



Northern Periphery and
Arctic Programme
2014-2020



EUROPEAN UNION

Investing in your future
European Regional Development Fund

Creating Business Opportunities From the reuse and recycling of fishing nets

2018-2021

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23rd September 2019
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The Centre for Sustainable Design



Marine Plastic Waste

Combatting the world's
fastest growing
environmental problem



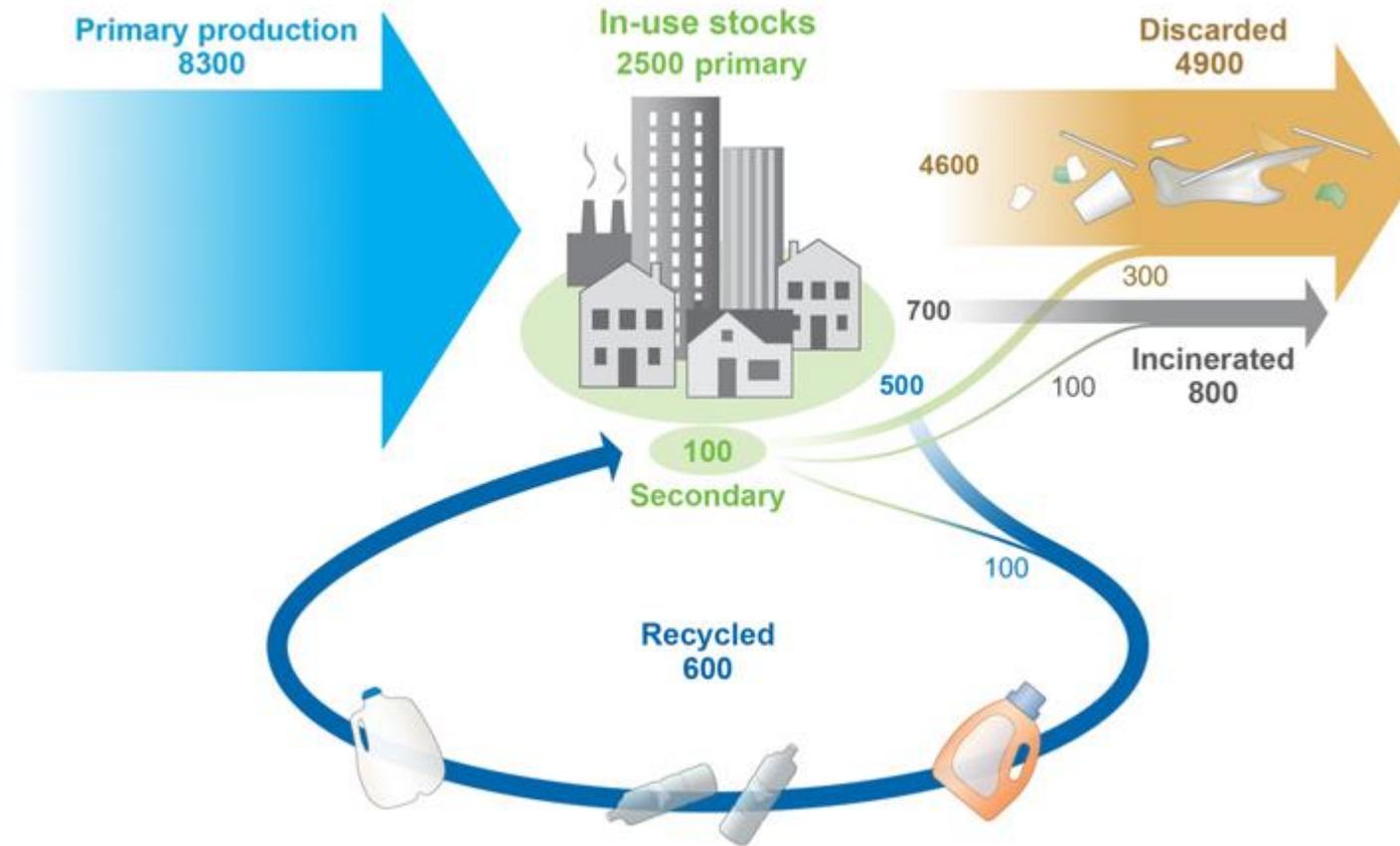


We treat our oceans like our waste bin

- **12-20 million tons of waste end up in the ocean each year**
- **Plastics comprise up to 90 percent of marine waste**
- **95 percent descend to the seabed**
- **Insufficient infrastructure of Waste Management systems is the main source of Marine Plastic Waste**
- **Dumping from ships represents a significant source**
- **Only small fractions are cleaned up, we are losing the battle every year**
- **The World Economic Forum has estimated that by 2050 the weight of plastic in the sea will exceed the weight of the world's total fish stocks**
- **Crucial to stop Marine Plastic Waste before it ends up in the open seas**

How is plastic managed?

Blue Circular Economy



Geyer et al (2017): [Production, use and fate of all plastics ever made](#)

Composition of Marine Waste: Norway

Blue Circular Economy

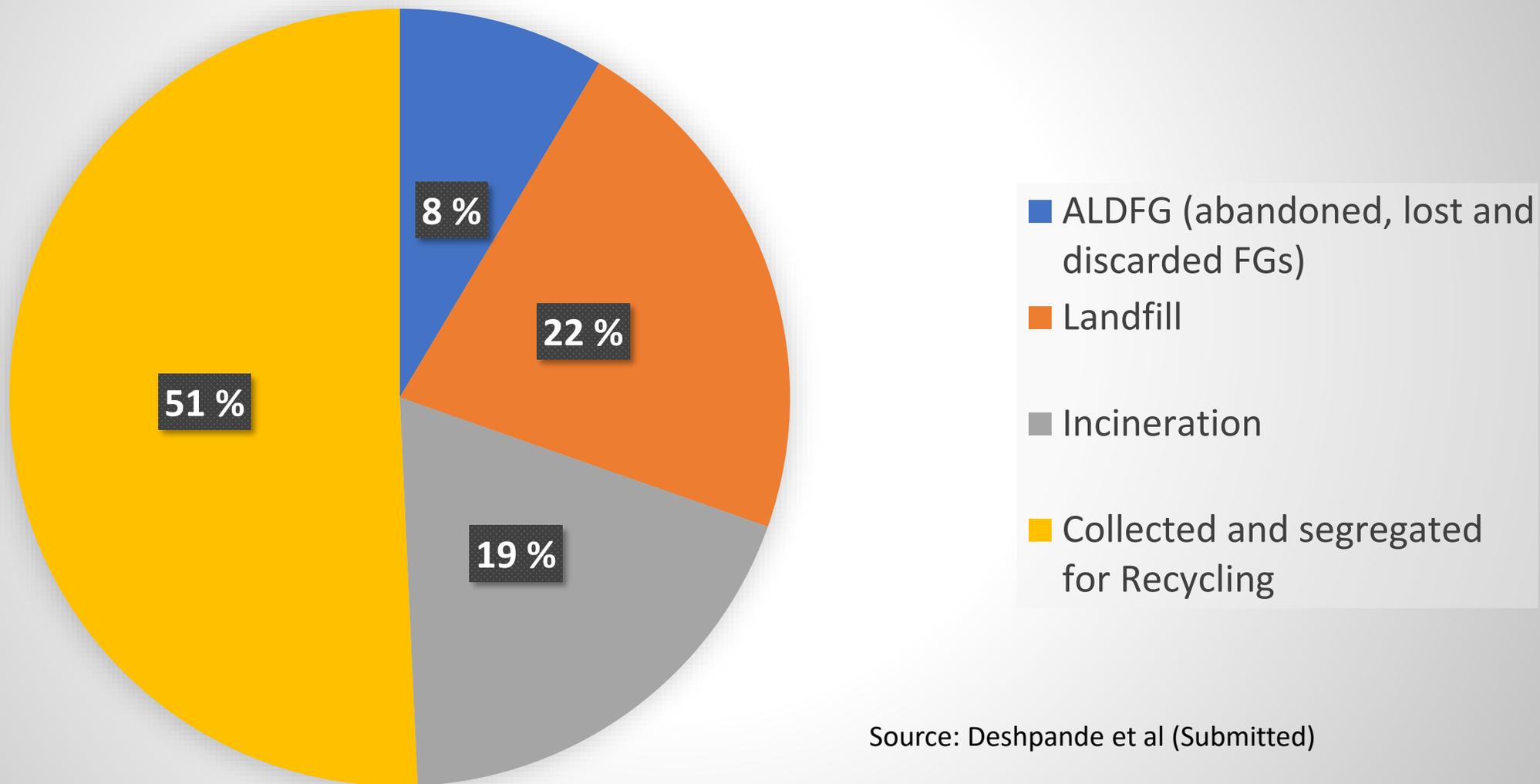
90 % of the marine litter collected on the Norwegian reference beaches was made of plastic.

The sources are:

- a. **38 %** consumer waste
- b. **37 % from fisheries**
- c. **18 %** from industry
- d. **5 %** sanitary waste
- e. **2 %** from other sources

Source: [Nordic Coastal Clean Up 2017](#)

Fate of plastic waste from FGs generated by Norwegian fishing fleet



Source: Deshpande et al (Submitted)

Lessons learnt from Circular Ocean (2015-2018)

Blue Circular Economy

- Significant growing interest in the issue of ocean marine plastics by media and policy-makers
- Various stakeholders engaged in the issue e.g. active beach-cleaning networks globally (not identified at the start of the project)
- Limited number of products produced globally from used fishing nets, ropes and components (FNRCs)
- Most companies are micro-SMEs and likely to produce in small scale
- Two specialist recyclers of FNRCs in Europe (Plastix Global in Denmark and Aquafil in Italy e.g. econyl brand)

Conclusion from CO

- Need to improve collection of EOL FGs across Norwegian coasts.

i. Port Reception Facility

(1514 out of 4443 ports have PRF)

ii. Landfill tax, Take-back schemes, EPRs, Penalty schemes

iii. Recycle friendly gear design

- Waste reduction is more effective than Clean-ups!
- Important with public participation and engaging fishers
- Effective policy instruments
- Need to ensure environmental and economic feasibility while closing the loop for plastics in Norway.

Source: Deshpande, 2019



Interreg NPA – fifth call - Priority axis 2, objective 2.2:

Priority axis 2:

Promoting Entrepreneurship to Realise the Potential of the Programme Area's Competitive Advantage

Objective 2.2:

Greater market reach beyond local markets for SMEs in remote and sparsely populated areas, by using marketing models to transnationally cluster SMEs with complimentary product or service portfolio focusing on ICT, e-commerce and social media, cooperation on logistics to overcome barriers for distance-to-market used to realize «place-based» development opportunities focusing on capturing spinoffs from local or regional large-scale investment

Result:

increased awareness of and increased capacity to act on business opportunities beyond local markets

Project outline: Goal

Blue Circular Economy

Blue Circular Economy (BCE) aims to help SMEs offering products and services within fishing gear recycling solutions in the NPA-region to attain greater market reach.

Building on the network developed under Circular Ocean (2015-2018), the project will set up a **multi-level cluster** to connect and catalyse SMEs in the region.

Project outline: Scope

Blue Circular Economy

The project will focus on SMEs aiming to create value using circular economy concepts related to products and services within fishing gear recycling.

National clusters in **Norway and Ireland** will form a core in the wider international cluster. These will serve as a basis for interactions between established companies and startups within the targeted industry.

BCE Main project output and indicators:

Blue Circular Economy

T1 Clustering – WDC – Ian Brannigan

OT1.1.1 Create three clusters of recycled fishing gear in the NPA region (30)

OT1.3.1 Create sustainable value chains in the fishing gear industry (3)

Programme output indicator:

Number of enterprises receiving support (CO01): 33

T2 Marketing strategy – NTNU – Richard Glavee-Geo

OT2.2.1 Stimulate the market demand for products made of recycled fishing gear (20)

OT2.3.1 Create environmentally and economically viable circular business models for SMEs in the fishing gear industry (30)

Programme output indicator:

Number of enterprises supported to introduce new to the market products (CO28): 50

T3 Sustainability product standards – NHC/ERI – Neil James

T3.1.1 Blue Circular Economy Eco-label with indicator

Programme output indicator:

Number of business support solutions (services) utilising place-based opportunities (specific) : 1

Who's who

- Partners
 - NTNU (Norway), IIF - [Siv Marina Flø Grimstad](#), [Richard Glavee-Geo](#), [Mark Pasquine](#), [Dina M Aspen](#), [Magnus V Domben](#), [Arron W Tippet](#), [Hajnalka Waagan](#)
 - Western Development Commission (Ireland) – [Ian Brannigan](#), [Stephen McCormack](#)
 - North Highland College/Environmental Research Institute (Scotland) – [Neil James](#), [Nina O'Hanlon](#), [Elizabeth Masden](#)
 - Centre for sustainable design, university of creative arts (England) – [Martin Charter](#), [Ros Carruthers](#)
 - Arctic Technology centre (ARTEK, Greenland) / Technical University of Denmark (DTU) – [Lisbeth Ottesen](#), [Ida MG Bertelsen](#), [Stine Skipper](#)
- WP-leaders
 - 1: NTNU (Norway), IIF - [Siv Marina Flø Grimstad](#)
 - 2: Western Development Commission (Ireland) – [Ian Brannigan](#)
 - 3: NTNU, IIF (Norway) – [Richard Glavee-Geo](#)
 - 4: North Highland College/Environmental Research Institute (Scotland) – [Neil James](#)
- Associated partners
 - The University Centre in Svalbard – [Harald Ellingsen](#)
 - Plasto – [Runar Stenerud](#)
 - Mayo County Council – [Michael O'Boyle](#)
 - Gaeltacht Authority - [Eamonn O'Neachtain](#)
 - Port of Galway – [Brian Sheridan](#)
 - Secret Life of Plastic - [Oonagh Herbert](#)
 - Loved and upcycled – [Veronika Kisela](#)

UN's sustainability goals focused on in this project:

Blue Circular Economy

- No 8: Decent work and economic growth
- No 9: Industry, innovation and infrastructure
- No. 11: Sustainable cities and communities
- No. 12: Responsible consumption and production
- No. 14: Life below water

What is circular economy?

Blue Circular Economy

- “A system that is designed to be restorative and regenerative” (Charonis, 2012 and Ellen Macarthur Foundation, 2012 as cited in Ghisellini, et al. 2015, pg. 6)
 - It replaces the linear “end-of-life” concept (resource loop closed)
 - Also about *slowing* resource loops and making better use of materials
- “It allows for the long life; it is optimal reuse, refurbishment, remanufacturing and recycling of products and resources” (Kraaijenhaagen et al, 2016)

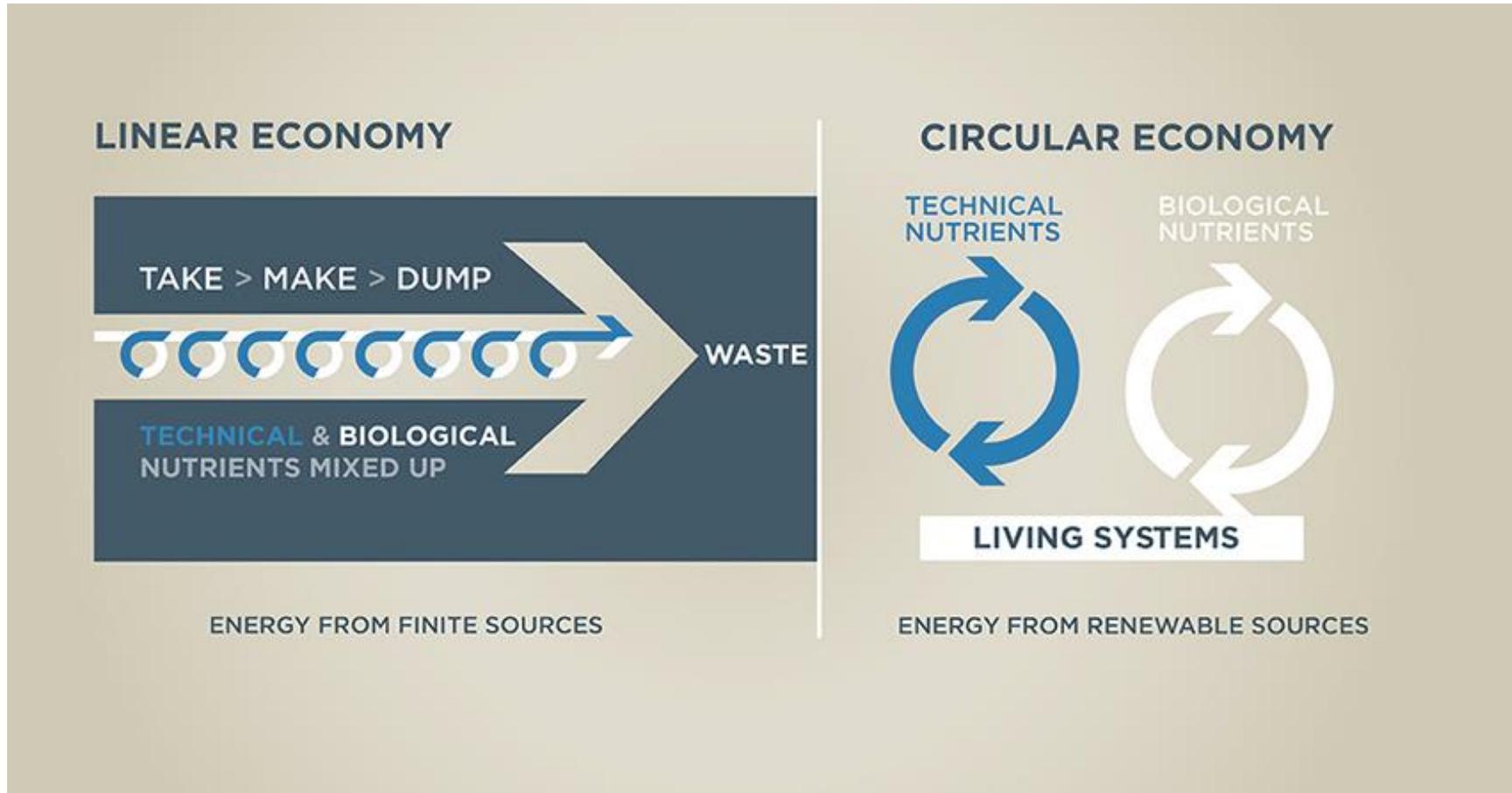
From obligation to circular business opportunities

Blue Circular Economy

- **3-4 decades ago – sustainability driven by governments**
 - Imposed legislation on organisations
- **Start of 21st century – organisations take initiative**
 - View sustainability as potential competitive edge rather than just a compulsory task
 - Saw that environmentally conscious decisions can lead to cost savings e.g. eco-efficiency initiatives (Ehrenfeld, 2005)
 - Approach is still linear – PLC from cradle to grave – Goal: doing things better (reduce shadow)
- **Recent focus: doing things differently**
 - Creating a positive impact (cast light – not just reduce shadow)
 - Launch circular paradigm; **use waste as a resource**

Linear vs circular economy

Blue Circular Economy

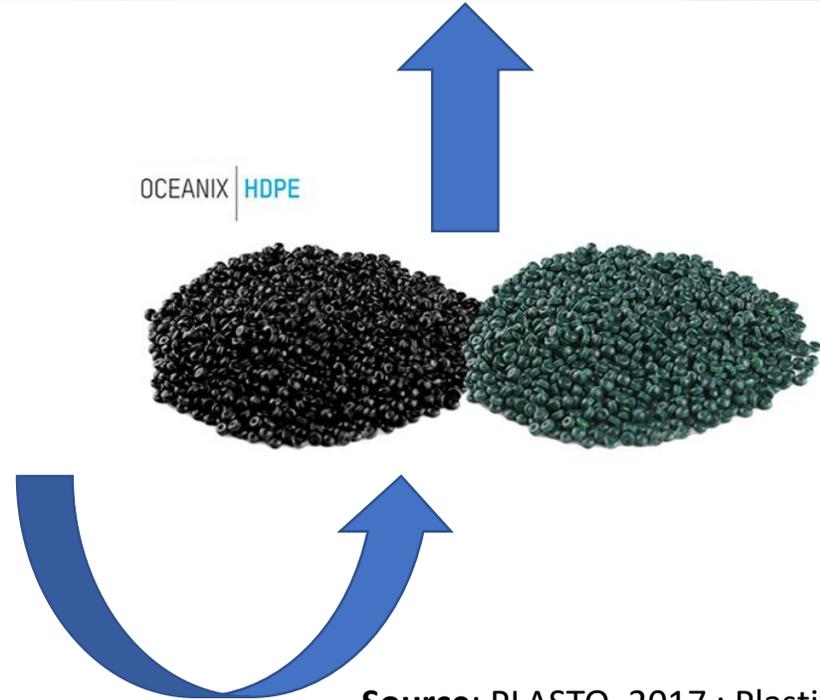


Circular economy

Blue Circular Economy

«is an economy in which stakeholders collaborate in order to maximise the value of products and materials, and as such contribute to minimising the depletion of natural resources and create positive societal and environmental impact»

(Kraaijenhagen, 2016:15)



Source: PLASTO, 2017 ; Plastix, 2017 and Snøhetta 2019

Summing up

- Consequences of abandoned, lost and discarded fishing gear (ALDFGs):
 - Ghost fishing
 - Marine pollution
 - Economic loss
 - Long-term damage to fish habitat
- The BCE-project will work to create:
 - More circular model of fishing gear production, collection and recycling
 - More jobs through the creation of new products

How can you contribute to a more sustainable society?

Blue Circular Economy

- Think global/local challenges
- Think life cycle and circular
- Think multi-disciplinary
- Be ambitious