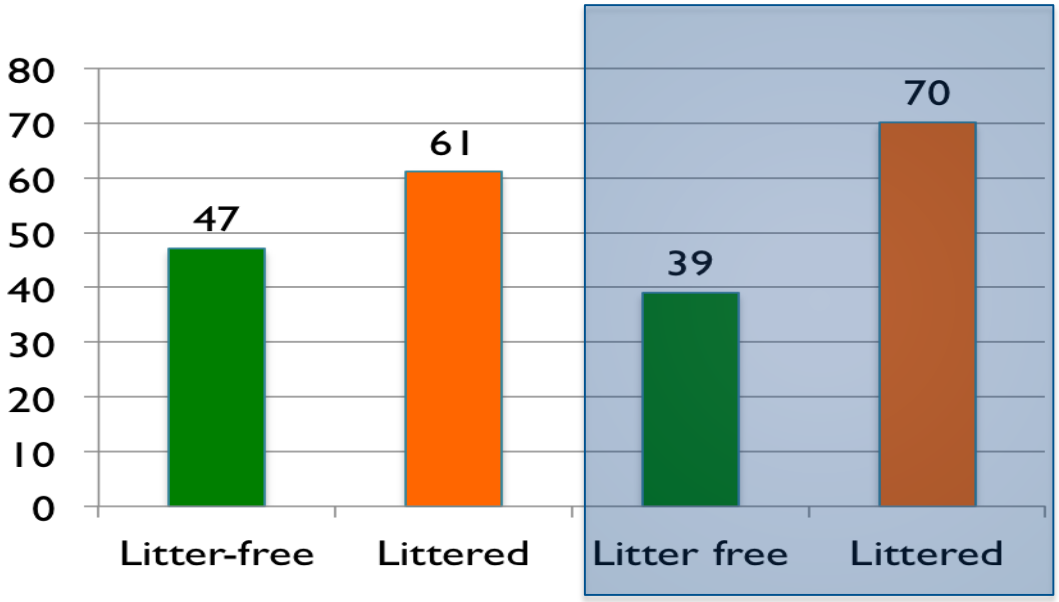
Prohibition sign: no litter!

Prohibition signs



Prohibition sign: no litter!

Prohibition signs



Prohibition sign: no litter!

(Positive) Effects

(Positive) Effects / spread

(Positive) effects / spread

Communicate: Who cleans + (dis)satisfied

Today

- Litter ➡ impact / causes
- Interventions

Testing + Monitoring

- Experimental – Survey/ correlational
- Goal ➡ establish + convince

Keizer / v Welsem


K/vW
Keizer /
v Welsem
www.keizervanwelsem.nl

Wrappers


IK BEN
SUPPORTER VAN
SCHOON
Wilhelmina
PEPERMUNT
Wilhelmina
PEPERMUNT

JAN VANSTOCKEM

OVAM

Flanders
State of the Art

WE MAKE TOMORROW BEAUTIFUL
OVAM

Litter fraction count

Jan Vanstockem, Kristien Huygh, Els Gommeren (OVAM)

1. Introduction

- **Goal:** construct a methodology to sample litter composition (amount/weight/volume) on the public domain in Flanders
  - → Sampling design
  - → Upscaling methodology

- **Ultimate goals:**
  - → **Policy evaluation:** Information on litter composition
    - × Work on prevention of specific litter types
  - → **Extended producer responsibility:** Distribution of cleanup costs among sectors

1. Introduction

- Litter fractions: 15 main fractions, 25 subfractions
  - 1. Cigarette butts
  - 2. Gum
  - 3. Dog poop (with/without bag)
  - 4. Food packaging:
    - → a. Cups and lids
    - → b. Plastic bottles up to 3 liter
    - → c. Cans
    - → d. Cartons
    - → e. Hard plastic packaging for single use
    - → f. Soft plastic packaging for single use
    - → g. Other service packaging for food (paper or foil)
  - 5. Other plastic packaging not for food or drinks
    - → a. Foils
    - → b. Other
  - 6. Other plastic litter (non-packaging)
  - 7. Paper and cardboard
    - → a. Cigarette box
    - → b. Newspapers and magazines
    - → c. Flyers, publicity material etc.
    - → d. Other (e.g. paper tissues)
  - 8. Fruit, vegetable or other food waste
  - 9. Plastic bags
  - 10. Disposable wipes for personal hygiene
  - 11. Balloons and balloon sticks
  - 12. Glass (bottles, jars, pieces)
  - 13. Textile and clothing
  - 14. Big pieces of litter (> 3 liter bottle)
  - 15. Other (e.g. umbrella)

2. Our approach

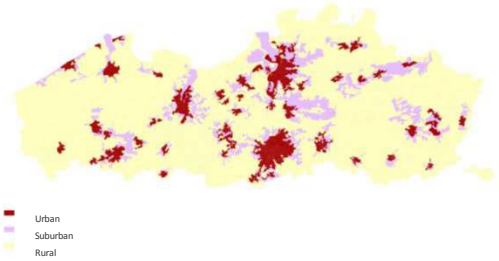
- We want to use a **limited number of local measurements** to derive **robust estimates** of litter fractions **on the Flemish level**

- **Therefore:**
  - → **Step 1: decide *where* to measure - *mapping***
  - → **Step 2: decide *how much* to measure – *sample size***
  - → **Step 3: decide *how* to measure - *methods***
  - → **Step 4: upscale to Flemish level**

2.1 Step 1: Where to measure?

Public domain in Flanders

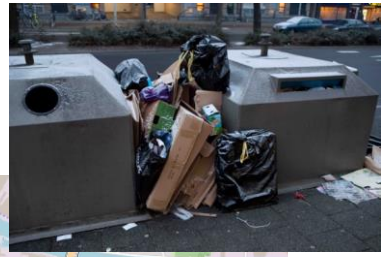
- Start with map of Flanders (10 x 10m raster)
  - → Remove all building lots
  - → Include all roads
  - → Remove all water
  - → Remove highways and railway tracks
  - → Remove zoos
- Distinguish between urban and rural areas (density, inhabitants)

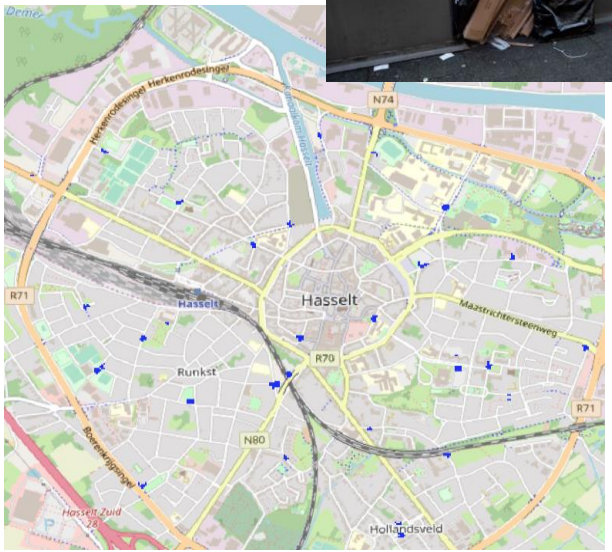


2.1 Step 1: Where to measure?

Public domain in Flanders

- 16 environment types (surroundings, terrain, area):
  - → Waste collection areas
  - → Public transport stops
  - → …
- Mapping each type using specific maps and characteristics

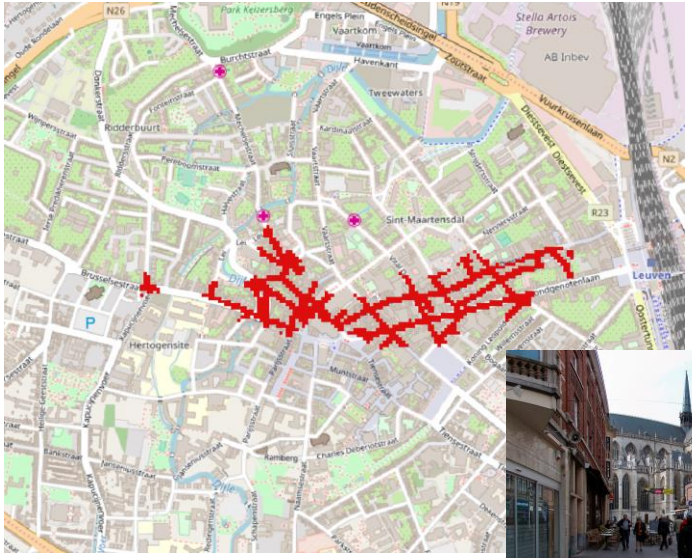




Flanders
State of the Art

2.1 Step 1: Where to measure?

- Some more examples
  → Shopping & Walking street (Leuven)



Flanders
State of the Art

2.1 Step 1: Where to measure?

- Some more examples
  → Highway parking without concession (Waasmunster)

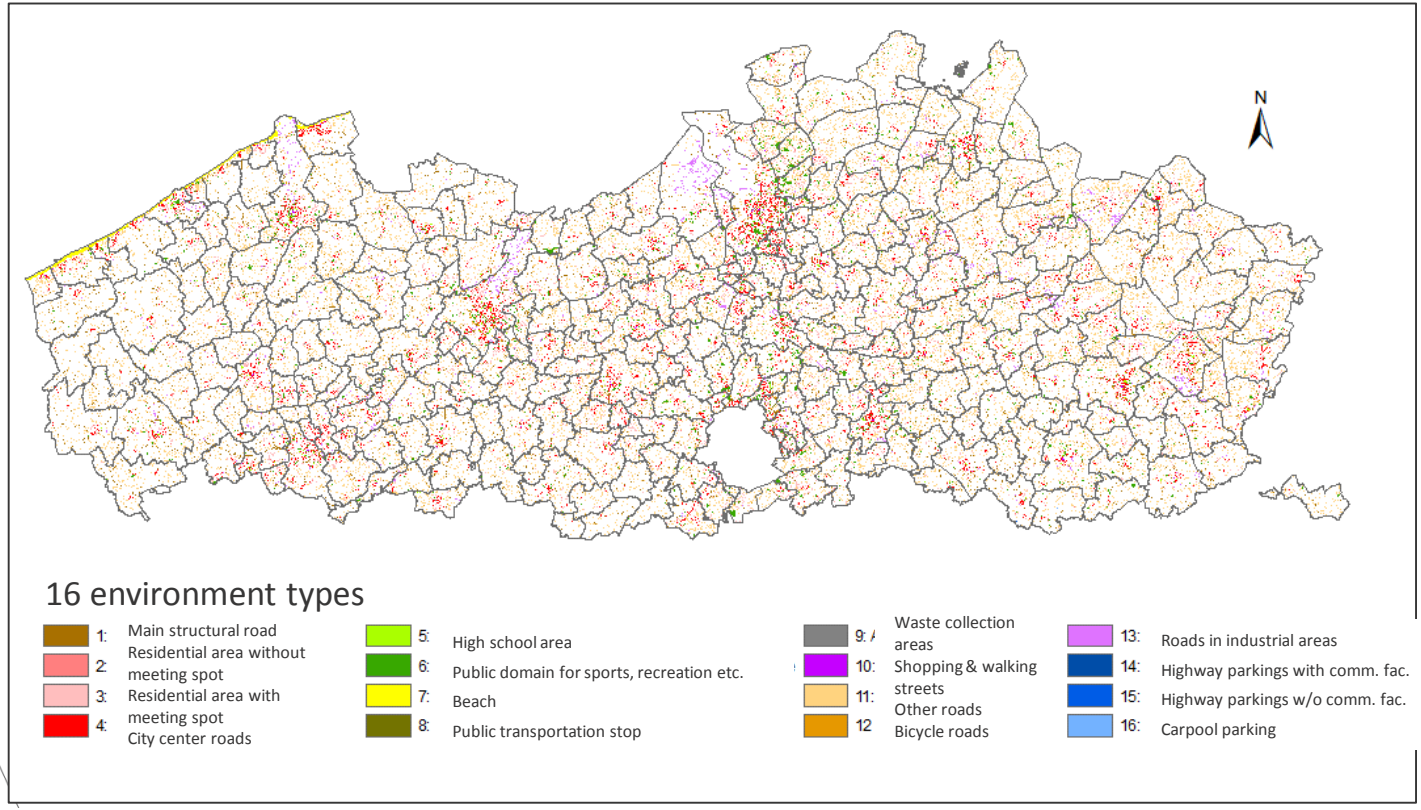
Flanders
State of the Art

2.1 Step 1: Where to measure?

- Conflicts: some spots have multiple environment types
  → E.g. waste collection nearby high school environment
- What to select? Use priority list:

Type	Priority
7) Beaches	1
5) High school environment	2
6) Public domain for sports, recreation etc.	3
8) Public transport stops	4
9) Waste collection areas	5
10) Shopping & walking street	6
2) Residential areas with meeting spot	7
3) Residential areas without meeting spot	8
4) City center roads	9
12) Bicycle roads	10
1) Main structural roads	11
14) Highway parking with concession	12
15) Highway parking without concession	13
16) Carpool parking	14
13) Roads in industrial areas	15
11) Other roads	16

2.1 Step 1: Where to measure?

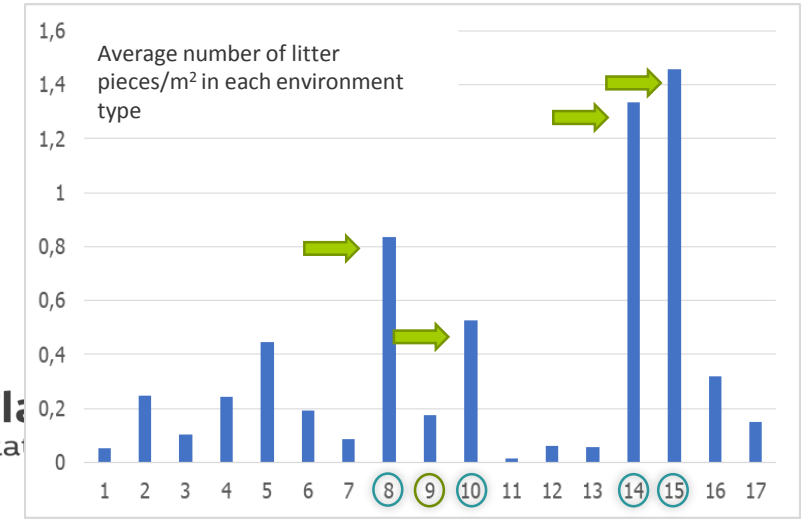


2.2 Step 2: How much to measure?

- How many points to sample to get a robust estimate?
- Decide end goal: how much detail needed?
  → E.g. statistically robust comparisons between all 16 environment types = more measurements necessary
  → Balance costs/time investment versus relevance

2.2 Step 2: How much to measure?

- Pre-pilot measurements beforehand:
  - → Not all environment types differ significantly in litter number
  - → Choose groups of types (‘strata’) based on significant differences: high- vs. low-risk strata

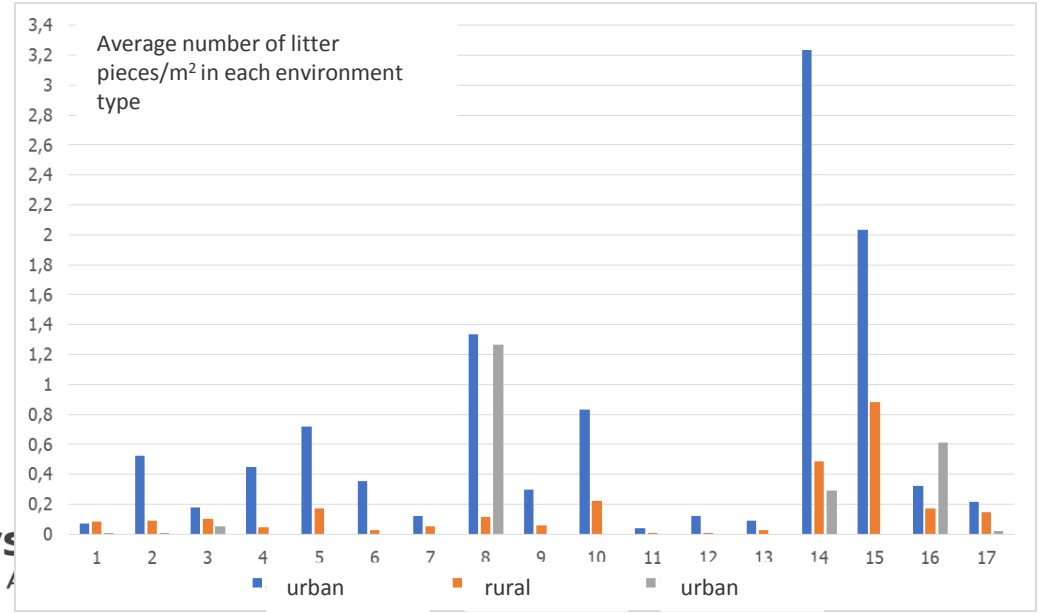


High risk:

8 – Public transport stops
10 – Walking & shopping street
14 – Highway parking with commercial facility
15 – Highway parking without commercial facility
16 – Carpool parking
= High-risk

2.2 Step 2: How much to measure?

- Also significant differences between environment types in rural and urban areas



Flanders
State of the A

2.2 Step 2: How much to measure?

- Determine final strata:
  - → Only make relevant comparisons
  - → Reduce total amount of measurements (and costs)
- Determine acceptable error margin: 5 %
- Final strata and sample numbers:

Stratum	Urban	Rural
High-risk	1 516	1 011
Low-risk	2 105	1 906
Total	6 538	

2.2 Step 2: How much to measure?

- Spread measurements over 1 year (4 seasons)
- Number of sampling points in each environment type relative to its cover % in stratum
  - → E.g. 1 124 sampling points for public transport stops in urban environment (1 124 out of 1 516)
    - × Public transport stops cover 74 % of the high-risk stratum in urban environments
- Backup sampling points are provided

2.3 Step 3: What to measure?

1. Number of pieces of each fraction
2. Weight of each fraction
3. Volume of each fraction

→ Collection *in situ*, measurements *ex situ*
→ ! Chewing gum and cigarette butts counted *in situ*, use of reference weight and volume
→ Registration of surface area (m^2) and exact location

2.4. Step 4: Upscale to Flanders

- Relative contribution of fractions: no upscaling needed due to sampling design
- Upscaling of absolute numbers, weight and volumes to total for Flanders based on relative cover of strata

The future

- Measurements starting this week by external partner
- 4 seasonal measurement campaigns
- Results expected by December 2020

Flanders
State of the Art

3. Big data @ Litter fraction count

- Big data @ Preliminary study
  → Mapping of environment types: databases, registers, addresses, map layers (by external partner)
- “Big” data @ Study
  → Preparations: clear and convenient data-template
  → During measurements: big data can be wrong (wrong environment types, locations)
  → After measurements: correct use of dataset – statistical design

Questions?

- jan.vanstockem@ovam.be

Flanders
State of the Art

MARIA CABRERA

PAISAJE LIMPIO

CLEAN EUROPE NETWORK

NederlandSchoon

eLitter

A new way of knowing the land-based litter

Knowledge

How much
What Kind
Where

asociación vertidos cero
www.vertidoscero.com

LIBERA
UNIDOS CONTRA LA BASURALEZA

SEO BirdLife

ecoembes
El poder de la colaboración

paisaje limpio
www.paisajelimpio.com

Land-based litter in Urban and Natural environments

Our focus is on NATURE

- The impact of littering more important
- No cleaning service

Harmonize

As 80% of marine litter comes from land, it has been vital to harmonize it with the marine litter methodologies

Based on

- RIMMEL project (European Commission)
- Clean Europe Network methodology
- Master List of European Union
- OSPAR
- Official monitoring of the marine litter (Spanish Ministry of Environment)
- MARNOBA

Habitats

NATURAL

Recreational Areas
Forest
River
Path
Lake
Cliffs
Etc.

URBAN

Street
Industrial place
Shopping center
Park
Parking
Etc.

Classification by Categories

Plastic
Paper/Paperboard
Wood (Machined)
Metal
Glass
Waste of electrical and Electronic Appliances
Sanitary Waste
Sanitary Medical
Other

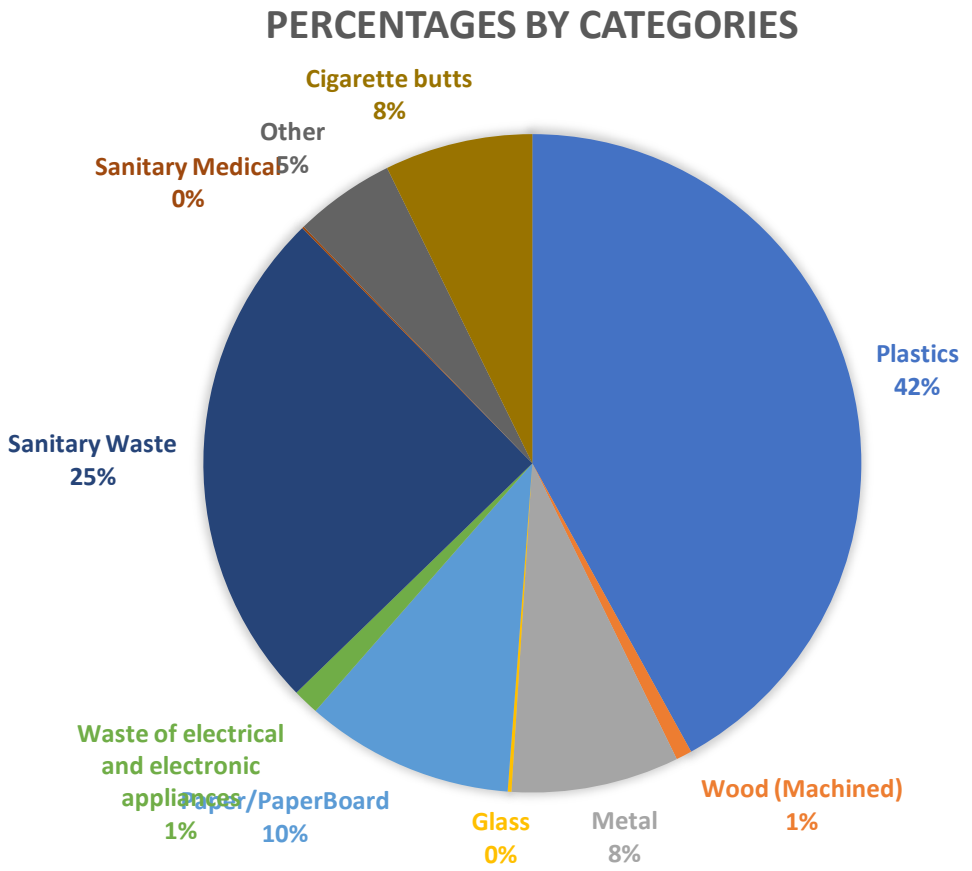
Measurement TRANSECT

100 x 6 m2

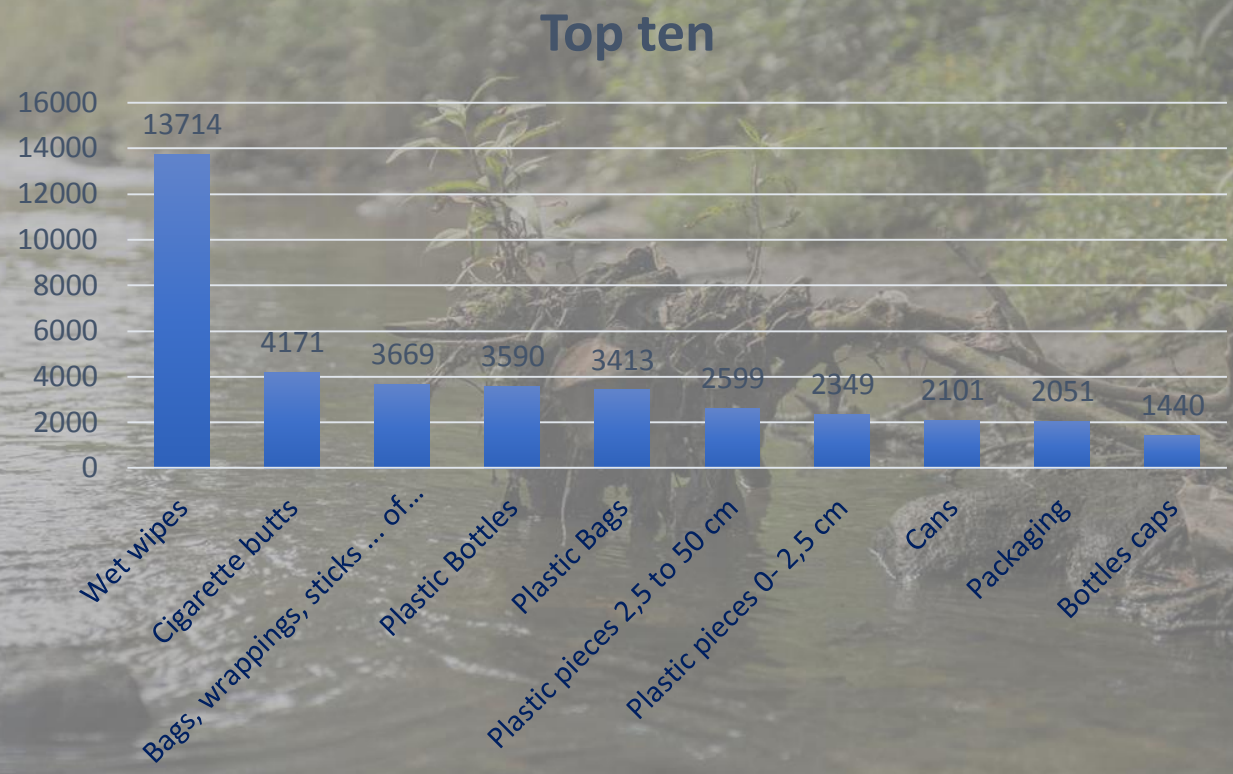
Increase

Rivers

Percentages by categories in 110 riverbanks



Top ten


Top ten
16000
14000
12000
10000
8000
6000
4000
2000
0
13714
4171
3669
3590
3413
2599
2349
2101
2051
1440
Wet wipes
Cigarette butts
Bags, wrappings, sticks ... of...
Plastic Bottles
Plastic Bags
Plastic pieces 2,5 to 50 cm
Plastic pieces 0- 2,5 cm
Cans
Packaging
Bottles caps

Everyone is welcome

- Free (Apple Store and Play Store)
- Share data
- Public data (www.elitter.org)
- Networking
- Available in English… coming soon

eLitter

THANK YOU

FLOOR UITTERHOEVE

Sustainability Manager McDonalds

CLEAN EUROPE NETWORK

NederlandSchoon

SCALE FOR GOOD

Packaging & Recycling

Climate Action

Youth Opportunity

Beef Sustainability

Commitment to Families

Packaging & Recycling

2025

Global goals

- All packaging made from recycled or renewable material
- Maximum recycling of our restaurant waste

Local goals (NL)

- Zero net**litter**
- Reduction of **food waste** in top 10-categories
- Closing the **loop** with circular supply chain solutions

SAMEN MEER DOEN VOOR MINDER AFVAL

Doing more for less waste, together

Reduce & sustainalize packaging

Maximize waste collection, minimize litter

Maximize recycling of all restaurant waste

SAMEN MEER DOEN VOOR MINDER AFVAL

Maximize waste collection, minimize litter

What did we know?

- Packaging weight put on the market
- Collection weight of 7 waste fractions of all Dutch restaurants
- Eat-in versus take-away sales

What didn't we know?

- Share of packaging weight in our restaurant waste
- Share of packaging weight thrown away in bins outside of McDonald's premises
- Share of non-collected waste in the form of litter
- Weight of litter collected

Getting the data

Packaging weight in restaurant waste

- Waste content analysis
- *Challenge*: packaging in waste is contaminated with food and liquid

→ 83,4% of all guest packaging put on the market by McDonald's is collected by McDonald's

→ Including non-McDonald's packaging in restaurant waste, this number is 92,4%

Packaging weight in litter

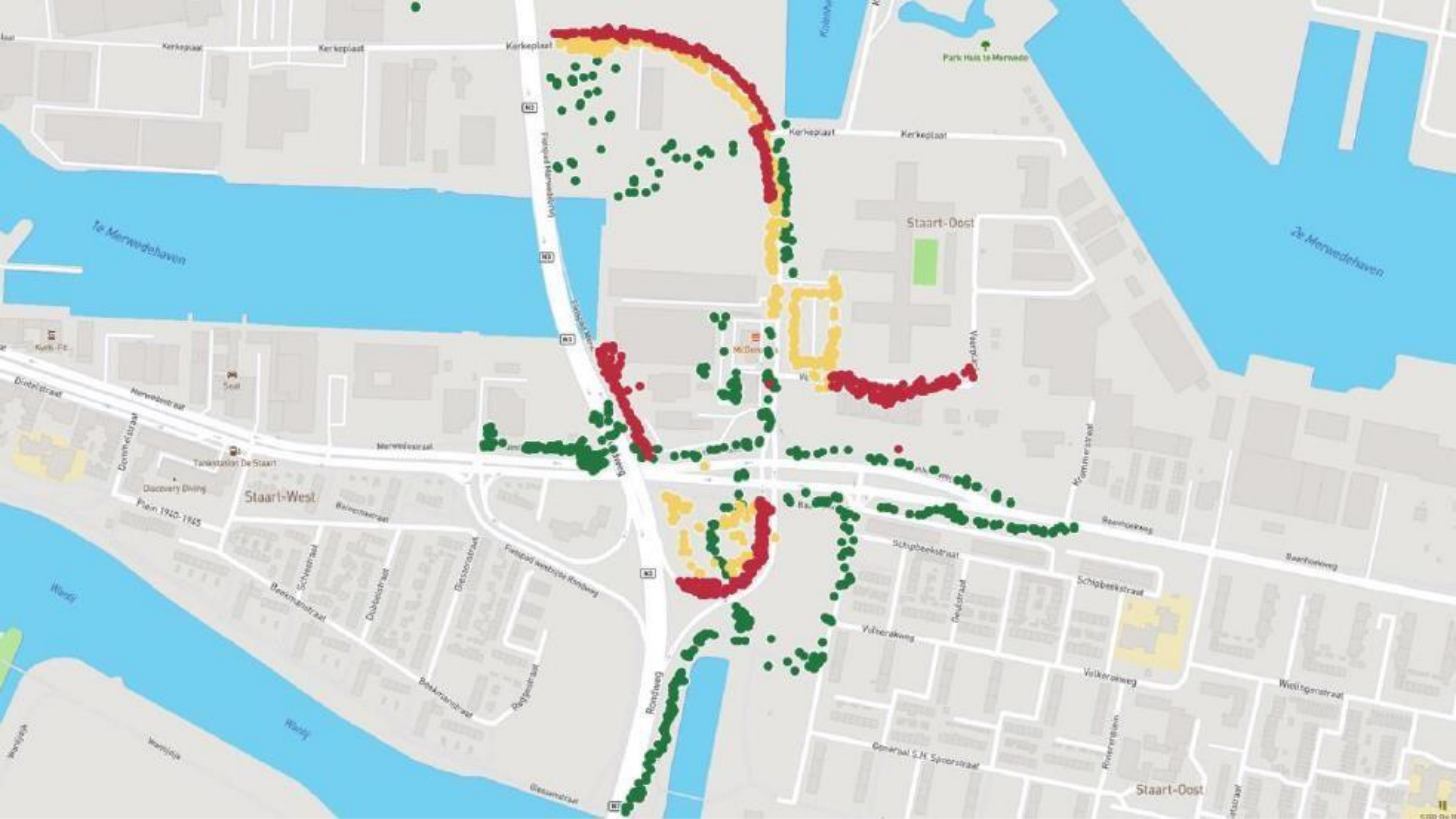
- Litter registration in 3k perimeter of 9 restaurants by @Zwerfinator
- *Challenge:* data reliability when extrapolating

→ 0,06% of restaurant waste ends up as litter on the street

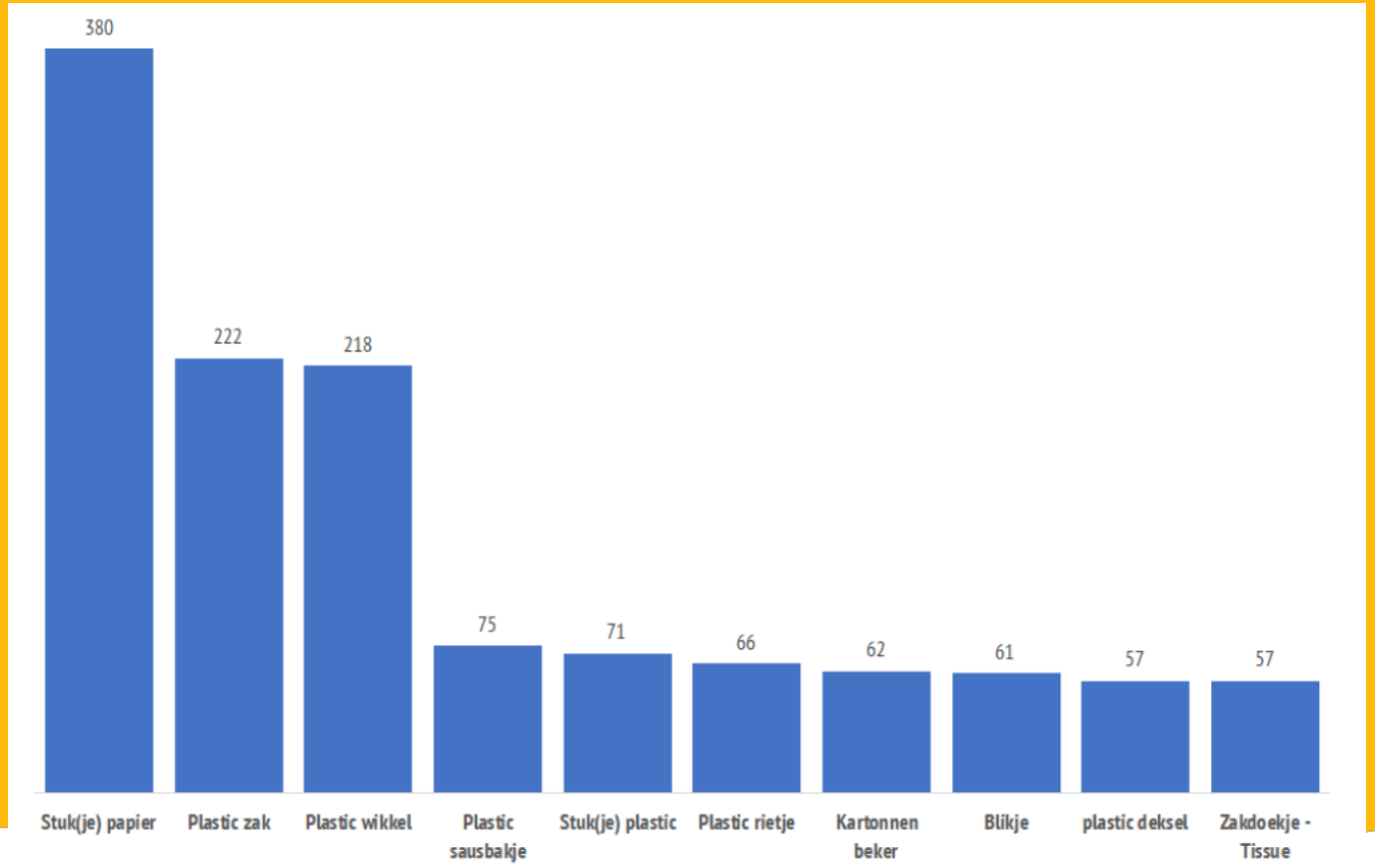
→ Hotspots & hot items

Weight of litter collected

- Collection samples
- *Challenge:* organise separate collection for regular waste and litter



Kerkeplaat
Kerkeplaat
Kerkeplaat
Kerkeplaat
Kerkeplaat
Park Huis te Merwede
1e Merwedehaven
2e Merwedehaven
Staart-Oost
Merwedestraat
Merwedestraat
Tankstation De Staart
Discovery Diving
Staart-West
Plein 1940-1945
Dintelstraat
Dommelstraat
Rondweg
Baanhoekweg
Baanhoekweg
Schipbeekstraat
Schipbeekstraat
Volkeraweg
Volkeraweg
Generaal S.H. Spoorstraat
Staart-Oost


380
222
218
75
71
66
62
61
57
57
Stuk(je) papier
Plastic zak
Plastic wikkel
Plastic sausbakje
Stuk(je) plastic
Plastic rietje
Kartonnen beker
Blikje
plastic deksel
Zakdoekje - Tissue

Using the data

- The right bins in the right spot (on premises)
- Daily clean-ups
- Customer communication
- Ad-hoc co-operation with local partners

- The right bins in the right spot (outside premises)
- More effective daily clean-ups
- Communication based on behavioural science
- Structural co-operation with local partners

NEXTGEN CUP CHALLENGE


SCALE FOR
GOOD

GO OUTSIDE:
ROLAND BUIJS & DARRYL ISSELT

Beheeraccent

CLEAN EUROPE NETWORK

NederlandSchoon

beheeraccent

The Dutch approach:
“Inspecting our streets”

beheeraccent

1. Quality levels

2. Locations

3. Method

4. Practice

beheeraccent

Qualitylevels

- Level A+: Perfect
- Level A: Clean and comfortabel
- Level B: Functional
- Level C: Restless image and discomfort
- Level D: Function loss, capital destruction and unsafe

Topic

Qualitylevels

Photos

Subscription

Requirement

Green	grass – large litter (>10 cm)			
A+	A	B	C	D
				
There is no large litter.	There is litte large litter.	There is a limited amount of large litter.	There is quite a lot of large litter.	There is a lot of large litter.
Large litter (> 10 cm) 0 pieces per 100 m²	**Large litter (> 10 cm)** ≤ 3 pieces per 100 m²	**Large litter (> 10 cm)** ≤ 10 pieces/100 m²	**Large litter (> 10 cm)** ≤ 25 pieces/100 m²	**Large litter (> 10 cm)** > 25 pieces/100 m²

Scoring scales for litter (NederlandSchoon)

1. Concrete – large litter
2. Concrete – small litter
3. Planting – large litter
4. Grass – large litter
5. Water – floating litter
6. Litterbins filling degree
7. Fly tipping – Container bags and other waste around containers

Street furniture	**waste bin-filling rate**			
A+	A	B	C	D
 Waste bin is empty.	 Waste bin is less than half full.	 Waste bin is not full.	 Waste bin is almost full.	 Waste bin is full.
Filling rate 0% per waste bin	**Filling rate** ≤ 40% per waste bin	**Filling rate** ≤ 80% per waste bin	**Filling rate** ≤ 100% per waste bin	**Filling rate** > 100% per waste bin

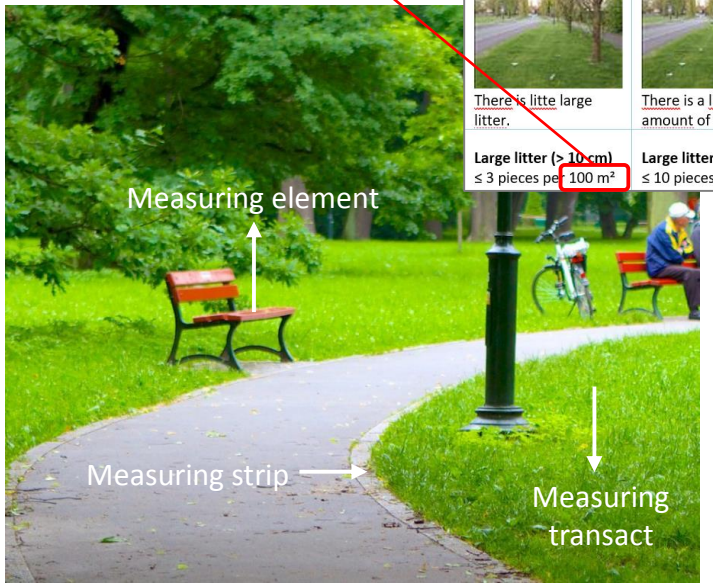
Measuring locations

- Grid maintanance area
- Measuring location is a square of 100 x 100 meter
- Distinction to functional areas, neightbourhood layout or ambition levels

Location is divided in measuring units:

- Transect (m2)
- Strip (m1)
- Element (pieces)

A	B	C
		
There is litte large litter.	There is a limited amount of large litter.	There is quite a lot of large litter.
Large litter (> 10 cm) ≤ 3 pieces per 100 m²	**Large litter (> 10 cm)** ≤ 10 pieces/100 m²	**Large litter (> 10 cm)** ≤ 25 pieces/100 m²



beheeraccent

- Search within your measuring locaties the worst place (transact, strip or element)
- Lowest scoring requirement determines the score
- Determine the quality score (A+, A, B, C or D)

A	B	C
 Litterbin is less than half full.	 Litterbin is not full.	 Litterbin is almost full.
Filling degree ≤ 40% per litterbin	**Filling degree** ≤ 80% per litterbin	**Filling degree** ≤ 100% per litterbin

C

Practice

- Measuring 5 locations
- Timetabel: 15:00 – 16:00 (±10 minutes per location)
- 1 Tablet per group
- Instructionforms (includes scoring scales, locations and inspection forms)

- Group 1: Darryl Isselt
- Group 2: Nina Listing
- Group 3: Roland Buijs

Feedback

- What do you take home from the Dutch measuring method?
- How can we improve the Dutch measuring method?

Thanks for your attention!

DISCUSSING SWOT

"HOW DO WE, AS ORGANIZATIONS FIGHTING LITTER AND LITTERING ACROSS EUROPE, ENSURE THE USAGE OF MONITORING DATA BEING A SMART TOOL FOR THE EFFECTIVE PREVENTION OF LITTER AND LITTERING?"

CLEAN EUROPE NETWORK

NederlandSchoon

Reference work of Clean Europe Network

Below you will find the summaries of the presentations, submitted by the presenters, of the Clean Europe Network Monitoring Symposium 2019 in order of presenting.

1. **Lise Keilty Gulbransen**, Chair of Clean Europe Network: placing monitoring into the current European context.

In a European context litter monitoring has never been more important. Littering, and especially marine litter and plastic pollution, is high on the agenda both globally and here in Europe.
Governments and municipalities are creating policy and legislation to combat littering both on land and in our oceans. And industry is both voluntarily and by means of legislation implementing changes to address the problem of littering. Main instruments in Europe. WFD: Broad strategic focus. Single Use Plastic (SUP): Narrow focus on certain items.

As everyone in this rooms knows, it is essential that litter prevention is knowledge based and targets the common litter items as well as the industries that are the main sources of littering. This requirement in the WFD will push member states to find the right combination of measures to tackle their litter problems. If they adhere to it … Strong statement. Places litter monitoring right up on the top of the agenda.

However, in the SUP directive the need for monitoring litter is not really made that clear. Here monitoring is largely focused on consumption reduction and collection targets. But there is no doubt, and governments are waking up to this, that we need knowledge about the current state of affairs, we need to monitor the effect of the measures in the directive, and we need quality control to ensure new litter problems do not emerge in the wake of the directive. So, this directive also places monitoring high on the European agenda.

Although the SUP directive targets a number of common litter items, littering in Europe encompasses far more than these items, and in addition to monitoring the effects of this directive, we also need to highlight this fact. It is only part of the answer. Does not address the whole problem. Not a litter prevention strategy.

In this context, CEN board decided to carry out a survey. CEN: Litter Monitoring Methodology. Main aims: Show the value of a common methodology, focus on the fact that littering is a shared European problem, and highlight the main litter items across Europe.

Sneak Peak. Full report will be available shortly. No surprises. Cigarette butts make up 77 % of the items counted. Not scientific. Anecdotal in nature. Very limited amount of data.

Locations: Not surprising. Main station on top.

Quick look at the materials. We plan to do this exercise again next year, and hopefully more of the members will take part.

2. **Marloes Heebing** from GoClean de Liemers and **Dick Ayres,** Cofounder & CSO of Litterati: 'The usage and possibilities of Litterati'

Marloes Heebing

GoClean started 2.5 years ago as a citizens' initiative to clean up litter, based on growing concern about litter in our nature.
Doing nothing was simply not an option anymore. The earth must be passed on to the following generations and litter indirectly poses a danger to our health and causes much animal suffering.

According to estimates, 50 million kilos of waste in the Netherlands alone, end up every year on the streets and in our nature. Littering is officially prohibited. It is harmful to our living environment and nature, but it is there!
We soon realized that only cleaning up wasn't the solution. It turned out that if one street was cleared away one week, it would be filled with litter the following week.

This was very frustrating. We came to the conclusion that plasticizing our living environment can only be effectively combated if it is preventively tackled at the source. That is why we do more than just cleaning up, our goal is to build the road from symptom control to source control.

Because we wanted to switch to source control we needed to have data about, what, where and which kind of litter was found by volunteers and at clean ups. We needed a possibility to register litter. We found this in the Litterati App. In short this app makes it possible to photograph and tag each piece of litter collected.

Nowadays every volunteer of GoClean uses the Litterati app. This means that we are building a huge database of collected litter in the Netherlands. To analyse the litter collected in the Litterati app, we needed a special analyzing tool which helps us to get a clear picture of what objects and which brands are found. That's why we developed the Litter Compass.

The Litter Compass:
The Litter Compass is the online impact platform of GoClean in collaboration with Litterati. The compass has extensive analyzing tools that enables us to analyze the Litter data and translate it into detailed information about, for example "hot spots", target groups, origin and composition.
The volunteers register and municipalities use this information in their policy and search for preventive solutions.

The Litter Compass is currently under development and we hope to launch it "carefully" in November. The National presentation is scheduled for April 2020.

An increasing number of municipalities are also running programs to support their volunteers in the best possible way with their cleaning activity. GoClean plays an advisory and executive role in this.

Currently, information is collected from each municipality in what way they support volunteers in their cleaning activities. This information will also be shared on the Compass. In this way, data-driven, we are joining forces with national government institutions, policy makers and National action groups in the search for preventive solutions and targeted policies.

In-Depth monitoring and effect measurements;

GoClean also carries out in-depth monitoring and impact measurements for companies and municipalities. We do this with the use of the Litterati app and our platform.

Specific problem locations need an in-depth monitoring to provide more insights regarding the actual problem. First the location is viewed and a suitable measurement method is determined.

We choose a suitable monitoring and required time-frame to provide a truthful and correct report. In average this will take about 10 weeks (once a week). The first week of the monitoring the location is cleaned. Every peace of litter, except butts are removed and registered. Every next week the location is cleaned and all items are registered. In that way we collect al lot of data and facts.-After the monitoring the data is read and analyzed through the Litter Compass.

Why is this important?
Determining an effective approach requires more information about the pollution on site. Can a specific target group be designated as perpetrators? Where does the waste come from? Maybe conversations are possible with local companies that represent a share in this? What's the location? Is it still possible to make a profit with the 25-meter rule? What is the weekly / monthly pollution rate?

The results from in-depth monitoring give direction where to look for the most effective intervention options. Once determined, these are implemented on the route. The effectiveness of the intervention is tested during the effect measurement.

As you can see our monitors are based on actual data that deviates from other monitoring. The waste is also removed during each measurement, which also gives insights on the pollution rate.

To address candy routes, we have an extensive program in which we involve Secondary schools and their students in monitoring and possible solutions. This had proven to be very efficient.

DATA is therefore central to the collaboration and to the monitoring.

Dick Ayres

Litterati empowers people to "crowdsource-clean" the planet, one piece of litter at a time. What started with one person picking up a single cigarette, has grown into a community of 150,000 people who have collected over 4.3 million pieces in 115 countries. We've built a mobile application that inspires people to photograph and pick up litter. From these photographs, we're able to identify brands (eg: Starbucks, Marlboro) analyze packaging (eg: plastic, styrofoam), map problem areas, and understand local trends & larger patterns. This crowdsourced data creates awareness and transparency: information that can be used to influence human behavior, shape government policy, and lead the packaging industry toward sustainable solutions. We've proven a concept, but it's just the beginning. At scale, we can pave a path to eradicating litter.
See an example of a report we can create instantly from the images taken to map and make the invisible visible & an example of how Litterati is being used by a local authority 1. Alameda County, CA, Cleanwater program (link) & Rethink Disposable Alameda CA, (link)
Any questions visit www.litterati.org or write to support@litterati.org or dick@litterati.org

3. **Mari Mo Ostenreider:** monitoring marine litter in Norway: methodology explained

Monitoring of marine litter through citizen science has been the main driving force for policy making in Norway.

Other kinds of littering get little attention in Norway, and there has been very little interest in funding any projects related to litter monitoring.

Keep Norway Beautiful's strategy has therefore been to mobilize volunteers to clean beaches along the Norwegian coast, and to register their findings in KNB's beach clean-up portal/interactive clean-up map: Ryddeportalen.no.

To verify the findings from the data gathered by the volunteers, KNB has carried out several professional monitoring projects, and it turns out that the results are in line with the citizen science.

The results from the citizen science is presented in KNB's annual Beach Clean-up Report. Norwegian policy making on marine litter has to a very large extent been based on this report and KNB's data.

Just recently, KNB has finally been able to get some funding to monitoring of litter on land, and so far, we have tested the Swedish and the CEN monitoring method.

4. **Jan Vanstockem** of OVAM Belgium: 'Identifying Belgium's litter objects'

The Public Waste Agency of Flanders (OVAM) has developed a methodology to sample the litter composition (amount/weight/volume) on the public domain in Flanders. A total of 15 main litter fractions and 25 subfractions will be investigated, ranging from cigarette butts to textile and clothing. The sampling design for the methodology starts from a map that assigns every 10 x 10 m cell in the public domain to one of 16 habitat types (e.g. waste collection areas, public transport stops) in the public domain. To determine the number of samples that are needed to get a robust estimate, pre-pilots measurements were used to decide on which environment groups (strata) need to be investigated and compared. Using the map and this information, it was decided to sample ca. 6 500 locations divided over 4 strata (high/low risk x urban/rural environment).

The measurements will be spread out over 4 seasons to get a representative snapshot of the litter composition. Litter will be collected at the location and the number of pieces, weight and volume for each (sub)fraction are determined off site. The gathered data will be easily extrapolated to percentages and absolute numbers on the Flemish level because of the sampling design. The actual measurements for this study have started in October 2019 and final results are expected by December 2020.

If you would like to know more about the progress of the project, feel free to contact Jan by emailing him at jan.vanstockem@ovam.be

5. **Floor Uitterhoeve**, Sustainability Manager of McDonalds: ‘What is McDonalds doing with their monitoring data?’

- McDonald’s takes prevention and clean-up of litter very seriously, as part of its wider ambition to do more for less waste, together
- To guide our policies and monitor our progress, we need data. For packaging sustainability, collection and recycling, the data we have is sufficient. But for litter, quantitative data was very much lacking.
- Therefore we started to investigate this topic earlier this year, looking at how much packaging waste we already collect, how much waste ends up as litter, and, more importantly, what the reasons and patterns behind littering are: where does litter occur (hotspots), which items are most litter-sensitive, what target groups should we aim prevention efforts on?
- With this data, we can now increase the efficacy of our work on litter, both in terms of prevention (tackling sustainable packaging, nudging towards good disposal behavior) and in terms of clean-up (hotspot approach).
- Collaboration is key: we want to collaborate more structurally with municipalities, neighbouring companies, customers, experts and other stakeholders to work towards zero net litter. The support, tools and network of NederlandSchoon is very valuable in this regard.