

## Circular Ocean

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**Partners:** Environmental Research Institute (ERI, UHI, lead partner, Scotland), Macroom E (Rep. of Ireland), The Centre for Sustainable Design (University for the Creative Arts, England), ARTEK (Arctic Technology Centre, Greenland), NTNU (Norwegian University of Science and Technology, Norway).

**Associated partners:** Nofir AS (Norway), Marine Scotland (Scotland), Environmental Protection Agency (Rep. of Ireland), Local Enterprise Office South Cork (Rep. of Ireland), TBC (Iceland), TBC (N. Ireland).

**Summary:** In pursuit of new innovative and sustainable approaches towards the processing, recycling and repurposing of marine plastic waste, the Circular Ocean project will develop, share and test new solutions and opportunities among northern European and Arctic regions. Circular Ocean will benefit remote, coastal regions by developing green economies using waste resources, driving eco-innovation, generating efficient and environmentally responsible businesses, and diminishing levels of marine litter.

The relentless increase of marine litter is particularly pertinent to countries of the NPA region, which currently have limited business opportunities and associated supply chains. In addition to and parallel with the focus on reducing fishing nets as marine waste, the project will look for possible synergies for eliminating, collecting, reprocessing and creating new value out of discarded fishing nets and other marine waste in the countries of the Northern Periphery and Arctic Region. The Circular Ocean project will promote social enterprises that can benefit from the circular economy, and assist coastal and rural communities in the development of new sources of livelihood, while reducing marine waste and enhancing the quality of life in the region, and developing best practice which can be applied to the rest of Europe.

Circular Ocean seeks to empower communities and entrepreneurs in remote and rural areas to develop novel and robust business opportunities that are environmentally sustainable and enhance income generation and retention within local regions.

### Work Packages

1. **Project management (ERI).** The Project Management of Circular Ocean will provide the required co-ordination actions to fulfil an effective and efficient delivery plan to meet the aims, objectives and outputs of the project and the NPA programme. We will use the most effective channels of communication between partners and provide robust financial and management procedures. This work package will be led by the lead partner, the Environmental Research Institute, although all partners will be involved and required to facilitate the proficient project operation, and ensure a successful legacy for the NPA programme.
2. **Communication activities (Macroom E).** Key outputs include:
  - a. Public events. Using the expertise and information derived during project activity a series of workshops will be delivered throughout partner regions and other NPA areas to maximise knowledge exchange and further broaden the scope of project and green economy opportunities. These events will be a key part of the projects transnational knowledge exchange programme that will disseminate best practise and facilitate the transfer of innovative solutions between regions. We will hold five workshops, one in the first year and two per year in the following two years. The events will bring together key stakeholders to assist the development of green economies surrounding fishing net recycling and reuse within the NPA region. The workshop locations will include all partner regions, to be held in conjunction with partner meetings to ensure minimal environmental impact and to provide value for money. Each workshop will differ in focus reflecting the development stage of the project, and the specific needs of the region in which it takes place. The workshops will allow knowledge exchange, study visits, networking and transfer of best practices, both locally and inter-regionally.
  - b. Promotional materials
  - c. Communication Channel Development and Operation
  - d. Publications
3. **Green enterprise and business engagement (CfSD).**

The key goal of work package 3 is to enable local communities and SMEs to grow green and social enterprises based on the reuse and upcycling of discarded fishing nets. Key outputs and activities are:

  - a. Feasibility study: to determine the technical eco-innovation capacity in each region (related to discarded fishing nets)

- b. Facilitating eco-innovation: to develop and organise workshops for partners aimed at diffusing knowledge and tools related to eco-innovation
- c. Encouraging eco-innovation: to develop and organise an 'open innovation' competition related to re-use of discarded fishing that takes account of regional needs
- d. Eco-innovation network development: to develop an 'open access' digital platform on eco-innovation (related to discarded fishing nets)
- e. Eco-innovation toolkit: to develop a series of reports and publications to support partners and end-users on eco-innovation (related to discarded fishing nets)
- f. Eco-innovation capacity building: to provide a remote research, consultancy and mentoring service related for both partners and end-users

4. **Technology development, support and piloting (ARTEK).**

Develop a methodology for initial evaluation and experimental testing of different uses or materials where the fishing nets are used focusing on durability and suitability for use under climatic conditions in the NPA territory. The materials which are evaluated being useful from a materials point of view are evaluated from an environmental point of view in work package 5. Activity includes:

- a. Methodology for material evaluation
- b. Evaluation and testing of known materials
- c. Development of new construction materials. New ideas for use of waste fishing nets in the construction sector as outdoor elements or parts of construction materials are investigated. Material samples are produced, tested and optimized in laboratory scale for use under the relevant climatic conditions. The input of ideas to the materials are from the project partners and different stakeholders including SMEs and the optimization is carried out in collaboration with these.
- d. Pilot scale testing of important reuse options for fishing nets. Outdoor exposure tests in pilot scale are carried out in collaboration with local stakeholders. For example the tensile strength of fishing nets, which have been used as rockfall netting (with and without direct UV exposure) are followed through one to two years, to ensure that the tensile strength (which is crucial to this use) is not changing rapidly. Also pilot scale testing of the optimized, new construction materials are carried out, and the result made available to interested companies.

5. **Environmental impact, policy and recommendations (NTNU).**

It is essential that any reuse or recycling processes identified during the project are carefully evaluated from a life cycle perspective, to evaluate environmental all impacts regarding energy use, greenhouse gas emissions, and other effects.

The knowledge acquired through the proposed project activity will assist in documenting existing best practice as well as developing new methods and products through involvement of researchers, innovation partners and companies within the field. WP5 will identify key barriers to green enterprise development, champion recommended changes where appropriate, to help consolidate the sector. This includes the identification of limitations of recycling and limitations of reuse, as well as an assessment of the environmental impact of fishing nets for each partner region and additional NPA areas. This work package aims to inform the development of green eco-innovation using marine litter to ensure that development in this sector can be made responsibly and sustainably. By assessing the environmental impacts and marine litter, its repurposing or recycling, and life cycle of eco-innovation products, potential business and entrepreneurs will benefit by more accurately assessing and promoting their green credentials. Activity and outputs include:

- a. Assessing environmental impact of marine waste
- b. Best practice for fishnet resource management
- c. Eco-product evaluation and business opportunities based on innovative eco-design

**Contacts**

For more information on

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