

PLAST — ET MATERIALE TIL GLEDE ELLER BESVÆR?

Thor Kamfjord, Director Sustainable Development

Norner AS

NORNER – OUR ROLE



Norner Research

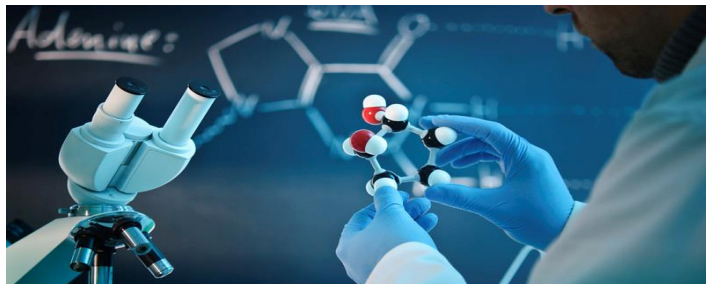
Innovation, new technology development and knowledge



Deliver **sustainable solutions** hand-in-hand with value creation to the society



Our **strategic advisory** team helps customers to navigate by successful strategic advises



Funded innovation and research projects together with our customers



Responsible social mission Bringing knowledge and facts to the social and political debate



Laboratory testing services Testing, development and verification

WE WILL CONTRIBUTE TO SUSTAINABLE INNOVATIONS



Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

- Renewal and innovation are key to future competitiveness, sustainable growth and prosperity
- The authorities promote innovation and development of new technology through a broad set of instruments, including the Research Council of Norway and *Selskapet for industrivekst (Siva)*



Ensure sustainable consumption and production patterns

- European Packaging Center / Application Center
- FuturePack, etc
- Internal waste / water consumption



Take urgent action to combat climate change and its impacts

- Focus on Renewable Energy industry
- Energy efficiency
- GHG emissions



Conserve and sustainably use the oceans, seas and marine resources for sustainable development

- Improve resource efficiency by generating value from waste
- Utilize a value-chain approach to create connections between the design, packaging, marketing and recycling of materials with the goals of reducing their environmental impact at the end of their lifecycle
- Raise consumer awareness on effective ways to properly dispose of their waste to discourage littering and promote responsible behavior

Our contribution to the SDG's
Public policy and industry must combine forces to tackle the complex challenges posed by the SDGs. By doing so, we can drive scalable, affordable and sustainable solutions. Driving action on the SDGs is at the heart of our business.

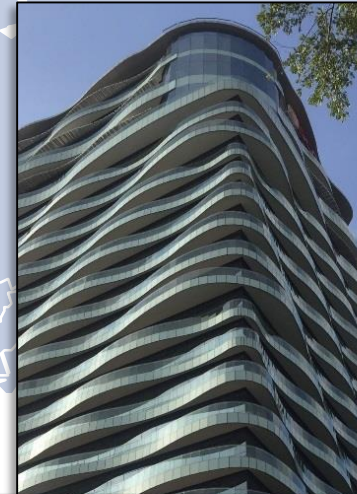
We contribute directly to SDG #9 on Innovation and Infrastructure in our daily work, and on SDG #12 in our effort to help our customers to improve their production and resource consumption, and SDG #13 on climate action, while we contribute significantly to SDG #14 on our focus and effort to reduce plastic waste and marine littering

THE POLYMER EXPLORERS

NORNER – Global, Industrial R&D services in Polymers - by exploring opportunities and discover Sustainable Solutions

Innovation, services, advisory;

- Where there's a market potential
- Where the businesses need our services
- Where we make a difference



“
Nothing is impossible,
the word itself says
'I'm possible.'
“
Audrey Hepburn

CRACK
YOUR
[CO]2
[C]HEMISTRY

Global Plastic Alliance Strategic Pillars

INFRASTRUCTURE	INNOVATION	EDUCATION	CLEAN UP
Catalyze investment in enhanced waste infrastructure to prevent plastic from reaching the environment	Innovate new sustainable materials, designs, technologies and business models based on sound science and economics	Engage and collaborate with governments, industry and consumers to drive effective solutions	Develop solutions to address and clean up areas of existing plastic waste in the environment

www.endplasticwaste.org

ALLIANCE TO END PLASTIC WASTE

FOR IMMEDIATE RELEASE

Join the live global press webcast at www.endplasticwaste.org/live at 14.00 GMT (15.00 Paris time).

New global alliance commits over \$1.0 billion USD to help end plastic waste in the environment; sets goal of investing \$1.5 billion USD

JANUARY 16, 2019 – An alliance of global companies from the plastics and consumer goods value chain today launched a new organization to advance solutions to eliminate plastic waste in the environment, especially in the ocean. The cross value chain Alliance to End Plastic Waste (AEPW), currently made up of nearly thirty member companies, has committed over \$1.0 billion with the goal of investing \$1.5 billion over the next five years to help end plastic waste in the environment.

NORNER KEY COMPETENCIES AND LABORATORIES



Research



Development



Strategic Advisory



Laboratory Testing



Catalysis & Polymerisation



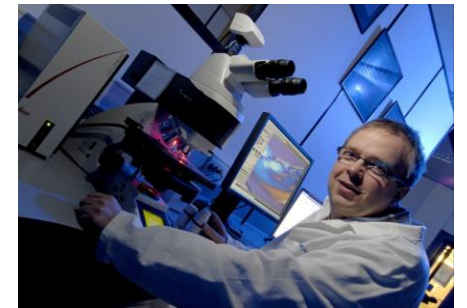
Compounding Pilots/
Recycling Pilot Centre



Durability and Additives



Extrusion/
Moulding Pilots



Microscopy and
Failure analysis



Physical and
Mechanical



Chemical, Polymer
and Thermal



Food and Pharma

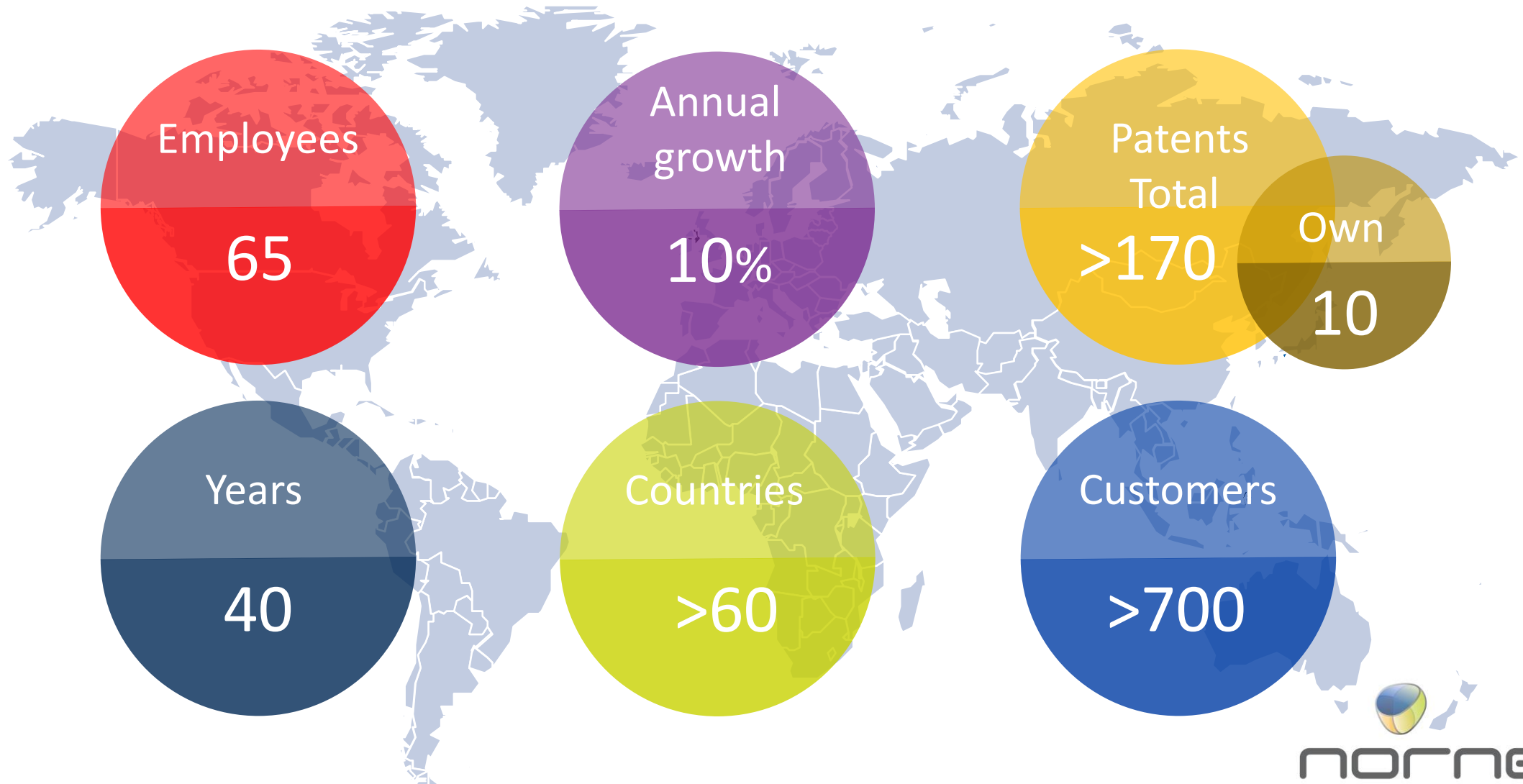


Exposure testing
and HPHT



Coating testing/Anti corrosion

NORNER — KEY FIGURES



Norway – New Polymer Exploration Centre

Full service portfolio in the plastics value chain from polymer to processing and end use innovations



**FUTURE
MATERIALS**

**NORSK
KATAPULT
SENTER**



norner

The Polymer Explorers



WHILE WE'RE THINKING OR INNOVATING..WE'RE CLEANING!

hold
Norge
rent



Handelens
Miljøfond




norner™
The Polymer Explorers

GLOBAL TRENDS CREATE A DEMAND FOR MORE PLASTICS

Growing Population



- By 2030 the global population will rise by more than 1 billion to 8.3 billion
- By 2050 to 9.8 billion

Growing Urbanization



- 85% urban population growth by 2050 (→68%)
- \$78 trillion in global infrastructure investment required over the next 10 years to accommodate growth

Growing Middle Class



- The world's growing middle class will drive a 32% increase in vehicle sales by 2030
- Plastics consumption is expected to double over the next 20 years

Growing Demand for Resources/ Improved Sustainability



- Global growth will increase demand to food, water and energy by 35, 40, and 50% respectively by 2030

A FEW PLASTIC TYPES USED TO 80% AV “EVERYTHING”

Food packaging, sweet and snack wrappers, hinged caps, microwave containers, pipes, automotive parts, bank notes, etc.

PP
19.3%



OTHERS
19%



Hub caps (ABS); optical fibres (PBT); eyeglasses lenses, roofing sheets (PC); touch screens (PMMA); cable coating in telecommunications (PTFE); and many others in aerospace, medical implants, surgical devices, membranes, valves & seals, protective coatings, etc.

Reusable bags, trays and containers, agricultural film (PE-LD), food packaging film (PE-LLD), etc.

PE-LD
PE-LLD
17.5%



PE-HD
PE-MD
12.3%



Toys, (PE-HD, PE-MD), milk bottles, shampoo bottles, pipes, houseware (PE-HD), etc.

Window frames, profiles, floor and wall covering, pipes, cable insulation, garden hoses, inflatable pools, etc.

PVC
10.2%



PUR
7.7%



Building insulation, pillows and mattresses, insulating foams for fridges, etc.

Bottles for water, soft drinks, juices, cleaners, etc.

PET
7.4%



PS, EPS
6.6%



Eyeglasses frames, plastic cups, egg trays (PS); packaging, building insulation (EPS), etc.

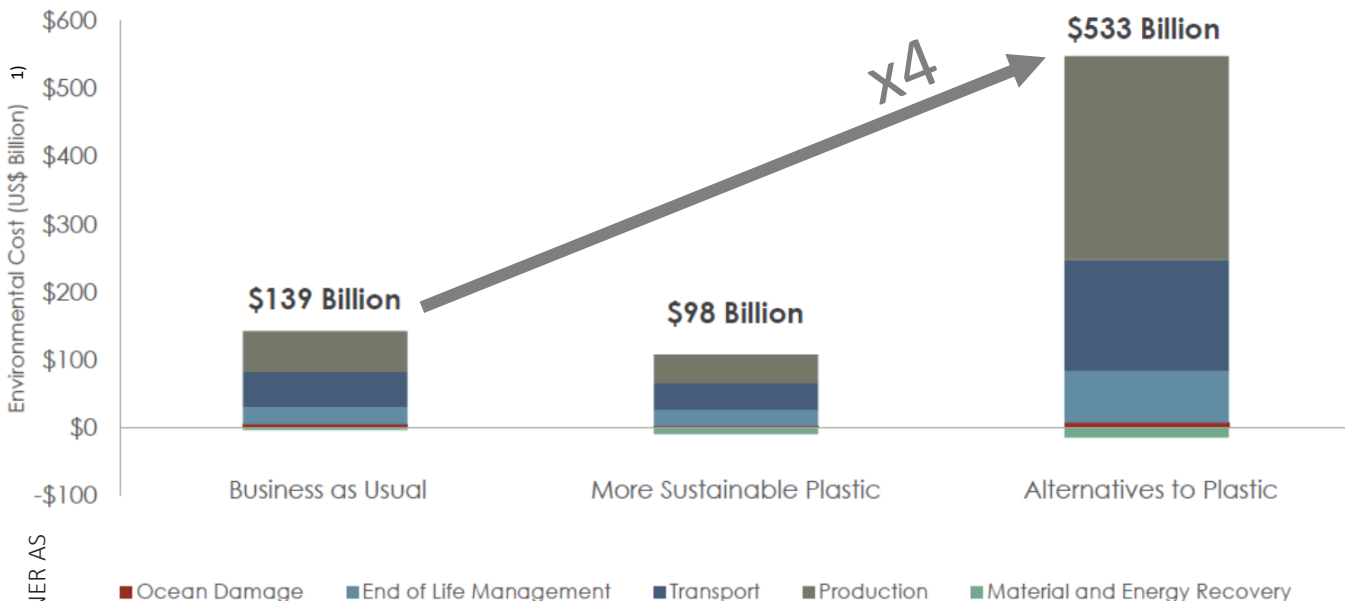
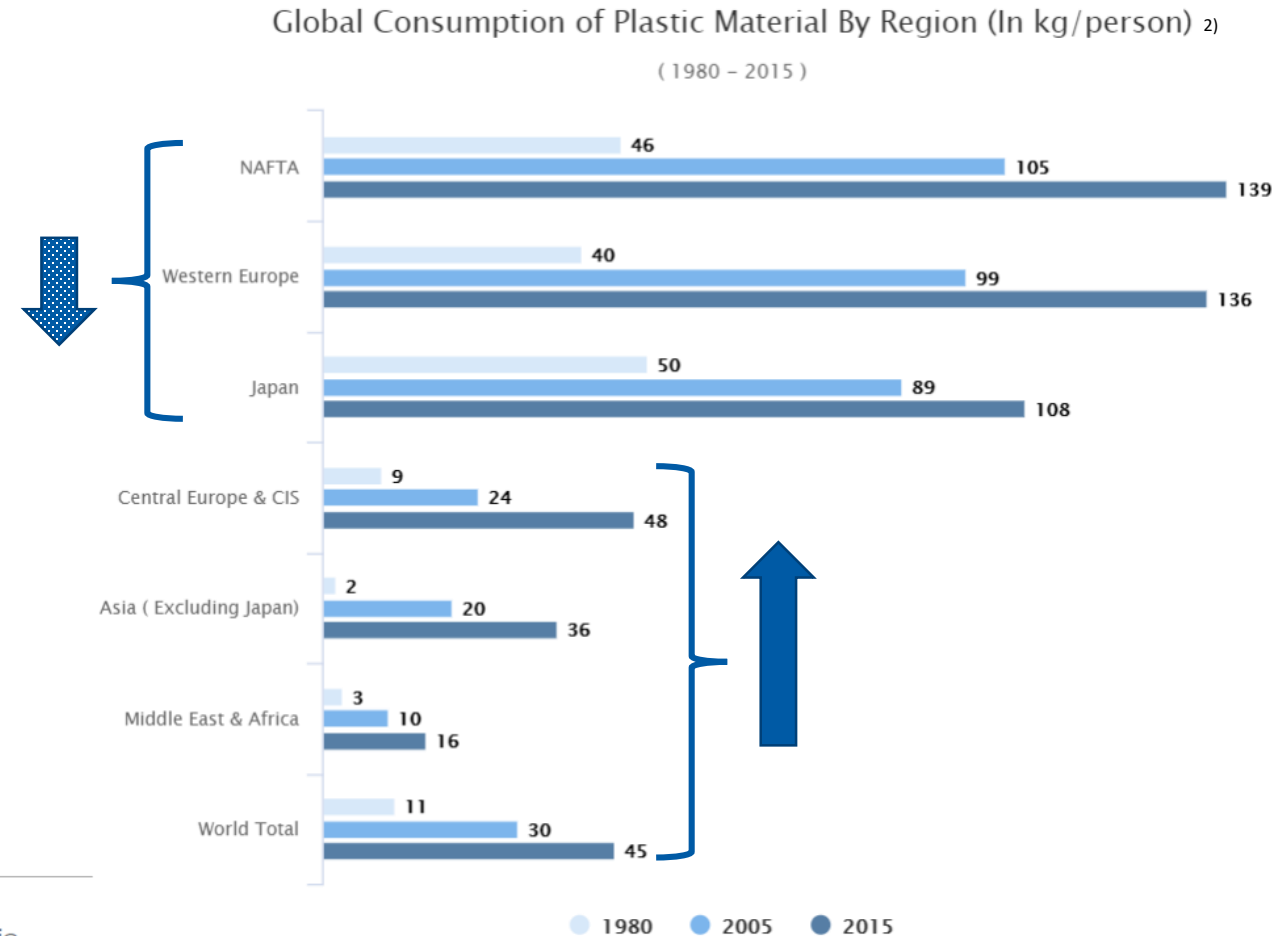
MORE USE OF PLASTICS = BETTER DECISIONS MUST BE TAKEN!

Facts:

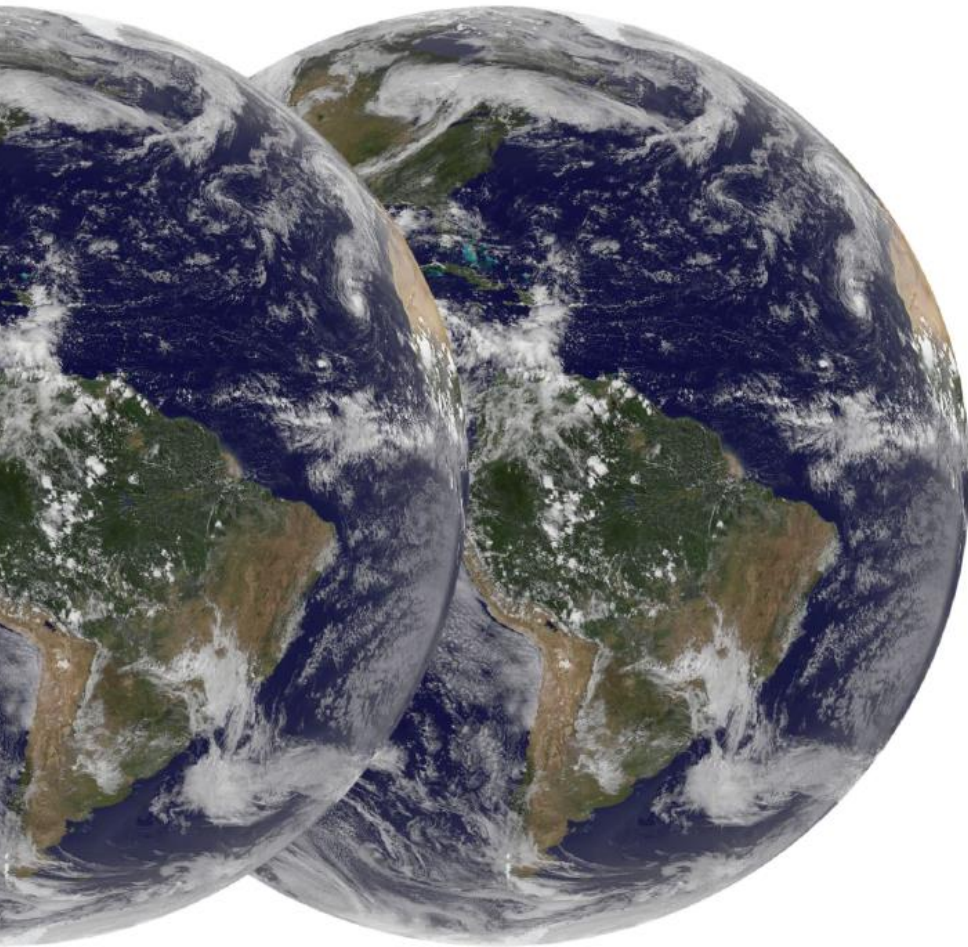
- Increased living standards results in increase in global plastics consumption
- The environmental cost of plastics is less than the alternatives
- Plastics littering is a global problem

We need to:

- Develop circular economy
- Reduce unnecessary plastics consumption



GLOBAL CHALLENGES – TIME FOR ACTION!

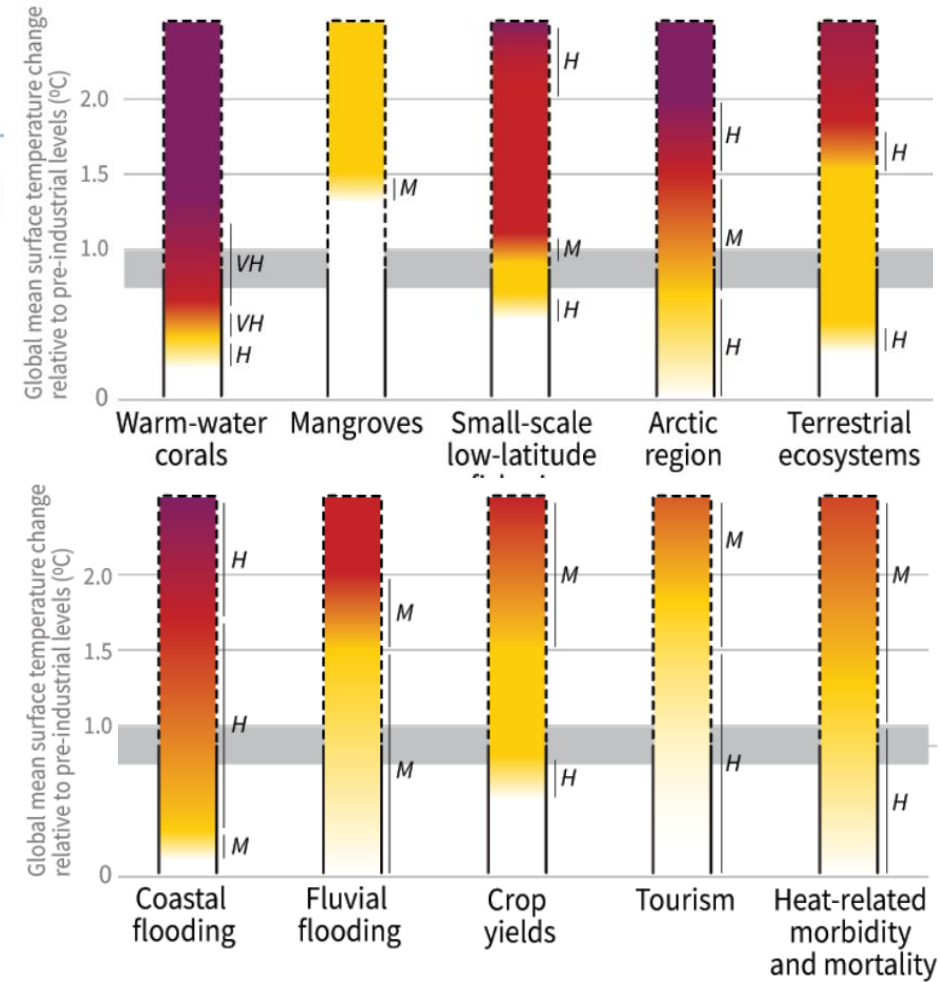


How many Earths do we need if the world's population lived like...



World 1.7

Source: Global Footprint Network National Footprint Accounts 2017



CC Special Report on the impacts of global warming of 1.5°C. Intergovernmental Panel on Climate Change.

Revised on January 2019 by the IPCC, Switzerland



norner

The Polymer Explorers™

MINDRE MILJØFOTAVTRYKK MED PLAST ENN UTEN!



I butikken vil man finne frukt pakket inn både én og én, og i pakker. Er det virkelig nødvendig? Foto: (Nettavisen)

#FAKTASJEKK

Hvorfor er frukt og grønt pakket inn i plast?

Det er maten du kjøper i løsvekt som virkelig er verstingen.

Magnus Blaker

PUBLISERT 17/09 2017

- Ifølge Østfoldsforskning skjer hele 61% av alt matsvinnet hjemme hos forbruker
- Forskningen viser at selv om det blir noe plastsøppel av emballeringen, er miljøbelastningen av produksjonen av matvarene **betydelig** større enn for emballeringen
 - På hvitost utgjør for eksempel emballasjen bare noen få prosent

Kjøp det du trenger – spis det du har kjøpt!

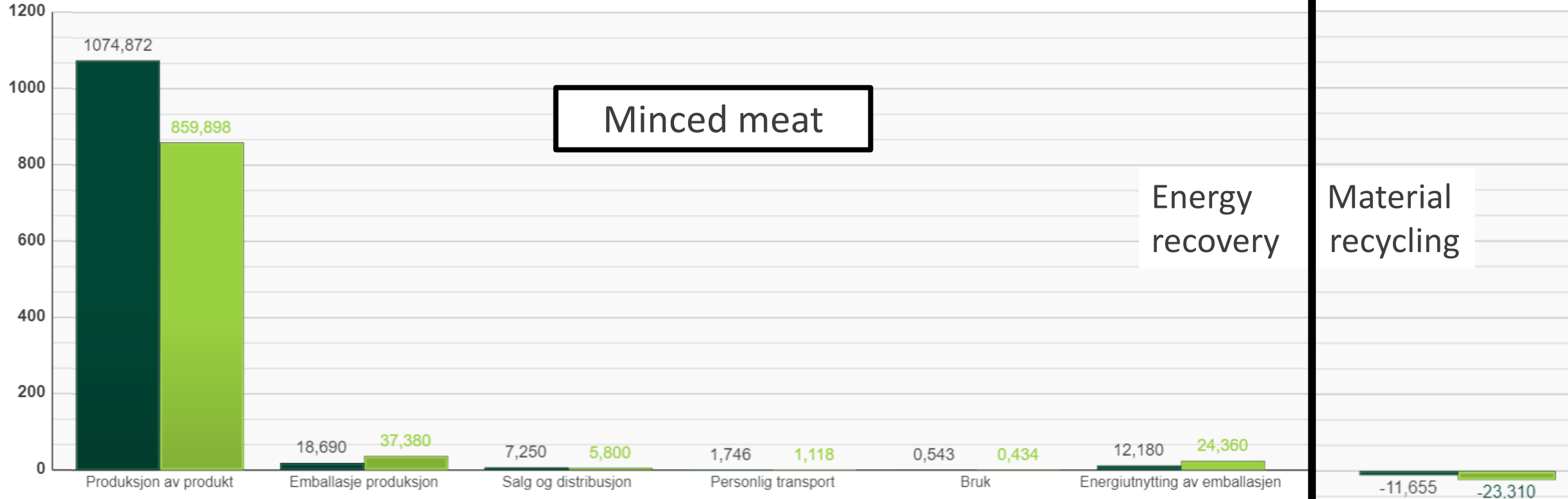


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The Polymer Explorers

PRODUCT VS. PACKAGING THROUGH THE LIFE CYCLE

grams CO2 eq. / functional unit

Minced meat



■ Without optimisation ■ With optimisation

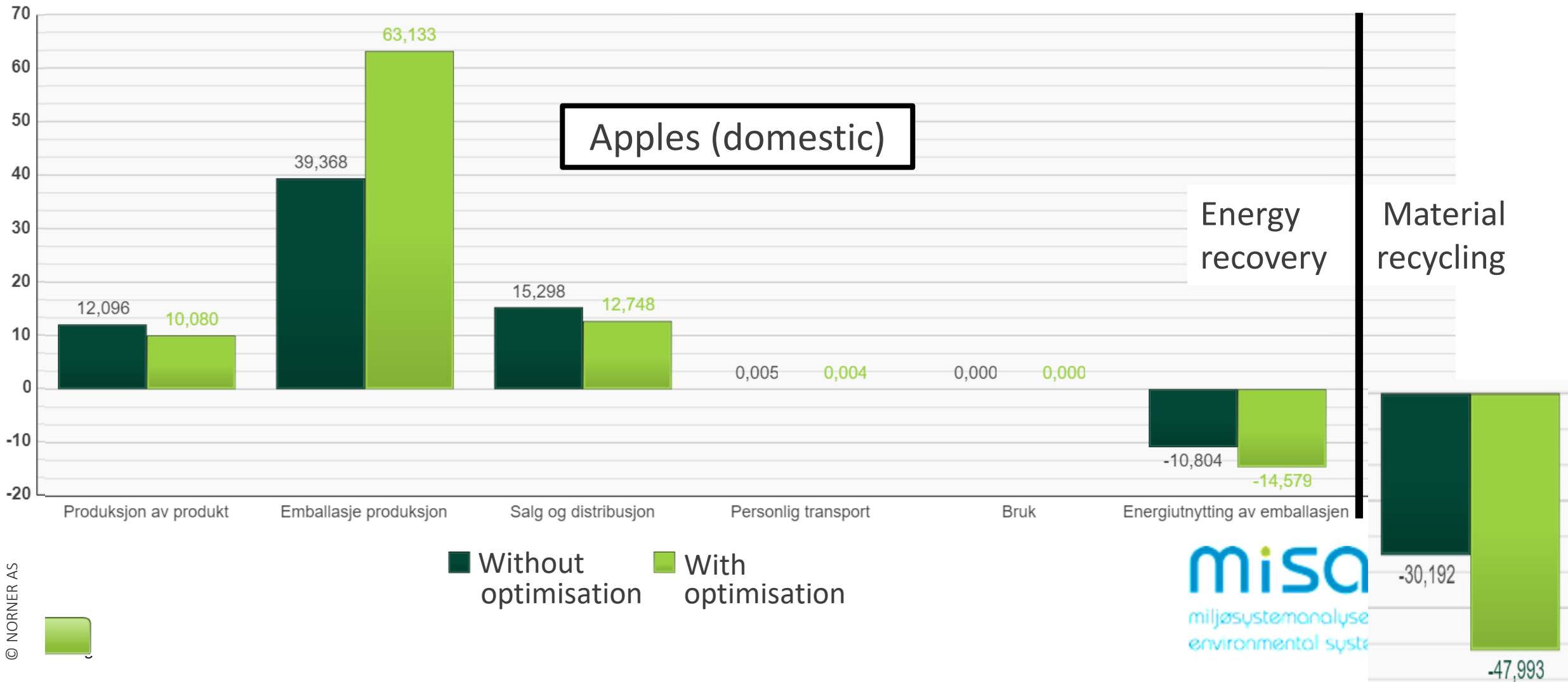


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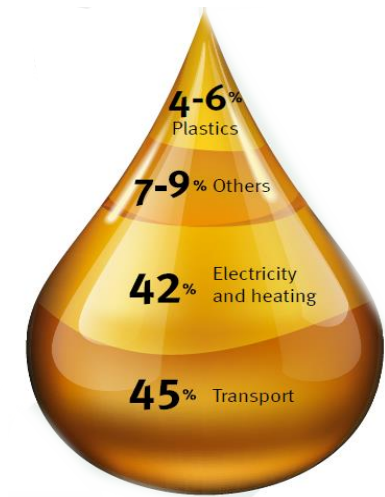
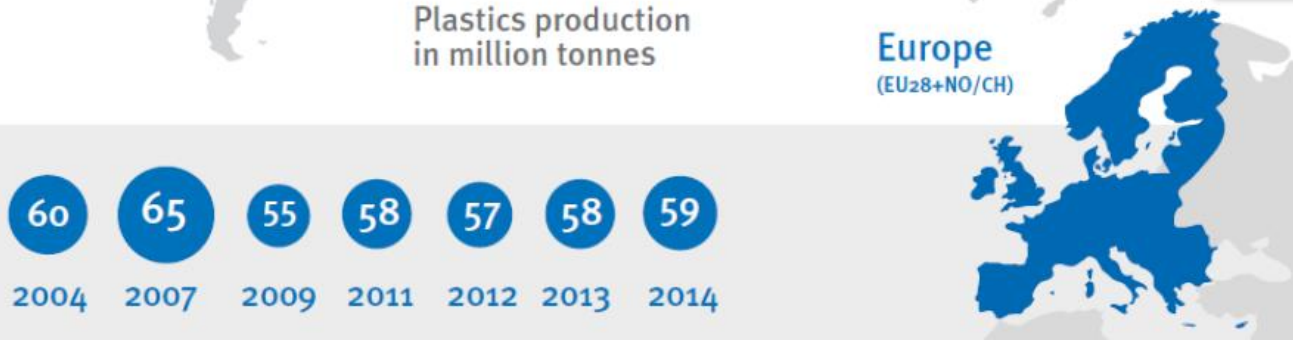
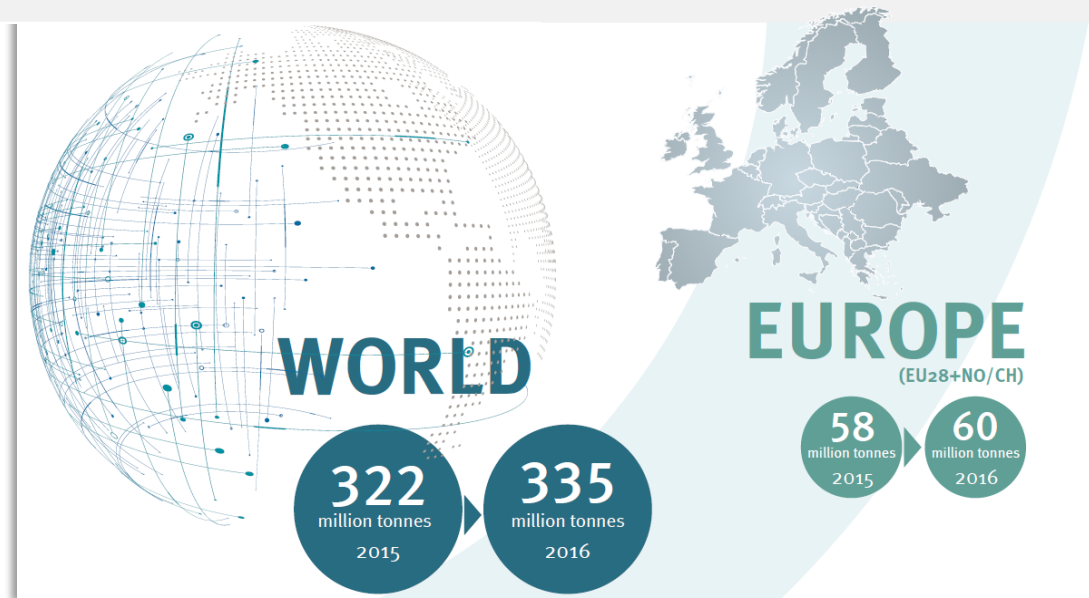
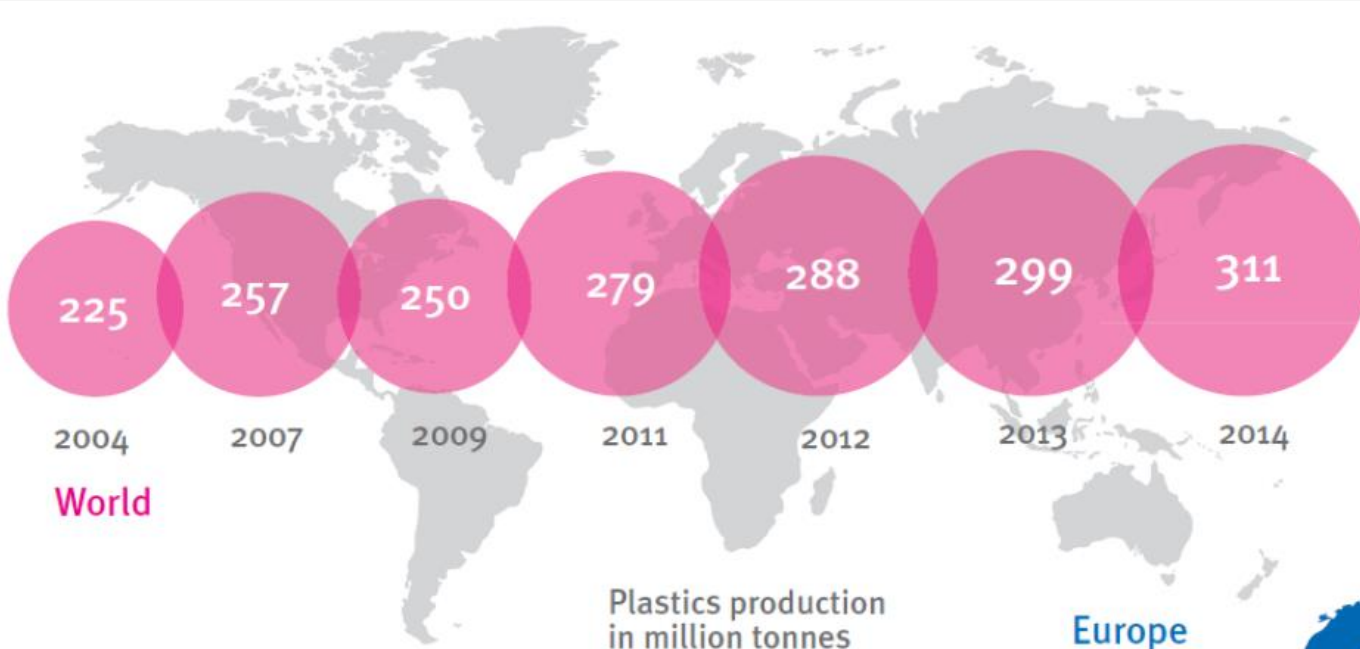
Materialgjenvinning av emballasjen

PRODUCT VS. PACKAGING THROUGH THE LIFE CYCLE

grams CO2 eq. / functional unit



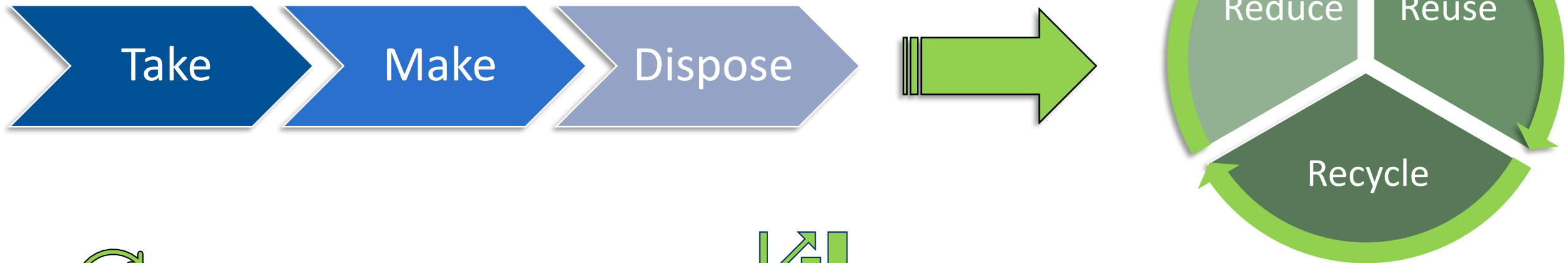
4-6% OF OIL & GAS ARE CONVERTED TO PLASTICS – IMPACT ON CO₂?



*For every tonne of CO₂ emitted during production, chemical products save two tonnes of CO₂ during use**



THE CIRCULAR ECONOMY PACKAGE – A PATH OF INNOVATION!



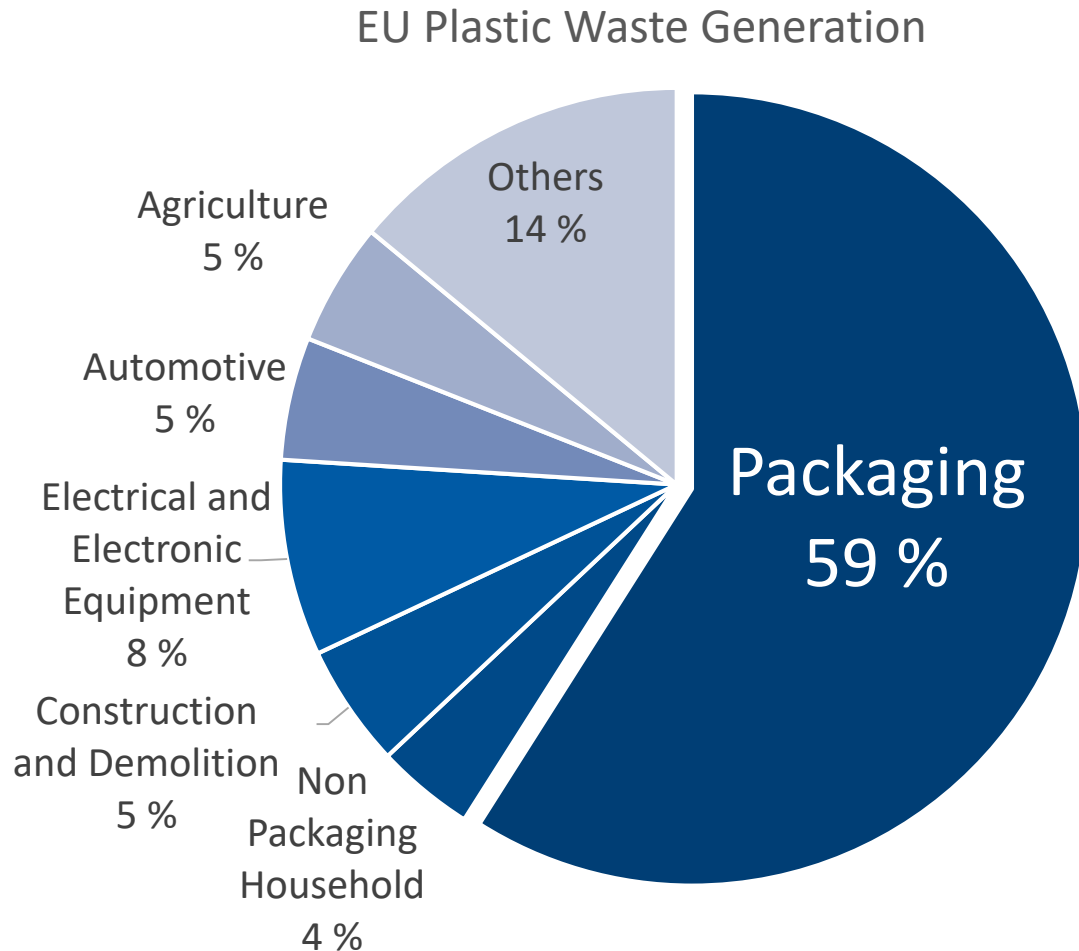
Use resources in a smarter, more sustainable way by keeping them in use for as long as possible, extracting their maximum value and recovering and regenerating materials at the end of life



Boost global competitiveness, foster sustainable economic growth and generate new jobs



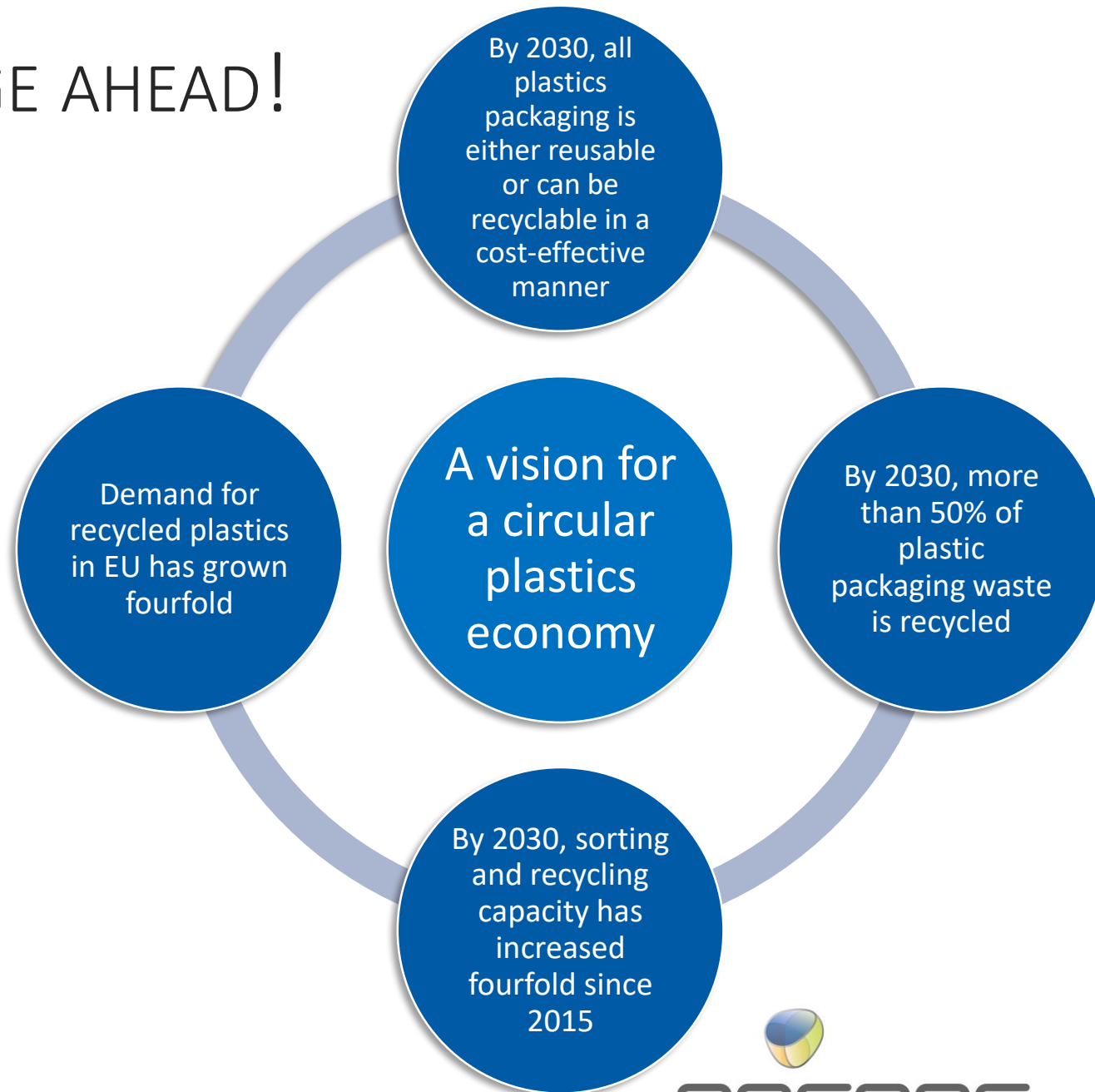
THE SITUATION: EUROPE'S SOURCES OF PLASTIC WASTE



Source: Eunomia (2017)

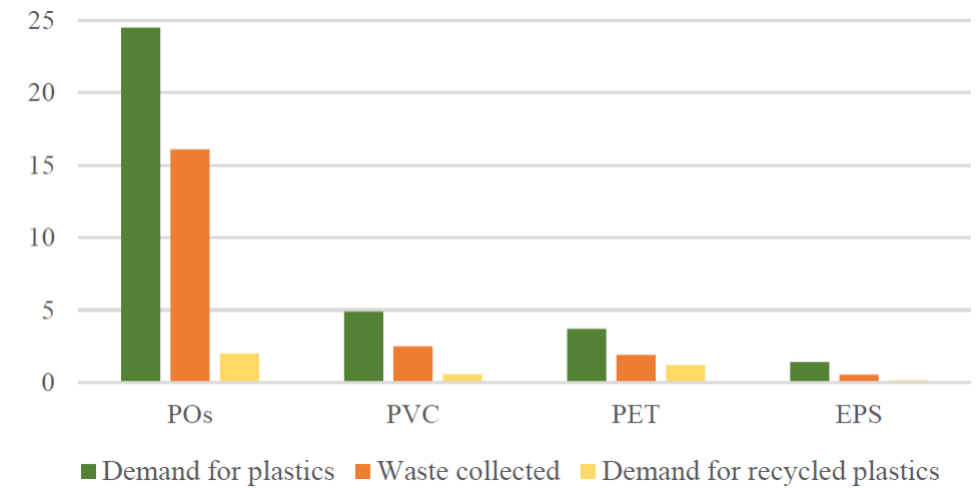
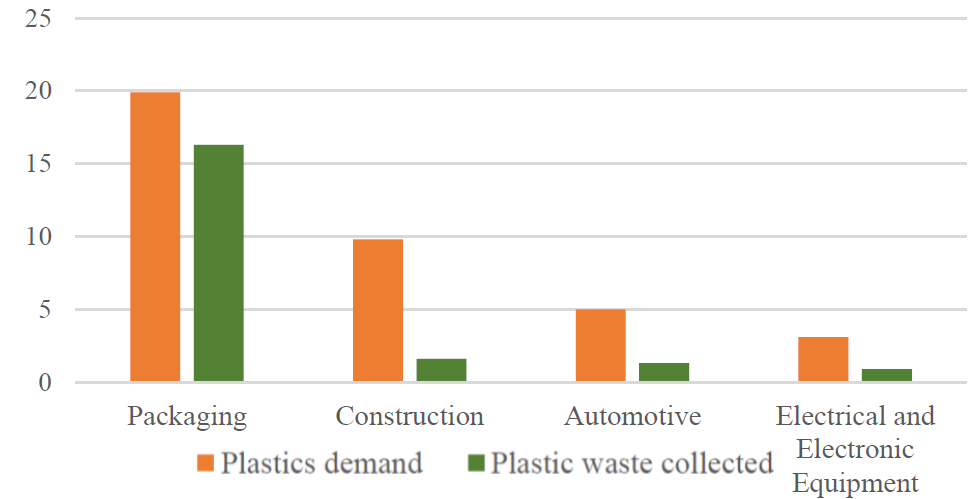
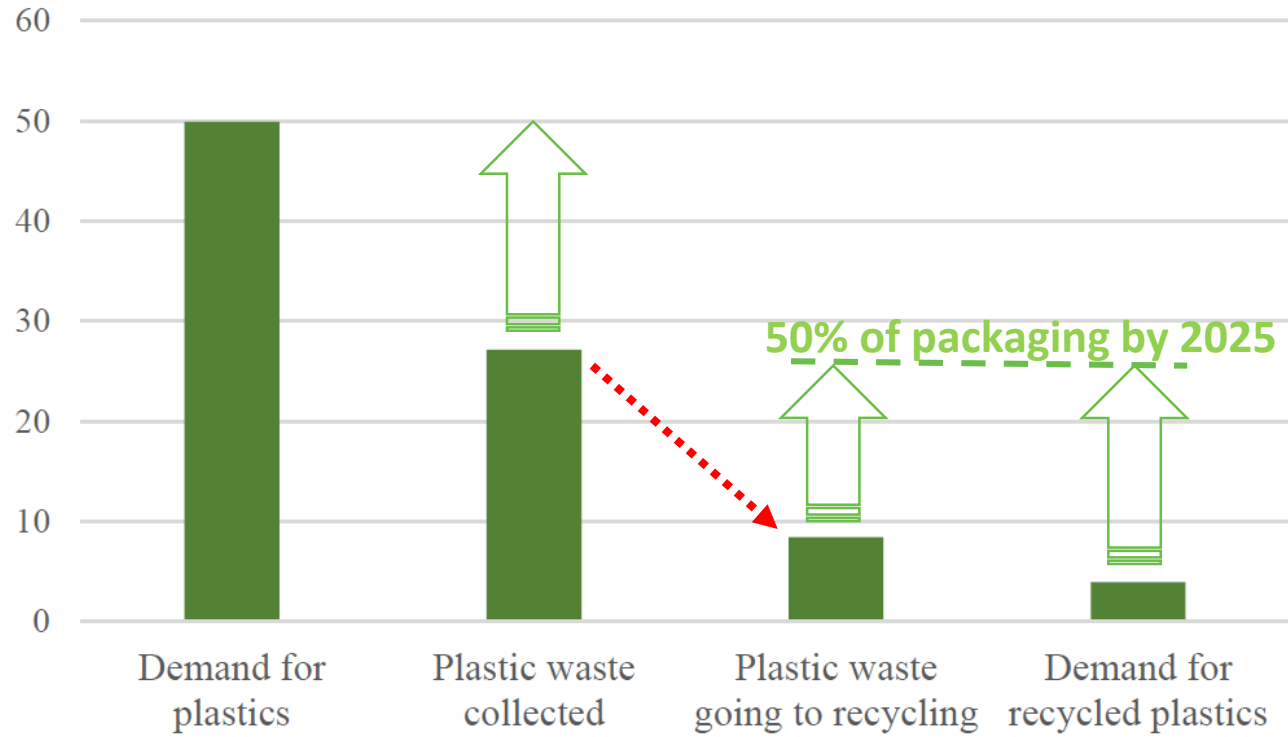
- Around 25.8 million tonnes of plastic waste are generated in Europe every year
- Less than 30% of such waste is collected for recycling
- Landfilling and incineration rates of plastic waste remain high - 31 % and 39 %
- According to estimates, 95 % of the value of plastic packaging material, i.e. between EUR 70 and 105 billion annually, is lost to the economy after a very short first-use cycle
- Demand for recycled plastics today accounts for only around 6 % of plastics demand in Europe

WE HAVE A MAJOR CHALLENGE AHEAD!



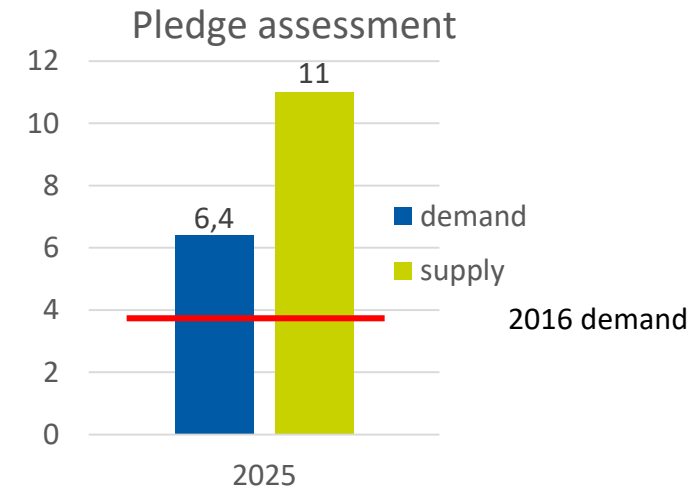
+ By 2025 ensure that ten million tonnes of recycled find their way into new products on the EU market

FROM VIRGIN PLASTICS DEMAND TO RECYCLED PLASTICS DEMAND



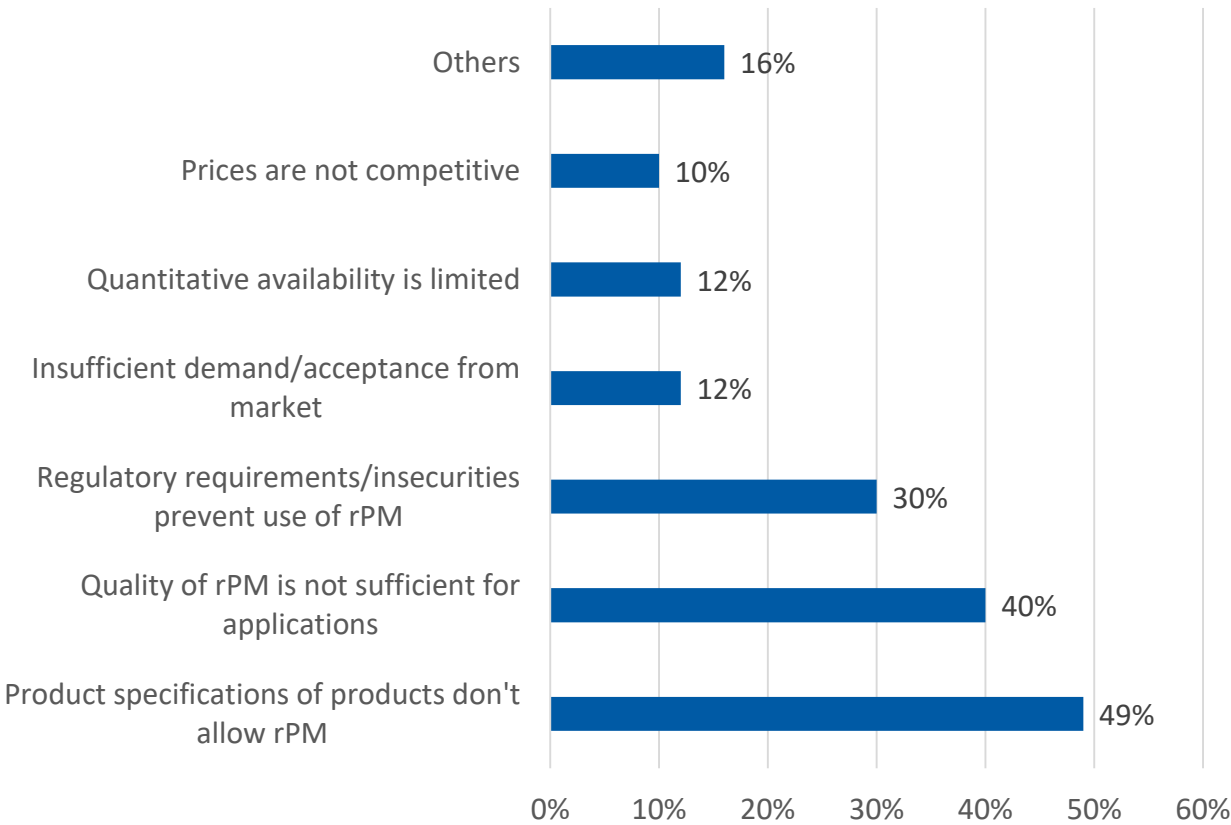
CIRCULAR PLASTICS ALLIANCE – 10 MILLION TONS REACHABLE!

- Invest in several recycling technologies, including chemical recycling
- Implement separate collection of plastic waste across the EU
- Improve sorting of plastic waste
 - This require to invest in R&D and waste management infrastructures, also to properly sort multi-layers or flexible packaging as foils
- Improve the recyclability of plastic products (product design)
- Provide clear and consistent framework conditions across Europe

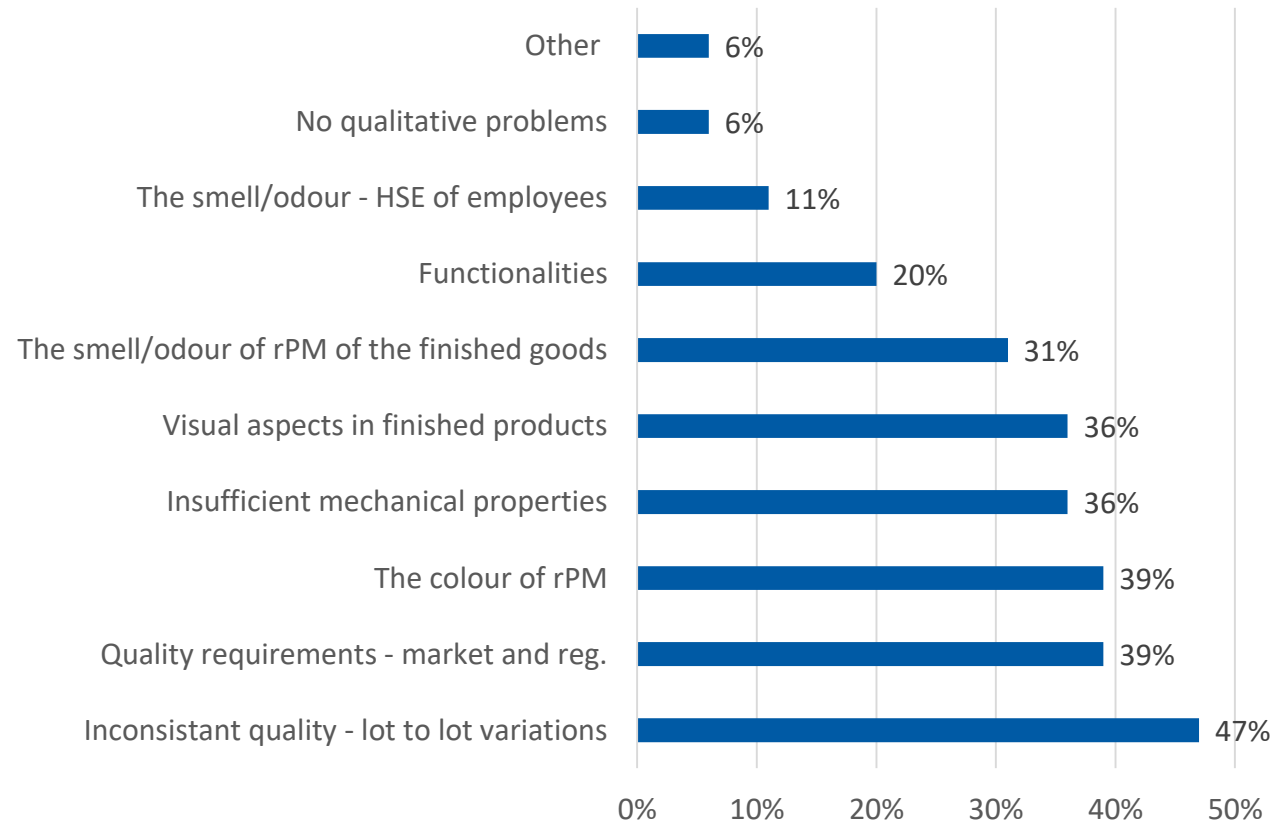


WHY NOT USE MORE RECYCLED PLASTICS? QUALITY!

What are the main reasons preventing you from using recycled plastic materials?



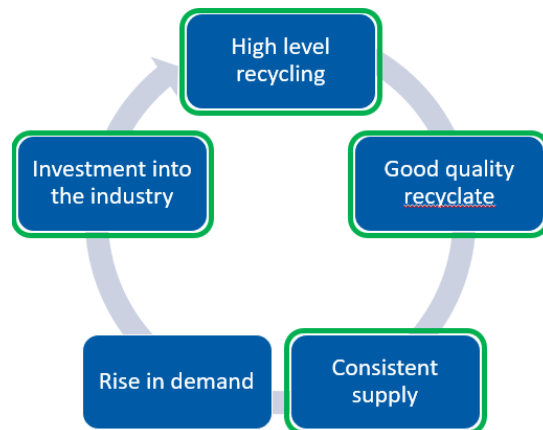
What qualitative problems prevent your company from using (more) recycled plastics materials?



Source: EuPC Recycled Plastic Materials Usage by Plastics Converters in Europe - 2019

INTEGRATION INCREASES COMPETENCE

- Polymer suppliers as Borealis, LyondellBasell and Total acquire and invest in increased capacities at recycling companies
- Brand owners Coca Cola, PepsiCo, Ikea – integrating into the collection and/or recycling facilities
- Plastic converters and mechanical recyclers like Trioplast and Stena Recycling partner up



Borealis pledges to quadruple amount of recycled content on offer by 2030

by: Stephen Moore in **K Show**, Sustainability, Packaging, Recycling, Consumer Electronics, Automotive and Mobility, Injection Molding, Materials on July 09, 2019



LyondellBasell, Suez close on QCP transaction

Companies say the venture is the first time a major plastics and chemicals company has partnered with resource management firm.

March 14, 2018

Plastics News Europe

June 25, 2019 12:47 PM

Borealis, Erema partner to advance plastics recyclability

February 19, 2019 06:00 AM

Total acquires France's Synova

Total acquires France's Synova



17,000 TPA PLASTIC RECYCLING FACILITY TO USE MAGNETIC DENSITY SEPARATION

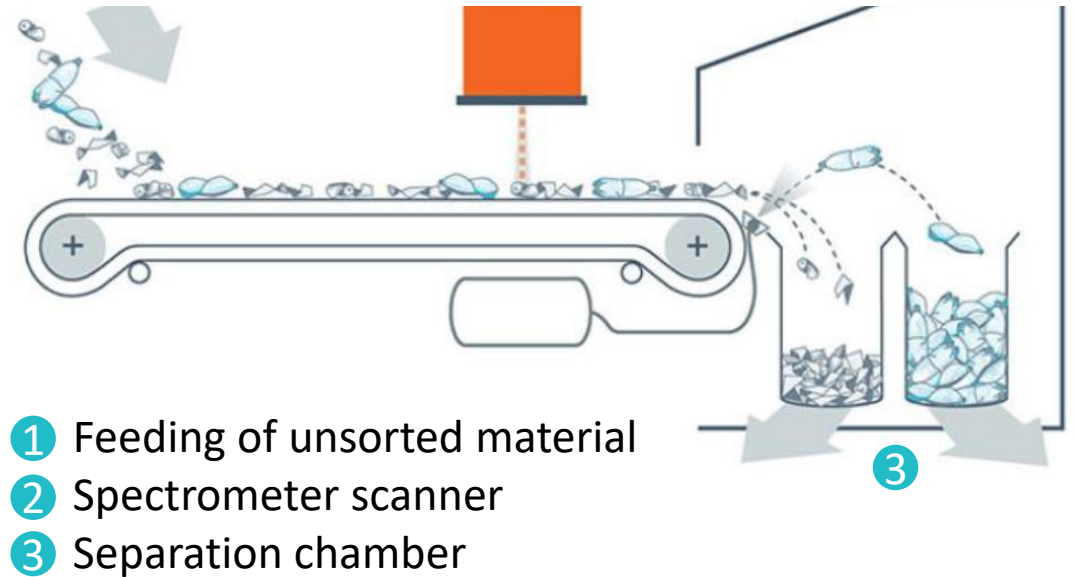
2019-01-09 12:52:39

Ikea Investment in New Plastic Recycling Technology at Port of Amsterdam

Plastic Recycling Amsterdam, a collaboration between Umincorp and Milieu Service Nederland, is constructing a new plastics recycling plant is to be built at the Port of Amsterdam.

THE WEAKNESSES IN THE CURRENT SORTING SYSTEM ARE LIMITING

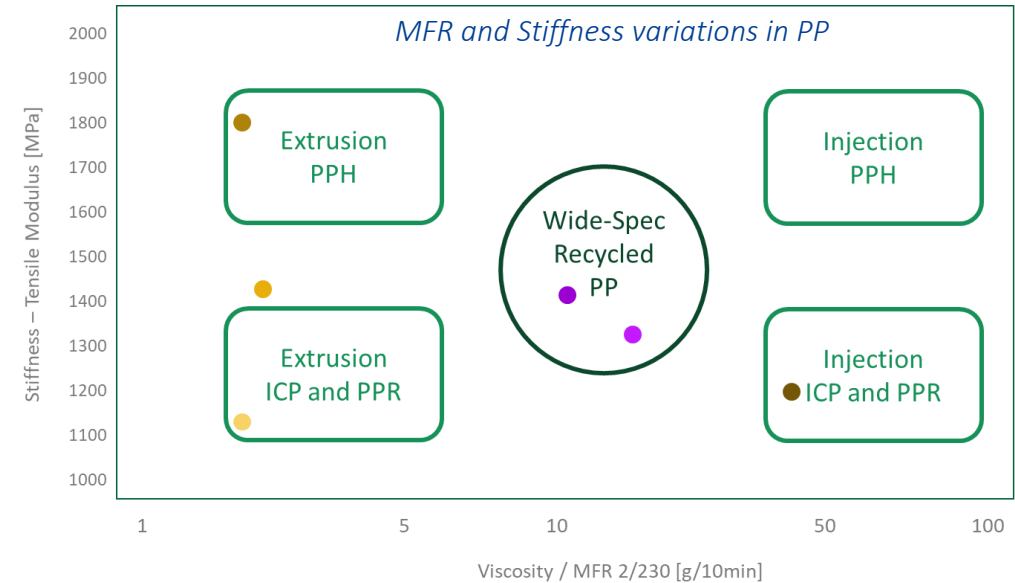
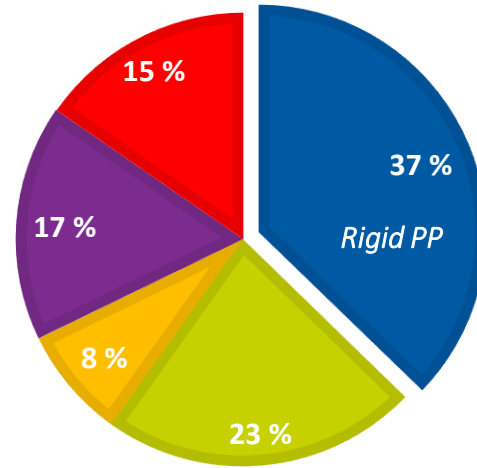
- Food versus non-food containers
- Mono or multi layer plastics and percentages of component parts
- Carbon black, opaque, difficult to recycle objects
- Color of plastic hidden by shrink sleeve
- Manufacturer, SKU, origin/facility, specific contents held
- New materials introductions
- Sorts only on material family (PP, PE, PET, etc)



SORTING OF PCR BY MATERIAL TYPE IS NOT SUFFICIENT!



■ PP ■ PET ■ PS ■ PE ■ OTHER plastics



- Norner campaign: Collection and sorting of rigid plastic packaging waste from households
 - Sorting 1: Main polymer types - PP, PET, PE, PS, other
 - Sorting 2: Fine sorting of PP (four fractions) and PE (four fractions) based on application
- PCR quality and differentiation: Better sorting is a requirement to enter value added applications

ROBOTS WITH 3D IDENTIFICATION AND NIR COULD DO THE JOB?



Designed for waste. Designed to maximize YOUR profit!

Construction & Demolition Waste
Commercial & Industrial Waste
Scrap Metals
Rigid Plastics

Plastic Bags by Color
Fiber Lines
Polymer Lines
Quality Control & Residue Recovery

ZENROBOTICS

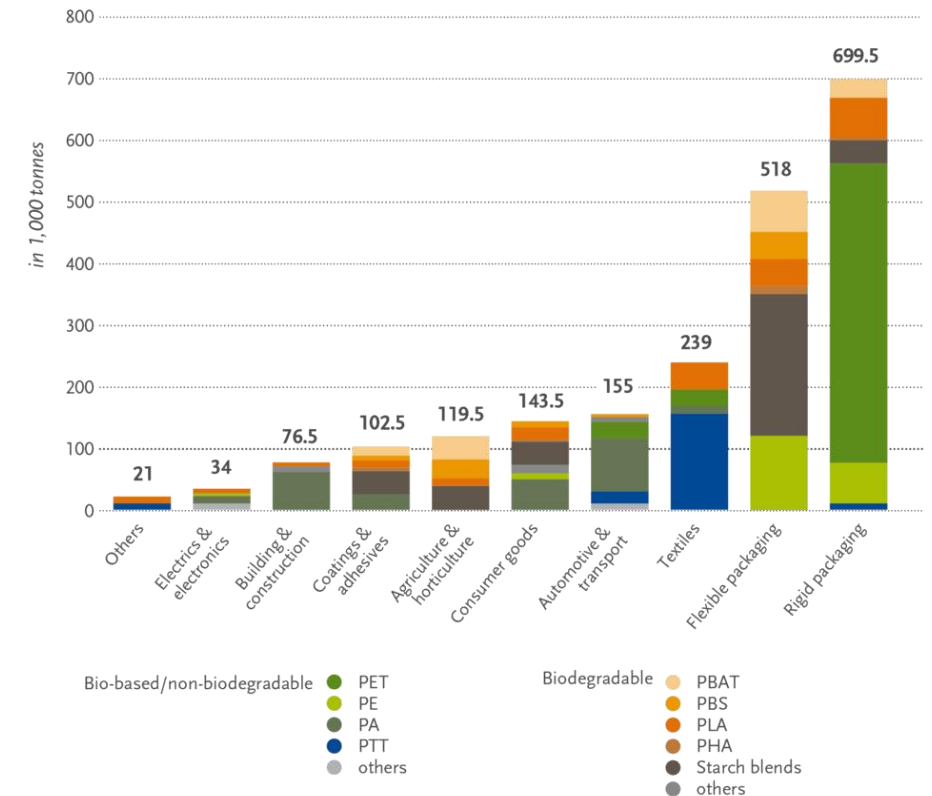
Contact: sales@zenrobotics.com

“BIOPLASTICS” – 1% OF GLOBAL PLASTICS PRODUCTION

- The criteria for the industrial compostability of packaging are set out in EN 13432
- EN 13432 requires the compostable plastics to disintegrate after 12 weeks and completely biodegrade after six months
 - 90% or more of the plastic material will have been converted to CO₂

«After 12 weeks at least 90% of the product should be able to pass through a 2x2 mm mesh»

Global production capacities of bioplastics 2018 (by market segment)

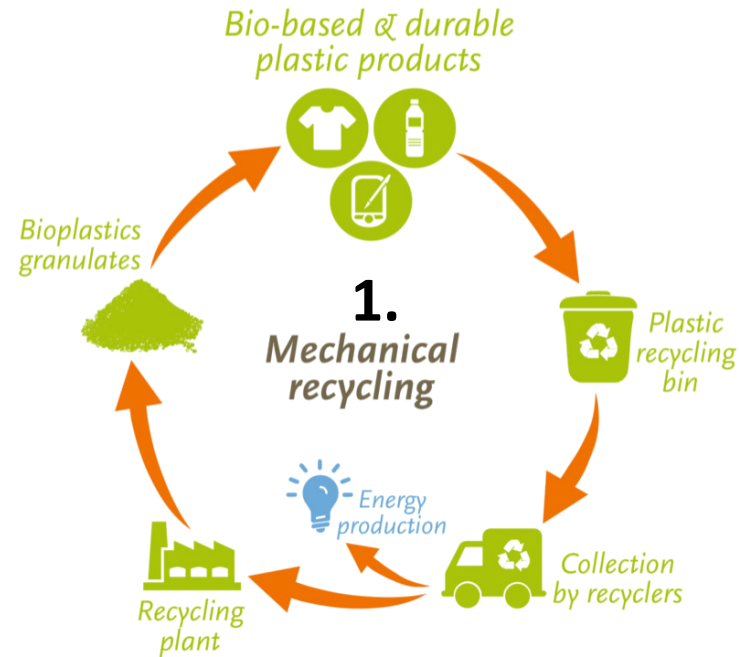


Source: European Bioplastics, nova-Institute (2018). More information: www.european-bioplastics.org/market and www.bio-based.eu/markets

AS ALL PLASTICS - INDUSTRIAL RECYCLING IS NEEDED

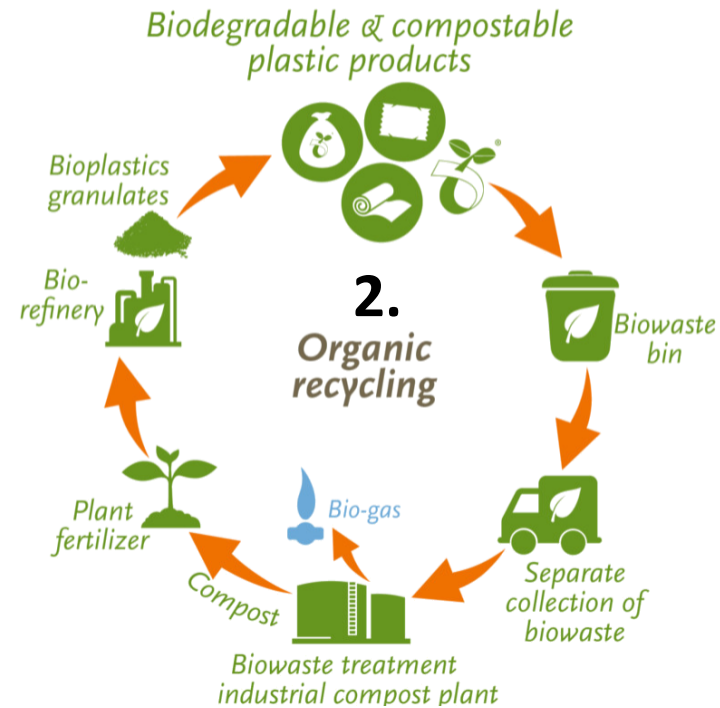
End-of-life options for **BIOPLASTICS**

– Closing the loop –



End-of-life options for **BIOPLASTICS**

– Closing the loop –



- Bioplastics must be recycled in separated material streams
- Too small volumes to implement automatically sorting
- Home compost produce greenhouse gases

FLOKK ECO DESIGN CRITERIA



- 1. Low weight.** Fewer materials – weight optimization.
- 2. Fewer components.** Integrated functions, resource efficient solutions, fewer tools, less processes, less packaging & transportation
- 3. Right choice of materials.** Avoid harmful substances, reduce carbon footprint, increase use of renewable and recycled materials
- 4. Long life span.** Reduce need to replace our chairs. Timeless designs, high quality, flexible adjustments, changeable wearing parts
- 5. Design for disassembly.** Keep materials in closed loop, easy to sort for recycling with marked parts.

- I. Climate.** Lowest possible carbon footprint
- II. Resources.** Reduced use of resources and minimised weight
- III. Health.** Reduced use of hazardous chemicals

Life Cycle Analysis is the obvious method, focusing carbon footprint
 ISO 14025 ensures harmonized calculation & comparable results.



epd-norge.no
 The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION
 In accordance with ISO 14025 [1]

Owner of the declaration	Flokk AS
Program holder and publisher	The Norwegian EPD Foundation
Declaration number	NEPD-1010-030-EN
Issue date	09.08.2018
Valid to	09.08.2023

HÅG Futu mesh 1100
 Including variants, page 6
 Product

Flokk
 HÅG • RH • GIROFLEX • BMA • OFFEECT • RIM

Flokk AS
 Manufacturer

NEPD-1010-030-EN HÅG Futu mesh 1100

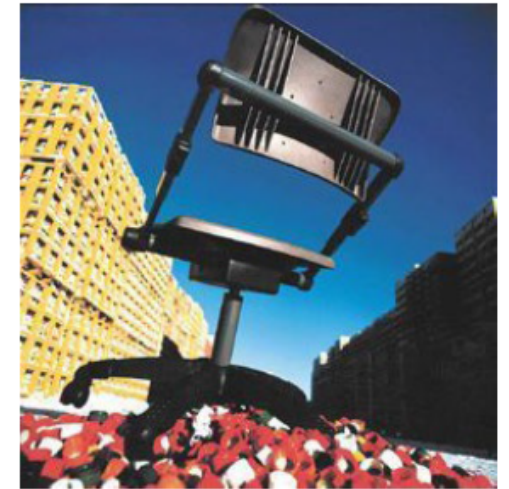
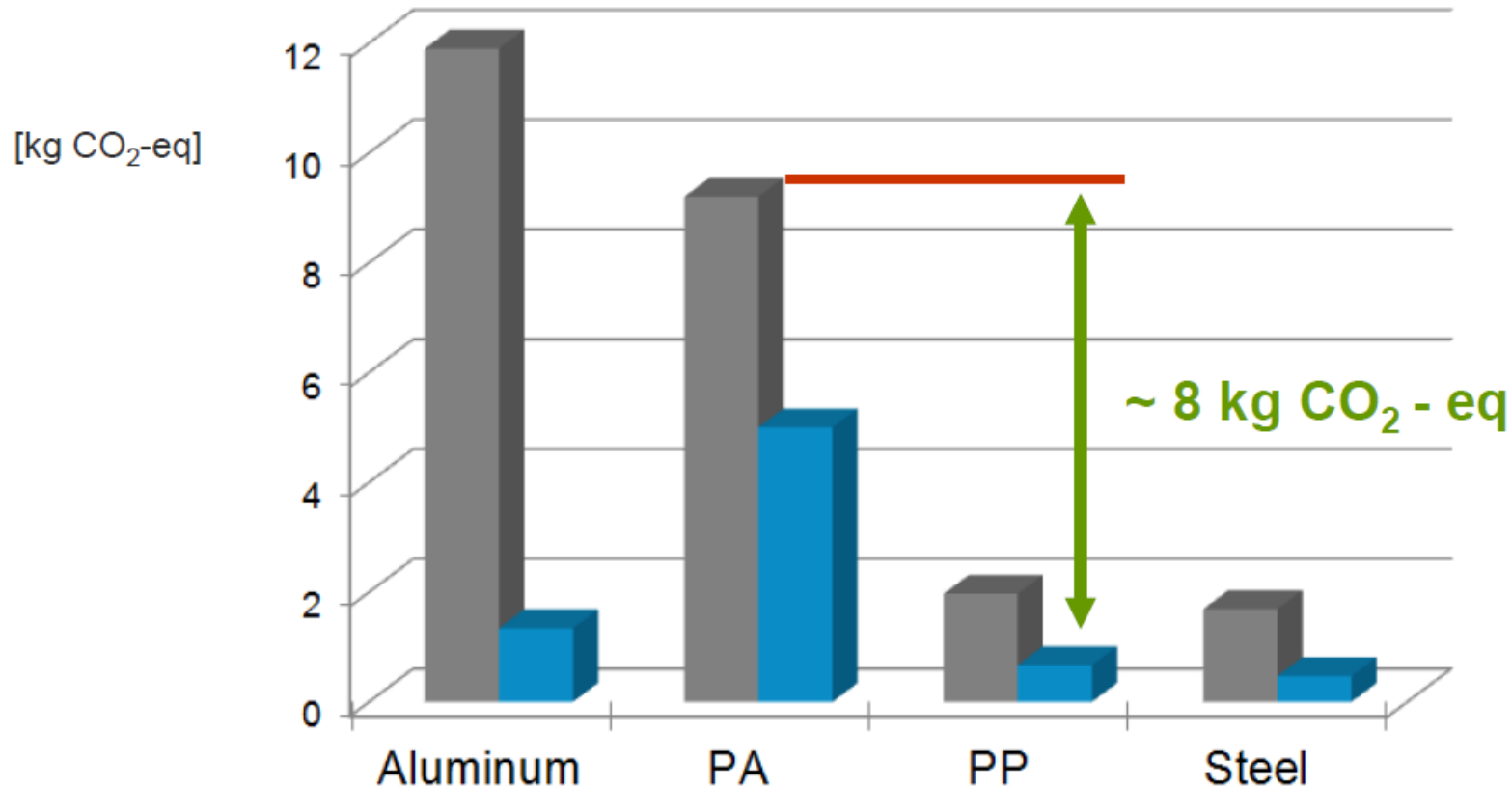
✈ Return trip Oslo-Brussels: **160 kg CO₂ per person**

Key environmental indicators for HÅG Futu Mesh 1100	Unit	Cradle to Gate A1-A3
Global warming (carbon footprint)	kg CO ₂	54.5
Total energy use	MJ	975
Amount of recycled materials	%	40%

Reduced greenhouse gas emissions, while creating a market for waste.
Both objectives are met by using post consumer recycled plastics.



GHG emissions per 1 kg raw materials:



Virgin
Recycled

Why is that important? Well, compare to everyday objects..

One chair

19 kitchen knives
335 beverage cans
145 shampoo bottles



1.32 kg recycled steel
8.25 kg recycled aluminium
5.09 kg recycled plastics



One annual volume

(Estimated 50.000
units/year)

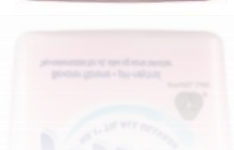
63 t recycled steel
395 t recycled aluminium
165 t recycled plastics



Post consumer recycled
material

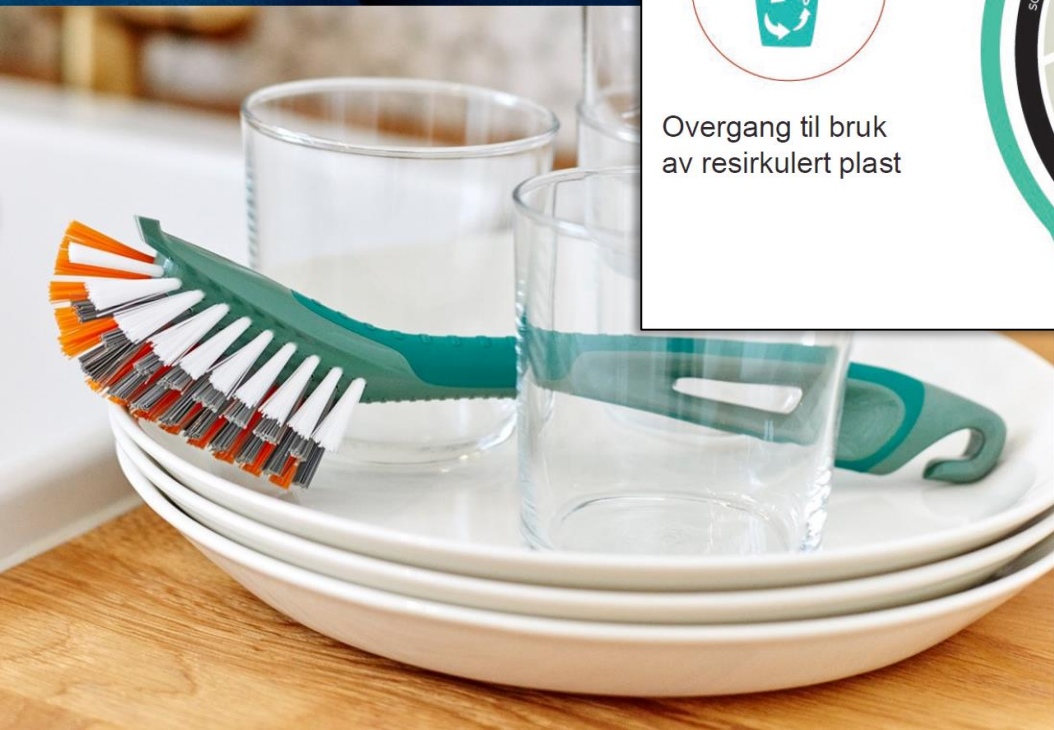
MADE TO RECYCLE – MADE FROM RECYCLED







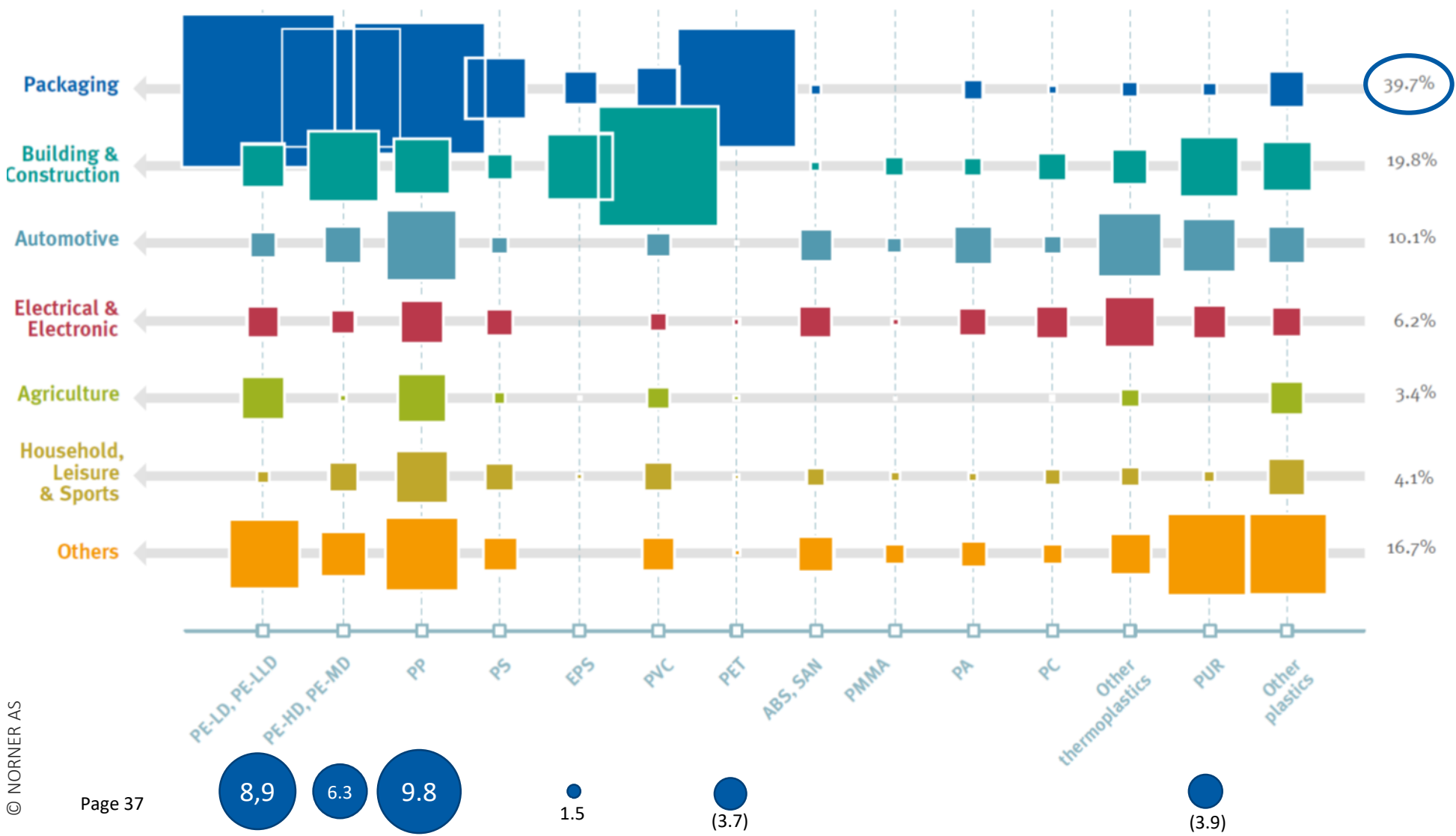
reddot award 2016
winner



The current «go with the flow» need to stop!

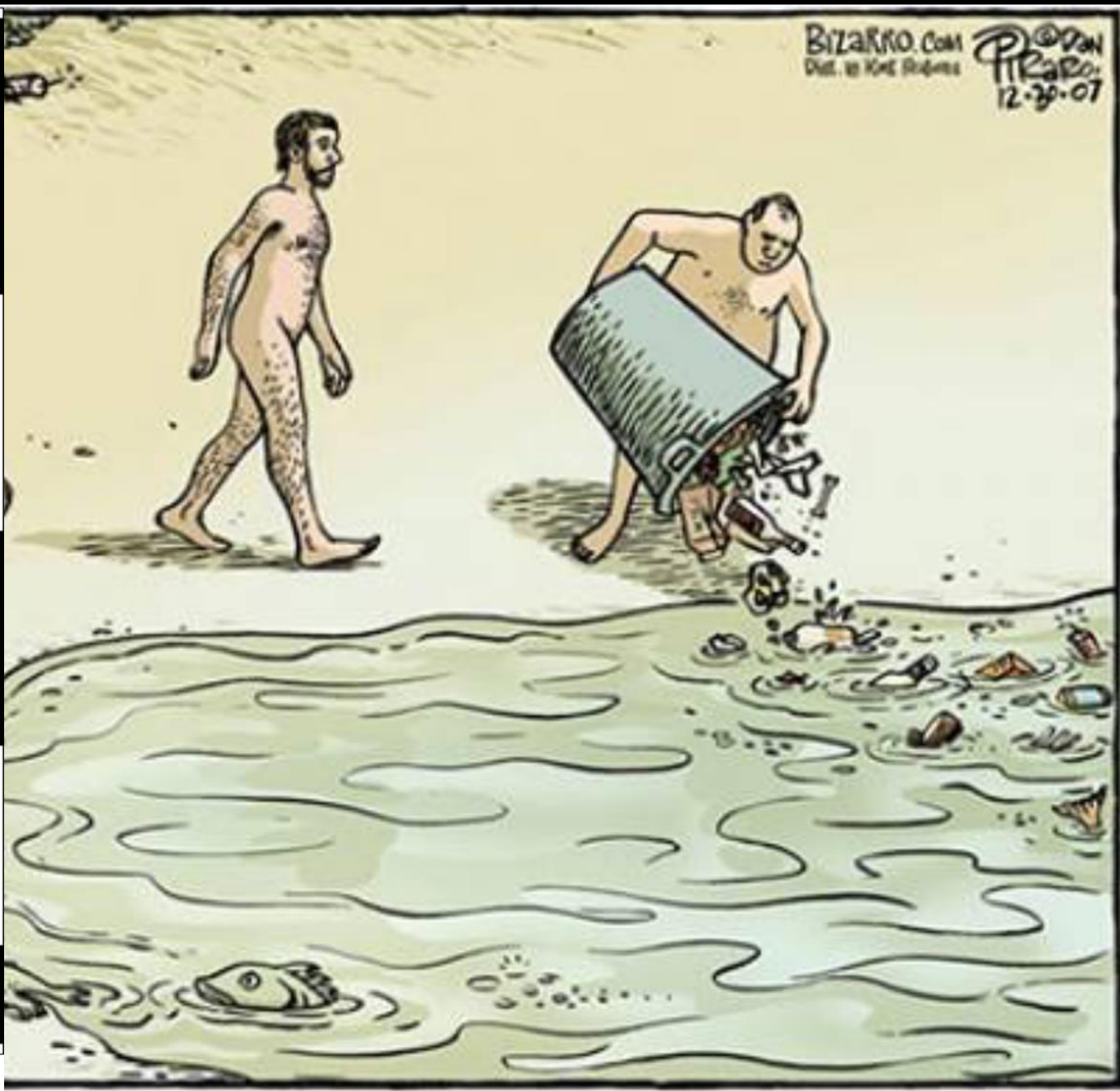
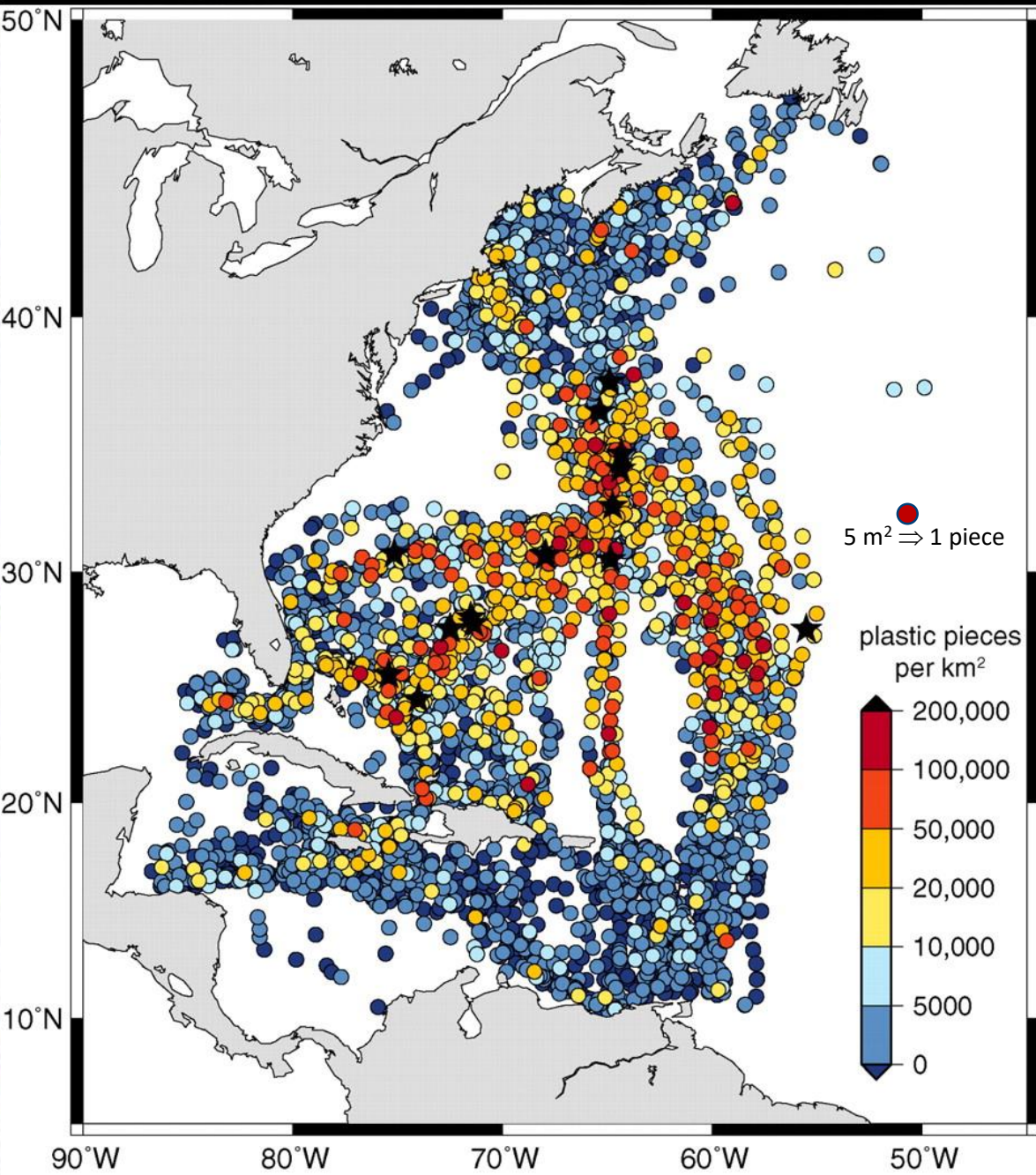


~50% OF THE PLASTICS FLOAT...A WHILE!



KEY FOCUS – STOP THE POLLUTION AT THE SOURCE!

- The plastics industry believes that plastics are a valuable resource that bring numerous benefits to modern society, significantly contributing to sustainable solutions
- Whatever its origin, plastic waste in any environment is unacceptable, and the plastic industry is committed to continuing its collaborative partnerships to tackle the problem at source
- The plastics industry are determined to drive multi-stakeholder action on the issue both in Europe and at the international level
- The plastics industry focus it's efforts on secondary microplastics and pellet losses, while for the other microparticles, this is tackled by a broader alliance with the textiles, tires, paint and cosmetics industries, through other associations like CEFIC



MARINE LITTERING AND MICROPLASTICS

- Massive attention and concerns from consumers, public bodies and NGOs
- Media does not communicate the facts
- Current knowledge gives enough reasons for actions

The amount of research of micro- and nanoplastics has been growing exponentially, but knowledge is not growing at the same rate.

Ecological risks are very rare at present for microplastics pollution, but risk may be widespread within a century if future emissions to the environment remain constant or increase. At present, there is no evidence of widespread risk to human health at present.

Available online at www.sciencedirect.com
ScienceDirect
Current Opinion in
Environmental Science & Health

What we know and what we think we know about microplastic effects – A critical perspective
Martin Ogonowski^{a,b}, Zandra Gerdes^a and Elena Gorokhova^a

Abstract
Microplastic pollution is currently perceived as an environmental hazard, and adverse effects have been reported at various levels of biological organization. However, most experimental designs do not allow plastic-specific effects to be distinguished from those caused by other particles, such as clay and cellulose, which are naturally ubiquitous in the environment. We suggest that microplastic effects reported in recent ecotoxicological studies are similar to those induced by the natural particles. To provide a sound basis for risk assessment, experimental designs must not only be able to disentangle the effects of food limitation and particle toxicity but also demonstrate whether microplastics cause impacts that differ from those induced by natural particles.

SCIENTIFIC REPORTS

Article | Open Access | Published: 13 September 2017

Brain damage and behavioural disorders in fish induced by plastic nanoparticles delivered through the food chain

Karin Mattsson, Elyse V. Johnson, Anders Malmendal, Sara Linse, Lars-Anders Hansson & Tommy Cedervall

Scientific Reports 7, Article number: 11452 (2017) | Download Citation ↓

Science Advice for Policy by European Academies

A SCIENTIFIC PERSPECTIVE ON
MICRO-PLASTICS
IN NATURE AND SOCIETY

SAPEA
Science Advice for Policy by European Academies

European Commission

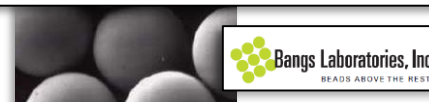
Scientific Advice Mechanism (SAM)

Environmental and Health Risks of
Microplastic Pollution

Group of Chief Scientific Advisors
Scientific Advice 6/2016

Independent Expert Report

Research and Innovation



AMINE POLYSTYRENE

Amine-functionalized microspheres offer further options for coupling of biomolecules. Glutaraldehyde is commonly used for the immobilization of amine-containing compounds, and specialized linkers are available for targeted coupling of thiol or carbohydrate moieties. See [TechNote 205](#), Covalent Coupling. Unless otherwise noted amine polymer microspheres are available as ~10% solids (w/w) aqueous suspensions in these standard amounts: 0.5g, 1.0g, 1.5g, and 5.0g. For microspheres larger than 100µm, please call for availability.

MICROPLASTICS IS HIGH ON THE AGENDA – AND THEN WHAT?

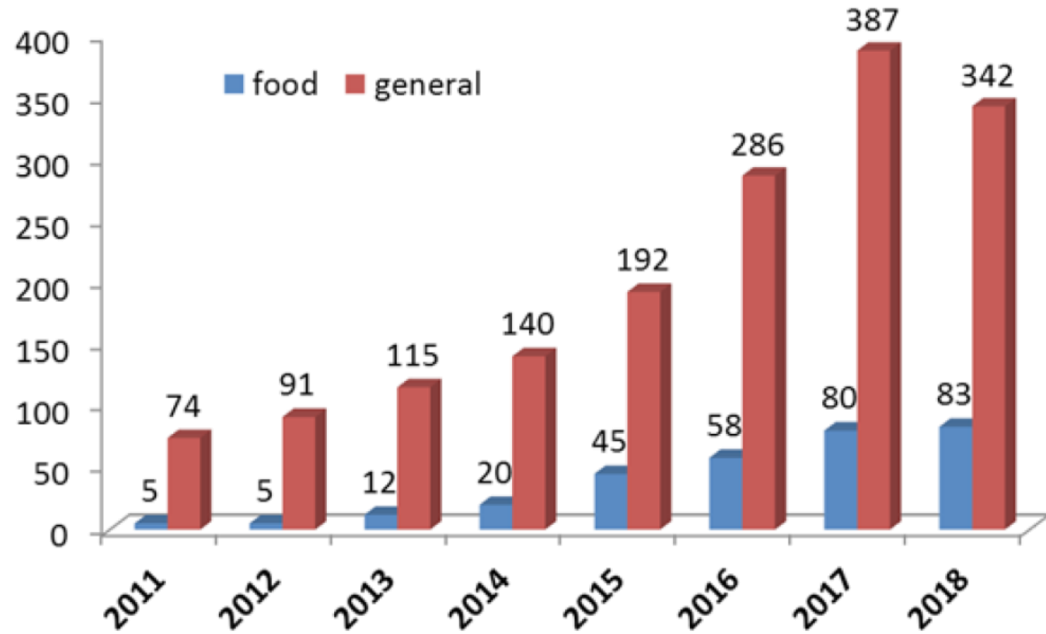


Figure 4: Scientific publications (including articles, reviews and conference proceedings) on the topic of microplastics generally (red bars) and microplastics in food (blue bars) have been increasing since 2011 (Scopus only).

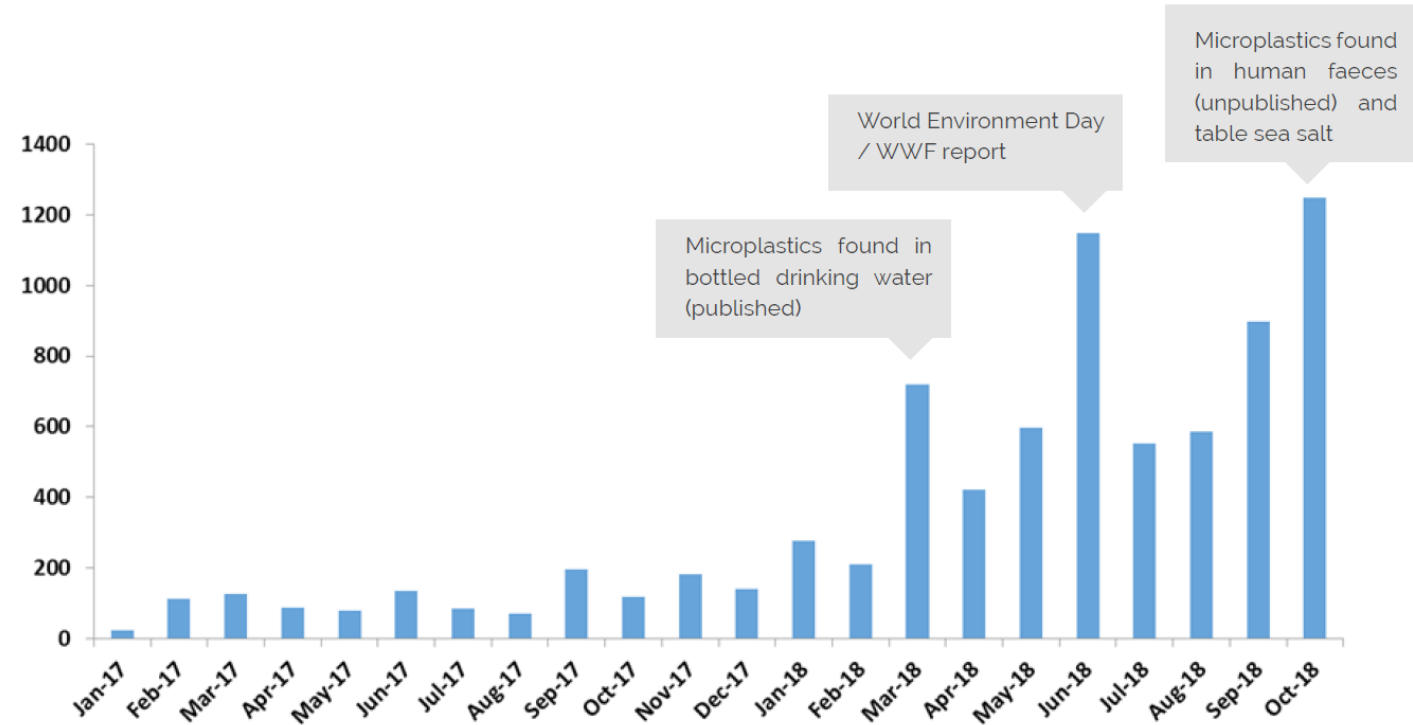


Figure 5: Monthly number of news items extracted from EMM between January 2017 and October 2018 (JRC, personal communication). News published in over 70 languages in traditional or social media on microplastics were monitored with the EMM. A total of 6433 media news items were collected on microplastics between January 2017 and July 2018 demonstrating increased coverage of the topic, starting in January 2018 (clear peaks in March, June and September/October are potentially related to specific news stories as indicated).



Ny forskning:

**– Får i oss minst
50.000 plast-
partiklar i året
gjennom maten**

Mange fleire matvarer

Marinbiologen Kieran Cox ved [Universitetet i Victoria i Canada](#) er ansvarleg for rapporten. Han fortel at dei har testa rundt 15 prosent av matvarene som inngår i eit normalt kosthald. Dei har ikkje testa brød, prosesserte produkt, kjøt, meieriprodukt og grønsaker, blant anna.

- Vi treng meir forskning på dette, men det er svært sannsynleg at det er store mengder mikroplast også i desse matvarene. Det vil bety at vi kan få i oss fleire hundre tusen partiklar i løpet av eit år, seier han til den britiske avisa [The Guardian](#). Han legg til at funna i undersøkinga har fått han til å endre det personlege forbruket sitt.
- Eg droppar alle formar for plastemballasje, og eg prøver så langt det let seg gjere å ikkje drikke flaskevatt, seier han.

What we know and what we think we know about microplastic effects – A critical perspective

Martin Ogonowski^{a,b}, Zandra Gerdes^a and Elena Gorokhova^a

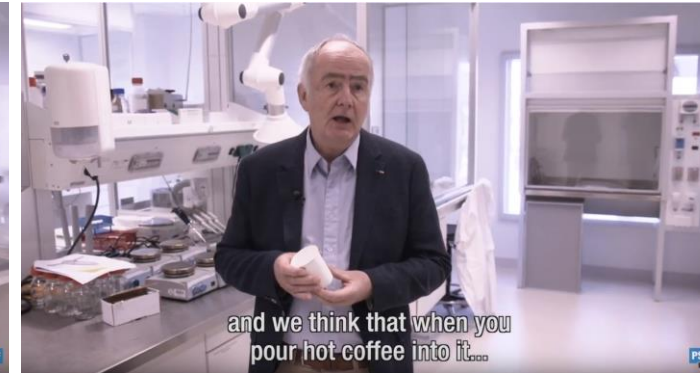
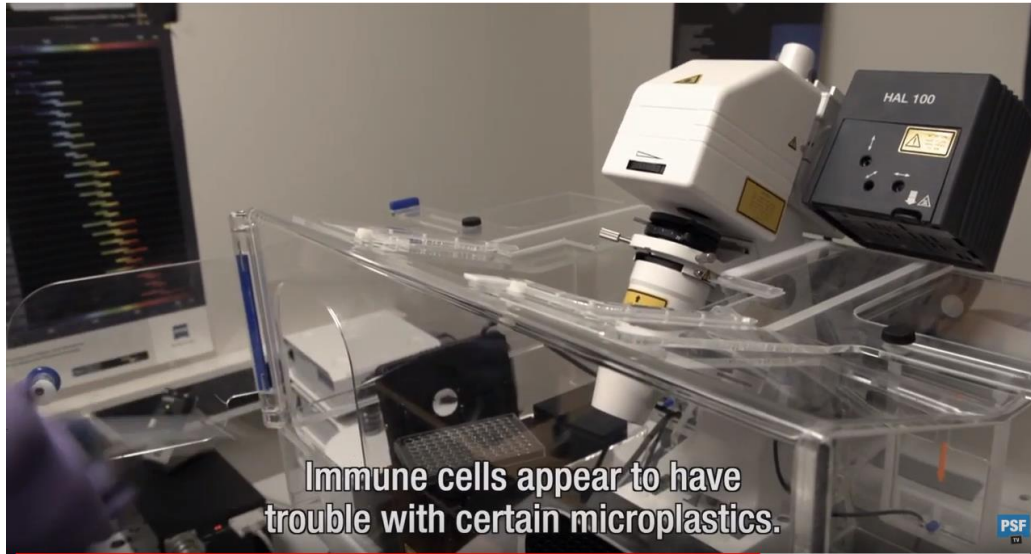
Abstract

Microplastic pollution is currently perceived as an environmental hazard, and adverse effects have been reported at various levels of biological organization. However, most experimental designs do not allow plastic-specific effects to be distinguished from those caused by other particles, such as clay and cellulose, which are naturally ubiquitous in the environment. We suggest that microplastic effects reported in recent ecotoxicological studies are similar to those induced by the natural particles. To provide a sound basis for risk assessment, experimental designs must not only be able to disentangle the effects of food limitation and particle toxicity but also demonstrate whether microplastics cause impacts that differ from those induced by natural particles.



“All things are poisons, for there is nothing without poisonous qualities. It is only the dose which makes a thing poison.”
- Paracelsus

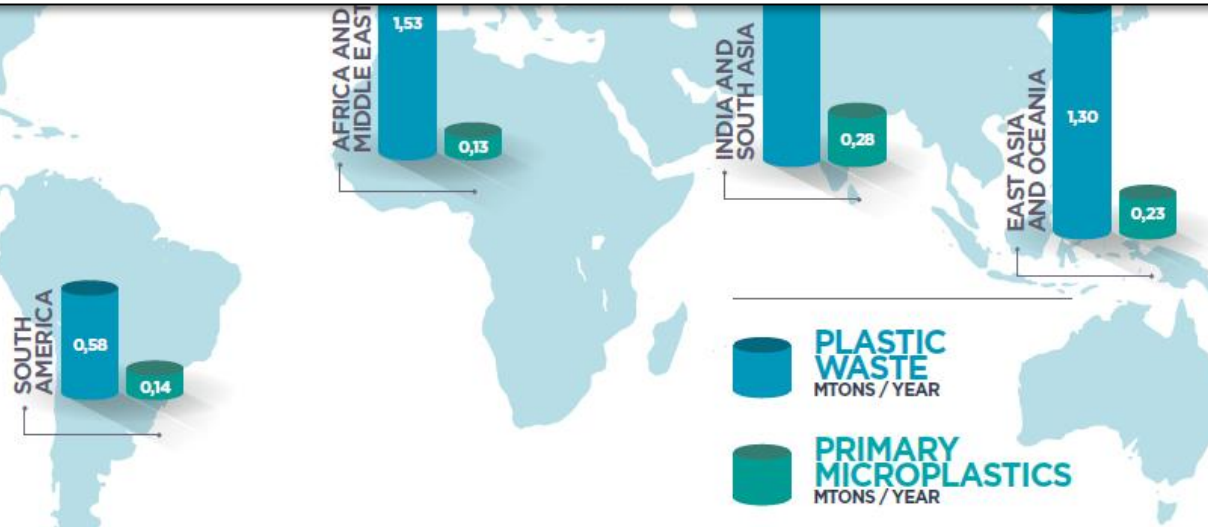
WHEN WE DO RESEARCH — MAKE IT RELEVANT!



WE NEED TO CLOSE THE PLASTIC TAP!

Science Advice for Policy by European Academies

The best available evidence suggests that microplastics and nanoplastics do not pose a widespread risk to humans or the environment, except in small pockets. But that evidence is limited, and the situation could change if pollution continues at the current rate.



- Reducing mismanaged plastic waste by:
 - Implementing infrastructure
 - Waste management practice
 - Changing consumer behavior
 - Changing industry behavior
 - Increase value of plastic waste
- Reducing primary microplastics by
 - Textile fiber re-design
 - Washing machine filtering devices
 - Water treatment efficiency
 - Water run-off collection
 - Reduce plastic pellet spillage

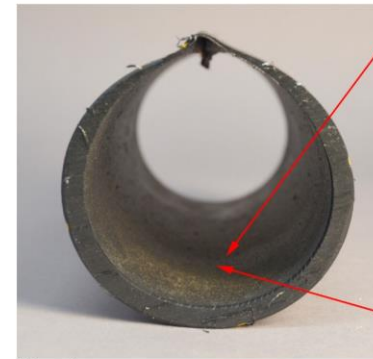
IMPROVED MATERIAL SOLUTIONS AND TEST METHODS ARE NEEDED

Home > News > Feed pipe wear 'putting tonnes of plastic into sea'

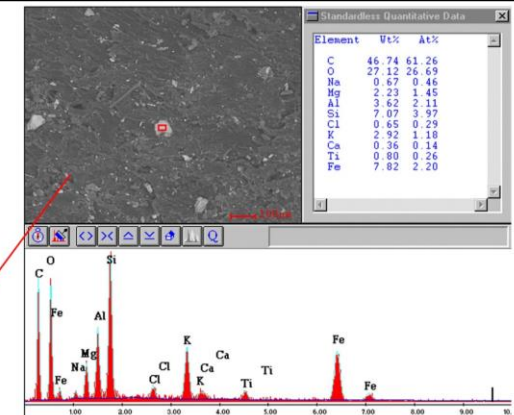
Feed pipe wear 'putting tonnes of plastic into sea'



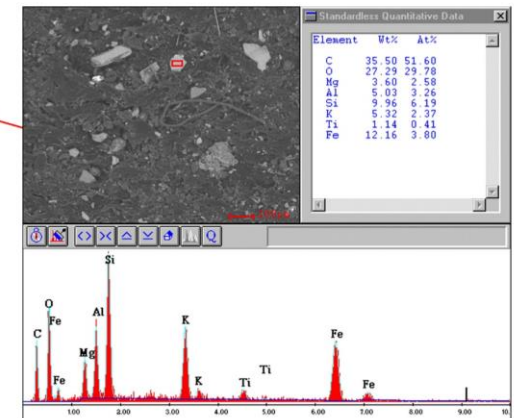
Friends of the Earth Norway claims wear and tear on feed lines is putting tonnes of microplastic into the sea. Photo: kyst.no



Figur 8.



Figur 8b. SEM - EDS analyse av innvendig rørvegg



Figur 8c. SEM - EDS analyse av innvendig rørvegg



ahlseil

Ny slitesterk fôrslange fra Ahlseil

Torbjørn Johnsen, Segmentsjef Ahlseil Havbruk

Arges HEX – Antistatisk fôrslange

Health and safe - det trygge valget - Environmental - avgir mindre mikroplast og resirkuleres - X-treme - unik slitestyrke

Samarbeid med Norner ga resultater



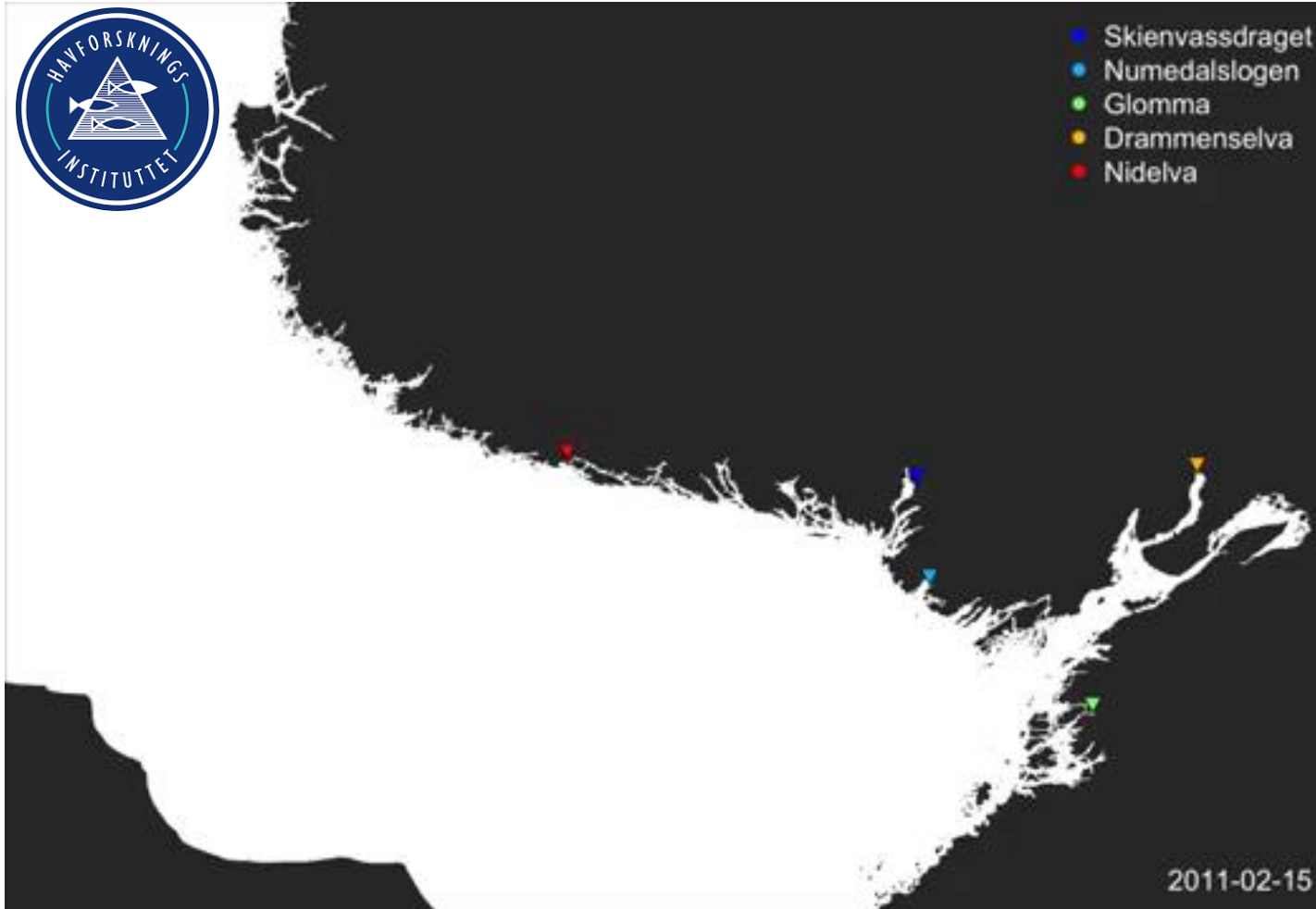
Til venstre ser dere den ny antistatiske fôrslangen. Den har 6 sektorer som leder ut statisk elektrisitet.

En kan se og kjenne at ny modell har et litt mykere og litt mer gjennomsiktig PE råstoff.

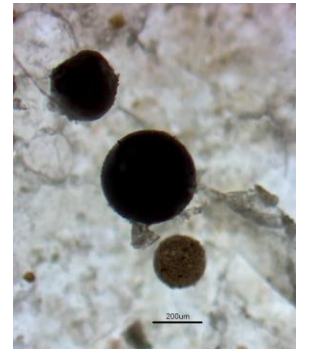
Til høyre ser dere gammel modell, den ledet ut via en sektor og et ledende belegg inne i slangen.

Begge slangene kan resirkuleres og Ahlsell hjelper til med å hente inn gamle slanger.

WASTE NOT TAKEN BY SOURCE IS SPREADING

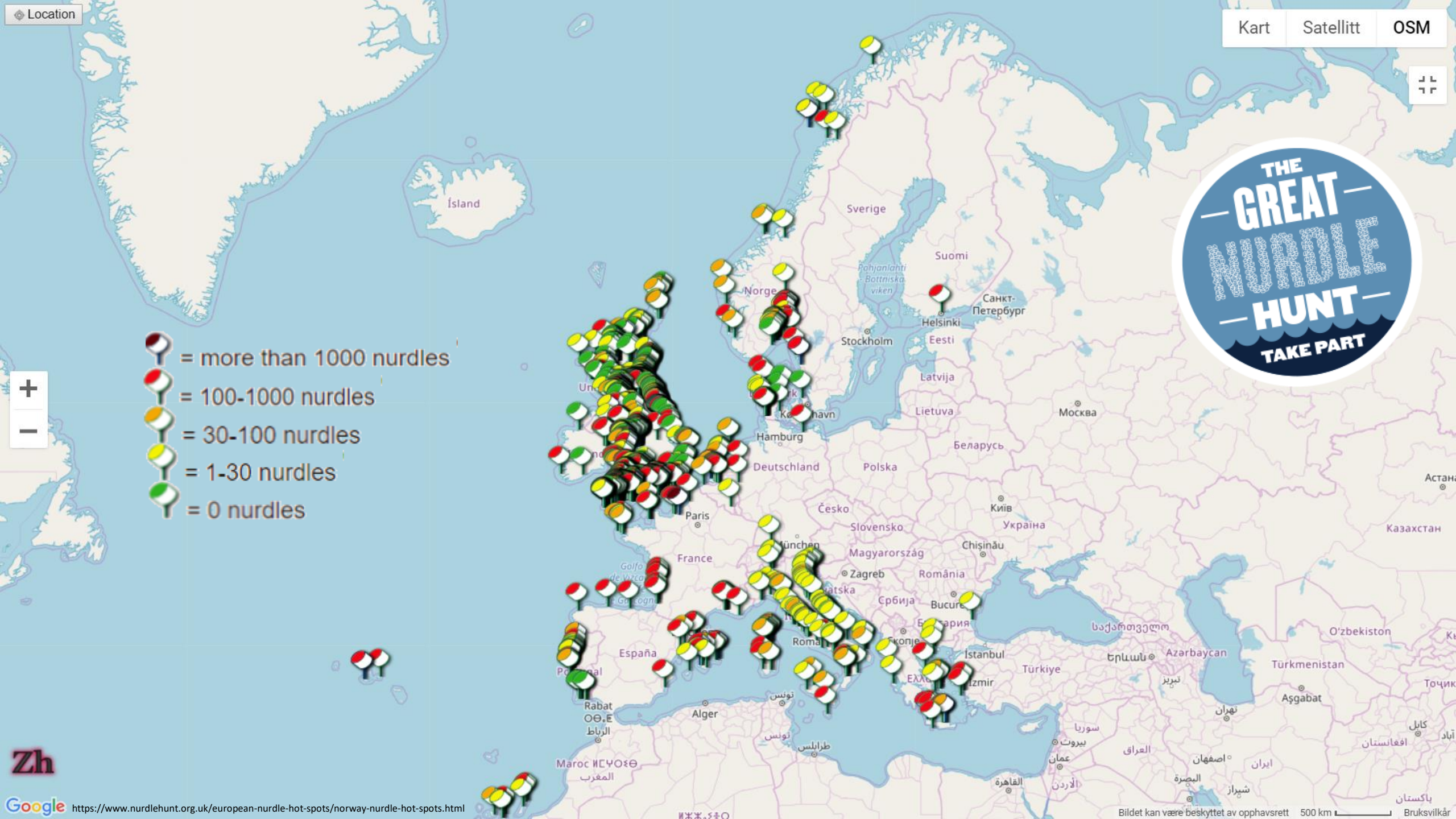


- 79 samples 15 locations
- 77.000 microplastics particles
 - 9-217 particles/m³
- 80% from asphalt and tyres
- 9% from ropes or clothing
- 7% fragments
- But also pellets...





- = more than 1000 nurdles
- = 100-1000 nurdles
- = 30-100 nurdles
- = 1-30 nurdles
- = 0 nurdles



2 X PLASTICS PRODUCTION -75% LESS PELLETS IN THE OCEAN, BUT...

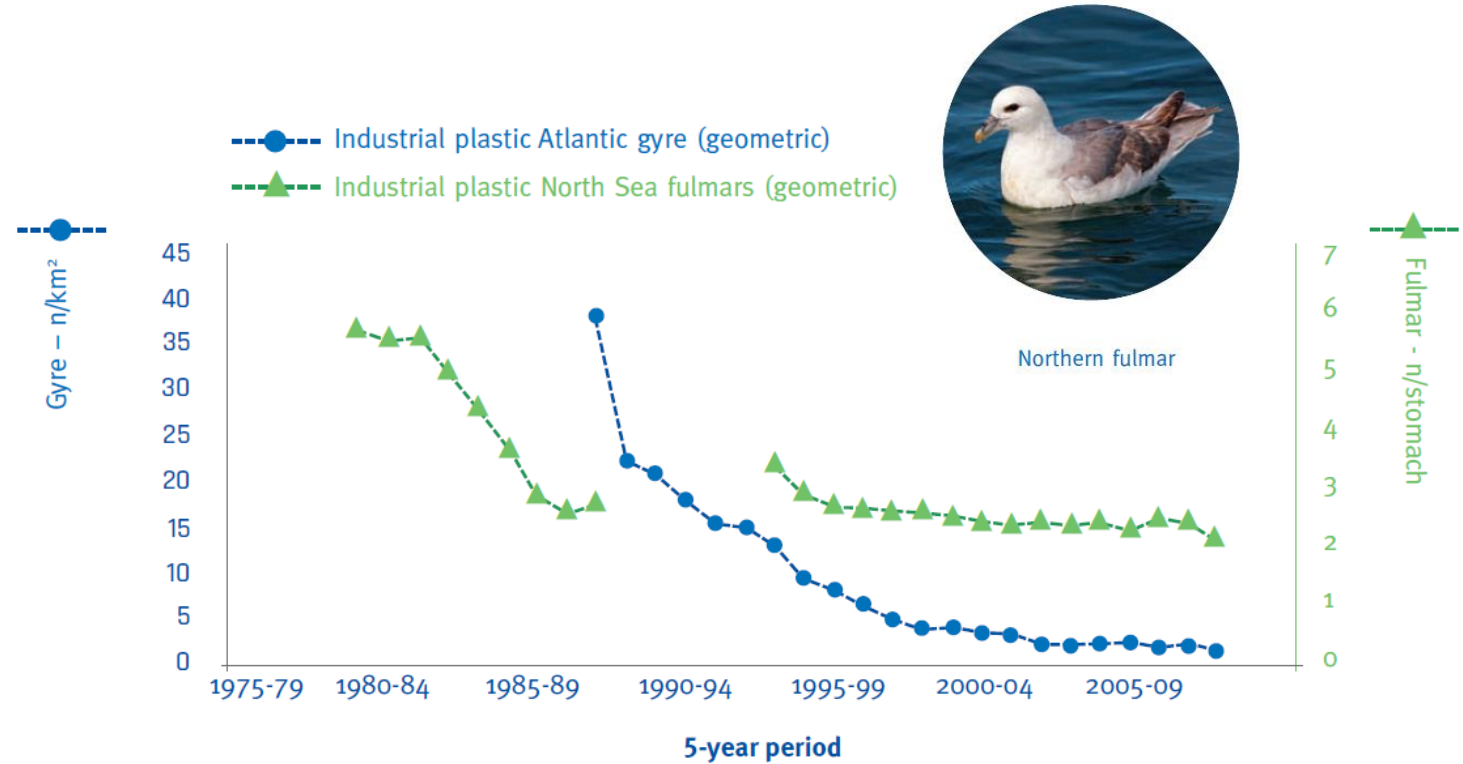
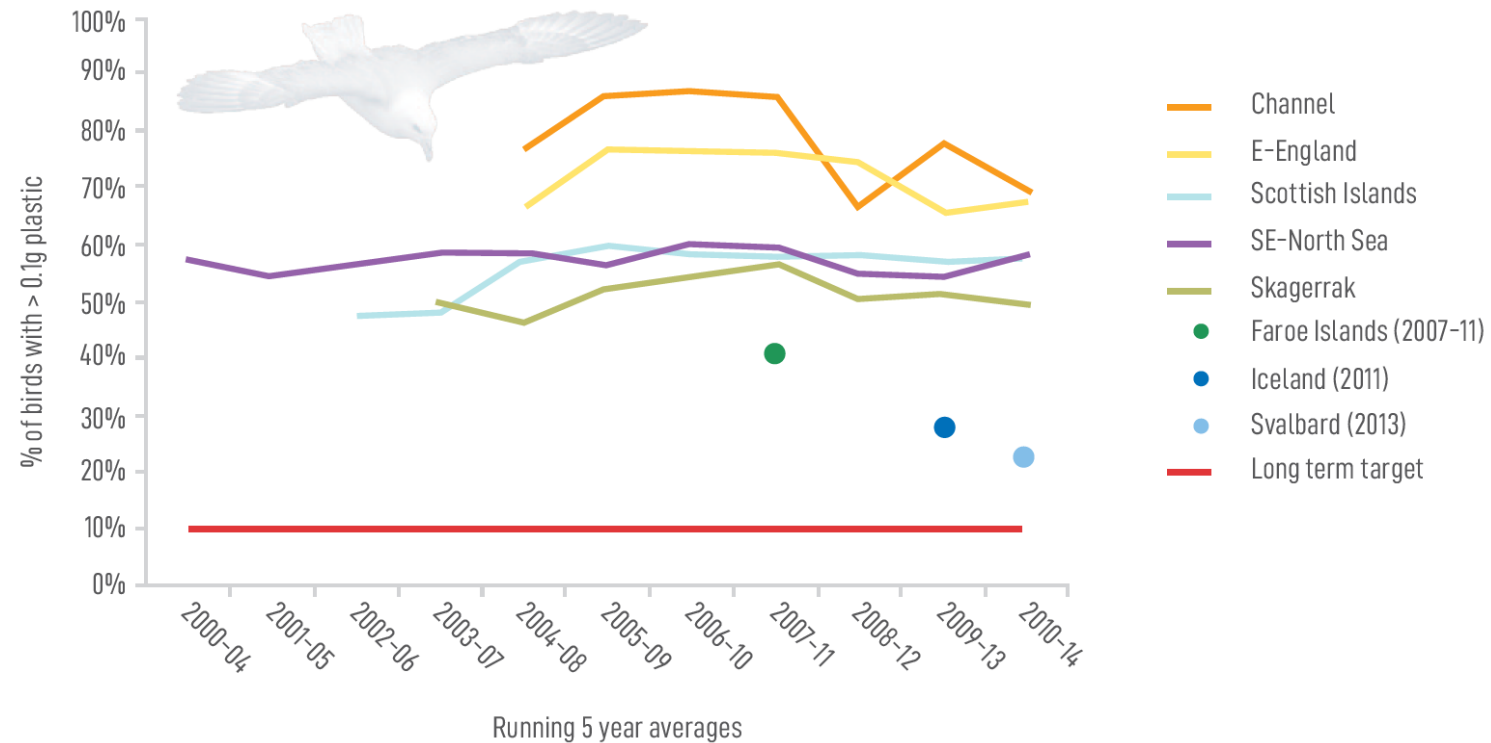


Figure 2: Comparative trends in numerical abundance of industrial plastics in stomachs of North Sea fulmars and surface densities in the North Atlantic subtropical gyre. Source: Franeker & Law, 2015⁷

2 x PLASTICS PRODUCTION -75% LESS PELLETS IN THE OCEAN, BUT...



2 X PLASTICS PRODUCTION -75% LESS PELLETS IN THE OCEAN, BUT...

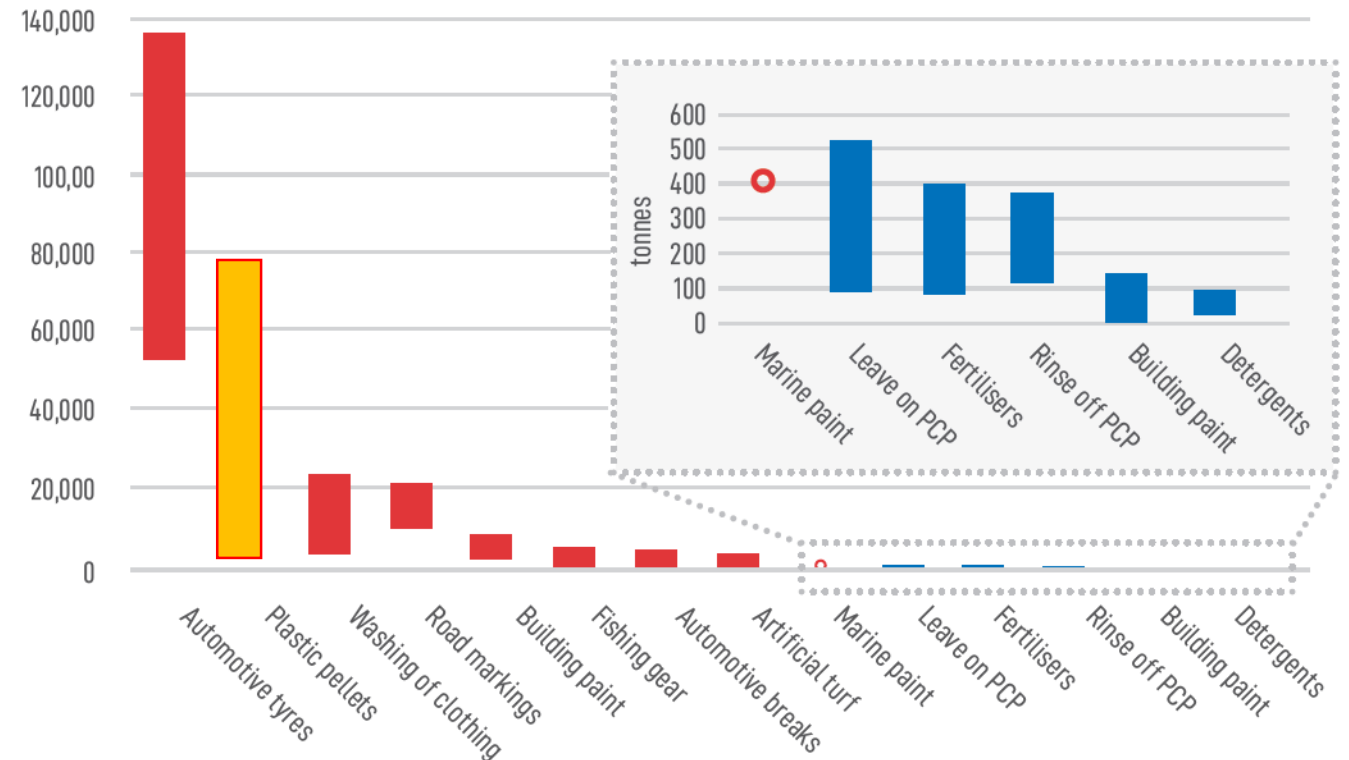
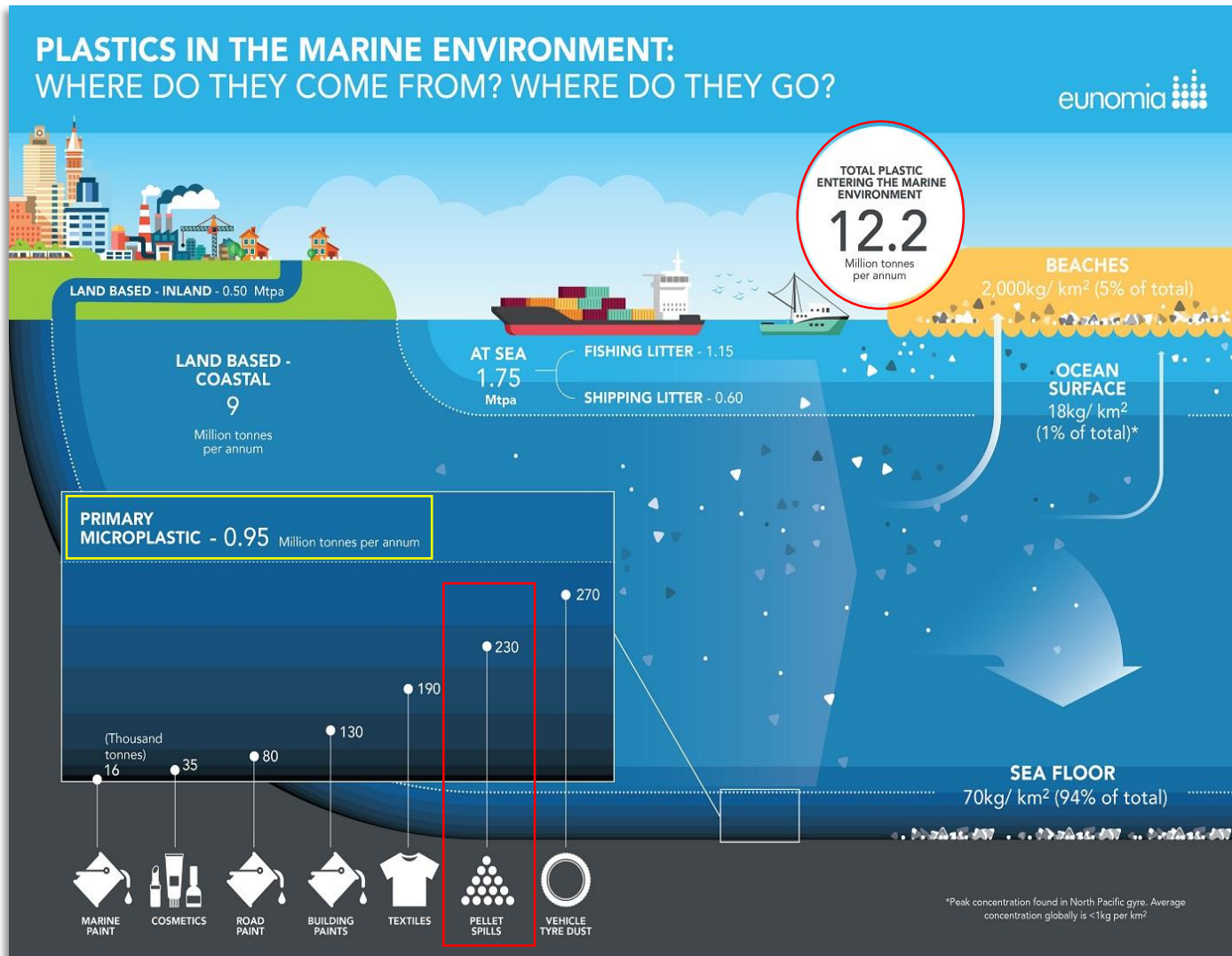


Fig 1. Eunomia and Amec Foster Wheeler modelling of annual emissions of microplastics to surface waters in the EU⁷.

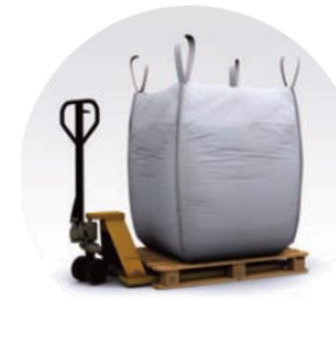
ESTIMATED LOSS OF PELLETS IS 0.001-0.01%



Bag (contents 20-25 kg) to be stacked on pallets, with a total of up to 1500 kg per pallet



Octabin (contents 500-1300 kg)



Big bag (contents 500-1000 kg)



Silo truck (up to 35 MT)

68.73 gram (PE)



18.05 gram (PP)



0.02-0.04 gram
2-5 mm



Operation Clean Sweep®
Zero pellet, flake and powder loss

PlasticsEurope
Association of Plastics Manufacturers

RAW MATERIAL LOSS IN THE ENVIRONMENT

Raw materials:

- Can be found in the environment around industrial areas but also in remote places transported by ocean currents
- Pollute terrestrial and marine environments
- Do not biodegrade
- Accumulate
- Can be ingested by animals causing suffocation and reduced feeding

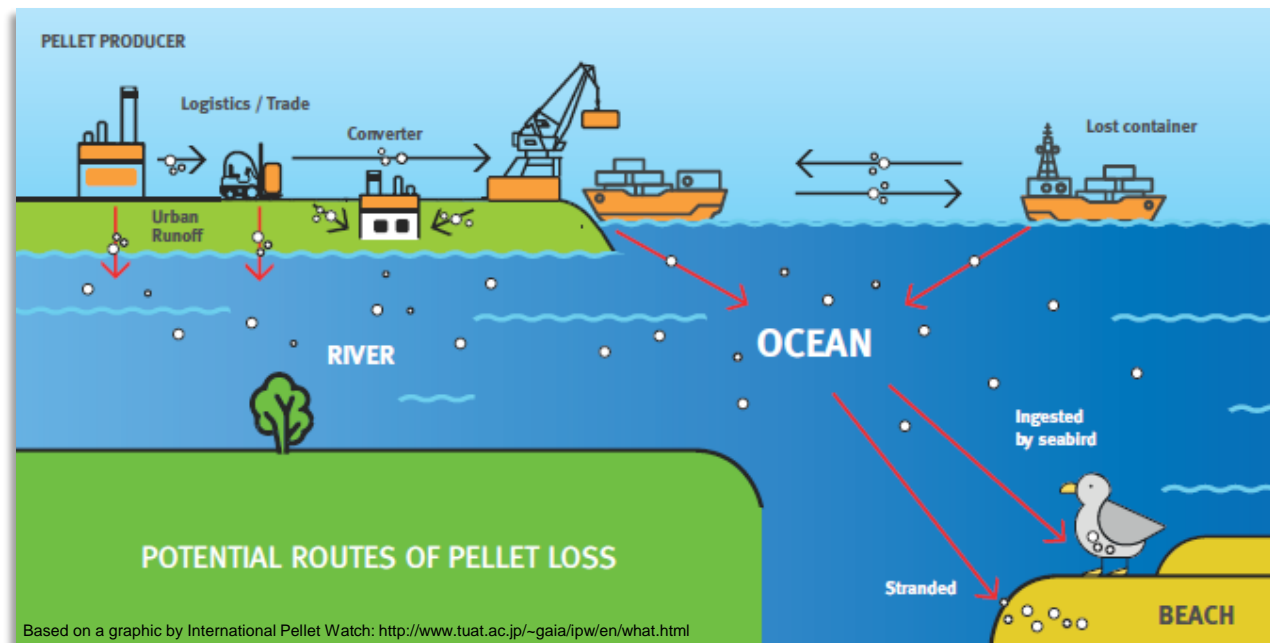
*Plastic pellets, flakes and powder belong in our plastic products
Not the environment!*



Photo: Jennifer Brand

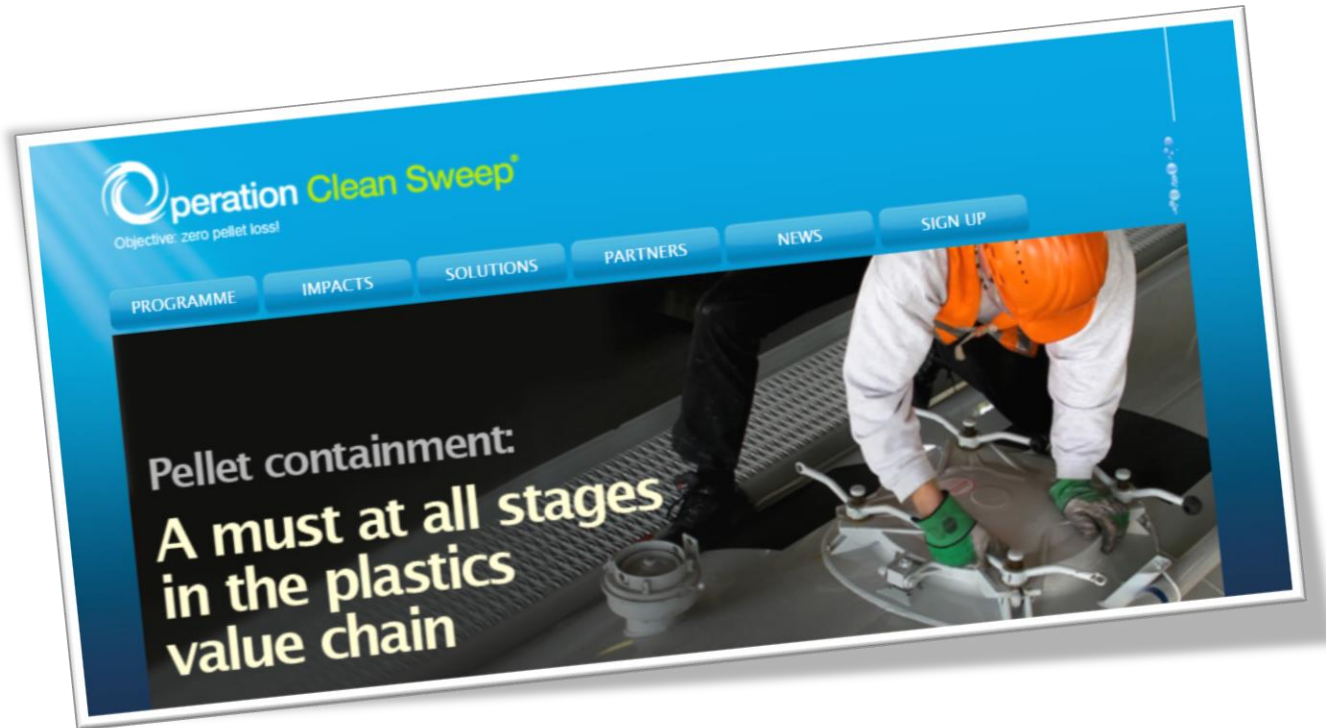
WHAT CAN WE DO?

- We can directly control:
 - Plastic pellet, flake and powder loss
- Polymer producers and converters, transporters and logistics operators – all have a role to play
- We can be in control of raw materials path from supplier to customer



Based on a graphic by International Pellet Watch: <http://www.tuat.ac.jp/~gaia/ipw/en/what.html>

THERE IS A SOLUTION: OPERATION CLEAN SWEEP®



OCS European site:

www.opcleansweep.eu

PlasticsEurope
Association of Plastics Manufacturers

Operation Clean Sweep® (OCS):

- International voluntary programme to tackle plastic pellet, flake and powder loss
- Originally developed in the USA in 1990 by Plastics Industry Association (PLASTICS)
- In Europe – already implemented by more than 350 signatories along the entire plastics value chain

(COMPANY'S NAME) JUST COMMITTED TO OCS!



Company Pledge to Prevent Resin Pellet, Flake and Powder Loss

Our company recognises the importance of preventing the loss of resin pellets into the environment and is committed to implementing the Operation Clean Sweep® programme.

We will be an OCS Programme Partner, strive towards "Zero Pellet Loss" and make changes to:

- 1** Improve our worksite(s) set-up to prevent and address spills;
- 2** Create and publish internal procedures to achieve «zero pellet loss» goals;
- 3** Provide employee training and accountability for spill prevention, containment, clean-up and disposal;
- 4** Audit our performance regularly;
- 5** Comply with all applicable local and national regulations governing pellet containment;
- 6** Encourage our partners (contractors, transporters, etc.) to pursue the same objectives.

WHY ARE WE DOING THIS?

Actions towards:

- Sustainability & cleaner environment
- Circular economy & increased profit
- Safer working environment
- Improved reputation and image – Voluntary commitment
- Part of network sharing best practices

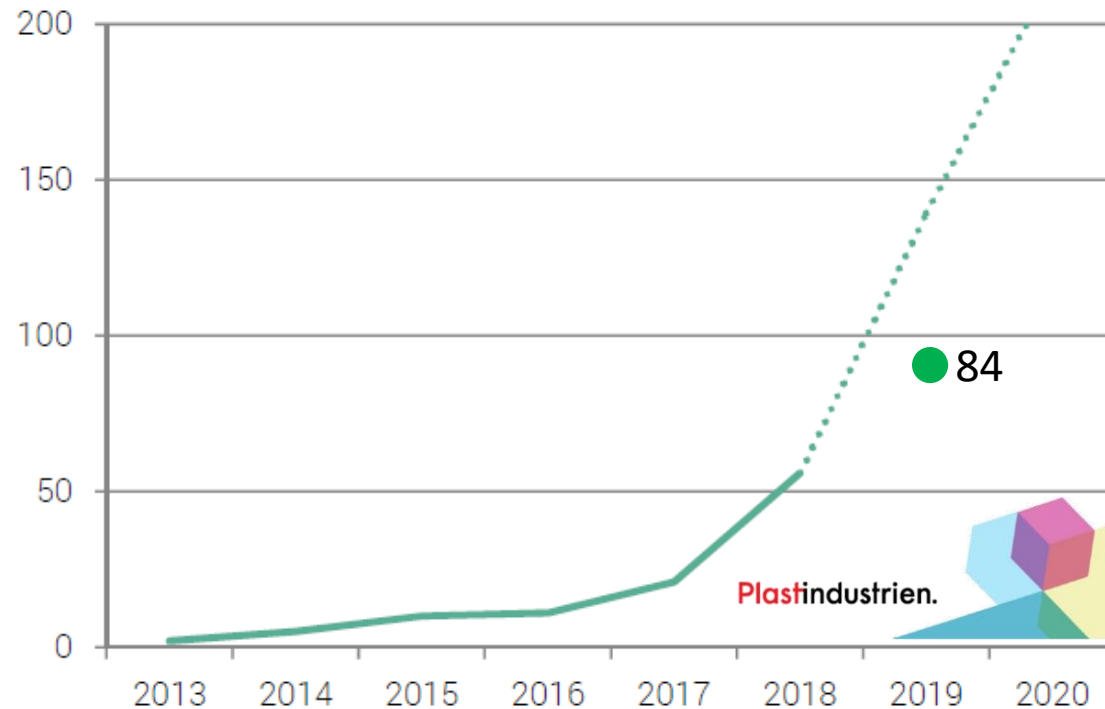


 **Operation Clean Sweep**[®]

STATUS PÅ OPERATION CLEAN SWEEP I DANMARK

- 71 innmeldte virksomheter siden 2013
- Mål: 80% av plastindustrien i 2020

Tilslutning til OCS 2013 - 2018



Plastindustrien.
Bråndeforeningen for danske plastvirksomheder

AKTUELT

Tema: **Plast i havet**

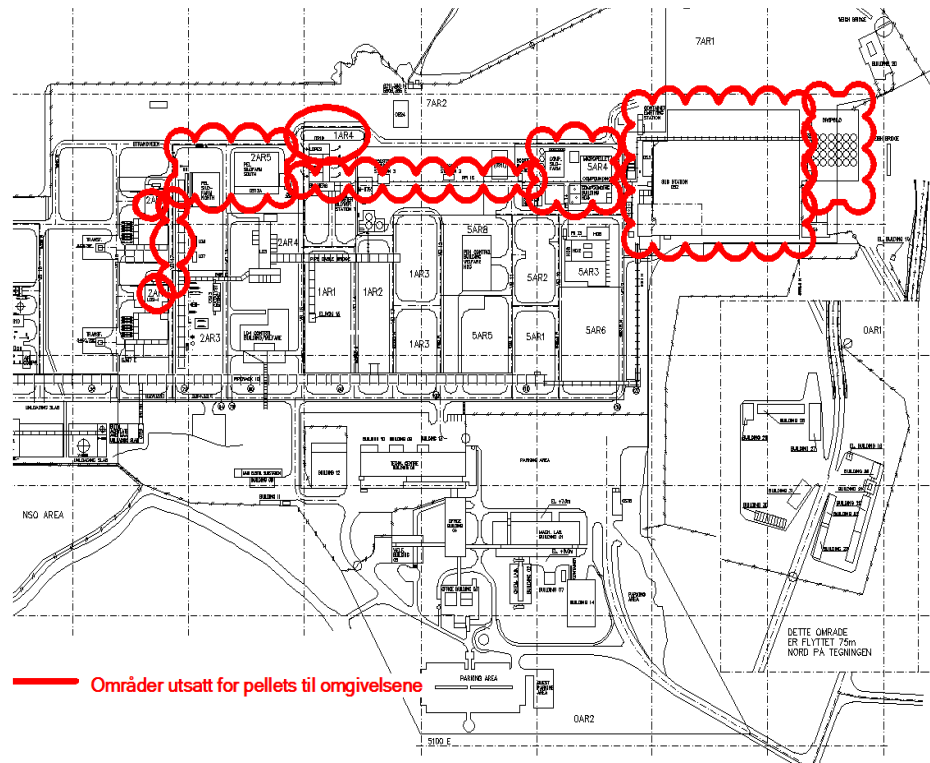
Vil sætte europæisk standard

– Vi ved, at der kan være mindre fokus på forebyggelse af plast i naturen i andre lande. Helt særligt uden for EU grænser, men også i Europa. Derfor har vi internt forpligtet os til, at alle branchens fabrikker tilmelder sig Operation Clean Sweep, der er plastbranchens miljøinitiativ til at forebygge plast i naturen, siger Henrik Vasylyeva, formand for EPS-branchen.

NYHED 26. MARTS 2019

EPS-branchen gør Operation Clean Sweep obligatorisk

Den danske EPS-branchen, som er en sektion af Plastindustrien, sætter turbo på forebyggelsen af plast i naturen. Derfor har bestyrelsen besluttet, at det skal være obligatorisk for alle EPS-producenter i branchen at have tilmeldt sig miljøprogrammet Operation Clean Sweep.



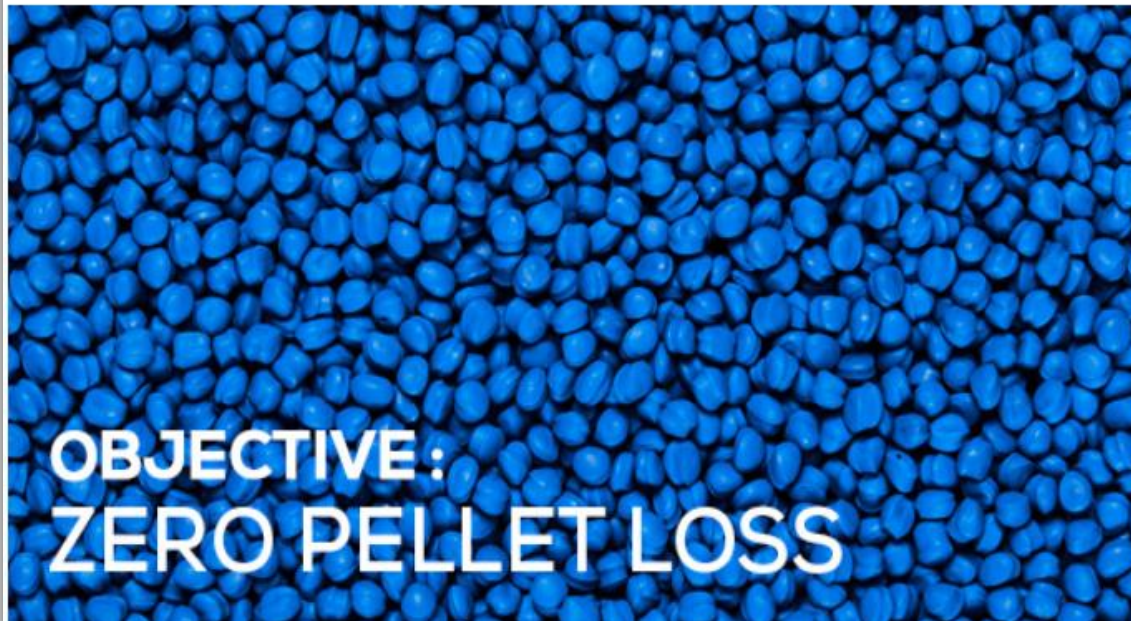
PLASTICS INDUSTRY NEED TO CLOSE “THEIR TAP”

LATEST NEWS NEWS ARCHIVE

20.11.2018

OPERATION CLEAN SWEEP A PART OF PRIMO'S ENVIRONMENTAL POLICIES

In the spring of 2018, Primo took the final steps in implementing European Operation Clean Sweep® programme (OCS) at all our production facilities throughout Europe. And while the programme is an ongoing process, progress is constantly being made towards the final goal of eliminating plastic pellet waste in the environment.



PREVENTING PELLET LOSS

Stop plastic pellets from finding their way into the sea

**SEE IT.
STOP IT.
CLEAN IT.
RECYCLE IT.**

Find out more at: www.operationcleansweep.co.uk

BPF PlasticsEurope Operation Clean Sweep



Handelens Miljøfond

STATUS IN NORWAY? ALMOST NONE!

Dear Thor,

I hope my email finds you well.

This is to inform you that the Norwegian company Pipelife Norway Stathelle (manufacturer) has signed-up the OCS programme. Please do not hesitate to contact me if you need any further information.

Best regards,

Marzia

Marzia Scopelliti

Marine Litter Solutions Team

Consumer and Environmental Affairs

PlasticsEurope

Rue Belliard 40, box 16, 1040 Brussels - Belgium

Phone +32 (0)2 792 30 48

marzia.scopelliti@plasticseurope.org

<http://www.plasticseurope.org>



- Blomquist Transport AS
 - Container Transport Larvik AS
 - RPC Packaging AS
 - Ineos
 - Innovyn
 - Norner
- + Pipelife, Mezonic, Minera...

To advance OCS within a country, it is generally very useful if plastics associations commit to OCS. Then, they can promote OCS to their member companies. At the moment we have no Norwegian association committed to OCS.

From a quick search online I found Norwegian Plastics Industries Association (PIF) and Nork Industri The Federation of Norwegian Industries. Are there more Norwegian associations that represent companies in the plastics value chain? Is there a specific one for plastics producers?

It would be very much appreciated if you could approach Norwegian associations to promote the programme as well! IKEM in Sweden and the Danish Plastics Federations have helped a lot to promote OCS in Scandinavia for example.

Let me know if you have more questions and keep us updated if you have more news from Norway!

HO TO ENGAGE THE NORWEGIAN INDUSTRY?



Plastindustrien tar opp jakten på havfruetårene

Published by Thor Kamfjord [?]

May 24 · 🌐

Allowed on timeline ▾

Idag startet fjerning av "havfruetårer" fra en strand i Porsgrunn. Det er mye enklere å hindre at plastråstoff kommer på avveie, enn å rydde opp etter gamle synder. NRK Telemark og NRK Nyheter dekket opstarten av ryddearbeidet. Ineos Bamble deltar i "Operation Clean Sweep" for å hindre at dette skjer i fremtiden!

Det er veldig bra, og Ineos er villig til å dele sine erfaringer og la andre få innsikt i hvilke tiltak de har implementert for å hindre at plastråstoff kommer på avveie. Lyst til å lære? Ta kontakt.

<https://tv.nrk.no/serie/distriktsnyheter-oestafjells/201905/DKTE99052419/avspiller> — with Thor Kamfjord.

Tag Photo Add Location Edit

26

8 Comments 4 Shares

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Most Relevant ▾

Plastindustrien tar opp jakten på havfruetårene Gledelig at industrien tar grep og pusher på for å rydde opp. Enda mer gledelig at enda flere norske bedrifter ønsker å stoppe kilden til forurensning ved å delta i Operation Clean Sweep. Globalt, gratis, effektivt. Kinderegg!
<https://radio.nrk.no/.../distr.../DKTE02010419/24-05-2019...>

Write a comment...

Press Enter to post.



PIPELIFE BLIR SOM FØRSTE NORSKE RØRPRODUSENT MED I «OPERATION CLEAN SWEEP»

– Plastindustrien tar ansvar for å forhindre at plast forurensere havene våre

Jordkloden trenger at vi alle er ansvarlige – fra politiske ledere, via forskning og næringsliv, til hvert enkelt menneske. Vi er simpelthen nødt til å redusere dybden og bredden på de negative fotavtrykkene vi etterlater oss – ellers vil de aldri kunne viskes ut.

Pipelife ønsker å være med å ta ansvar for at produksjonsprosessen våre ikke gir utslipp til nærmiljøet vårt, og at råvarene og produktene våre brukes på rett måte og ikke havner på avveie. Vi oppfordrer også kundene og de andre aktørene i verdikjeden vår om å gjøre det samme.

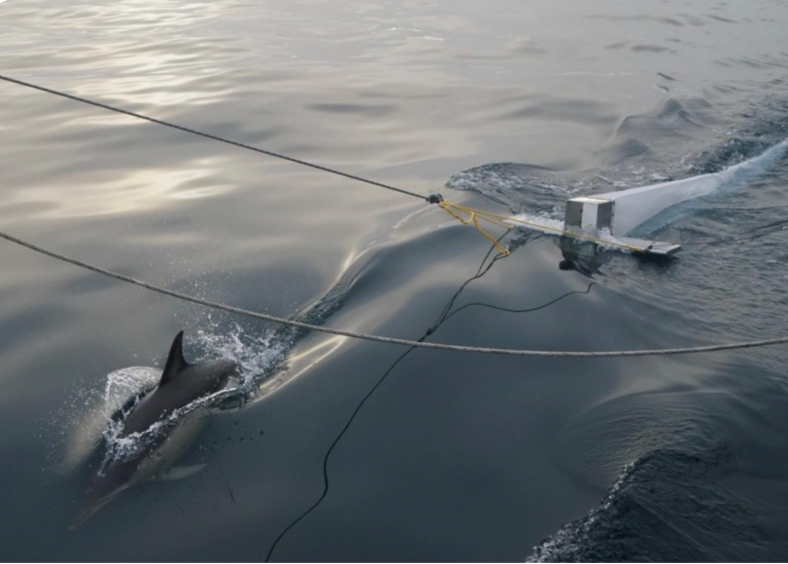
Å være en miljøvennlig og bærekraftig industribedrift er et viktig mål og visjon for oss, og vi har en lang tradisjon for å sikre at alle råvarene våre går til produksjon av essensielle og miljøvennlige produkter for samfunnets infrastruktur, slik at plastråstoff ikke kommer på avveie og ender i naturen. Vi tenker at vi er en liten bekk i den store åa som skal bidra til at vi som nasjon når målene satt i Parisavtalen.

Vi følger opp målsetningene i praksis ved at vi for eksempel har ført miljøregnskap for fabrikkene i Surnadal og på Stathelle siden 2010, for at både kunder, brukere og vi sjøl får innsikt i hvordan vi jobber for et lavere karbonfotavtrykk. Vi har også, som eneste norske plastrørprodusent, utviklet og publisert godkjente miljødeklarasjoner (EPD) på fire produktgrupper. En EPD (Environmental Product Declaration) gir informasjon om utslipp fra et spesifikt produkt i alle prosesser det gjennomgår i livssyklusen, fra vugge til grav (LCA). Det gleder oss å sjå at dokumentasjon om miljøaspektet ved et produkt og en leveranse blir stadig mer etterspurt om verdsatt av våre kunder og brukerne av våre produkter. Som norsk industribedrift ønsker vi å utnytte de gode forutsetningene vi har for å være ledende på dette området.

Vi gleder oss over – og er stolte av – å være en del av det globale initiativet «Operation Clean Sweep» og oppfordrer flere norske plastindustribedrifter å gjøre det samme!

Fakta om Pipelife Norge:

- Norges største produsent og leverandør av plastrørsystemer
- Nesten all produksjon skjer i Norge, på fabrikker i Surnadal, på Stathelle og Ringebu.
- Omsetning på godt over 1 milliard kroner og ca. 250 ansatte.
- Pipelife bruker årlig rundt 40.000 tonn med plastråstoff i sin produksjon.
- Pipelife Norge AS inngår i Pipelife-konsernet, som er heleid av det østerrikske Wienerberger-konsernet.



WE ARE ALL
IN THE
SAME BOAT
ARE EVERYONE
ON-BOARD?

Plastics

The Material for the 21st Century

*Plastics shape
the future*

New Plastic Industry Goals



- 100% of plastic packaging is re-used, recycled, or recovered by 2040
- 100% of plastic packaging is recyclable or recoverable by 2030
- 100% of European and North American manufacturing sites participate in Operation Clean Sweep



EN STOR DEL AV
LØSNINGEN
FINNES HVIS
DU
SER INN I
SPEILET



norner[™]

The Polymer Explorers

Thank you for the attention!



norner™

The Polymer Explorers