

DOING NOTHING IS NOT AN OPTION

BERNARD MERKX

- Entrepreneur
- CEO GreenWavePlastics
- Co-founder WasteFreeOceans
- Honorary President
PlasticsRecyclersEurope
- Board of Directors Member
PLASTIX Denmark / a.o.

Business as usual

2016



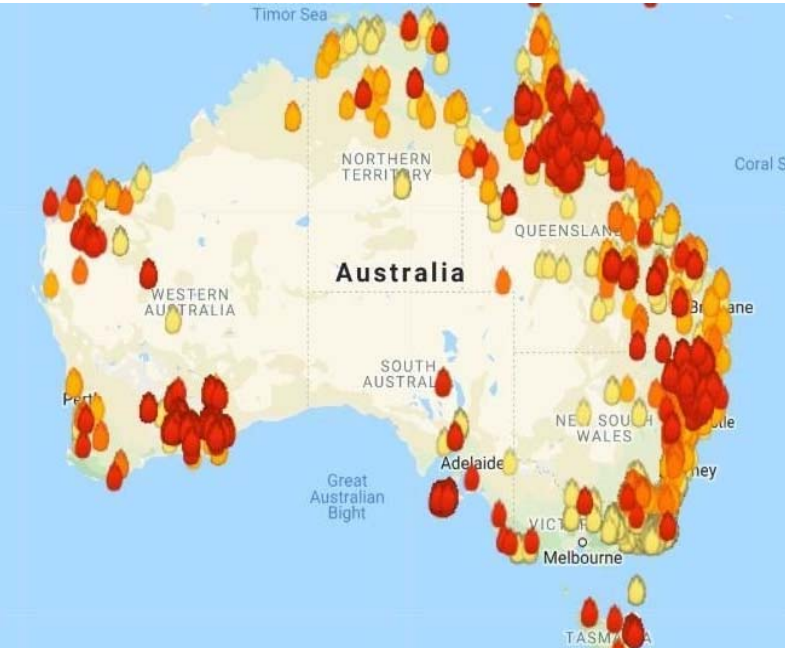
2050



REALITY:

REALLY ????

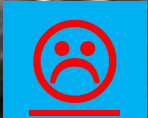




JAKARTA & VENICE FLOODING / AUSTRALIAN FIRES / GLORIA STORM SPAIN



IMAGINE... YOUR LIFE
SURROUNDED BY LITTER..





NO ONE ON THE PLANET WANTS TO BE SURROUNDED BY LITTER ☹️



WE, HUMANS, ARE MAKING A MESS OF IT (and not only on planet Earth)... ☹️





FISHING FOR LITTER – TACKLING EXISTING MARINE DEBRIS



WFO EUROPEAN RIVER SIDE CLEAN UPS WITH VOLUNTEERS





LITTERATI - DATABASE





100% RPET BOTTLE OF WHICH 11% RPET DANUBE COLLECTION

CO – CREATION & HORIZONTAL VALUE CHAIN COOPERATION NEEDED




WHICH DIRECTION ??



WE CANNOT SOLVE OUR PROBLEMS
WITH THE SAME THINKING
WE USED WHEN WE
CREATED THEM

- Albert Einstein



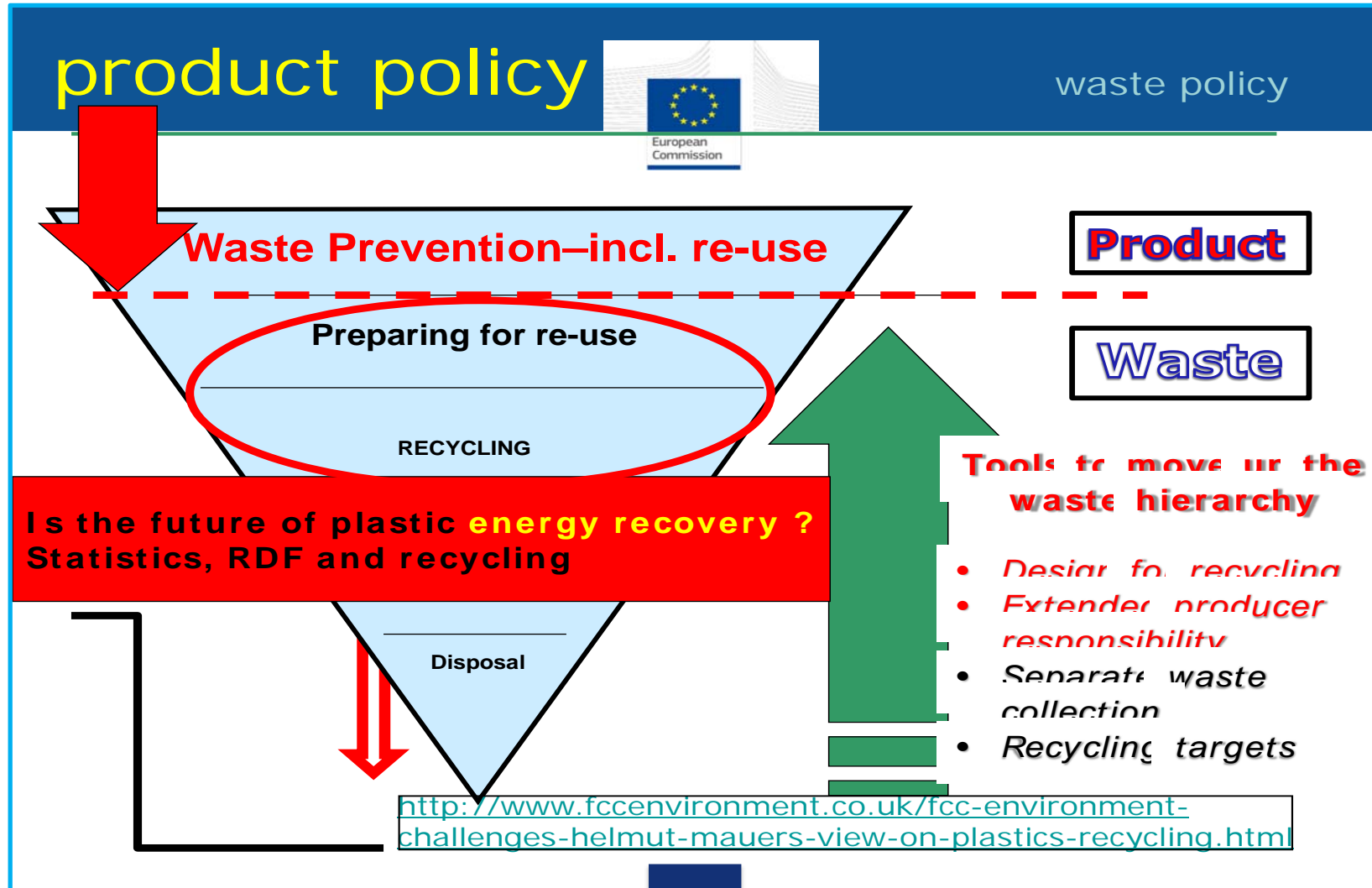


Linear Plastic we have

- ◆ Treated as **cheap disposable** material
→ litter
- ◆ **Ruthless marketing without pointing to harm** to the environment if not properly handled
- ◆ Disposed in landfills = in the oceans
- ◆ **Incineration looks clever for the naive**
- ◆ Invites to design for early obsolescence
→ no repair, no upgrade, short life, hazardous additives, not recycling friendly
- ◆ **Radically expansive production**
(cosmetics/irrational and ignorant uses)



GOING TOWARDS A MORE CIRCULAR ECONOMY



PLASTICS IN THE SPOTLIGHT – MANY EU LEGISLATIONS ONGOING



Brussels, 16.1.2018
COM(2018) 28 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS

A European Strategy for Plastics in a Circular Economy

{SWD(2018) 16 final}

**Plastics Strategy
Circular Economy Package**

DIRECTIVE (EU) 2018/...
OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of ...

amending Directive 2008/98/EC on waste

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular
Article 192(1) thereof,

Having regard to the proposal from the European Commission,

After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee¹,

Having regard to the opinion of the Committee of the Regions²,

Acting in accordance with the ordinary legislative procedure³,

**Port Reception Facilities Directive
Marine Strategy Framework Directive**



Brussels, 28.5.2018
COM(2018) 340 final
2018/0172 (COD)

Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on the reduction of the impact of certain plastic products on the environment

(Text with EEA relevance)

{SEC(2018) 253 final} - {SWD(2018) 254 final} - {SWD(2018) 255 final} -
{SWD(2018) 256 final} - {SWD(2018) 257 final}

**Single-use Plastics Directive
'Fishing gear' Directive**

MAIN IMPACTS 2019 EU LEGISLATIONS

SOME PRODUCTS WILL NO LONGER BE ALLOWED ON THE MARKET
OTHERS NEED TO BE RE-DESIGNED

FROM 2025 MINIMUM MANDATORY CONTENT FOR BOTTLES >25%
BY 2030 > 30%

COLLECTION FOR RECYCLING (!) :
77% BY 2025
90 % BY 2029

EPR FOR TABACCO INDUSTRY TO COVER COSTS LITTERING (?)
EPR FOR CHEWING GUM PRODUCERS TO COVER COSTS LITTERING (??)

CLEAR SUPPORT TO ROLE OUT DEPOSIT / REVERSED VENDING SYSTEMS

POLITICAL VOTING WITH VAST MAJORITY IN EU PARLIAMENT
(ENVIRONMENT HAS LOST ITS POLITICAL COLOURS)

IT ALL STARTS WITH CLEAR DEFINITIONS

What is RECYCLING ?

(Waste Framework Directive 2008/98/EC definition)

Recycling means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes.

It includes the reprocessing of organic material but does **NOT** include energy recovery and the reprocessing into material that are to be used as fuels or for backfilling operations.

Hence: Collection, logistics, sorting and "recovery" is **clearly not recycling**

Mechanical recycling not only safeguards valuable resources but at the same time also a considerable amount of CO2 emissions compared to virgin plastics

ECO FOOTPRINT WHEN REPLACING VIRGIN PLASTICS BY RECYCLATES

**PLASTIX REDUCES CO₂
EMISSIONS UP TO 82%
COMPARED TO VIRGIN PLASTICS**

1 TON OCEANIX rHDPE OR rPPC USED MEANS
1,7 TONS CO₂ EMISSIONS SAVED IN THE WORLD

Source: PLASTIX' Life Cycle Assessment (LCA)



Circularity - Four points for reflection

Mandatory content

Design WITH Green Plastics

Design FOR Capture at End of Life

Design FOR Recyclability

Design FOR Disassembly

Modular products

Reduce waste through reuse

Single type of polymer

Marking & Tracking schemes

Extended Producer Responsibility

Return & Deposit schemes

Legislation as an accelerator

QUALITY OF RECYCLATES : 'WE ARE WHAT WE EAT'



ALL TYPES OF PLASTIC ARE RECYCLABLE, THEORETICALLY !

(ACTUALLY ONLY THE DARK GREEN SQUARES ARE MONO MATERIALS)

		Secondary fraction**																			
Primary fraction*	Material	ABS	PA6	PA66	PBT	PC	PC/ABS	LD PE	HD PE	PET	PMMA	POM	PP	PP co	PS	PVC rigid	PVC soft	SAN	TPE-PP/PE	TPU	
	ABS	Green	Orange	Orange	Orange	Orange	Yellow	Orange	Orange	Orange	Orange	Red	Red	Red	Red	Yellow	Red	Red	Yellow	Yellow	Light Green
	PA6	Orange	Green	Yellow	Orange	Orange	Orange	Yellow	Yellow	Orange	Orange	Red	Orange	Orange	Red	Red	Red	Orange	Light Green	Yellow	Light Green
	PA66	Orange	Light Green	Green	Orange	Orange	Orange	Light Green	Light Green	Orange	Orange	Red	Orange	Orange	Red	Red	Red	Orange	Light Green	Orange	Light Green
	PBT	Orange	Orange	Orange	Green	Orange	Orange	Yellow	Yellow	Yellow	Orange	Red	Orange	Orange	Red	Red	Red	Orange	Orange	Orange	Orange
	PC	Orange	Orange	Orange	Orange	Green	Orange	Yellow	Yellow	Yellow	Orange	Red	Orange	Orange	Red	Red	Red	Orange	Orange	Orange	Orange
	PC/ABS	Yellow	Orange	Orange	Orange	Orange	Light Green	Orange	Yellow	Orange	Orange	Red	Orange	Orange	Red	Red	Red	Orange	Orange	Orange	Yellow
	LD PE	Orange	Yellow	Orange	Orange	Orange	Orange	Green	Light Green	Orange	Orange	Red	Orange	Yellow	Yellow	Red	Red	Red	Orange	Light Green	Orange
	HD PE	Orange	Yellow	Yellow	Orange	Red	Red	Light Green	Green	Orange	Red	Red	Orange	Yellow	Light Green	Red	Red	Red	Red	Light Green	Orange
	PET	Orange	Yellow	Orange	Light Green	Orange	Orange	Yellow	Yellow	Green	Orange	Red	Orange	Yellow	Light Green	Red	Red	Red	Orange	Orange	Orange
	PMMA	Orange	Orange	Orange	Orange	Orange	Orange	Yellow	Yellow	Orange	Green	Orange	Orange	Orange	Orange	Red	Red	Red	Yellow	Orange	Red
	POM	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Green	Red	Red	Red	Red	Red	Red	Red	Red	Red
	PP	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Red	Green	Light Green	Orange	Red	Red	Red	Orange	Light Green	Orange
	PP co	Orange	Orange	Orange	Orange	Orange	Orange	Yellow	Light Green	Orange	Orange	Red	Green	Light Green	Orange	Red	Red	Red	Orange	Light Green	Orange
	PS	Yellow	Orange	Orange	Orange	Orange	Orange	Orange	Red	Orange	Orange	Orange	Orange	Orange	Red	Green	Red	Red	Yellow	Red	Red
	PVC rigid	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Light Green	Orange	Red	Red	Red
	PVC soft	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Orange	Green	Red	Red	Red
	SAN	Yellow	Red	Red	Red	Red	Red	Orange	Orange	Orange	Orange	Yellow	Red	Red	Red	Light Green	Red	Red	Green	Red	Red
	TPE-PP/PE	Orange	Red	Red	Red	Red	Red	Orange	Light Green	Light Green	Red	Red	Red	Light Green	Light Green	Red	Red	Red	Red	Light Green	Red
	TPU	Light Green	Red	Red	Red	Red	Red	Orange	Red	Red	Red	Red	Red	Red	Red	Orange	Red	Red	Red	Red	Green

* **Primary fraction** defines the larger volume of material

** **Secondary fraction** defines minor volume of material mixed into or added to the primary fraction

- Compatible / mixable
- Acceptable / partly mixable
- Acceptable, if the secondary fraction is kept below 2%***
- Normally not acceptable
- Not Acceptable / not mixable

*** The secondary fraction, which can be added in these (yellow) blends will vary from case to case. In some cases, only 1% of the secondary fraction can be added, and in other cases, up to 5-10% can be added.

WALL OF FAME (.....and shame)



BACK TO SCHOOL .. !!

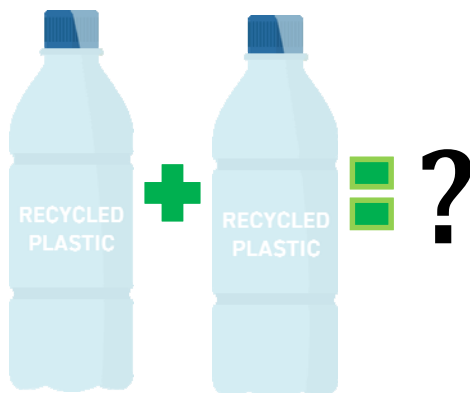
Plastics Industry challenges

Design for Recycling ->> Design WITH Recyclates



RecyClass

Test recyclates quality



Recycling Guidelines



Transparent clear | light blue PET bottles

	YES Full compatibility Materials that passed the testing protocols with no negative impact OR materials that have not been tested (yet), but are known to be acceptable in PET recycling	CONDITIONAL Limited compatibility Materials that passed the testing protocols if certain conditions are met OR materials that have not been tested (yet), but pose a low risk of interfering with PET recycling	NO Low compatibility Materials that failed the testing protocols OR materials that have not been tested (yet), but pose a high risk of interfering with PET recycling
Container	PET		PLA; PVC; PS; PETG
Colours	transparent clear; transparent light blue	transparent; dark colours	other transparent colours; opaque; metallic
Barrier	SiO ₂ coating	carbon plasma-coating; PA multilayer with <5 wt% PA and no tie layers; PEA multilayer; PET alloy	PA multilayer with >5 wt% PA or tie layers; monolayer PA blend; EVOH
Additives		UV stabilisers; AA blockers optical brighteners; oxygen scavengers	bio-/non-/photodegradable additives; nanocomposites
Closure Systems	PE; PP - all with density <1 g/cm ³		materials with density >1 g/cm ³ (e.g. highly filled PE, metals); non-detaching or welded closures
Liners, seals and Valves	PE; PE + EVA; PP; foamed PET all with density <1 g/cm ³	silicone with density <0.95g/cm ³	materials with density >1 g/cm ³ (e.g. PVC, silicone, metals)
Labels	PE; PP; OPP; EPS; foamed PET or PETG all with density <1 g/cm ³	lightly metallised labels (density <1 g/cm ³); paper	materials with density >1 g/cm ³ (e.g. PVC; PS; PET; PETG; PLA) metallised materials; non-detaching or welded labels
Sleeves	Partial bottle coverage in PE; PP; OPP; EPS foamed PET or PETG all with density <1 g/cm ³	sleeves translucent for IR detection in PE; PP; OPP; EPS foamed PET or PETG all with density <1 g/cm ³	materials with density >1 g/cm ³ (e.g. PVC; PS; PET; PETG); metallised materials; heavily inked sleeves; full body sleeves

Recyclability ranking



EU GREEN DOT SYSTEMS
HAVE REACHED THEIR LIMITS AT AROUND 50-60% COLLECTION RATES



RECENT TRENDS & FACTS

CHINA BAN

INCINERATION STILL SUBSIDIZED (SO TOO CHEAP, YET NO LONGER CONSIDERED 'RECYCLING')

2008 EU LANDFILL BAN ONLY IMPLEMENTED IN SOME 50% OF MS

CONSOLIDATION OF THE MARKET

WASTE MANAGEMENT COMPANIES IN FORWARD EXPANSION

LEADING BRANDS IN STRATEGIC PARTNERSHIPS
(SOMETIMES WITH MINORITY SHARE IN COMPANIES)

INCREASED DEMAND IS NOT IN LINE WITH AVAILABLE INSTALLED CAPACITY
YET STILL SPOT BUSINESS AND NO LONG TERM COMMITMENTS
(so delay in investments)

PUSH FOR CHEMICAL RECYCLING SOLUTIONS (but ??)

WASTE MANAGEMENT IS NOT EQUAL TO RECYCLING

WASTE MANAGEMENT CHALLENGES ARE EVERYWHERE - AMSTERDAM



From the photos you can however learn a lot:

People are willing to bring their waste close to a collection point (even if it has no value, as it is part of education, but will then not separate !. **This material will therefore go to incineration instead of recycling)**

Products that have a value (like deposit) are NOT in those bins (the small bottle in NL have no deposit as yet -> they are frequently found in (marine) litter and rank in NL top 10 most littered items)

Public services are not very flexible to cope with peak moments (like festivals, or weekend extra preventive collections)



DEPOSIT SCHEMES GIVE BOTH TRACEABILITY AND HIGH RETURN (>90%) QUALITY VOLUMES

PCW RAW MATERIAL ON ITS WAY TO A NEW LIFE





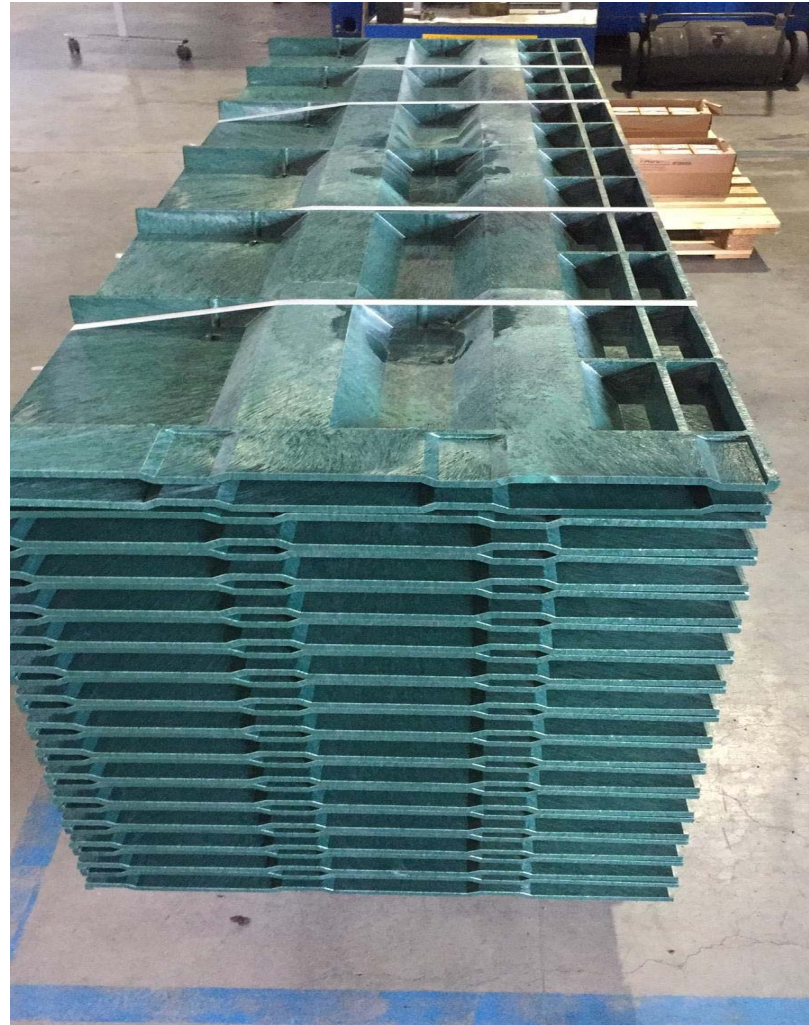
FROM 'WASTE SHIFTER' TO RAW MATERIAL PRODUCER :

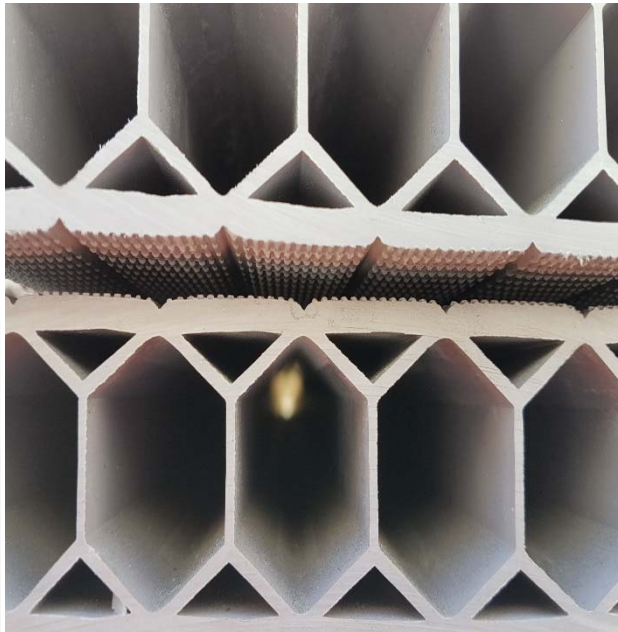


GREEN PROCUREMENT ROLE PUBLIC SECTOR (CHANGE YOUR LoR)

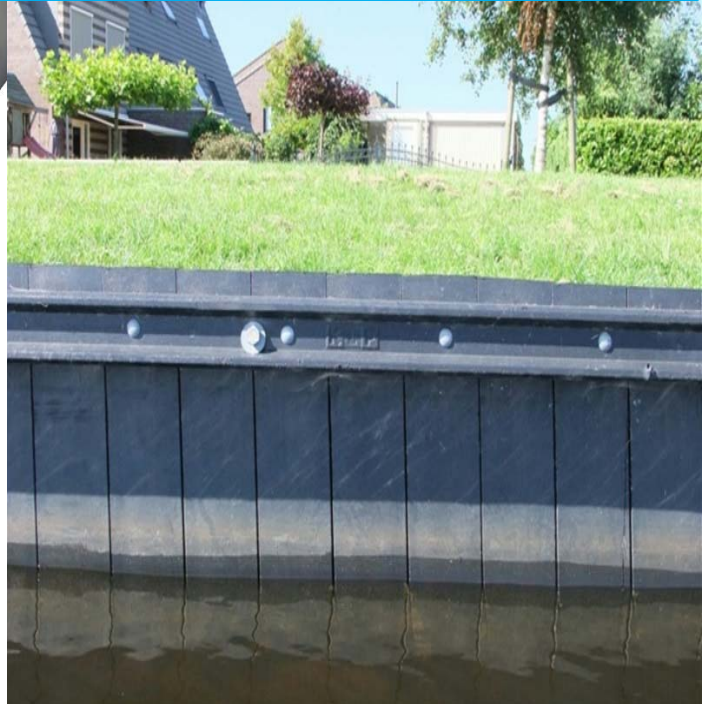


PORTS WILL ALSO HAVE TO BUY BACK PRODUCTS MADE FROM COLLECTED WASTE





BUILDING AND CONSTRUCTION APPLICATIONS WITH HIGH RECYCLATE CONTENT



...BECAUSE WITHOUT STRUCTURAL SALES MARKETS: NO RECYCLING



EUPC BERLIN WFO VALUE CHAIN PARTNERS WORKSHOP :
BE GOOD AND TELL IT !!



FISHING GEAR CLEAN TECH RECYCLING PLANT IN DENMARK



FROM 100% FISHING GEAR RECYCLATE TO DESIGN FURNITURE



 **FINALIST**
PLASTICS RECYCLING 2018
AWARDS EUROPE

OCEAN COLLECTION BY NANNA & JØRGEN DITZEL AND MATER DESIGN



Wallpaper*
DESIGN
AWARDS
2019

Winner

mater

DESIGN CRAFTSMANSHIP ETHICS

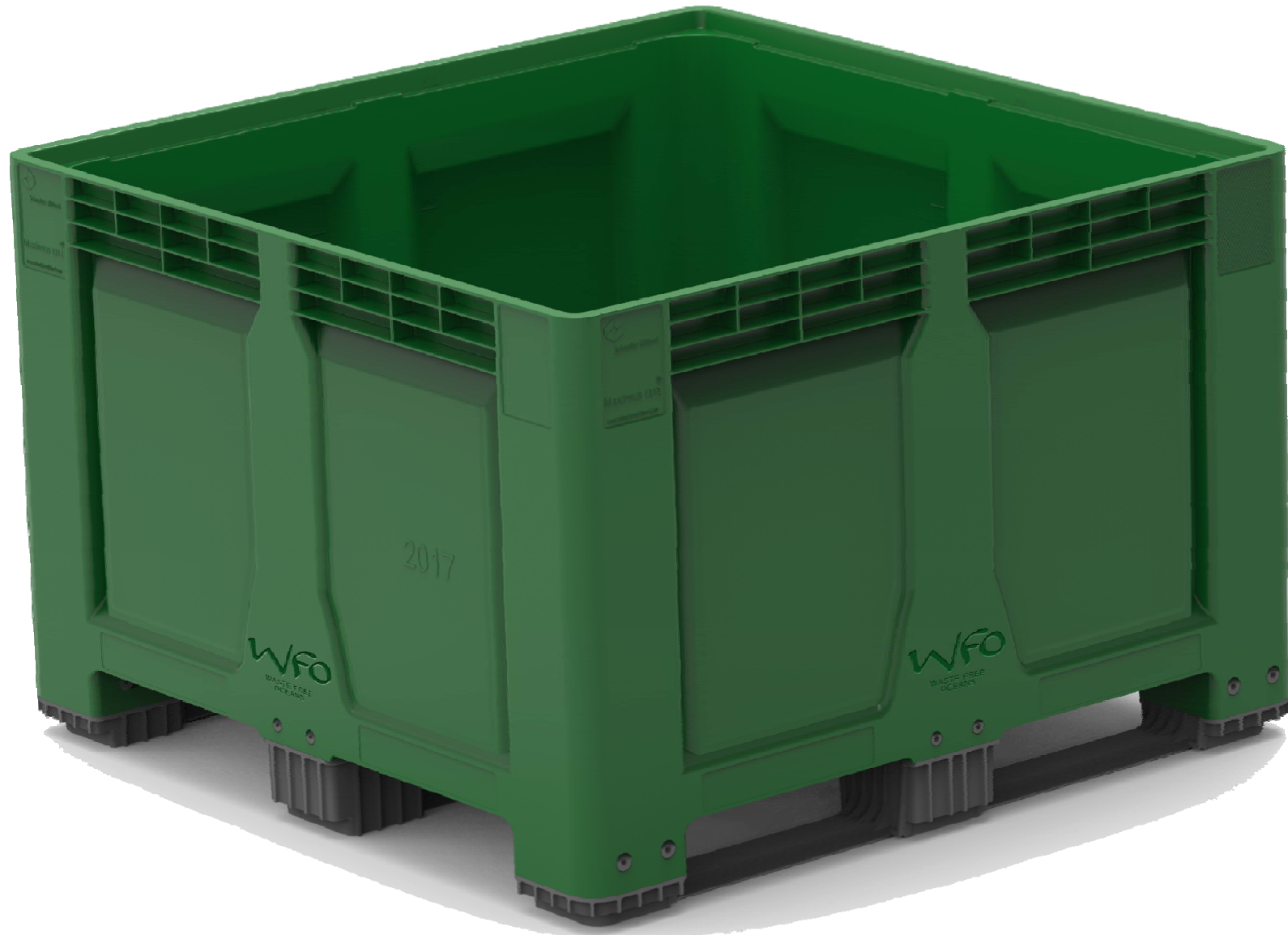
THE WORLDS ONLY MARINE PLASTIC RECYCLED KAYAKS



RECYCLED FISHING GEAR AND ROPES BASED HOUSEWARE



WFO BIGBOXES FROM RECYCLED PLASTICS TO COLLECT PORT WASTE



PIC NIC SETS MADE FROM 100% RECYLED FISHING NETS :

SHOULD BE IN EVERY PORT & ON EVERY BEACH



FILM: WHERE BLUE MEETS GREEN

OCEANIX® - MADE FROM 100% RECYCLED FISHING NETS

Denne havplastbænk er produceret af 100% genanvendt plast fra brugte fiskenet

This ocean bench is made from 100% recycled plastics from used fishing nets

Diese Bank ist produziert aus 100% recyceltem, ozeanischem Kunststoff aus gebrauchtem Fischernetz

www.plastixglobal.com

PLASTIX

Keep Nature Clean – 25% OceanIX, 75% PCR from household waste



BODY BIKE® OCEANIX MADE FROM RECYCLED FISHING NETS



BODY BIKE®
SMART+
OceanIX

FROM FISHING GEAR TO TOP QUALITY OFFICE FURNITURE: COMING TO MARKET 2020



3D PRINTED 100% RECYCLED CONTENT PRODUCTS

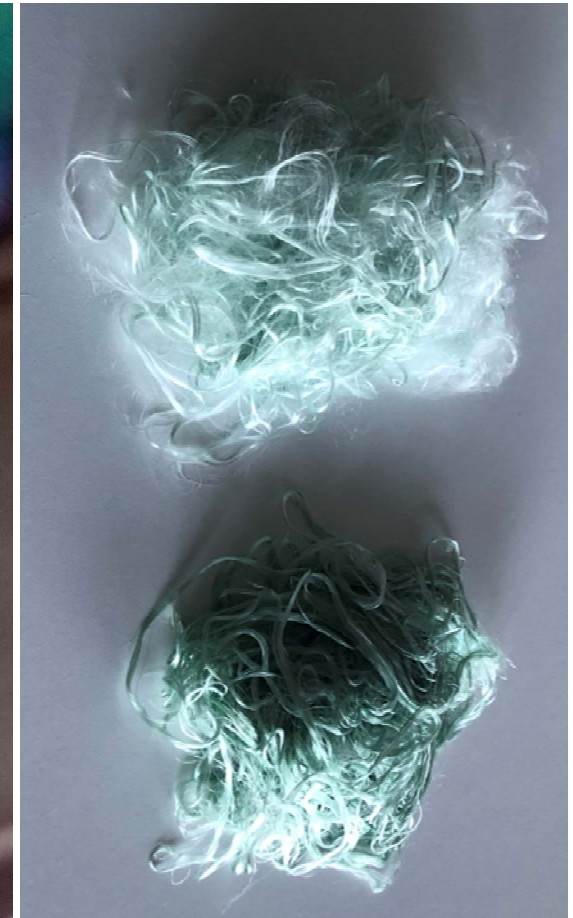


OCEAN75 – CASES MADE FROM RECYCLED FISHING NETS & ROPES



ocean75™

FIBRES MADE FROM RECYCLED FISHING ROPES



Approx. 30-50 tex fibers - made from:
100% OceanIX rPPC and OceanIX rHDPE
(30 tex = 300 gram per 10km fiber)

2,2 dtex fibers - made from:
20% OceanIX rPPC
(2,2 dtex = 2,2 gram per 10km fiber)

WFO PARTNER AIRBUS ZEPHYR : HIGH ALTITUDE SURVEILLANCE OPTIONS



REFUGEES & LITTER ISSUES (AND CLIMATE CHANGE RELATED)



Lanza "Operación Castor"

Para la limpieza de los ríos Ozama e Isabela

Por: Julia Ramirez

El Ministerio de Medio Ambiente, la Fundación Farach, la Armada de República Dominicana y la fundación internacional Waste Free Oceans (WFO) lanzaron este martes el proyecto **Operación Castor** que busca recolectar los residuos sólidos y sedimentos en los ríos Ozama e Isabela.

Esta iniciativa piloto utilizará la tecnología WFO de mallas de arrastre recolectoras de la basura flotante para hacer sus operaciones. Con esto se creará e implementará un sistema de gestión de residuos sólidos y sedimento que empieza desde su recolección, sepa-



WFO THE AMERICAS : FROM WASTE TO SOCIAL HOUSING

FROM DIFFICULT TO RECYCLE WASTE STREAMS TO PRAGMATIC SOLUTIONS



REFUGEES & LITTER SOLUTIONS : WFO REFUGEES SHELTERS



IN SUMMARY :

PORT RECEPTION FACILITIES DIRECTIVE (and others)

SUCCESS IS GREATLY DEPENDENT ON SPEED OF IMPLEMENTATION BY MEMBER STATES AND ENFORCEMENT. (EU MS track record is not good)

IMPLEMENTATION IN MAIN PORTS BUT ALSO IN MARINAS

LANDFILL BAN (2008!) NEED TO BE IMPLEMENTED IN ALL EU MEMBER STATES

WASTE FRAMEWORK DIRECTIVE AND WASTE HIERARCHY TO BE ENFORCED

SEPERATE COLLECTION OF VARIETY OF WASTE STREAMS IS CRUCIAL. !

PORTS TO WORK WITH CERTIFIED RECYCLING COMPANIES ONLY

MIXED STREAMS => INCINERATION

LANDFILL => POTENTIALLY BACK TO NATURE THROUGH LEAKAGE

NEITHER INCINERATION NOR LANDFILL ARE CIRCULAR

EVEN WHEN COSTS WILL GO UP SHORT TERM, LONG TERM EFFECTS ARE WORTH IT

IN SUMMARY :

ADD VALUE TO WASTE & CREATE MARKET UPTAKE

Investing in a more circular economic activity and improved resource efficiency will :

Safeguard natural resources for future generations

Have a considerable positive effect on the environment

(less litter, less health issues, improved wildlife etc)

Will considerably decrease CO2 emissions (climate change)

A **raw material transition** is therefore an important tool

Will create a large number of so-called green jobs on all levels

Therefore will decrease poverty and social inequality


Will stimulate further innovation and more sustainable progress (education) and is therefore an important tool for **social transition**

Let's turn words into real actions.

Today's available plastics recycling technologies can cope with most of the issues on hand, yet we do so far not use the huge potential of it

FROM POLLUTION TO SOLUTION(S) :

1. WE ARE ONLY AT THE START OF A TRANSITION PERIOD INTO A NEW TOMORROW
2. WITHOUT STRINGENT LEGISLATION AND MANDATORY RECYCLATE CONTENT
TRANSITION WILL REMAIN SLOW OR WILL NOT HAPPEN
3. WE NEED **ALL OF YOU** TO SPEED UP THE PROCESSES
4. DON'T TRY TO BE PERFECT..  JUST BE GOOD AND TELL IT
5. CHANGE YOUR BEHAVIORS AND MOTIVATE OTHERS TO JOIN ..

HOWEVER THE  IS TICKING, SO...

DOING NOTHING IS NOT AN OPTION !!