BLUE CIRCULAR ECONOMY

Northern Periphery and Arctic Programme 2014–2020

EUROPEAN UNION
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European Regional Development Fund

Blue Circular Economy Project

Information Booklet 2022

DTU Technical University of Denmark

The Centre for Sustainable Design®

NTNU Norwegian University of Science and Technology

WESTERN DEVELOPMENT COMMISSION

eri environmental research institute

Blue Circular Economy (BCE) has been a three-year initiative aimed at helping small and medium-sized enterprises (SMEs) offering products and services, within fishing gear recycling solutions, to attain a greater market reach.

Our mission has been to generate sustainable business opportunities focused on abandoned, lost, and discarded fishing gear (ALDFG) through informed, innovative and collaborative efforts, for the benefit of enterprises, local economies, and the environment in the northern periphery and arctic region region.

The vision is to foster the ecosystem, knowledge, and networks necessary to address the ALDFG problem resulting in a vibrant industry for the recycling and reuse of used fishing nets, ropes, components and peripherals.

Established in 2018, BCE is a partnership between the Norwegian University of Science and Technology, the Western Development Commission, the Technical University of Denmark, the Centre for Sustainable Design® at UCA, and the Environmental Research Institute at North Highland College. The three-year programme is funded under the European Regional Development Fund (ERDF) Northern Periphery and Arctic 2014-2020 programme (http://www.interreg-npa.eu/).

Full details may be found at **www.bluecircularеconomy.eu**

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Clustering from the **Norwegian Perspective**

The clustering activities triangulate cluster development policies within the quadruple helix model of innovation and organisational network analysis. It explores relational structures facilitating regional cluster development for marine plastic waste recycling and upcycling by promoting well-functioning value chains, regional innovation processes, and other structures. The Norwegian West Coast region has strong traditions of technology-driven innovation and entrepreneurship in maritime businesses.

BCE takes the starting point of a generic circular value chain for fishing net recycling with a well-functioning forward stream of fishing rope and rope-installation manufacturing and operations systems, and a rather immature reverse stream for recycling-upcycling. Disposal of marine debris is both authorized (e.g. entering the reverse stream through recovery facilities) and non-authorized, with a large share of marine plastics waste entering the ocean. The network is extended to include stakeholders from governmental bodies, academia, civil society, and hybrid institutions connecting different actors in the quadruple helix model and acting as a catalyst between actors.

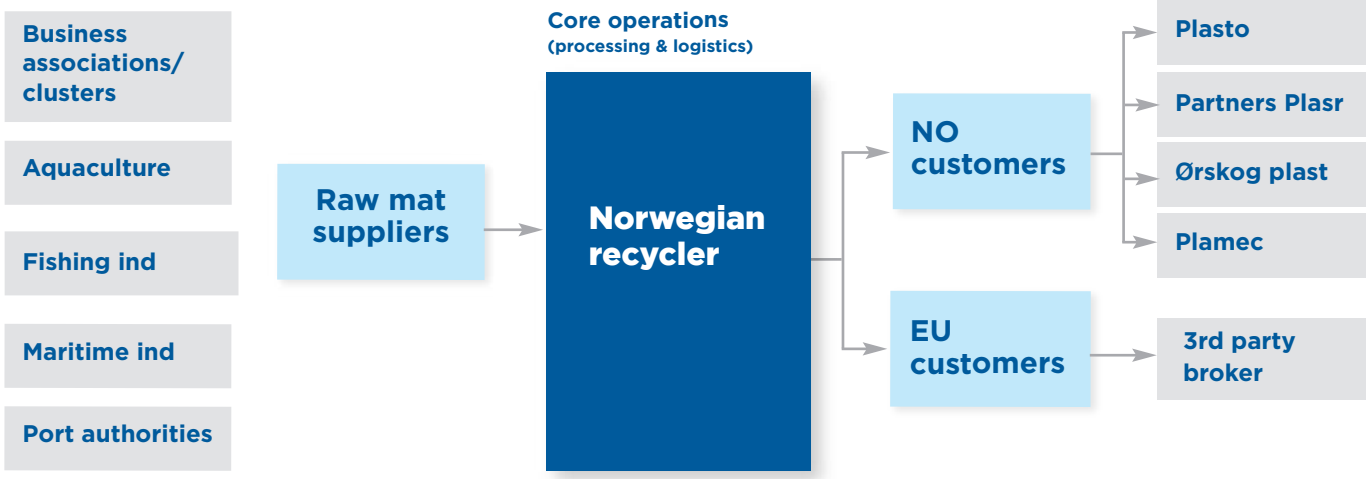
Clustering from the **Irish Perspective**

In Ireland the network for marine plastic recycling, including fishing gear, is significantly less developed. Where Norway has several companies and programmes collecting, processing, and reusing such materials, Ireland continues to face challenges in terms of the geographically dispersed nature of its ports, permissions issues in terms of waste handling, and lack of infrastructure necessary to tackle this form of plastic.

As part of the project, workshops were held bringing together stakeholders from across the value chain including fishers, recyclers, net producers, and SMEs seeking to create new products from waste gear. The BCE team also had substantial engagement with Bord Iascagh Mhara (BIM), the Irish agency responsible for promoting sustainability in Ireland's fisheries. This was coupled with a growing focus within Ireland on the circular economy, including new legislation introduced in 2021.

As a result of these engagements, BCE has engaged with a number of Irish companies who are exploring solutions to waste gear combining both recycling and blockchain technology. These companies will be featured as part of a report which will issue before the end of the BCE project in March 2022.

INDUSTRY - Norwegain recyler supply chain



Marketing Strategy

Recycling plastic materials and ALDFGs through the business models of SMEs and micro-enterprises can ensure both economic and environmental benefits. Illustrative companies (Ørskoplast, Plasto, Noprec, Replast and Akva) involved in such recycling and reuse shows how these companies have implemented circular business models into their operations.

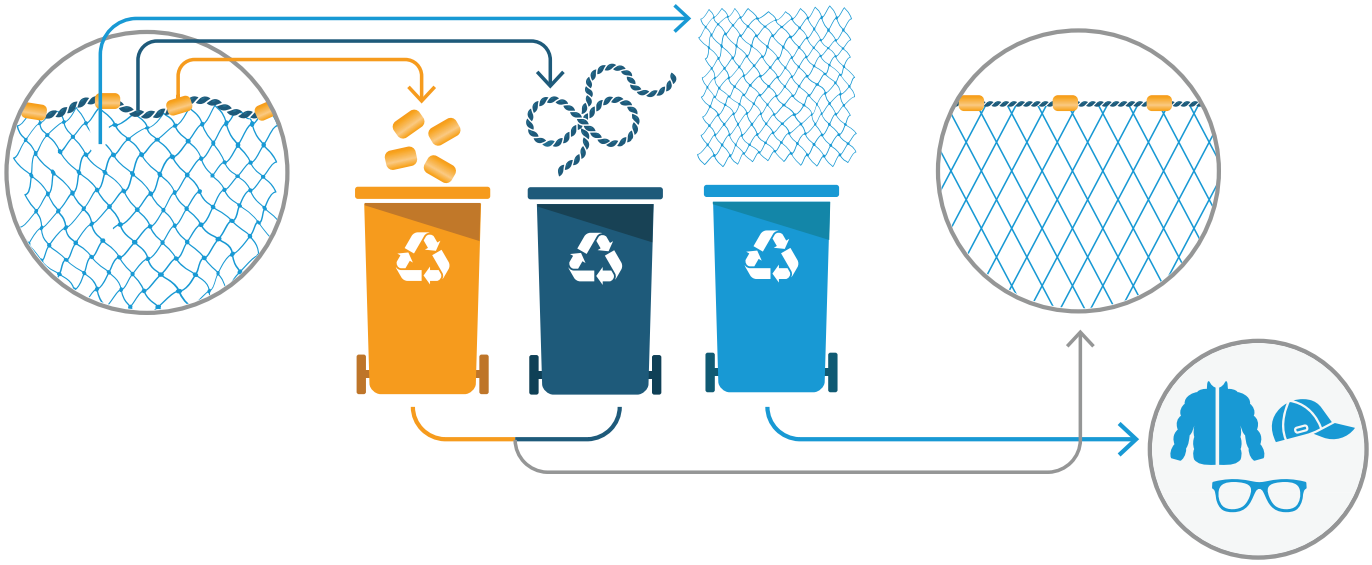
The BCE project identified the motivations, challenges, and success factors for circularity. The multiple case analyses explored the sourcing, material flow, and logistics processes. The project also examined the attitude and intentions of potential customers in purchasing eco-label products. Generally, more consumers have positive attitude towards sustainable products.

The project also identified marketable product opportunities. Several products and services based on the use of recycled fishing gear (in whole or as a fraction of final product) are delivered by companies in Norway (PartnerPlast, Vartdal Pastri, Plasto, Ørskoplast, Pla-Mek, Vik Ørsta, Noprec, Nordic Comfort Products) and globally: Karun, Bureo (Chile), Adidas, Bracenet (Germany), Planet Love Life, Kettle Cove Enterprises, Fishpond, The Main Coast Rope Rugs, Miliken, Interface (USA), Verdura, RubyMoon (UK), Ecoalf (Spain), Klattermusen (Sweden), Teko (Scotland), Axiom (Canada). The categorization of the different products and services provided by the companies show the business potential in the use of recycled gear as part of the solution to the problem of marine plastic pollution.

The project also examined the role of non-profit organizations in the marine plastics value creation. NGOs' roles go beyond volunteering operations and can be sources of new ideas, testing of new processes, development of new products and services. Value chain collaboration and volunteering initiatives and operations by NGOs enhance marine plastics recycling. Collaboration drives the innovation and new product development process and enhance recycling of marine plastics.

A report will be published in March 2022 highlighting the findings from workshops in Galway and Alesund which focused on local innovation systems related to waste and 'end of life' fishing gear. The concept of a BCE Lab© - an innovation lab designed to deliver solutions to such gear - is also proposed. The report will include two best practice cases on Sotenäs Marine Recycling Centre in Sweden and Steveston Harbour in Canada.

CIRCULAR BUSINESS MODELS - Modular Design



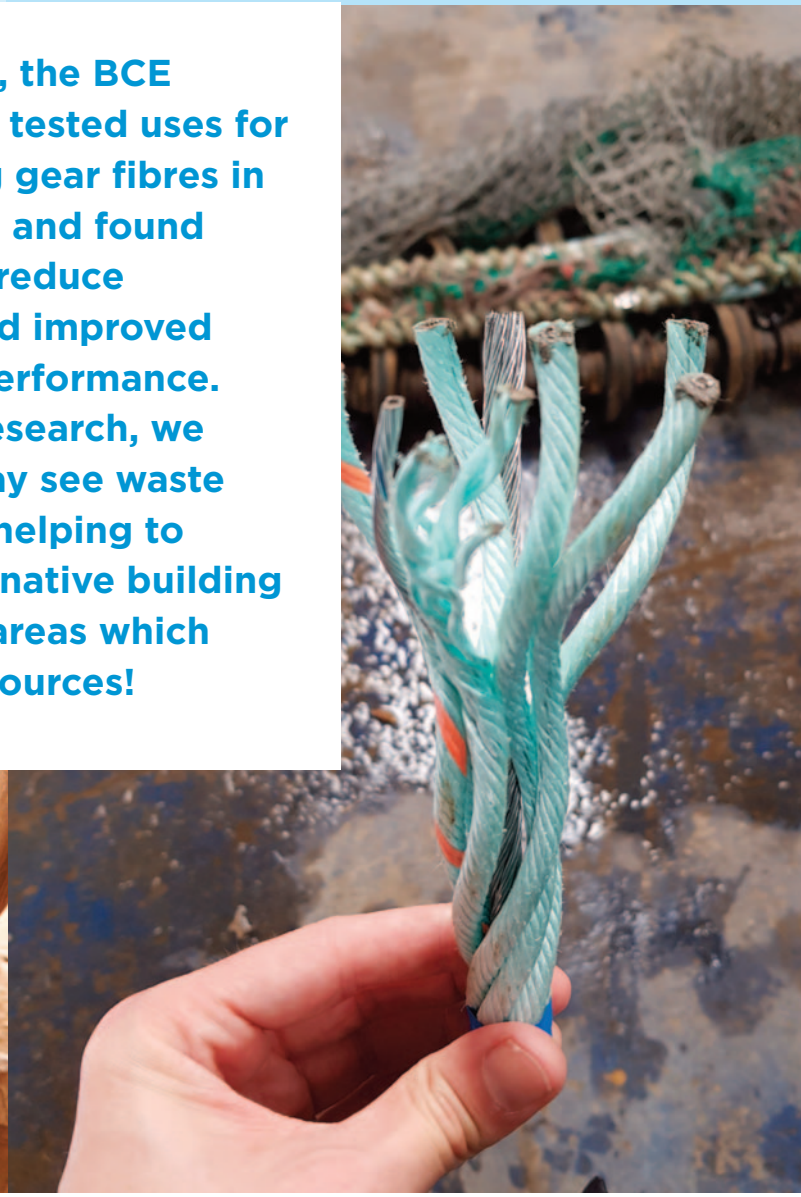
Marine Plastic Hotspot Mapping Tool

Birds and Debris was established to extract useful information from single instances of entanglement and nest incorporation of anthropogenic debris by birds, from anywhere in the world. This data will be used to raise awareness of the extent of debris in marine, freshwater and terrestrial environments, and to explore which species are most reported and where, and which types of debris are involved. Observations and photographs can be uploaded to https://www.birdsanddebris.com

Blue Circular Economy Eco-Label

The Blue Circular Economy Eco-label will be an emblem for use by SMEs and enterprises utilising marine derived plastic and FNRC-based products across the NPA region and beyond. The Eco-label will increase visibility and marketing opportunities of products created by SMEs in the NPA region to further the market reach in line with the project objectives.

In Greenland, the BCE project team tested uses for waste fishing gear fibres in adobe bricks and found they help to reduce shrinkage and improved post-crack performance. With more research, we might one day see waste fishing gear helping to provide alternative building materials in areas which lack such resources!



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