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WP2 REPORT

D.2.5.1: End-of-life fishing gear management under extended producer responsibility: readiness and compliance from NPA countries

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GLOSSARY

End-of-life fishing gear: Fishing gear and gear accessories (e.g. ropes, floats, sink weights and other attachments) that are no longer actively used by fishers. These gears can be old, redundant, retired, disused, damaged or discarded (Stolte et al., 2019).

Fishing port: A port that is mainly used by fishing vessels, i.e. vessels that are used to catch fish or other living natural resources mainly commercially.

Plastic containing fishing gear: "means any item or piece of equipment that is used in fishing or aquaculture to target, capture or rear marine biological resources or that is floating on the sea surface and is deployed with the objective of attracting and capturing or of rearing such marine biological resources" (Directive (EU) 2019/904).

Producer Responsibility Organization: A company or entity established by manufacturers to fulfil their legal obligations related to the collection, recycling, and disposal of waste generated by their products.

ACRONYMS AND ABBREVIATIONS

CIRCNETS	Blue Circular Nets project
EOL	End-of-life
EPR	Extended producer responsibility
EU	European Union
FFL	Fishing for Litter campaign
NPA	Northern Periphery and Arctic
PRO	Producer Responsibility Organisation
SUP	Single-use plastics

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INTRODUCTION

1. Introduction

Blue Circular Nets (CIRCNETS) is an INTERREG project funded by the Northern Periphery and Arctic 2021–2027 (NPA) programme that addresses marine litter issues. Single-use plastics and fishing gear are the primary sources of marine plastic litter in Europe, and the European Union (EU) has taken substantial steps to tackle these threats to the marine environment. Many single-use plastic (SUP) items have been banned and replaced with items made from more sustainable materials, but a similar approach is not yet possible with plastic-containing fishing gear. Therefore, a different kind of approach has been taken. End-of-life (EOL) fishing gear, nets, and other gear approaching their best-before date should be collected separately and recycled to prevent them from entering the ocean and contributing to marine plastic pollution.

The more specific aim of CIRCNETS is to support the setting up of a collection system for EOL fishing gear in the NPA region. EU's SUP directive requires that producers and importers of plastic containing fishing gear in all EU member countries organise the collection of EOL fishing gear based on the extended producer responsibility (EPR) principle. Determining how collections can be organised regionally in the most efficient and cost-effective way, while adhering to the "do no significant harm" principle, requires examining solutions from other regions that have already taken steps in this direction. However, the collection of fishing gear creates opportunities to move toward a more circular economy and to recycle the collected materials regionally.

The aim of the present deliverable report (D.2.5.1) is to assess the readiness level of the NPA countries in this project (i.e., Finland, Ireland, Norway and Sweden) for the implementation of the EPR directive. Section 2 sets the scene by defining the EPR directive and its principles, presenting the Directive in the context of EOL fishing gear, and summarising the main processes involved in its waste management. Section 3 describes the methodology and the report's objectives. Section 4 outlines the requirements under the EPR Directive for material quantities, material sorting and treatment, and technical coordination (e.g., establishing collection points, reporting obligations, and transport requirements). Section 5 explains the state of progress of the partner countries assessed in each category. Section 6 presents the readiness analysis of each country to implement the requirements of the EPR Directive. Finally, Section 7 summarizes a list of recommendations for each country to achieve readiness for the implementation of the EPR Directive.

For more information about the project, visit the website of the project at https://www.interreg-npa.eu/projects/CIRCNETS/home/

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EXTENDED PRODUCER RESPONSIBILITY (EPR): CONCEPT AND RELEVANCE

2. Extended producer responsibility (EPR): concept and relevance

2.1. Definition and principles of EPR schemes

Extended Producer Responsibility is an environmental policy approach that encourages businesses to operate more sustainably and supports the transition toward a circular economy. This is achieved by making producers responsible for the environmental impact of their products throughout their entire life cycle, including collection, sorting and recycling once the product becomes waste. Therefore, EPR schemes encourage producers to design products with minimal environmental impact and to ensure they are properly monitored at the end of their life. (Van Nijen, 2021).

The main objectives of EPR schemes are:

- **Eco-design:** EPR encourages producers to integrate recyclability and repairability during the design stage and meet recycling and waste prevention targets.

- **Polluter pays principle:** producers need to bear the costs of waste collection and treatment. Therefore, environmental costs are reflected in the price of a product, ensuring that the polluter pays. This serves as a mechanism to finance and organize waste collection and treatment infrastructure.

- **Producer Responsibility Organisation (PRO):** most EPR schemes must establish a PRO, which is a collective entity set up by producers or through legislation. The PRO becomes responsible for meeting the recovery and recycling obligations of the individual producers. In practice, PROs carry out three main functions:

    1. **Financing the collection and treatment of EOL products** using fees collected from registered producers.

    2. **Manage data and reporting** related to product flows, compliance, and system performance.

    3. **Organize and/or supervise operational activities**, including collection, sorting, and treatment processes.

EPR schemes may be mandatory or voluntary, although mandatory schemes are more effective at improving waste management systems. As explained previously, producers can meet their EPR obligations individually or through collective PRO schemes. For the latter, producers pay EPR fees to the PRO, which are used to finance the operationalization of the system, including all waste management tasks as well as administration, communication and education. Therefore, PRO schemes can often be more efficient due to shared resources and streamlined operations (Cyclos GmbH & WWF Mediterranean Marine Initiative, 2024).

2.2. EPR in the context of fishing gear

The EPR scheme for EOL fishing gear products containing plastics originates from the EU SUP Directive (EU/2019/904), which aims to reduce plastic pollution, improve collection and recycling practices, and minimise the environmental footprint of plastic-based products. Under this Directive, member states must establish an EPR scheme for fishing gear containing plastic by 31 December 2024 (Van Nijen, 2021). Up, to date, none of the member states have established an operational EPR scheme; however, progress has been done in many countries (e.g., Sweden, Finland, Ireland and Malta), while other member states (e.g., Denmark, Norway, Spain, France, Estonia) have legal provisions or proposals but may not yet have fully functioning schemes (Chowdhury et al., 2024).

Within the fishing gear system, the EPR framework promotes more circular practices. By assigning financial responsibility to producers, the scheme encourages better product design, improved recyclability, and more effective collection and recycling processes throughout the gear's life cycle. This redistribution of costs is especially advantageous for small ports and fishing operators, as it helps reduce the financial burden associated with managing increasing volumes of collected or recovered gear.

One benefit of this policy is its potential to reduce the use of environmentally harmful gear. For example, items such as plastic dolly ropes or unprotected polystyrene floats, which are prone to fragmentation during use, could be banned or restricted through design limitations, bans, or environmental fees. In this way, alternative, more sustainable materials become cost-competitive, thereby encouraging producers and users to adopt them. Revenues generated through the EPR scheme can also be reinvested in improving waste management services, recycling infrastructure, outreach programmes, research and the collection or retrieval of lost gear. In this way, the scheme functions both as a financial mechanism and an incentive to prevent the abandonment or improper disposal of fishing gear (Van Nijen, 2021).

2.3. EPR and EOL fishing gear waste management

Effective management of EOL fishing gear involves a sequence of processes designed to maximise material recovery, minimise environmental harm, and ensure that valuable plastics remain within the circular economy. The main stages are described below, along with the ways in which the EPR directive addresses them.

Collection

The collection of EOL fishing gear is a critical step toward ensuring that materials are properly treated, recycled, and reintegrated into the circular economy. Efficient collection systems reduce the risk of abandoned, lost, or otherwise discarded fishing gear entering the marine environment and help maintain the quality of materials (Salla & Richardson, 2023). The effectiveness of downstream processes (e.g., sorting, pre-treatment, and mechanical or chemical recovery) depends heavily on how gear is collected and managed at the collection points.

Based on SEARCULAR, (2025) and Salla & Richardson, (2023), the following attributes should be considered to ensure the proper collection of EOL fishing gear waste:

- **Collection at harbours and landing sites:** most EOL gear is recovered when fishers bring damaged or obsolete equipment to shore. Collection typically relies on:

  - **Designated collection points:** such as harbour containers or specialised bins for nets, ropes, and traps.

  - **Temporary storage areas:** to protect gear from exposure to weather and contaminants (e.g., sand, moisture, and UV radiation), all of which can degrade polymers and reduce recyclability.

  - **Protocols for segregating materials:** ensuring that different gear components (e.g., metal frames, monofilament nets, lead lines) are not mixed to avoid additional sorting.

- **Retrieval of gear lost at sea:** fishermen might find fishing gear lost at sea that poses several problems to the marine ecosystems. Retrieval practices are encouraged through voluntary activities from fishermen. These retrieval practices may involve:

  - **Bringing damaged gear back to shore** for proper disposal rather than discarding it offshore.

  - **Recording and reporting gear losses** to facilitate targeted recovery efforts.

    Participation in organised retrieval campaigns, which recover derelict gear that would otherwise remain in the marine environment.

  Although such retrieval increases the volume of material available for recycling, it also introduces heavily contaminated and degraded gear that may require more intensive pretreatment.

- **Transport and logistics:** once collected, EOL gear must be transported to pre-treatment or recycling facilities. Effective transport systems prioritise:

  - **Compaction** to reduce the volume of bulky items such as traps and nets, lowering transport costs.

  - **Contamination prevention** by storing gear in covered containers to limit exposure to rain or sediment.

  - **Efficient routing** to minimise emissions and reduce logistical expenses, especially when recycling facilities are distant from coastal areas.

Transport logistics strongly influence the economic viability of recycling EOL fishing gear, particularly for remote fishing communities.

An EPR scheme would introduce structural improvements to the collection stage by:

- **Ensure consistent availability of collection points**.
- **Support standardised storage and containment systems**.
- **Improve the material quality of EOL fishing gear through proper collection and segregation.**
- **Provide incentives for fishers to return EOL gear.**
- **Fund transport and logistics.**
- **Encourage traceability systems**.

By addressing financial and logistical barriers, an EPR framework can significantly strengthen the collection of EOL fishing gear materials, ensuring that higher volumes of cleaner, better-preserved material enter the recycling chain.

Pre-treatment

Before EOL gear can enter any recycling stream, it must undergo careful preparation. Fishing nets, ropes, traps, and similar equipment often consist of multiple components and material types, which must be separated to allow proper recycling. According to Stolte et al., (2019), pre-treatment typically includes:

- **Dismantling and sorting** to separate gear components and sort the different polymer types and other materials (e.g., metal, wood, rubber, etc).
- **Washing** to lower salinity and remove biological material, sediments, and other contaminants before recycling.
- **Removing hazardous components**, such as embedded metal or lead lines, to prevent contamination of processing streams.
- **Size reduction**, for example, cutting or shredding nets into manageable fractions.

An EPR directive would require producers to fund or **organise collection, sorting, and pre-treatment systems**. This could lead to:

- Standardised pre-treatment protocols across regions.
- Better gear designs that are easier to dismantle and sort.
- Investment in infrastructure for cleaning, shredding, and storage.

Recycling Pathways

Recycling options for plastics present in fishing gear vary in complexity and environmental impact. These methods correspond to three recognised categories of plastic recycling (Davidson et al., 2021):

- **Mechanical Recycling:** it involves reprocessing plastics without altering their chemical structure.

- **Chemical Recycling:** Chemical processing breaks down plastics into basic chemical constituents through methods such as pyrolysis, gasification, depolymerisation, or hydrothermal processes. These outputs can be used to manufacture new plastics or chemical products.

- **Energy Recovery:** This involves incinerating plastic waste to generate energy. Although it recovers some value, it results in the permanent loss of materials.

Mechanical and chemical recycling, along with energy recovery, keep materials within the use cycle and therefore support a circular economy. However, it is important to consider that these methods could also result in some material loss during processing.

EPR schemes would encourage:

- **The use of polymers and gear designs compatible with mechanical or chemical recycling.**
- **Financial incentives for producers to use recyclable materials.**
- **Investment in research and infrastructure to scale up recycling technologies.**
- **Prioritisation of recycling over energy recovery and disposal.**

This would help shift the industry away from disposal-heavy practices toward true material circularity.

Disposal

When recycling options are not viable, due to severe contamination, material degradation, or complex mixed components, EOL fishing gear may be directed to disposal routes such as incineration without energy recovery or landfills. These options provide no material recovery and carry environmental risks, particularly landfilling, which can contribute to long-term pollution (Davidson et al., 2021).

Under EPR:

- **Producers would carry financial responsibility for disposal costs.**
- **Mandatory reporting and targets could reduce the waste volumes sent to final disposal.**
- **Producers might adopt design changes that facilitates recycling of fishing gear materials.**

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OBJECTIVES & METHODOLOGY

3. Objectives & methodology

3.1. Objectives

The primary objective of this report is to assess the readiness of four NPA countries in the CIRCNETS project (i.e., Finland, Ireland, Norway, and Sweden) to implement the EPR Directive for the management of EOL fishing gear waste. Specifically, the report aims to:

1. **Evaluate national preparedness** across key requirements of the EPR Directive, with a focus on material quantities, sorting and treatment of materials, and technical coordination.
2. **Identify gaps, strengths, and barriers** within each country's current waste management systems in relation to EPR obligations for EOL fishing gear.
3. **Compare readiness levels across the four countries**, highlighting variability in regulatory, infrastructural, and operational development.
4. **Provide a structured readiness assessment** using a traffic light scoring system to determine which countries are well-positioned to implement the directive and which require further development.
5. **Generate recommendations** to support each country's progress toward full compliance with the EPR Directive.

Although Iceland is also a partner country of the CIRCNETS project, it was excluded from the analysis since the EPR legislation is not implemented in the country. In addition, Iceland has already implemented a successful private scheme for the collection and treatment of EOL fishing gear. Under an agreement between the Icelandic Recycling Fund and the Association of Fisheries Companies (SFS), SFS takes responsibility for the collection and treatment of plastic-containing fishing gear waste and covers the associated costs, instead of paying a processing fee on fishing gear placed on the market. The purpose of the agreement is to ensure that the fishing industry manages EOL fishing gear made from synthetic materials, thereby reducing environmental impacts while keeping disposal costs as low as possible.

Under this arrangement, EOL fishing gear is collected at 14 ports and around 2100 tonnes were collected in 2023. Currently, around 90% of the collected gear originates from Icelandic fishing vessels. However, foreign operators or their representatives may also deliver synthetic fishing gear waste from foreign vessels to the collection facilities, subject to direct payment to the contractor. For more information check previous CIRCNETS reports (D.1.1.1, D.1.2.1, D.1.3.1, D.2.1.1).

3.2. Methodology

To assess the readiness of NPA countries to implement the EPR Directive on EOL fishing gear waste management, the study employed a multistep methodology combining legislative review, secondary data analysis, and a comparative traffic-light assessment.

3.2.1. Categories definition

Four categories were defined based on the requirements of the EPR Directive:

- **Material Quantities:** assessment of the fishing gear collection targets and the extent to which countries are prepared to meet them. Data gathering on the reported volumes of collected fishing gear waste, the volumes of fishing gear placed on the market, and the historical volumes of fishing gear.
- **Collection of materials:** identification of the collection infrastructure requirements (i.e., collection points) under the EPR Directive and analysis of relevant collection infrastructure within each country.
- **Sorting and Treatment of Materials:** identification of sorting and treatment requirements under the EPR Directive and analysis of relevant sorting and treatment facilities within each country.
- **Technical Coordination:** evaluation of technical coordination requirements, including the establishment of collection points, development of transport routes, and implementation of data reporting and traceability systems.

3.2.2. Review of requirements and the country's progress

The following legislative and policy documents were reviewed to identify the EPR obligations applicable in each country:

- **Finland:** legislation 29.12.2022/1319 (Valtioneuvosto, 2022).
- **Ireland:** legislation S.I. 612/2022 (Department of the Environment, Climate and Communications ,2022)
- **Norway:** Miljødirektoratet proposal for producer responsibility for fishing gear containing plastic (Klima- og miljødepartementet, 2024).
- **Sweden:** *Swedish Ordinance on Producer Responsibility for Fishing Gear (SFS 2021:1001)* (Swedish Government, 2021).

The country's progress was then evaluated using findings from previous CIRCNETS project deliverables (D.1.1.1, D.1.2.1, D.1.3.1, D.2.1.1) and supplementary literature. This stage aimed to capture existing systems, initiatives, and developments that contribute to national readiness.

3.2.3. Comparative traffic light analysis

A comparative analysis was conducted to assess readiness across the four countries. A traffic light scoring system was applied to each of the three categories (**Table 1**). This scoring enabled the identification of technological strengths and gaps, implementation barriers, and differences in progress across the NPA countries.

Table 1: Traffic light analysis definitions.

Strong development	Partially developed	Undeveloped
The country has already established the essential systems, infrastructure, and regulatory frameworks required by the EPR Directive. **Well-positioned to implement the directive and requires only minor adjustments.**	The country has made progress toward meeting EPR directive requirements but still has notably incomplete systems or moderate gaps. **Needs targeted improvements and coordination efforts to reach full readiness but has a foundation to build upon.**	The country currently lacks key systems, legislative instruments, or infrastructure needed to comply with the EPR Directive. **Requires substantial investment, regulatory development, and system-building to meet EPR requirements.**

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TECHNICAL REQUIREMENTS FOR PROPER EOL FISHING GEAR WASTE MANAGEMENT

4. Technical requirements for proper EOL fishing gear waste management

4.1. Material quantities

Under the EPR directive, by 2024, each member state should establish a minimum annual collection rate of EOL fishing gear waste, which is based on the volume of fishing gear placed on the market (European Commission, 2021). It is important to note that, for Finland, Ireland and Sweden, ”fishing gear” refers to an item or piece of equipment that is used in fishing or aquaculture. Therefore, the collection targets for these countries reflect both gear sources. **Table 2** summarizes the most recent collection targets established by the assessed NPA partner countries (i.e., Finland, Ireland, Norway, and Sweden).

Finland legislation states that producers of fishing gear containing plastic shall at least collect 10% of the weight placed on the market annually (Valtioneuvosto, 2022).

Sweden also has set a collection target of at least 20% of fishing gear placed on the market, to be achieved by 2027 (Swedish Government, 2021).

Meanwhile, **Ireland** has established a non-binding national minimum collection target. The Minister set a target of 100 tonnes for both 2023 and 2024, based on estimated 2022 collection volumes. As more accurate data became available, the target was increased to 400 tonnes for 2025 and 500 tonnes for 2026. (Department of the Environment, Climate and Communications ,2021).

Norway, in contrast, has not yet established a binding target for the collection of EOL fishing gear or aquaculture equipment.

Table 2: Summary of the material quantities requirements under the extended producer responsibility (EPR) directive & national laws for end-of-life fishing gear containing plastics in the assessed countries.

Categories	Finland	Ireland	Norway	Sweden
Fishing gear collection target	At least 10% of the fishing weight placed on the market	500 tonnes of waste fishing gear containing plastic in 2026	n.d.	At least 20% of the fishing gear placed on the market
Aquaculture gear collection target	Included in fishing gear collection target	Included in fishing gear collection target	n.d.	Included in fishing gear collection target

Notes: **n.d.,** no data

4.2. Collection of materials

In this section, the EPR directive legislation in each country is reviewed to identify the requirements for establishing the collection infrastructure for EOL fishing gear waste. In other words, how many collection points should be established in each country and what other relevant requirements are related to the collection of materials.

Finland

Under Decree 29.12.2022/1319, first, **the general requirements** for the reception of fishing gear waste are defined. The producers must establish the collection of plastic containing fishing gear so that the delivery of waste to the reception point is convenient and **free of charge**. The reception sites have to be **evenly distributed** across the country, taking into account the amount of fishing gear waste generated regionally.

The Decree then defines the requirements for **three different types of fishing gear**. For **stationary fishing gear** (such as fishing nets, ropes, and buoys attached to the gear), at least 150 reception points must be established. The regulation allows flexibility to substitute these fixed sites with mobile collection points, a collection service, or other similar collection arrangements that meet the general requirements.

For lure fishing, angling, and ice fishing, the producer shall arrange a mobile reception point, a collection service, or another functional collection arrangement for the separate collection of these materials. The collection may be **targeted separately for reusable, recyclable, and environmentally harmful fishing gear.** The seasonal nature of fishing may be taken into account when organising the collection.

Finnish legislation also covers **aquaculture**, stating that producers must ensure that proper arrangements meet general requirements to receive aquaculture equipment containing plastic.

Ireland

Irish legislation (S.I. 612/2022) emphasises that collection must be **reliable, accessible**, **and well-documented**, allowing accurate monitoring of return rates and recycling targets. In practice, EPR schemes are expected to **fund free or low-cost collection** to incentivise the return of used gear.

Unlike Finland, Ireland's legislation **does not specify a fixed number of collection points**. Instead, PROs design collection networks based on operational feasibility, coverage of major ports, and proximity to fishing activity (Chowdhury et al., 2024).

Norway

According to the proposed legislation, producers must ensure the **separate collection** of a reasonable quantity of discarded fishing gear relative to the products they place on the market. Collection systems must be **readily available in regions where fishing activity occurs, particularly around ports and coastal areas.** Producers shall ensure that discarded fishing

gear containing plastic is collected separately at port reception facilities or municipal collection points and treated in accordance.

Sweden

According to the SFS 2021:1001 ordinance, PROs are required to provide **accessible and free-of-charge collection systems** for both professional and household users. National guidance from the Swedish Environmental Protection Agency (Naturvårdsverket) specifies that the extent of collection should be **reasonable and geographically appropriate**, particularly considering the proximity of fishing waters and active ports (Swedish Environmental Protection Agency, 2024).

PROs must ensure that users can efficiently deliver waste gear and that the scheme effectively contributes to national collection targets. **Municipalities may also participate in collection**, and PROs must coordinate with these local authorities when municipal facilities are used to process fishing gear waste.

Table 3: Summary of the collection requirements under the extended producer responsibility (EPR) directive & national laws for end-of-life fishing gear containing plastics in the assessed countries.

Categories	Finland	Ireland	Norway	Sweden
Regulatory basis	Decree 29.12.2022/1319	S.I. No. 612 of 2022	Draft EPR regulations	SFS 2021:1001
Collection points number	At least 150 permanent collection points for stationary gear	n.d.	n.d.	n.d.
Collection coverage	Collection points must be evenly distributed nationwide	Collection must be reliable and accessible	Systems must be available to a sufficient extent in areas where the products are used	Collection must be available and accessible for household and professional users
Cost to users	Free of charge for the delivery of waste gear	Free or low-cost; costs covered by producers under EPR	Typically free of charge, costs are covered by producers under EPR	Free of charge for those submitting waste to the PRO system
Collection arrangements	Fixed, mobile, or equivalent systems; includes mobile reception points for angling, lure, and ice-fishing waste	PROs organise appropriate logistics (ports, collection sites, or partner facilities)	Collection via port reception facilities or municipal collection points	Combination of municipal collection, port reception, and PRO services
Special provisions	Separate arrangements for three types of gear: stationary gear, seasonal angling gear and aquaculture equipment	n.r.	n.r.	PROs must cooperate with municipalities to ensure coverage and achieve collection targets
Responsible actor	Producers / PROs	Producers / PROs	Producers / PROs	PROs and municipalities

Notes: **n.d.,** no data; **n.r.,** not relevant.

4.3. Sorting and treatment of materials

The implementation of the EPR directive for fishing gear containing plastics, as introduced under the SUP Directive, only requires Member States to ensure the separate collection of EOL fishing gear. The subsequent sorting, treatment, reuse and recycling of the collected materials are addressed by the design and functioning of the EPR schemes, which aim to ensure effective resource use and minimise waste disposal.

Therefore, the following section summarises how Finland, Ireland, Norway and Sweden regulate and organise the sorting and treatment of EOL fishing gear within their respective EPR frameworks, noting that national approaches may vary.

Finland

Under Finnish legislation (Decree 29.12.2022/1319), **producers are only required to organise the collection** of fishing gear waste containing plastics. The decree does not impose detailed or uniform requirements regarding the sorting and treatment of materials, neither numerical threshold for purity or contamination, or any sorting protocols. The Finish legislation only requires PROs to **report the volumes of fishing gear that are reused, recycled and otherwise utilised**.

Ireland

In Ireland, EPR obligations place **responsibility on producers and PROs** to ensure that collected fishing gear is properly managed in **authorised facilities that meet all permit requirements regarding health, safety, and environmental protection**. This includes sorting and segregation of materials, preparation for reuse where feasible, and prioritisation of material recycling when technically and economically proportionate. However, sorting and pre-treatment facilities are regulated under Ireland's **waste management frameworks**, rather than through EPR technical requirements (S.I. 612/2022).

Norway

Under the proposed regulation (Klima- og miljødepartementet, 2024), Norwegian producers must ensure that all collected fishing gear is sent to authorised treatment facilities for reuse or material recycling, where technically and economically feasible. The regulation does not establish specific technical sorting or purity standards; instead, these are **defined by PROs and authorised treatment operators**. Operators must hold **valid waste treatment permits** and comply with **traceability and reporting obligations**, ensuring full accountability across the treatment chain (Klima- og miljødepartementet, 2024).

Sweden

According to the Swedish Ordinance on Producer Responsibility for Fishing Gear (SFS 2021:1001), PROs must ensure that all collected fishing gear waste is sorted and treated in a way that is **acceptable from a health and environmental perspective** in accordance with Chapter 15, Section 10 of the Environmental Code.

Table 4: Summary of the sorting and treatment requirements under the extended producer responsibility (EPR) directive & national laws for end-of-life fishing gear containing plastics in the assessed countries.

Categories	Finland	Ireland	Norway	Sweden
Regulatory basis	Decree 29.12.2022/1319	S.I.612/2022	Proposed regulation (Klima- og miljødepartementet, 2024).	SFS 2021:1001
Sorting requirements	n.s.	Sorting and pre-treatment facilities regulated under Ireland's waste management frameworks	n.s.	n.s.
Treatment requirements	Reuse, recycling, and other utilisation must be reported	Treatment must occur at authorised facilities	Collected gear must be sent to authorised facilities for reuse or material recycling where feasible	Treatment must be environmentally and health-acceptable
Technical standards	n.s.	n.s.	n.s.	n.s.
Role of PROs	Organise collection and report volumes reused, recycled, or otherwise utilised	Ensure gear is managed at authorised facilities and handled in line with waste legislation	Define operational sorting practices, ensure authorised treatment, and maintain traceability and reporting	Ensure compliant sorting and treatment in line with legislation

Notes: **n.s.,** not specified.

4.4. Technical coordination

The effective operation of EPR systems relies not only on regulatory compliance but also on robust technical coordination between collection, sorting, and treatment processes. It is important to understand how countries are addressing these topics to ensure efficient transport, reporting, and traceability of fishing gear waste.

The following section outlines how the regulations establish the main requirements for defining the transport network for materials and for data reporting and traceability. A summary table is provided at the end of this section (**Table 5**).

4.4.1. Transport of materials

Effective transport ensures that collected fishing gear reaches the treatment facilities safely, efficiently, and in an environmentally responsible manner. This section outlines the national approaches taken by Finland, Ireland, Norway, and Sweden to regulate and coordinate the transport of waste fishing gear.

Finland

In Finland, the national EPR decree for fishing gear (Decree 29.12.2022/1319) does not specify transport requirements. Instead, the transport of waste fishing gear is governed by **Finland's general waste transport and carrier regulations** under national waste management and environmental laws (Southwest Finland ELY centre et al., 2023).

Accordingly, the responsibility for ensuring compliant transport lies with PROs and their contracted logistics providers. They must ensure that waste fishing gear is transported using **registered waste carriers** and that all **shipments are traceable and documented** under the national waste reporting system. Transport operations must also comply **with environmental and safety standards** applicable to the movement of waste within Finland and, where relevant, for cross-border shipments under EU Waste Shipment Regulations (Syke & Ministry of the Environment, 2024; Team Finland, 2025).

Ireland

Under No. 612 of 2022, producers are required to ensure the separate collection, transport, and sustainable management of waste fishing gear containing plastic that is placed on the market.

PROs, acting on behalf of their members, must arrange the collection, transport, storage, and treatment of such waste. All these activities must be conducted in accordance with the **Waste Management Acts 1996–2022** and related regulations (Waste Management Act, 1996).

Transport operations may only be carried out by **permitted waste carriers** and must use **authorised facilities** for interim storage or treatment. PROs are responsible for ensuring that their **contractors maintain valid permits** and that all transport **movements are correctly recorded, traceable, and reported**.

Norway

Under the draft regulation on producer responsibility for fishing equipment containing plastic, Norwegian producers must ensure that collected waste fishing gear is transported to authorised treatment facilities. **Producers or their PROs must also cover the associated transport costs**, offsetting these costs with any revenue generated from the sale of recovered materials.

Transport operations must be conducted by **licensed waste carriers**, and all waste **movements must be documented and traceable** under Norway's waste management and environmental reporting systems.

Sweden

In Sweden, transport responsibilities for waste fishing gear are partly integrated into the broader national waste and port management framework.

According to Chapter 3, Section 5 of the Ordinance (1980:789) on Measures to Combat Pollution from Ships, all ports must provide reception facilities for waste, including fishing gear. Under Chapter 3, Section 40 of the Waste Ordinance (2020:614), **municipalities are responsible for transporting waste away from such reception facilities.**

Beginning in 2025, a PRO for fishing gear will be required to **pay a fee to cover the municipality's costs associated with the transport** of collected fishing gear waste.

4.4.2. Reporting and traceability

Traceability and reporting mechanisms are fundamental to ensuring transparency, accountability, and continuous improvement within EPR systems. They enable regulatory authorities to monitor producer compliance, measure recovery targets, and evaluate the environmental performance of EOL fishing gear management.

Finland

Under Decree 29.12.2022/1319, producers and PROs must ensure transparent traceability throughout the collection and treatment chain. Each year, by the end of June, producers or their PRO must submit a comprehensive annual summary containing the following information:

- **Quantities (tonnes) of plastic-containing fishing gear placed on the Finnish market**, disaggregated by collection system.
- **Quantities (tonnes) of gear separately collected in Finland**, by collection system.
- **Quantities (tonnes) of reused, recycled, otherwise recovered, or disposed of EOL fishing gear**, specifying the treatment facility name and location.
- **A description of reception arrangements** established under Section 4 of the decree.
- **A description of awareness and information activities** conducted under Section 51(1) of the Waste Act.
- **Details of internal control measures**, including actions and inspections carried out under the internal control.

Ireland

In Ireland, S.I. No. 612 Regulations 2022 do not prescribe a fixed format or content for reporting by producers. Instead, it establishes a general obligation for **producers to furnish information** related to their participation in the approved EPR scheme, in a form and at a frequency determined by the approved PRO.

This flexible framework allows PROs to design data-collection systems tailored to their operations, while ensuring producers report sufficient information to enable national monitoring of EPR performance.

Norway

Under Norway's proposed regulations, producers are required to provide comprehensive data to their PROs annually, or more frequently as required. Reporting must include:

- **Quantities (in tonnes) of fishing gear containing plastic placed on the market**, broken down by sector (fisheries, aquaculture, and recreational fishing). Data must reflect the total weight of the products, including both plastic and non-plastic components.

- **Collected quantities, treatment outcomes**, and relevant **material recovery data**, as determined by the PRO's monitoring framework.

Sweden

According to SFS 2021:1001, the **PRO** should, no later than 31 March each year, submit to the Swedish Environmental Protection Agency information on:

- **The weight, in kilograms, of waste consisting of fishing gear collected during the preceding calendar year**: the information shall specify the weight collected by the PRO scheme and how much was collected by the municipalities or an entity responsible for providing a port reception facility.

- **The weight, in kilograms, of fishing gear placed on the market during the preceding calendar year.**

- **Producers who engaged the PRO during the preceding calendar year.**

In addition, each **municipality** must, by 31 March every year, submit to the Swedish Environmental Protection Agency information on:

- **The weight (kg) of fishing gear waste** that was **separately collected and transported** during the previous year.
- **The costs incurred for:**
  - **Transporting fishing gear waste** in accordance with Chapter 3, Section 40 of the Waste Ordinance (2020:614).
  - **Separately collecting fishing gear waste** in accordance with Chapter 15, Section 20 of the Environmental Code
  - **Separately collecting fishing gear waste in a reception facility** in accordance with Chapter 3, Section 5 of the Ordinance (1980:789) on measures to combat pollution from ships
  - **Collecting and reporting information** that must be submitted in accordance with this Ordinance or regulations issued pursuant to the Ordinance (2025:831).

Table 5: Summary of the technical coordination requirements for the proper waste management of end-of-life fishing gear in the assessed partner countries.

Categories	Subcategories	Finland	Ireland	Norway	Sweden
Transport of materials	Regulatory basis	Decree 29.12.2022/1319 (no specific transport provisions); governed by general waste law	S.I. No. 612/2022 and Waste Management Acts 1996–2022	Draft EPR Regulation	Ordinance (1980:789) on Pollution from Ships; Waste Ordinance (2020:614)
	Transport requirements	Must use registered waste carriers; ensure traceability and compliance with waste transport laws	Must use permitted carriers; comply with Waste Acts; maintain records of shipments	Producers/PROs must ensure and finance transport to authorised treatment facilities	Municipal transport from port reception facilities; PROs pay fee from 2025
	Responsible actor	PROs and contracted waste carriers	PRO	PRO	Municipalities
	Cost responsibility	PRO	PRO	PRO	PRO
	Implementation approach	Indirect approach, embedded in the general waste law.	Clear legal obligation under the EPR regulation	Explicit producer obligation with cost responsibility	Integrated municipal system with EPR cost recovery
Reporting and traceability	Regulatory basis	Decree 29.12.2022/1319	S.I. No. 612 of 2022	Draft EPR Regulation	SFS 2021:1001
	Reporting frequency	Annually by 30 June	Determined by PRO	Annually (or more frequently if required)	Annually by 31 March
	Responsible actor	PRO	PRO	PRO	PRO and Municipalities
	Data reported	Wight of collected and placed-on-market fishing gear; reuse/recycling/disposal data; facility details; reception and awareness descriptions; internal controls	n.d.	Weight of EOL fishing gear waste by sector (fisheries, aquaculture, recreation); collection and treatment outcomes	**PRO:** Weight of EOL fishing gear waste collected and placed on market, registered producers. **Municipalities:** weight of EOL fishing gear collected and transported, costs of the collection and transport of materials and data reporting.

Notes: **EPR,** Extended producer responsibility**; PRO,** producer responsibility organization**; n.d.,** no data**.**

5

STATE OF PROGRESS OF THE PARTNER COUNTRIES

5. State of progress of the partner countries

The state of progress assessment for each partner country (i.e., Finland, Ireland, Norway and Sweden) provides an overview of how far they have advanced toward implementing the EPR Directive requirements for fishing gear waste containing plastics.

This evaluation focuses on the same key categories (i.e., material quantities, sorting and treatment of materials, and technical coordination) that indicate each country's readiness for EPR compliance.

Understanding these factors collectively helps identify regional differences in readiness, infrastructure maturity, and potential bottlenecks to achieve EPR compliance.

5.1. Material quantities

This section presents the status of material quantities in each country, which establishes the baseline for assessing recovery potential and infrastructure needs. A summary is presented in **Table 6.**

Finland

In Finland, approximately **361.8 tonnes of plastic-containing fishing gear** were **placed on the market in 2024**, according to producers' personal communication (D.1.3.1). However, **no national data** are yet available on the **volumes of EOL fishing and aquaculture gear collected**, as the separate collection system will only begin in 2025 under the new EPR framework.

With regard to **historical fishing gear**, volume **data is not available**. However, field surveys at Finnish ports and aquaculture facilities revealed the presence of substantial historical fishing gear waste accumulated over many years (D.1.1.1). Most ports reported storing old nets, ropes, and cage components, often in large quantities. In addition, around 30% of the surveyed aquaculture farms reported stockpiles of old net pens, ropes, and floats.

It is important to note that some older cage nets treated with antifouling coatings cannot be disposed of through conventional waste channels and must be stored on-site. The volume of such material is not quantified but is believed to be significant, posing both environmental and logistical challenges for the future EPR scheme.

Ireland

According to the Environmental Protection Agency (EPA) in Ireland, **2,618 tonnes of fishing gear were placed on the market in 2022**. In the same year, around **692 tonnes of EOL fishing gear were reported collected** (Environmental Protection Agency, 2024).

A significant issue for Ireland is the **large volume of historical gear** stored in harbours, net stores, and other coastal locations. Industry consultations suggest that the quantity of historical

gear could exceed annual market placements and cause a sharp increase in waste volumes once the EPR scheme becomes operational (Chowdhury et al., 2024).

Due to the potential magnitude of these waste streams, some historical gear materials are being exported for recycling by national fishing gear producers. In 2022, Swan Net Gundry Ltd (SNG) sent 150 tonnes of old nets to Nofir (Lithuania) for recycling, with an additional 80 tonnes scheduled for export the following year (Chowdhury et al., 2024). However, the **total stockpile of historical gear across Ireland remains unknown**, representing a significant factor to consider when planning future collection and recycling schemes.

Norway

In Norway, -**57 tonnes of fishing gear placed on the market** were estimated in a previous CIRCNETS report (D.1.2.1). This estimate was obtained by subtracting the exported fishing gear volumes from the volumes of imported and industrial production of fishing gear materials. Due to the lack of official data from industrial production, only imported and exported data were considered, thus resulting in a negative value.

When it comes to the collected fishing and aquaculture gear, Norway presents three main actors dealing with collection at the moment:

- **Fishing for Litter (FFL):** a voluntary initiative that recovers around **200 tonnes of fishing gear** were annually.

- **Oceanize:** a Norwegian collection and sorting organization for aquaculture plastic materials. It is reported that this company can handle up to **25,000 tonnes of aquaculture gear waste**, (D.1.2.1; D.1.3.1).

- **Nofir:** a private system dealing with the collection and treatment of fishing gear waste in Norway. They have collected around 87,000 tonnes of discarded gear since 2011, including 10,200 tonnes in 2025.

It is important to note that this collection figures represent estimates, since there is no official information about the extent of fishing gear waste collection in Norway.

Nationally, the **amount of historical fishing gear waste is believed to reach six-figure volumes**, including material stored at ports, landfilled, or abandoned (D.1.1.1).

Sweden

Sweden placed around **1,084 tonnes of fishing gear on the market in 2022** (D.1.2.1), and approximately **206 tonnes of EOL gear were collected in 2023** (D.2.1.1).

Unlike other partner countries, Sweden has been operating a national scheme for collecting and recycling historical fishing gear, launched through the **Fiskereturen system**. This initiative has enabled the systematic removal of historical gear and the recycling of collected materials, significantly reducing the volumes of old fishing waste resting in port facilities, sheds, informal collection points, and other aquatic environments.

However, it is important to note that the collection of historical fishing gear has not yet been fully extended to the Swedish NPA region, where residual historical waste may still be present.

Table 6: Summary table of the material quantity characteristics for fishing/aquaculture gear materials in the partner countries assessed.

Category	Finland	Ireland	Norway	Sweden
Volumes of fishing gear placed on the market (tonnes)	361.84 (2024)	2,618 (2022)	-57	1,084 (2022)
Volumes of aquaculture gear placed on the market (tonnes)	n.d.	n.d.	n.d.	n.d.
Total volumes placed on the market (tonnes)	**361.84**	2,618	**-57**	**1,084**
Volumes collected EOL fishing gear (tonnes)	n.d.	692 (2022)	**FFL:** 200 **Nofir**: 10,200 (2025)	206 (2023)
Volumes collected EOL aquaculture gear (tonnes)	n.d.	n.d.	25,000	n.d.
Total volumes collected (tonnes)	**n.d.**	**692**	**35,400**	**206**
Presence of historical fishing gear	Significant amounts are stored at ports and farms	Historical gear could exceed annual market volumes,	Possibly six-figure tonnes.	Historical waste addressed via Fiskereturen system.

Notes: Year of the data in brackets; **EOL,** end of life**; FFL,** Fishing for Litter**; n.d.,** no data.

5.2. Collection of materials

The establishment of accessible and well-distributed collection points is a critical component for the implementation of EPR schemes for EOL fishing gear waste. These sites serve as the first link in the logistics chain, ensuring that discarded fishing gear is efficiently captured for reuse, recycling, or proper disposal. This section reviews the status of collection points across the partner countries assessed and the existing collection infrastructure in place (**Table 7**).

Finland

Under the national EPR Decree, producers are required to establish or support a minimum of 150 collection points across Finland. To achieve this target, in 2024, **Suomen SUP-**

Tuottajayhteisö Oy (the approved PRO) and **Suomen Pakkauskierrätys Rinki Oy** (a non-profit service company which provides producer responsibility solutions) started a pilot collection of fishing gear waste by arranging 13 reception points. The purpose of this pilot was to test the collection practicalities before developing the official network of 150 collection points. Based on the success of this pilot, the **national collection for fishing gear was initiated in 2025** with the following characteristics (Suomen SUP-Tuottajayhteisö, 2024):

- **Household passive gear (i.e., nets, traps, pots, and longlines):** since May 2025, there are **75 fixed collection** points across the country. In addition, **a seasonal mobile collection** with Southwest Finland Waste Management (LSJH) was organized from June to September 2025 (Suomen SUP-Tuottajayhteisö, 2025c). It included 75 rotating and fixed collection points in Southwest Finland with the aim of investigating the best collection practices and the amount and quality of the collected waste. This seasonal collection will be arranged annually in different regions.

- **Rod fishing gear (lures, rods, and ice-fishing equipment):** a collection of rod fishing gear organised in cooperation with Ruoto Oy and Motonet Oy stores. The collection started in June 2025, with the aim of extending the lifespan of fishing equipment through repair and maintenance (Lumiaro, 2025; Suomen SUP-Tuottajayhteisö, 2024, 2025b).

- **Professional fishing and Aquaculture Equipment:** collection for professional fishing/aquaculture gear is due to take place at **10 terminals** across Finland operated by Lassila & Tikanoja (L&T) from 1 May 2025. These terminals will serve as official reception sites where aquaculture farmers and professional fishers can deliver recyclable equipment such as nets, ropes, and cage components (Lumiaro, 2025; Suomen SUP-Tuottajayhteisö, 2024).

Ireland

To date, Ireland's plans for establishing a collection point remain under development. The Department of Climate, Energy and the Environment is funding a **Legacy Fishing Gear Waste Management Programme** in October and November 2025, managed by Haul It Back. Under this initiative, the company will collect and manage waste fishing gear free of charge for fishermen and aquaculture operators. This service is available only for 2025, as future funding for 2026 has not yet been confirmed. Haul it Back plans to establish dedicated collection points near selected ports across **the country**. Once finalised, details of dates and locations will be shared widely (Haul it Back, 2025a).

Regarding Ireland’s infrastructure for the collection and recovery of fishing gear, previous work has been done under **waste and marine litter collection initiatives**. The main mechanism for EOL gear and marine litter recovery is the Fishing for Litter initiative, coordinated by Bord Iascaigh Mhara (BIM) under the Clean Oceans Programme. The scheme involves 12 major ports and 244 registered vessels and has recovered approximately 409 tonnes of litter since 2015, including plastic debris, ghost gear, and EOL nets.

In addition, some fishing gear producers, such as SNG, already accept used or damaged gear from customers for repair or recycling, contributing to small-scale circular practices within the sector (SNG, 2025).

Norway

Since the EPR framework proposed in Norway is still not effective, details on the collection points are not available under legislation. Therefore, Norway hasn't moved forward in the establishment of an official collection network for EOL fishing gear.

However, similar to Ireland, the collection of fishing gear waste has been covered through the **FFL programme**, managed by SALT since 2015, and operates 11 reception points across Norway. By 2023, it had recorded 178 deliveries and collected nearly 229 tonnes of marine litter and discarded gear. In addition, **municipal waste management companies** are collecting plastic waste from aquaculture, fisheries, and waste companies, which is sent to Nofir and Oceanize for their further treatment (more information in section 5.3).

Sweden

Since summer 2025, Sweden's EPR scheme for fishing gear has been operated through its PRO, Fiskekretsen, in collaboration with municipalities. **Collection points** are planned to be located at municipal recycling centres and other local waste facilities, ensuring broad geographic coverage. From 2025 onward, municipalities will provide collection points for private users (e.g., recreational fishers), while collection for professional users (e.g., commercial fisheries) will be managed through separate logistics systems coordinated by Fiskekretsen (Fiskekretsen, 2025; Swedish Government, 2021). To date, Fiskekretsen has established an agreement with Stena Recycling for the collection of the gear; however, there is still uncertainty regarding how the collected materials will be managed.

As explained previously, before the establishment of the PRO, the collection of EOL fishing gear in Sweden was undertaken through the **Fiskereturen system**, where EOL and historical fishing gear were collected from the different fishing ports located in the east, west and south of the country since 2018. This system collects PP, PE, PET, PA, metals, and rubber from fishing gear waste and has an estimated collection capacity of 200 tonnes/year.

Table 7: Summary table of the collection infrastructure for fishing/aquaculture gear waste in the partner countries assessed.

Country	Collection points	Collection infrastructure			Responsible actor
		Infrastructure	Materials collected	Capacity (tonnes)	
Finland	**Household and recreational passive gear:**75 fixed and rotating points. **Rod fishing gear:** seasonal collection **Commercial fishing/aquaculture gear:** 10 collection points	Collection points	Household, recreational and commercial fishing gear	n.d.	Suomen SUP-Tuottajayhteisö Oy
Ireland	**PRO:** Collection network under development **FFL:** 12 fishing ports	Fishing for Litter	Plastic debris, abandoned, lost or discarded fishing gear	409 (since 2015)	BIM / Haul it back (PRO)
Norway	**FFL:** 11 fishing ports	Fishing for Litter	Plastic debris, abandoned, lost or discarded fishing gear	229 (since 2015)	SALT / Environment Directorate / PRO (future)
		Waste management firms	Plastic from aquaculture, fisheries and waste companies	n.d.	
Sweden	**PRO:** Collection points will be located at the municipalities recycling centres and other local waste facilities. **Fiskereturen system:** EOL and historical fishing gear collected in fishing ports from the east, west and south of Sweden	Fiskereturen system	PP, PE, PET PA, metals and rubber from fishing gear waste	200 (per year)	Fiskekretsen (PRO)/ Fiskereturen system

Notes: **FFL.,** Fishing for Litter**; PRO.,** Product Responsible Organization**; n.d.,** no data.

5.3. Sorting and treatment of materials

Under the SUP Directive, only the collection of EOL fishing gear containing plastics is required. However, the Waste Framework Directive promotes the waste hierarchy, prioritising reuse, recycling and recovery over disposal. Therefore, while collection fulfils the SUP Directive requirements, EPR schemes should go further by ensuring that collected materials are pre-treated and recycled wherever feasible. Each NPA partner country's ability to promote fishing gear reuse or recycling depends primarily on the availability and capacity of sorting, pre-treatment, and recycling infrastructure. These facilities form the backbone of the EPR system, ensuring that EOL fishing gear can be efficiently recovered, treated, and transformed into new materials.

This section presents an overview of the current and potential infrastructure available in the partner countries assessed for the sorting, pre-treatment, and recycling of EOL fishing and aquaculture gear (**Tables 8 and 9).** Detailed information on the facilities' characteristics can be found in report D.1.3.1.

Finland

In Finland there is currently **no official information on the next steps following the collection points** organized by the PRO. It is expected that the PRO will inform the authorities of the collected volumes by June 2026 (covering 2025 data) and will also be required to report on how the collected gear has been managed.

In terms of recycling, Finland has a **broad base of plastic and metal recycling infrastructure,** which, though not being fishing gear specific, could process recovered materials once pre-treated.

Seven mechanical recycling facilities have been reported, which can cover the recycling of common plastic types used in fishing gear design, such as polypropylene (PP), polyethylene (PE), high-density polyethylene (HDPE) and low-density polyethylene (LDPE). However, none of the mechanical recycling plants seems to process or specify the recycling of nylon (i.e., polyamide-PA), which is one of the main plastic streams coming from fishing gear waste. Regarding recycling capacity, it ranges from 18,000 to 50,000 tonnes, with the latter available in future Syklo and NG Group facilities.

Chemical recycling is also present in the country, but with lower representation. **Three chemical recycling plants** have been reported and are able to process plastic types such as LDPE, HDPE, PP, polystyrene (PS), polyethylene terephthalate (PET), Acrylonitrile Butadiene Styrene (ABS) and Polyvinyl chloride (PVC). Again, nylon recycling is not specified for any of the facilities. The capacity ranges from 8,000 to 40,000 tonnes, the latter being available in future Lamor recycling facilities.

Finland also presents **several metal recyclers**, able to process a wide variety of metal types. Meanwhile, **rubber can only be recycled by one company** which is recycling rubber from car tires exclusively (Suomen Rengaskierrätys Oy, Finnish Tyre Recycling Ltd).

Ireland

Despite the collection system planned by the PRO and the previous collection campaign for discarded and abandoned fishing gear through the FFL campaign, in Ireland, there aren't specialised facilities dedicated to sorting or pre-treating fishing gear. **All the collected materials are presently sent to landfills.**

Regarding plastic recycling, Ireland possesses **9 mechanical recycling plants** which can process different types of mixed plastics, mainly from domestic plastic waste and agricultural waste. One plant specified that they could process the following plastic types: PP, PE, PS, ABS, polycarbonate (PC), PVC, Nylon, Acetel, PET, and thermoplastic elastomer (TPE). The capacity of recycling ranges from 1,000 to 35,000 tonnes, depending on the facility's dimensions.

On the other hand, **chemical recycling is dominated by two plants,** one of them focused on processing agricultural plastics, while the other can process HDPE, LDPE, LLDPE, PP and PS. The recycling capacity of these chemical plants can cover up to 35,000 tonnes.

Metal recycling in Ireland is **largely covered** by different smelters across the country. Meanwhile, **rubber recycling** in Ireland is covered by **4 facilities**, mainly located on the east coast and receive rubber tyres.

Norway

In terms of sorting and pre-treatment, in Norway, two main companies provide of fishing gear waste and pre-treatment services for aquaculture and fishing gear:

- **Nofir:** this company collects and handles nets, ropes, fish farming tarpaulins, and fish shelters, managing dismantling, cleaning, and pre-treatment operations (**Figure 1**). However, it is important to note that sorting and treatment of materials is not done in Norway, but in Nofir's pre-treatment facilities located in Lithuania. In terms of numbers, Nofir has collected 80,000 tonnes of EOL fishing gear since 2011 (Nofir, 2025a).

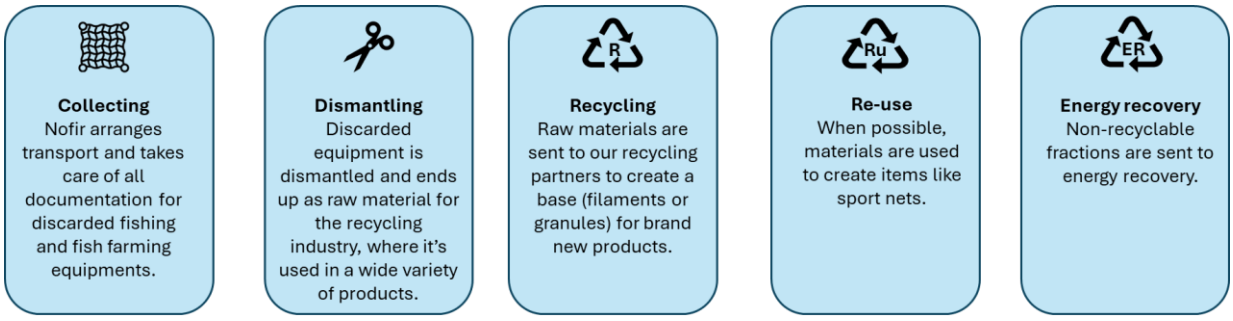

Figure 1: Traceability and recycling system of Nofir (Norway). Adapted from (Nofir, 2025b).

- **Oceanize:** it is a plastic recycling facility that aims to recover plastic from the fishing and aquaculture industries for reuse in Norway (**Figure 2**).

Oceanize gathers plastic waste from fisheries and aquaculture operations, including abandoned fish cages, feed pipes, and ropes. From 2017 to 2021, the company collected and recycled 10,000 tonnes of aquaculture-related plastic. This material is sourced from plastic users and waste reception facilities throughout Norway. Customers may either deliver their plastic equipment directly to Oceanize's site or arrange for Oceanize to pick it up. If requested, Oceanize can manage the entire process, provided the equipment is transported to an appropriate onshore location. At Oceanize's facilities, the plastic is sorted, cleaned, and shredded into small plastic pellets, such as HDPE100, PE, and PP granules (Oceanize, 2023 a,b,c).

Figure 2: Traceability and recycling system of Oceanize (Norway). Image retrieved from Oceanize, 2025

On the other hand, only a few recycling facilities are operating in Norway, but with substantial recycling capacity. **Mechanical and chemical recycling is dominated by two main companies** (i.e., Oceanize and Replast) both of which specialize in recycling aquaculture plastic equipment and have a capacity of between 20,000 and 30,000 tonnes per annum. Replast can also process plastic from other sectors, such as nylon nets and plastic waste from manufacturing, construction, domestic plastic waste, the healthcare sector and projects. Therefore, most of the aquaculture plastic, and some fishing gear waste is processed nationally. However, since there aren't enough specialized facilities dealing with EOL fishing gear in Norway, all the materials collected and sorted by Nofir are sent abroad for recycling.

With regard to metal recycling, **15 metallurgical companies** are available in Norway, able to process a wide range of metals. In addition, **rubber materials from EOL tyres are only processed by one company (**Norsk Dekkretur).

Sweden

As noted earlier, Sweden has an advanced, integrated infrastructure for the collection and recycling of fishing gear, driven by the Fiskereturen system and the Sotenäs Marine Recycling Centre (SMRC).

For sorting and pre-treatment, the fishing gear waste collected through the Fiskereturen system is transferred to the SMRC facilities, which serve as the central hub for sorting and pre-treatment. It has a capacity of approximately 176 tonnes $year^{-1}$ and performs fine sorting into individual material fractions, including:

- **Plastics:** PE, PP, PET, PA, HDPE and mixed polymers
- **Metals:** aluminium, stainless steel, lead, copper, and mixed metals
- **Other fractions:** rubber, floats, wood, and combustible residues.

Although the establishment of the Fiskereturen system and the SMRC for the collection and treatment of EOL fishing gear in Sweden has been successful, the introduction of the EPR Directive has created uncertainty about the future of EOL fishing gear waste management in the country. It remains unclear whether the Fiskereturen system will continue to serve as the main infrastructure for managing these waste streams or whether a new system will be developed under the PRO.

When it comes to recycling, Sweden also has a potential recycling network capable of handling both plastic and metallic fractions. Plastic waste in Sweden is currently recycled through **mechanical treatment**, a sector dominated by **9 companies** with capacities ranging from 2,000 to 100,000 tonnes per annum, depending on the facility's size. These facilities can cover plastic waste from different sources, such as agricultural waste, municipal waste, construction plastics, hard plastics, etc. However, most of them don't specify the plastic types they can process. Only one company (i.e., Veolia PET Svenska) specializes in PET plastic recycling. Contrary to mechanical recycling, Sweden currently **doesn't possess the infrastructure for chemical recycling of plastic waste.**

Different **metal fractions** can be recycled nationally through **5 companies**. Meanwhile, only **one company** is dealing with **rubber waste** from old tyres.

As we can see, Sweden has the potential to process plastic waste from EOL fishing gear on a national scale. The SMRC centre has established collaborations with national recyclers to process some of the plastic fractions sorted at the facilities (e.g., PP, PE, and HDPE). Other plastic fractions, such as PA, are exported for further recycling, while small volumes of PET are sorted and stored at SMRC facilities for future processing. Rubber and float components are also separated during sorting, and a portion of the collected floats is reused in the manufacture of new trawls. In addition, the SMRC centre collected lobster traps, which are sold back to fishermen for reuse. Meanwhile, metal fractions are recycled locally at Stena Recycling Nordic facilities (D.2.1.1).

Table 8: Potential infrastructure for the collection, sorting and pre-treatment of plastic and other materials from end-of-life (EOL) fishing gear in the partner countries. Based on D.1.3.1 and D.2.1.1.

Country	Sorting			Pre-treatment		
	Infrastructure	Type of material	Capacity (tonnes)	Infrastructure	Type of material	Capacity (tonnes)
Finland	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ireland	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Norway	Nofir (Lithuania)	Trawl nets, purse seine nets, fill nets, ropes, fish farming nets, tarpaulin, and fish shelters	80,000 (since 2011)	Nofir (Lithuania)	Trawl nets, purse seine nets, fill nets, ropes, fish farming nets, tarpaulin, and fish shelters	80,000 (since 2011)
	Oceanize	Fisheries and aquaculture waste (abandoned fish cages, feed pipes, and ropes)	10,000 (2017-2021)	Oceanize	Fisheries and aquaculture waste (abandoned fish cages, feed pipes, and ropes)	10,000 (2017-2021)
Sweden	SMRC	PP, PE, PET PA, metals, rubber and wood	176	SMRC	PP, PE, PET PA, metals, rubber and wood	176

Notes: **SMRC**, Sotenäs Marine Recycling Centre; **PP,** polypropylene; **PE,** polyethylene; **PET,** polyethylene terephthalate; **PA,** polyamide; **n.d.,** no data.

Table 9: Potential infrastructure for the recycling of plastic and other materials from EOL fishing gear in the partner countries. Based on D.1.3.1

Country	Mechanical recycling			Chemical recycling			Rubber recycling		Metal recycling	
	Number of plants	Type of material	Capacity (tonnes/year)	Number of plants	Type of material	Capacity (tonnes/year)	Number of plants	Type of material	Number of plants	Type of material
Finland	7	Plastic packaging; agriculture plastics; PP, PE, PET, HDPE, LDPE, LLDPE	18,000 - 50,000	3	Various plastic types and rubber; Waste plastic; LDPE, HDPE, PP, PS, PET, ABS, PVC	8,000 -40,000	1	Rubber waste from EOL tyres	4	Copper, zinc, nickel, stainless steel
Ireland	9	Mixed plastic; Agriculture plastics; PP, PE, PS, ABS, PC, PVC, PA, Acetel, PET, TPE	1,000 - 335,000	2	Agriculture plastics; HDPE, LDPE, LLDPE, PP, PS	Up to 35,000	4	Rubber waste from EOL tyres	7	Steel, nickel, iron, copper, lead, aluminium, cobalt, stainless steel, tungsten, antimony, tin, bronze, brass, zinc
Norway	2	Aquaculture plastic; nylon nets; waste plastics from domestic waste, manufacturing, construction, healthcare sector and projects.	20,000–30,000	2	Aquaculture plastic; nylon nets; waste plastics from domestic waste, manufacturing, construction, healthcare sector and projects.	20,000–30,000	1	Rubber waste from EOL tyres	15	Aluminium, steel, zinc, among others.
Sweden	8	Municipal plastic waste; Hard plastics; Construction plastics; Production, EOL and waste plastics; PET	2,000 - 100,000	---	----	----	1	Rubber waste from EOL tyres	5	Lead, aluminium, copper, lead, zinc, batteries, scrap metal, ropes, and stainless steel

Notes: **EOL,** end of life; **PP,** polypropylene; **PE,** polyethylene; **PET,** polyethylene terephthalate; **PA,** polyamide; **HDPE,** high-density polyethylene; **LDPE,** low-density polyethylene; **LLDPE,** Linear Low-Density Polyethylene; **PS,** polystyrene; **ABS,** Acrylonitrile Butadiene Styrene; **PC,** polycarbonate; **PVC,** Polyvinyl chloride; **PET,** polyethylene terephthalate; **TPE,** thermoplastic elastomer.

5.4. Technical coordination

The analysis of the technical coordination category shows the preparations done in each country to establish an efficient transport network and the work done in terms of reporting data and traceability to comply with the EPR directive. A summary is presented in **Table 10.**

5.4.1. Transport of materials

Efficient and traceable transport systems ensure that collected fishing gear waste is handled safely, cost-effectively, and with minimal environmental impact. Transport arrangements vary among the partner countries, reflecting differences in the maturity of their EPR systems and the availability of treatment infrastructure. This section summarises the current transport practices in the assessed partner countries.

Finland

Finland is establishing a formal collection or recycling system for EOL fishing gear under the EPR framework. Once the EPR scheme becomes active in 2025, transport networks will need to be organised to connect the 150 planned collection points to authorised treatment or recycling facilities.

To date, data from pilot collection conducted in collaboration with Southwest Finland waste management firm, indicate that the collected fishing gear has been transported from the collection sites to the company's terminal; however, what will happen with the collected volumes remains unclear. These pilot collections have gathered a total of 1.7 tonnes of fishing gear (internal communication with Suomen SUP-Tuottajayhteisö Oy). As the collection and transportation are organized by Suomen Pakkauskierrätys Rinki Oy, **it is expected that a well-developed logistics system is already in place** from this perspective.

Ireland

Similar to Finland, Ireland does not yet have an established transport system specifically for EOL fishing gear, as the national EPR scheme has not been implemented. Current activities are primarily limited to voluntary initiatives such as the FFL campaign.

Under FFL, voluntary ports facilitate the temporary storage and collection of retrieved marine litter and discarded gear, which is then transferred to waste management operators for treatment or disposal. However, because dedicated sorting and processing facilities for fishing gear do not yet exist in Ireland, **transport flows and future routes cannot be estimated.**

Norway

Norway has a **functioning transport framework** for EOL fishing and aquaculture gear, managed primarily through Nofir and Oceanize.

With regards to Nofir, its sorting and pre-treatment facilities are located in Lithuania, not in Norway. This means that all collected fishing and aquaculture gear from Norwegian ports and

facilities is transported abroad for sorting and pre-treatment before being sent on to final recycling destinations.

On the other hand, the Ocenize system is designed to process all the aquaculture waste nationally, having a collection and transport system where the aquaculture companies either bring their waste directly to the Oceanize's sorting and treatment facilities, or the waste is collected from an accessible landing point.

Sweden

As previously stated, the Swedish PRO has an agreement with Stena Recycling to collect fishing gear waste from municipalities. However, the transport arrangements and the final destination of the collected materials remain unclear.

Previously, Sweden had established a **well-coordinated transport system** for EOL fishing under the **Fiskereturen system,** in which two companies were responsible for transport operations (Ólafur Egilsson et al., 2023):

- **FF Norden:** manages the collection and transport of EOL fishing gear from Bohuslän and the west coast to the SMRC facilities.
- **Båtskroten:** operates along the east coast, including the Stockholm archipelago, collecting material from local actors and transporting it to intermediate warehouses in Stockholm. Once sufficient volumes are collected, large truckloads with fishing gear waste are sent to SMRC in Sotenäs for their sorting and pre-treatment. Båtskroten previously used stationary collection containers but later switched to scheduled collection rounds, coordinating directly with fishers and port operators to optimise routes.

5.4.2. Reporting and traceability

Each partner country has developed or is in the process of developing its own national reporting procedures, data management tools, and traceability mechanisms to ensure compliance with the EPR Directive for fishing gear containing plastics.

Finland

The **Suomen SUP-Tuottajayhteisö Oy** (Finnish SUP Producer Group Ltd), established in 2022, is the approved PRO responsible for implementing EPR obligations for fishing gear, alongside other single-use plastic products (Suomen SUP-Tuottajayhteisö, 2025a).

At present, Finland has published official data only on the quantities of fishing gear placed on the market. Information on the volumes of EOL fishing gear collected in 2025, along with the corresponding treatment outcomes (reuse, recycling, or disposal), will be made public in June 2026.

Regarding traceability, there is **no publicly available digital tracking tool** dedicated to fishing gear waste in Finland. Although the PRO's website notes that "information systems" are used for data submission and verification, it provides no further details on the structure or technical

capabilities of these systems. Currently, traceability relies primarily on administrative reporting rather than an automated system.

Ireland

In Ireland, the approved PRO is **Haul It Back**. Haul It Back's mandate includes registering producers, collecting data on fishing gear placed on the market, and preparing to become the permanent Extended Producer Responsibility scheme for fishing gear in Ireland by 2026 (Haul it Back, 2025b).

Reporting obligations are still being developed, but the Environmental Protection Agency (EPA) has already reported the collected volumes of EOL fishing gear in 2022. In addition, in 2023, the EPA introduced **new waste codes** to improve data accuracy for fishing and aquaculture gear (**Figure 3**). When applied consistently by waste operators, these codes will enable the distinction of fishing gear data within national waste statistics (Chowdhury et al., 2024). Currently, reporting remains inconsistent, with data coverage limited to specific ports and pilot projects.

A notable innovation is the **NET 360 project**, a collaboration between Verifact and Novelplast that has developed a blockchain-based traceability system to track EOL fishing nets through the recycling chain and back into new products. Although still in the pilot phase, this initiative demonstrates the potential for digital traceability within the Irish EPR system once scaled nationally (D.2.1.1).

Figure 3: New waste codes proposed by the Irish European Environmental Agency in 2023.

Norway

In Norway, the PRO (i.e., PROFA), when approved, will be responsible for the implementation of EPR requirements for fishing gear containing plastic. However, the approval of an official PRO and the implementation of the EPR scheme have been delayed. The Directorate of the Environment set a hearing deadline of 23 December 2024, during which substantial input was provided by industry stakeholders. The Directorate subsequently submitted the final regulatory proposal to the Ministry of Climate and Environment in December 2025. Once approved, the regulation will be implemented immediately. In the meantime, Nofir remains the key operator responsible for the collection, dismantling, sorting, and recycling of EOL fishing and aquaculture gear, functioning as the main Norway's take-back and recycling system.

As mentioned previously, there are **traceability features built into Nofir's business model**. Nofir monitors and reports all the EOL fishing gear waste collected from the fishing and aquaculture industry and traces it until it is used to produce new materials, with detailed environmental reports and background documents. Although this is a company-led system, it suggests that the value chain from collection to recycling is tracked.

To date, **Norway hasn't established a digital tool for tracking fishing gear waste**. While some records exist for materials unsuitable for recycling that are sent to landfill, an important fraction of discarded fishing gear remains unregistered, representing a substantial knowledge gap for the establishment of a future EPR scheme (Arnar Einarsson et al., 2025).

Sweden

Fiskekretsen AB, approved in October 2024, is the national PRO for fishing gear containing plastics in Sweden. It operates in coordination with Naturvårdsverket and municipalities to ensure compliance with collection, reporting, and recycling requirements.

The EPR regulation requires producers to report annually on the weight of fishing gear placed on the market and the amounts collected, treated, and recycled. Under the EPR scheme, municipalities will report annually to the Swedish EPA on the quantities of fishing gear collected and associated management costs, providing a structured basis for monitoring national progress. Fiskekretsen will disseminate information and raise awareness among producers, fishermen, and the general public about the importance of proper handling of fishing gear after use.

At present, there is **no dedicated national traceability tool**. Traceability is ensured primarily through reporting flows between municipalities, Fiskekretsen, and recyclers. Through the **Fiskereturen project**, the SMRC has provided detailed data on collected materials, sorting outcomes, and the export of recyclable fractions abroad. These practices represent the most advanced traceability mechanism currently functioning in Sweden.

Table 10: Summary of the technical coordination practices in the assessed partner countries.

Category	Subcategory	Finland	Ireland	Norway	Sweden
Transport	**Transport system**	No dedicated system yet	Limited to FFL logistics	Active system via Nofir	**Now:** transport arrangement from Stena recycling facilities is unclear **Previously:** Fiskereturen system transport logistics
	Destination/route	n.d.	Local collection and disposal via waste operators	EOL fishing gear materials transported to Lithuania for sorting	**Now:** from municipalities to Stena Recycling facilities **Previously:** From ports and coastal areas to SMRC facilities
	Responsible actor	Producers / PROs	BIM / Waste contractors / PRO (future)	Nofir	**Now:** Fiskekretsen & Stena recycling **Previously:** FF Norden & Båtskroten
Reporting and traceability	**PRO**	Suomen SUP-Tuottajayhteisö Oy	Haul It Back	PROFA (when approved)	Fiskekretsen AB
	Reporting Status	EPR system under development; reporting will start in 2025	EPR system under development; reporting for collected volumes by EPA	Nofir data; no national consolidated register	Municipal and producers report annually to EPA
	Traceability Mechanism	No public traceability tool	*NET 360* blockchain pilot for net traceability	No public traceability tool/ Traceability through Nofir's internal management	No public traceability tool/ Traceability through Fiskereturen system

Notes: **PRO**, Producer Responsibility Organization; **FFL**, Fishing For Litter; **EPA**, Environmental Protection Agency.

6

READINESS ANALYSIS

6. Readiness analysis

This section evaluates and describes the readiness analysis of Finland, Ireland, Norway, and Sweden to implement effective EPR schemes for the collection and treatment of EOL fishing and aquaculture gear (**Table 11**).

6.1. Finland

Materials quantities

In Finland, collection targets for EOL fishing gear have been defined (10% of the fishing gear placed on the market annually), thus providing clarity to producers and authorities for the logistics design of a future EPR scheme. Based on the estimated volumes of fishing gear placed on the market in 2024 (361.8 tonnes), Finland is expected to collect approximately 36.18 tonnes per year. This collection target seems modest in absolute tonnage. However, the lack of data on current collection volumes limits the ability to assess real progress.

Regarding historical fishing gear, the stockpiles stored at ports and aquaculture facilities could provide an initial supply of material.

Overall, the material quantities analysis shows that some progress has been made. If historical gear is quantified and addressed, it could serve as a starting point for the scheme. Therefore, considering these aspects, Finland's preparedness in this domain can be characterized as **partially developed.**

Collection of materials

In terms of collection, Finland has already begun developing a national collection network to meet the 150 collection points required under legislation. The 2024 collection pilot, which included 13 reception points, generated valuable information to optimise logistics, estimate material quantities, and assess user accessibility. This information served as a baseline for designing an effective national collection system that covers both commercial and recreational fishing. It is therefore expected that the results from the first year of collection will provide insights into whether the designed system functions effectively and meets its intended purpose at its current scale.

Given the substantial progress made in developing a functional and tailored collection system, Finland can be considered **strongly developed** in this category.

Sorting and treatment of materials

When it comes to sorting and treatment of materials, although the EPR directive doesn't set specific requirements for the steps following material collection, each country defines its own operational and technical requirements for sorting and treatment.

Compared to the other countries assessed, Finland has relatively basic legislation in this area. It does not prescribe detailed requirements for establishing sorting and treatment facilities;

instead, these are implemented through PRO contracts with recyclers and national waste treatment systems. While this approach may offer flexibility to adapt to technological advancements and market conditions, it also presents a potential risk. In particular, the PRO could opt for the simplest solution: limiting its role to packing waste and exporting it for further processing, rather than taking responsibility for national sorting and recycling of EOL fishing gear.

In terms of recycling infrastructure, Finland has broad capacity, especially for general plastics. Additionally, the emergence of new recycling facilities, such as chemical recycling plants, presents a strong opportunity to support the development of a future EPR scheme. However, the absence of domestic nylon recycling capacity means that significant material fractions will need to be exported for further processing.

Metal recycling capacity is also strong, but rubber processing in Finland is limited to a single facility, which could overload waste systems if rubber from EOL fishing gear is recycled nationally. Chemical recycling could be a possibility in this case, if the recycling is to be done domestically, there is one chemical recycler which could recycle both plastics and rubber.

Overall, Finland's existing recycling infrastructure provides a promising starting point if appropriately adapted. Nevertheless, the lack of legislative requirements may hinder the establishment of national sorting and treatment facilities. As a result, Finland's level of readiness in this category is assessed as **partially developed.**

Technical coordination

The technical coordination category in Finland presents both strengths and weaknesses. In terms of transport and logistics, this area is expected to be a strength of the Finnish system. Although transport logistics have not yet been fully arranged, Rinki has extensive experience in this area through its work with packaging collection, positioning it well to manage these requirements.

Regarding reporting, Finnish legislation includes extensive and detailed requirements covering the quantities of fishing gear waste collected, fishing gear placed on the market, and waste reused or treated. However, to date, Finland has reported only data on the quantities of fishing gear placed on the market. This may be a consequence of delays in developing a fully operational collection and recycling scheme, as collection efforts began only in 2024–2025. As a result, data on collected and processed materials are not yet available.

Regarding traceability, there is no publicly available digital tracking tool dedicated to fishing gear waste in Finland. Although the PRO's website notes that "information systems" are used for data submission and verification, it provides no further details on the structure or technical capabilities of these systems. Currently, traceability relies primarily on administrative reporting rather than an automated system.

Considering the identified challenges and opportunities within the technical coordination category, Finland is therefore assessed as **partially developed** in this area.

6.2. Ireland

Materials quantities

Ireland's material quantities assessment reveals similar challenges to Finland, but with a different baseline. The country uses a non-binding target, which is yearly updated, rather than a percentage of the volumes of fishing gear placed on the market. Like Finland, this target appears relatively modest (set as 500 tonnes for 2026) compared to both the estimated amount of gear placed on the market (1,385 tonnes) and the quantity collected in 2022 (692 tonnes of EOL fishing gear). This reflects a misalignment between policy ambition and the actual material flows. If the scheme were to be designed around this target, a considerable proportion of fishing gear waste could remain uncollected and unprocessed. In addition, the reported 2022 collection volume represents approximately 50% of the estimated gear placed on the market. This indicates that Ireland could establish a percentage-based collection target that better reflects the volumes of fishing gear entering the market.

With regard to historical fishing gear volumes, measures taken by some producers to export this material for recycling abroad demonstrate that an operational pathway for processing EOL fishing gear already exists, although not domestic.

Overall, Ireland's preparedness in terms of material quantities is **partially developed**. Although some actions toward scheme implementation have been initiated, further improvements are required to establish a reliable baseline for future material collection and management.

Collection of materials

In Ireland, the development of a collection network is still at an early stage. While potential collection programmes and pilot initiatives are under development, there is limited publicly available information from the PRO regarding the progress achieved to date. In addition, Irish legislation does not clearly specify the requirements for collection points to be established under an EPR scheme. As a result, the lack of updated information and existing legislative gaps make it difficult to assess Ireland's actual progress in this area.

Despite these challenges, Ireland has undertaken some collection efforts in the past through voluntary and project-based initiatives, such as the FFL campaign. However, this campaign is not exclusively focused on the collection of EOL fishing gear, as it also addresses the collection and retrieval of marine litter. Furthermore, the FFL campaign covers only 12 of the 47 registered fishing ports in Ireland (MaREI, 2016). Consequently, while it may serve as a useful baseline, its limited coverage is insufficient to support a scalable national collection system.

Taking into account both the efforts made to date and the existing challenges and information gaps, Ireland is assessed as **partially developed** in terms of material collection. Further actions, such as implementing collection pilots and establishing a defined number of permanent collection points, are required to fully develop a national collection network.

Sorting and treatment of materials

In Ireland, there is also a lack of sorting and treatment facilities for EOL fishing gear. Consequently, all gear collected from the FFL campaign is currently landfilled. This practice represents a significant environmental concern, as landfilling is the least preferred waste management option and is associated with higher greenhouse gas emissions compared to alternative strategies such as energy recovery or mechanical recycling (Schneider et al., 2020).

With regard to recycling, Ireland has significant capacity for several plastic waste streams, making integration feasible with targeted investment. Metal and rubber recycling capacity is also strong, with multiple smelters and rubber recycling facilities operating nationally. Therefore, with appropriate investment and adaptation of existing recycling infrastructure, fishing gear waste could potentially be processed domestically.

Overall, Ireland has an emerging infrastructure that could support the implementation of an EPR scheme. However, sorting and treatment operations remain largely underdeveloped, with no dedicated facilities and continued reliance on harmful waste-management practices. As a result, Ireland's level of readiness in this area is assessed as **partially developed**. Substantial efforts are required to fully integrate EOL fishing gear into national recycling systems and to ensure the sustainable and efficient management of all material fractions.

Technical coordination

The reporting system in Ireland also presents several gaps and challenges. From a legislative perspective, specific data reporting requirements are not defined under the directive. This lack of requirements may result in limited transparency, as the PRO does not have clear guidance on the type of information that should be reported or made publicly available.

In addition, data collection and reporting are also inconsistent, with national figures being reported mainly as estimates. However, ongoing efforts (e.g., introduction of waste codes and the NET 360 blockchain pilot) demonstrate increasing awareness of the need for traceability tools and suggest potential models for future monitoring.

Transport systems are also not yet formalised, where current practices rely on individual contracts with waste operators for material handling and disposal.

Overall, while Ireland has initiated coordination actions and pilot initiatives that could be integrated into a future EPR scheme, several limitations in legislative requirements, data reporting, and logistics coordination remain. Consequently, Ireland is assessed as p**artially developed** in this category.

6.3. Norway

Materials quantities

Norway's materials quantity analysis is defined by both high collection volumes and critical data gaps. Although around 10,400 tonnes of fishing gear and 25,000 tonnes of aquaculture

gear were reported as collected, no official placed-on-market data exist due to unrecorded domestic production. As a result, collection targets cannot yet be calculated.

Regarding historical gear, available estimates remain uncertain. However, the national volumes may reach six-figure tonnes when considering landfilled, abandoned, and stored materials. Therefore, if mobilised, these legacy volumes could significantly exceed annual collection flows, posing logistical and processing challenges.

Given these data gaps, Norway can be considered **partially developed** in this category. Although notable progress has been made in collecting data on aquaculture and fishing gear, the lack of reliable data reduces the country's readiness to fully implement a comprehensive EPR scheme for EOL fishing gear.

Collection of materials

Due to the absence of formalised EPR legislation in Norway, an official national collection network has not yet been established. However, Norway has strong industry actors that could serve as the foundation for a future EPR scheme for EOL fishing gear.

With regard to potential collection points, data from 2015 indicated that only approximately one-third of the 4,443 ports in Norway had waste handling plans (Deshpande, 2020). More recent findings from a CIRCNETS study focusing on ports within Norway's NPA area suggest significant improvement, with the majority of ports (13 out of 14) now equipped with waste handling systems (D.1.1.1). It is also important to note that the higher port numbers reported by Deshpande (2020) include all ports nationwide, including very small ports in places with fewer than 100 inhabitants. When considering only the main fishing ports, the figures are more comparable to those of the other countries assessed. According to the Norwegian Coastal Administration, Norway has a total of 371 fishing ports, of which 183 are located within the NPA area (Bjørshol, 2023). Therefore, despite Norway's extensive coastline, the realistic number of potential collection points can be narrowed to a few hundred.

In terms of infrastructure, and despite pending regulatory approval, Norway has the elements of a potential collection system for fishing and aquaculture gear. These are driven primarily by public initiatives, such as the FFL campaign, and by waste management companies which deliver the waste to the private treatment systems (i.e., Oceanize and Nofir). Such systems could serve as the basis for a future national collection network, although further investment would be required to ensure full coverage of key fishing ports and areas with substantial fishing activity.

Overall, although collection requirements are not yet clearly defined in legislation and a formal collection network has not been established, the existing initiatives and systems could enable the rapid implementation of an EPR scheme in Norway. As a result, Norway is assessed as **partially developed** in this category.

Sorting and treatment of materials

In terms of sorting and treatment of materials, the dismantling and pre-treatment models operated by Nofir and Oceanize are the main systems currently addressing fishing and

aquaculture gear waste in Norway. However, it is important to note that Nofir conducts sorting and pre-treatment activities outside the country, at its facilities in Lithuania. As a result, if a future EPR scheme were to prioritise national treatment, additional investment in domestic sorting and pre-treatment facilities would be required. An alternative option would be to process fishing gear waste within Oceanize's and Replast facilities. This is an approach that both companies are currently exploring; however, similar investments would be necessary to manage higher waste volumes and a broader range of material fractions.

With regard to recycling, aquaculture waste is currently processed through private recycling systems, such as those operated by Oceanize and Replast. In principle, these systems could be extended or adapted to include fishing gear waste. To date, however, such integration has not yet occurred, and most collected fishing gear materials continue to be exported abroad for final recycling.

The metal recycling sector in Norway is strong. However, rubber recycling capacity remains limited, with only one company handling such materials. Without expansion in this sector, rubber fractions from EOL gear will continue to rely on export or energy recovery, constraining the overall circularity of the system.

Overall, while Norway demonstrates technical readiness in specific sectors, the country's progress toward an integrated EOL fishing gear treatment system remains **partially developed**. The successful implementation of an EPR scheme will depend on expanding domestic recycling capacity to reduce dependence on exports and ensure efficient, transparent, and circular management of EOL fishing gear waste.

Technical coordination

With regard to the technical coordination, although Nofir's system ensures high recovery rates and full material traceability, it also results in long-distance transport of waste across national borders. This leads to logistical inefficiencies, increased transport emissions and costs, and may hinder compliance with national EPR requirements once these are implemented. Furthermore, Norway lacks a dedicated digital traceability platform to manage or verify national material flows of EOL fishing gear, leaving data gaps that weaken regulatory monitoring.

Norway's main opportunity lies in integrating the aquaculture recycling sector into Nofir's collection system. Together, these actors could collaborate on the development of a fully domestic EPR scheme.

Although Norway has made positive progress toward establishing a functional collection and processing network for EOL fishing gear, improvements in coordination (particularly between future PROs, port authorities, Nofir and recycling companies) will be essential to ensure system integrity, enhance transparency, and strengthen reporting practices across the sector. Based on the identified challenges and opportunities, Norway is assessed as **partially developed** in terms of technical coordination.

6.4. Sweden

Materials quantities

Sweden's material quantities assessment indicates a higher level of readiness compared to the other countries assessed. To date, the Fiskereturen system has served as the primary national collection scheme, collecting approximately 206 tonnes of historical and EOL fishing gear annually. This corresponds to a collection rate of about 19.0% of the volumes placed on the market (1,084 tonnes). This value is very close to the 20% EPR target set for 2027, demonstrating strong alignment between policy objectives and operational capacity. In addition, Sweden is the only country to have established a collection scheme prior to the EPR directive implementation, thereby anticipating regulatory requirements, generating early data on collected materials, and emphasizing the recovery of historical fishing gear as a key driver of system performance.

However, while the Fiskereturen system has proven effective for fishing gear waste, the management of aquaculture plastic waste in Sweden remains uncertain. To date, this waste stream is not collected, and no national data are available on either collected volumes or quantities placed on the market. These data gaps may hinder the future treatment of this waste fraction, as they limit the ability to predict the volumes that will eventually enter the EPR scheme.

Overall, taking into account both strengths and limitations in material quantity data, Sweden is assessed as **partially developed**. Despite its pioneering approach and the demonstrated effectiveness of the Fiskereturen system, significant data gaps, particularly in the aquaculture sector, must be addressed to support the design of an efficient, fully functional collection and recycling scheme.

Collection of materials

In terms of collection activities and infrastructure, Sweden is among the most advanced countries assessed. As stated before, the Fiskereturen system has operated as the main collection and recycling scheme for fishing gear waste, enabling effective recovery of a wide range of materials (e.g., plastic types, metals, wood, rubber, etc) across the east, west, and south coasts of the country.

Despite its proven effectiveness, the system's future role remains uncertain. The implementation of the EPR directive requires the PRO (i.e., Fiskekretsen) to design and implement a new collection and recycling scheme. In this context, Fiskekretsen has expressed interest in building upon the existing Fiskereturen system. However, while the system is regarded as a strong model, it will require adaptation to meet the requirements of a long-term, nationwide collection framework.

Given the demonstrated performance of the Fiskereturen system, Sweden could be considered **strongly developed** in terms of material collection. Nevertheless, to successfully integrate this system into a national EPR-compliant collection and recycling scheme, closer collaboration among the PRO, port authorities, and Fiskereturen partners will be essential.

Such coordination will be necessary to expand collection coverage and ensure consistent infrastructure and resource availability across the country.

Sorting and treatment of materials

The SMRC sorting facilities currently represent the primary system in Sweden capable of handling material fractions from fishing gear waste. However, as stated before, the Fiskereturen system operations are limited to the south, east and west regions of the country. As a result, the NPA region remains outside the collection network due to resource constraints. This partial geographical coverage could lead to uneven implementation of EPR requirements and uncollected waste fishing gear in remote fishing areas. Moreover, if the SMRC facilities are integrated into a future EPR scheme, their existing capacity may be insufficient to manage the increased volumes of fishing gear waste, indicating a need for investment to align sorting and processing capacity with national demand.

In terms of recycling capacity, Sweden has a potential network of mechanical recycling facilities with high processing capacities. However, these facilities aren't adapted to process fishing gear polymers. In addition, Sweden doesn't have chemical recycling plants. Consequently, fishing gear recycling in Sweden remains limited, necessitating exports of PA fractions and PET storage.

By contrast, Sweden's metal and rubber recycling sectors are robust. However, at present, only metal fractions from EOL and historical fishing gear are processed domestically, while rubber waste is sorted and stored at SMRC. Currently, energy recovery is the only viable treatment option for rubber. Although SMRC is seeking to collaborate with an innovative national rubber recycler, the conclusion of such an agreement may take several years.

Overall, Sweden benefits from a solid legal framework, an established collection and sorting infrastructure, and a potential recycling industry for the treatment of EOL fishing gear waste. However, despite this apparent readiness, it remains uncertain how the Fiskereturen system will be used for the design and implementation of the future EPR scheme. Moreover, targeted investment in polymer recycling technologies, along with expanded collection coverage, would significantly strengthen Sweden's ability to achieve full circularity under the EPR Directive. Consequently, Sweden's readiness for sorting and treating EOL fishing gear waste is assessed as **partially developed.**

Technical coordination

In Sweden, the assessment of technical coordination (i.e., transport, reporting and traceability) reveals two different approaches: 1) the operational practices developed under the Fiskereturen system; and 2) the arrangements planned under the future EPR collection and recycling scheme.

With regard to transport, the EPR framework assigns responsibility to the Swedish PRO, which has established an agreement with Stena Recycling for the collection of fishing gear waste from municipalities. However, key aspects of this setup (i.e., transport logistics and final treatment locations) remain unclear. This indicates that, although contractual responsibility has

been established, transport operations under the EPR scheme are still at an early stage of development.

By contrast, transport logistics under the Fiskereturen system were highly structured, with two dedicated operators (i.e., FF Norden and Båtskroten) managing defined transport routes across the west, east, and south of Sweden. These operators coordinated directly with fishers and port authorities, optimized transport routes, and adapted collection methods over time.

The coexistence of these two approaches creates uncertainty regarding future transport arrangements. Integrating the proven Fiskereturen logistics into the emerging EPR scheme would help reduce this uncertainty and provide immediate operational capacity. With additional investment, the transport network could also be expanded to ensure the collection of fishing gear waste in the norther and remote areas of Sweden.

In terms of reporting, requirements are better formalized under the EPR regulation, establishing a standardized national monitoring framework. In contrast, Fiskereturen system reporting was driven by project-based accountability rather than regulatory obligations. Nevertheless, SMRC generated detailed data on the collected quantities, sorting outcomes, and the export of recyclable fractions. While these data flows were not legally mandatory, they provided high-quality operational insight and represent the most advanced reporting practice currently available in Sweden.

Traceability remains a key challenge. While material flows were monitored through the Fiskereturen project, Sweden still lacks a real-time traceability system. As in other countries, the absence of such a tool may limit transparency and restrict the ability to track materials across the full value chain.

In summary, Sweden's EPR framework provides a strong legal and institutional foundation for transport responsibility, reporting, and traceability. However, the most effective operational practices to date have emerged from the Fiskereturen system rather than from EPR-specific mechanisms. Bridging this gap by integrating Fiskereturen practices into the EPR structure could ensure efficient logistics, robust data quality, and full transparency in the future national collection and recycling scheme for EOL fishing gear. Therefore, based on the discussed strengths and weaknesses, Sweden is assessed as **partially developed** in terms of technical coordination.

6.5. Comparative summary

Finland, Ireland, Norway, and Sweden face common challenges and opportunities in achieving full readiness for the management of EOL fishing gear waste under the EPR Directive.

The volumes of fishing and aquaculture gear placed on the market and collected at the end of life vary significantly across countries, reflecting differences in industrial profiles, fleet composition, and past collection practices. Moreover, the presence of substantial volumes of historical gear poses a particular challenge to new EPR schemes. However, Sweden's approach of integrating historical gear into its collection system demonstrates a potential pathway for other countries. By using historical gear as a foundation for collection activities in

future EPR schemes, challenges related to low initial waste volumes could be mitigated while creating new recovery opportunities for historical fishing gear waste.

All four countries are progressing toward the establishment of collection and treatment systems for EOL fishing gear, though their approaches differ. Finland and Sweden exhibit the most clearly defined collection infrastructure. Finland has set a minimum target of 150 collection points, while Sweden plans to organize collection for recreational fishing gear through municipalities and local waste facilities. In contrast, Norway and Ireland rely on outcome-based performance criteria rather than defined infrastructure requirements.

In terms of collection and sorting arrangements, the countries assessed differ considerably. In the past, Sweden had the strongest collection and sorting infrastructure, driven by the Fiskereturen system. However, nowadays, the implementation of the EPR directive has created uncertainty regarding the future of the Fiskereturen system and how this will be used or integrated in the design of the new EPR scheme. On the other hand, Finland is making strong progress to achieve the collection targets by arranging collection pilots and developing the future collection network. However, sorting arrangements are still lacking in this country. Norway also has a strong potential for collection and sorting due to its experience with private collection and sorting systems for fishing and aquaculture gear, which could be easily integrated in the future EPR scheme. Meanwhile, although the collection network in Ireland is under arrangement, this country scores the latest due to the modest collection requirements and the lack of sorting infrastructure.

Regarding waste treatment, possibilities and limitations are shared between the countries. The four countries possess general recycling infrastructure and metal recovery networks that could be adapted to integrate EOL fishing gear waste. However, these potential recycling facilities are not designed to process fishing gear waste containing plastic, resulting in the export of materials for further treatment (in the best-case scenario) or landfilling (in the worst-case scenario). This dependency not only increases logistical costs and carbon emissions but also challenges traceability and compliance with EPR reporting obligations. Despite these challenges, the countries could benefit from cross-border collaboration and knowledge transfer. For instance, the Sweden's Fiskereturen system could be used as a best-practice references for scaling up collection and treatment systems elsewhere in the NPA region.

Finally, in terms of technical coordination, the countries assessed face similar technical barriers, such as achieving nationwide collection coverage, organising efficient transport logistics, and establishing functional digital tools for reporting and traceability.

Overall, the assessment shows how each country presents strong characteristics that should be further explored and weaknesses to address to achieve a successful EPR scheme for fishing gear waste. In summary, while each country is at a different stage of readiness, they collectively face similar structural barriers and share a strong potential to build on existing networks, regional collaboration and technological infrastructure.

Table 11: Traffic light analysis of the readiness level of Finland, Ireland, Norway and Sweden for the implementation of the Extended Producer Responsibility schemes for EOL fishing gear. PD: partially developed, SD: strongly developed.

Category	Subcategory	Country			
		Finland	Ireland	Norway	Sweden
Material quantity	Fishing gear				
	Aquaculture gear				
	Historical fishing gear				
	Overall	PD	PD	PD	PD
Collection	Collection requirements				
	Infrastructure				
	Overall	SD	PD	PD	SD
Sorting and treatment infrastructure	Sorting and pre-treatment				
	Mechanical recycling				
	Chemical recycling				
	Rubber recycling				
	Metal recycling				
	Overall	PD	PD	PD	PD
Technical coordination	Transport				
	Reporting				
	Traceability				
	Overall	PD	PD	PD	PD

7

RECOMMENDATIONS

7. Recommendations

Based on the readiness analysis for each country to establish an effective EPR scheme for EOL fishing gear, the following tables provide a set of country-specific recommendations. These recommendations aim to strengthen data collection, enhance collection activities, expand treatment opportunities, and improve technical coordination operations. In addition, a timeline is established for each recommendation, indicating whether the actions should be implemented within a short, medium, or long timeframe.

Table 12: Finland's recommendations for proper EPR scheme implementation.

Category	Recommendations	Description	Timeline
Material quantities	**Establish a national inventory of EOL and historical fishing gear volumes**	Collecting operational data from ports, aquaculture farms, and waste operators on EOL and historical fishing/aquaculture gear provides essential information for tracking progress toward collection targets and for designing EPR schemes.	Short
	Refine placed-on-market estimates	It is recommended to update and validate data on fishing gear placed on the market to ensure that the 361.8 tonnes estimate remains accurate. Improved precision will strengthen logistics planning and setting of the future EPR scheme.	Short-Medium
	Introduce adaptive targets over time	Consider gradually increasing collection targets as data quality improves and the system matures	Long
Collection of materials	**Differentiate targets for commercial vs. recreational fishing sector**	Since the waste profiles between recreational and commercial fishing gear may differ, separate targets or collection strategies would ensure both streams are appropriately handled. Finland should use the pilot results to determine collection points and targets for recreational/commercial fishing gear and aquaculture.	Medium
	Develop a plan for removing historical gear	Finland could use historical stockpiles as a reference point and gradually remove them to avoid overwhelming the system when the EPR scheme is implemented.	Short-Medium
	Scale up and optimise the collection network	Finland should continue expanding its collection system based on a systematic evaluation of the 75 fixed and rotational collection points implemented in 2025. Progress toward the 150-point target should be guided by collection performance, regional fishing activity, and the effectiveness of different collection models. In particular, the PRO should assess the performance of fixed and rotational collection points before extending them to new regions from 2026 onwards.	Medium-Long
Sorting &Treatment	**Introduce minimum sorting and treatment requirements**	Complement the existing flexible legislative framework with basic national standards for sorting and treatment of EOL fishing gear. These could define minimum performance, traceability, and quality criteria while allowing adaptation to technological developments.	Short-Medium
	Strengthen PRO contractual obligations	Ensure that the PRO is contractually required to prioritise domestic sorting and treatment where feasible, rather than defaulting to export. This can help retain value within Finland and support a national circular economy for fishing gear waste	Short
	Co-locate sorting hubs with existing waste	Finland needs permanent sorting facilities capable of receiving, dismantling, cleaning, and segregating gear. Co-locating sorting	Medium

	management centres	hubs with existing waste management centres could minimise investment.	
	Integrate fishing gear waste into the national recycling sector	Promote investment to adapt mechanical/chemical recyclers so plastic fractions from fishing/aquaculture gear can be recycled domestically.	Short-Medium
	Assess and reinforce rubber recycling capacity	Authorities should assess domestic treatment options for rubber from EOL fishing gear. Considering that the existing mechanical recycler only processes tire waste, it is recommended to evaluate the feasibility of using national chemical recycling facilities that can handle both plastics and rubber.	Medium
Technical coordination	**Develop national transport logistics**	Build on Rinki's existing expertise, Finland should define a national logistic plan, including: • Transport responsibilities • Collection frequencies • Optimised routes based on fishing gear volumes • Standardised loading, cleaning, and packaging protocols	Medium
	Develop comprehensive reporting systems	Ensure that the reporting requirements are covered and updated as the collection system scales up. This includes establishing clear timelines, templates, and responsibilities for reporting data on collected, reused, recycled, and disposed fishing gear.	Short-Medium
	Implement digital traceability	Current monitoring relies on administrative reporting, which is insufficient for future EPR obligations. A digital system should track: • Gear registration and placed-on-market volumes. • Collection quantities per port. • Transport routes and operators. • Sorting outputs and recycling destinations.	Medium-Long
	Strengthen coordination	Pilot initiatives already involve multiple actors (PRO, municipalities, and waste operators). Coordinated agreements on roles and responsibilities (collection vs. transport vs. sorting vs. reporting) will avoid duplication, inefficiencies, and data inconsistencies.	Short-Medium

Table 13: Ireland's recommendations for proper EPR scheme implementation.

Category	Recommendations	Description	Timeline
Material quantities	**Replace tonne-based target with % based target**	Ireland's current target is not aligned with the placed-on market volumes estimate. Percentage-based targets (e.g., "40% by 2026") would be more realistic and better reflect the market volumes.	Short
	Develop a national inventory of historical gear	Ireland should perform systematic surveys in ports, aquaculture farms and municipal waste facilities to determine the real flows from historical fishing gear.	Short
	Integrate existing export flows of historical fishing gear into future EPR monitoring	Inclusion of historical gear export routes under the EPR scheme planning ensures the processing of materials and reduces startup costs.	Short
Collection of materials	**Define clear requirements for collection pilots**	It is recommended to develop guidelines to specify minimum requirements for the number, type, and geographic distribution	Short

		of collection points under the EPR scheme. This would provide clarity for the PRO and ensure consistent national coverage.	
	Scale up from pilot initiatives to a national network	Use lessons learned from pilots and voluntary initiatives, such as the FFL campaign, to design a scalable national collection system	Medium-Long
	Integrate existing initiatives	Where relevant, align voluntary and project-based initiatives with the future EPR scheme to avoid fragmentation.	Medium
	Engage fishing communities	Actively involve port authorities, fishers, and local stakeholders in the design of collection points to ensure accessibility and uptake. Early engagement can help build trust and increase participation rates.	Medium-Long
Sorting &Treatment	**Introduce minimum requirements for sorting and treatment**	It is recommended to define basic national standards for sorting, pre-treatment, and treatment of fishing gear waste within the EPR framework. This will provide guidance to the PRO and reduce reliance on harmful disposal routes	Short-Medium
	Establish sorting & pre-treatment facilities	It is crucial for the country to establish dedicated pre-treatment facilities to enable polymer separation for further treatment and avoid landfilling.	Medium
	Pilot mechanical/ chemical recycling of nets and ropes	To explore future integration of fishing gear materials within existing mechanical and chemical plants, pilot trials could be established to evaluate: • Shredding capacity • Contamination thresholds • Additives removal • Product suitability	Medium-Long
	Phase out landfilling of collected fishing gear	Establish policy or contractual requirements to progressively eliminate landfilling as the default treatment option for EOL fishing gear,	Medium-Long
Technical coordination	**Define clear and binding reporting requirements**	Ireland should introduce specific legislative or regulatory requirements that clearly define what data the PRO must collect and report, including quantities placed on the market, collected EOL gear, and treatment outcomes.	Short
	Adopt a national digital traceability system.	By scaling up the NET360 blockchain pilot, Ireland could be a pioneer in implementing systems for fishing gear waste tracking.	Medium-Long
	Implement waste codes	If Ireland implements the waste codes proposed by EPA, mixing of discarded materials in port facilities can be avoided, thus facilitating sorting activities and reporting of material volumes.	Short-Medium
	Clarify roles and responsibilities across the value chain	Clearly define the responsibilities of producers, the PRO, waste operators, and recyclers in data reporting, transport, and verification to avoid gaps and overlaps.	Short-Medium
	Formalise transport and logistics arrangements	It is recommended to define a coordinated transport and logistic model to improve efficiency, reduce costs, and ensure national coverage.	Medium

Table 14: Norway's recommendations for proper EPR scheme implementation.

Category	Recommendations	Description	Timeline
Material quantities	**Build accurate placed-on-market datasets**	To be able to set collection targets, Norway should develop detailed data collection of volumes placed on the market by producers of fishing gear.	Short
	Establish national collection targets	Once the EPR regulation is approved, collection targets should be established as in other European countries.	Short-Medium
	Map historical gear nationally	Mapping the real volumes is crucial to understanding how this waste fraction could impact the implementation of the EPR scheme.	Short-Medium
	Align the EPR scheme with aquaculture volumes.	Norway collected 25,000 t of aquaculture gear, compared with approximately 10,400 tonnes of fishing gear. The EPR should reflect this imbalance and ensure that: • Aquaculture fees match processing cost. • Recyclers are prepared for high-volume flows. • Fishing gear does not become an afterthought	Medium
Collection of materials	**Establish a formal EPR framework for fishing gear**	Norway should develop and adopt an EPR legislation that clearly defines collection responsibilities, targets, and governance structures. This would provide the legal basis for transitioning from voluntary and project-based initiatives to a coordinated national system.	Short
	Define clear requirements for collection points	It is recommended to specify minimum requirements for the number, type, and geographic distribution of collection points, focusing on the 371 recognised fishing ports and prioritising areas with high fishing and aquaculture activity.	Short
	Build on existing port waste handling systems	Integrate existing port waste handling infrastructure into a future EPR collection scheme. This will ensure that ports equipped with waste management systems are prepared to accept EOL fishing gear.	Short-Medium
	Ensure adequate coverage along the coastline	Despite narrowing the number of relevant ports, additional investment will be needed to ensure coverage across Norway's extensive coastline. Mobile or regional collection points could complement fixed collection points in remote areas.	Short-Medium
	Engage with strong industrial actors	Involve Norway's strong industrial and waste management actors (e.g., Nofir and Oceanize) in the design of the EPR scheme, particularly in logistics, collection operations, and system financing.	Short-Medium
Sorting &Treatment	**Integrate Nofir and Oceanize facilities within the EPR scheme**	The sorting and treatment systems developed by Nofir and Oceanize could be used as a preliminary private-public model for the development of the EPR scheme in terms of treatment and recycling.	Medium
	Develop domestic pre-treatment capacity.	Establishing national pre-treatment facilities would reduce export dependency, lower emissions, and improve compliance with EPR principles.	Medium-Long
	Integrate fishing gear into industrial recycling plants	Oceanize and Replast have the capacity to handle fishing gear waste, but they don't do it at high scale. It is recommended to increase investment to expand and modify their lines to accept higher volumes and types of fishing gear waste.	Medium-Long
	Expand rubber recycling options	With only one operator, rubber fractions risk becoming a bottleneck. Norway should explore co-processing with aquaculture rubber or establish partnerships with national recyclers.	Medium-Long

Technical coordination	**Develop a national traceability system**	Norway should aim to establish a digital traceability system that tracks collected materials, transport, storage, and treatment outcomes.	Medium-Long
	Improve coordination across actors	Coordination between key actors (e.g., PROFA, harbour masters, Nofir and potential recyclers) could be improved by setting collaboration environments to discuss strategies for the proper implementation of the EPR scheme for EOL fishing gear.	Short-Medium

Table 15: Sweden's recommendations for proper EPR scheme implementation.

Category	Recommendations	Description	Timeline
Material quantities	**Expand Fiskereturen system coverage**	National coverage should be expanded to ensure equal access to free disposal of EOL gear, maintain consistent compliance with EPR requirements, and clear both historical stockpiles and emerging gear waste in remote areas.	Short-Medium
	Map out volumes in northern regions	There are knowledge gaps regarding the volumes of EOL and historical fishing gear waste in the northern area of Sweden. If coverage is expanded in the future, it is recommended to develop surveys to map out those ports with largest volumes.	Short
	Establish data collection for aquaculture plastic waste	Prioritise the development of reporting requirements for aquaculture gear, including quantities placed on the market and EOL volumes.	Short
	Refine annual projections to account for new regions.	Collection tonnage will increase once remote regions are integrated. To avoid overload, the collection system should update transport fleet needs, collection and sorting capacities and the budget required.	Medium
Collection of materials	**Formally integrate/adapt Fiskereturen into the EPR framework**	Ensure that the new EPR-compliant collection and recycling scheme builds on the operational experience, infrastructure, and partnerships established under Fiskereturen, avoiding duplication and loss of efficiency.	Short
	Expand and standardise collection coverage	Identify geographic or operational gaps in the current collection network and expand it to ensure coverage across all relevant ports and coastal regions (i.e., northern and remote areas).	Short-Medium
	Plan for future waste streams and volume changes	Anticipate potential increases in collected volumes due to EPR implementation or inclusion of additional gear types (e.g. aquaculture gear) and ensure that collection infrastructure can be scaled accordingly.	Medium-Long
Sorting &Treatment	**Integrate sorting and recycling planning into the EPR framework**	Clarify how Fiskereturen, SMRC, Stena Recycling and other actors will coordinate sorting and treatment under the national EPR system, ensuring clear roles, responsibilities, and investment plans.	Short
	Develop domestic recycling for fishing gear waste	Sweden should support domestic recyclers in adapting their facilities to process plastic from EOL fishing gear, ensuring the development of a closed-loop system.	Long
	Maintain and optimise metal recycling streams	Continue leveraging Sweden's strong domestic metal recycling sector for EOL fishing gear, while ensuring sufficient capacity as volumes increase under the EPR scheme.	Medium-Long
	Enhance rubber recycling pathways	Accelerate collaboration with national rubber recyclers to enable domestic processing of rubber fractions, reducing reliance on energy recovery and storage.	Short-Medium

	Clarify transport logistics and treatment locations under EPR	Define specific transport routes, schedules, and final treatment destinations within the EPR system to reduce uncertainty and ensure operational efficiency across all regions.	Short
	Integrate/adapt Fiskereturen transport practices into the EPR scheme	It is recommended to integrate or adapt the structured transport model of the Fiskereturen system to provide immediate operational capacity for the national EPR framework.	Short-Medium
Technical coordination	**Expand transport coverage to northern and remote areas**	Invest in scaling the transport network beyond the current south, east, and west regions to include the NPA region and other remote fishing areas.	Medium
	Use SMRC data practices	Use the high-quality operational data generated by SMRC to inform the collected and sorted material fractions, develop reporting templates, and improve the future performance of the EPR scheme.	Medium-Long
	Implement digital traceability	Sweden should implement a digital platform within the Fiskereturen system to provide real-time monitoring, full material flow visibility, ready documentation for auditing, and producer accountability.	Long
	Ensure collaboration and responsibilities among stakeholders	Ensure that the PRO, Fiskereturen operators, port authorities, and recyclers collaborate with each other and have clear roles for transport, reporting, and traceability to avoid overlap or gaps in operational data.	Medium

8

CONCLUSIONS

8. Conclusions

The technical analysis of Finland, Ireland, Norway, and Sweden shows that all four countries are progressing toward establishing EPR systems for EOL fishing gear waste. Across the countries, three main challenges emerge: insufficient data on material flows, limited polymer-specific recycling capacity (particularly for nylon), and incomplete technical coordination frameworks. Nonetheless, each country also presents promising opportunities to strengthen the circular management of EOL fishing gear waste through existing collection, sorting and recycling infrastructure, emerging coordination mechanisms, and regional knowledge sharing.

In terms of **materials quantities**, Sweden and Finland are the only countries that have established national collection targets for EOL fishing gear, whereas Ireland and Norway have not yet defined specific targets. Overall, the four countries remain partially prepared, primarily due to incomplete data on collected and placed-on-market volumes and a limited understanding of historical stockpiles. Large amounts of historical fishing gear exist across all countries, representing both a logistical challenge and a potential opportunity to accelerate recycling efforts if properly integrated into EPR planning.

Regarding the **collection of materials**, Sweden was the most advanced country, since it already implemented a collection and recycling system (i.e., Fiskereturen system) for EOL and historical fishing gear. However, the future of this system is unclear with the arrival of the EPR directive. Finland, on the other hand, has established collection pilots and a structured plan to develop a functional collection network. In contrast, Ireland and Norway remain at the earliest stages. Ireland is still preparing future pilot projects, while Norway relies on voluntary collection practices and private schemes run by recycling companies.

Regarding the **sorting and treatment capacity**, most of the countries assessed lack domestic recycling solutions for fishing gear containing plastics, resulting in continued dependence on export markets. Finland and Ireland possess robust mechanical and chemical recycling infrastructure that could be integrated into future EPR operations; however, these facilities do not process fishing gear waste. Norway benefits from potential recycling capacity driven by the aquaculture sector, although it lacks domestic pre-treatment facilities and continues to rely on foreign processors. Sweden has mechanical recycling potential but does not have chemical recyclers. To reduce exports and promote national recycling schemes, further investment is needed in all countries to address present and future fishing gear waste as the EPR scheme is implemented.

Technical coordination is the area with the most similarities between countries. Finland and Ireland are still in the early stages of system planning, relying on pilot projects and voluntary schemes that provide valuable insights but lack national scale and standardisation. Norway possesses strong industry actors and extensive port infrastructure; however, its coordination capacity is limited by incomplete harbour waste plans and reliance on external pre-treatment facilities. Sweden, while presenting a robust reporting framework through the Fiskereturen system, faces confusion regarding the responsibilities of actors following the introduction of the EPR directive. In all countries, digital traceability tools are either at the pilot stage or not yet implemented, leaving significant gaps in monitoring and reporting.

Overall, the four countries assessed present a mix of strengths and weaknesses in developing a fully functional EPR scheme. The recommendations in this report facilitate the rapid maturation and implementation of EPR schemes by promoting stakeholder collaboration and the development of effective action plans to meet EPR obligations.

REFERENCES

References

Arnar Einarsson, H., Jeremiassen, A., Gaardlykke, M., Haney, G., & Langeaal, G. (2025). The Circular Economy of Fishing Gear in Nordic Fisheries.

Bjørshol, E. (2023). Internal communication on fishing ports in Norway. Norwegian Coastal Administration (Kystverket), Ålesund, May 2023.

Chowdhury, T., Farnbacher, A., Bapasola, A., Reichstadt, T., Fairbrother, J., Crick, T., Kaminska, M., Cappell, R., & Perry, L. (2024). Analysis of the Marine Fishing Gear Market in Ireland and Identification of Most Suitable Extended Producer Responsibility Model for Compliance with the Single-Use Plastics Directive. www.eunomia.eco

Cyclos GmbH, & WWF Mediterranean Marine Initiative. (2024). Extended Producer Responsibility for Fishing Gear. Development of a blueprint for implementation. In PLoS ONE (Vol. 9, Issue 12). Public Library of Science.

Davidson, M. G., Furlong, R. A., & McManus, M. C. (2021). Developments in the life cycle assessment of chemical recycling of plastic waste – A review. Journal of Cleaner Production, 293. https://doi.org/10.1016/j.jclepro.2021.126163

Department of Climate, E. and the E. (2021). Single-use plastics directive. https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/single-use-plastics

Department of the Environment, Climate and Communications. (2022). European Union (Extended Producer Responsibility) (Fishing Gear Containing Plastic) Regulations 2022 (S.I. No. 612 of 2022). Government of Ireland.

Deshpande, P. C., Philis, G., Brattebø, H., & Fet, A. M. (2020). Using Material Flow Analysis (MFA) to generate the evidence on plastic waste management from commercial fishing gears in Norway. Resources, Conservation & Recycling: X, 5, 100024

Environmental Protection Agency. (2024). Single-use plastic statistics for Ireland. https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/single-use-plastics/

European Commission. (2021). European Commission-Press release Circular economy: Commission provides guidance for harmonised application of Single-Use Plastic rules and advances on monitoring of fishing gear.

EUROPEAN UNION (EXTENDED PRODUCER RESPONSIBILITY) (FISHING GEAR CONTAINING PLASTIC) REGULATIONS 2022 (2022).

Finnish Environment Institute (Syke), & Ministry of the Environment. (2024). Waste carrier – take care of the information and acknowledgements in the transfer document. https://www.ymparisto.fi/en/permits-and-obligations/collection-transport-and-brokerage-waste-within-finland/transfer-document/waste-carrier

Fiskekretsen. (2025). Questions and Answers. https://fiskekretsen.se/en/questions-and-answers

Haul it Back. (2025a). Free Waste Management of Fishing Gear. https://haulitback.ie/waste-service/

Haul it Back. (2025b). Haul it Back-About us. https://haulitback.ie/about/

Klima- og miljødepartementet. (2024). Forskrift om endring i avfallsforskriften (nytt kapittel 7B om utvidet produsentansvar for fiskeutstyr som inneholder plast) [Draft regulation on extended producer responsibility for fishing gear containing plastic]. Norwegian Government.

Lumiaro, T. (2025, June 10). *Kalastusvälineiden erilliskeräyksen toteutus* [PowerPoint slides]. https://www.interreg-npa.eu/media/rlekii1b/kalastusvaelineet10062025.pdf

Marine Renewable Energy Ireland (MaREI). (2016). Fishing Port [Data set]. data.gov.ie. https://data.gov.ie/en_GB/dataset/fishing-port

Nofir. (2025a). Bringing value to marine waste. Retrieved February 5, 2026, from https://nofir.no/en/ .

Nofir. (2025b). Our solutions. https://nofir.no/en/vare-losninger/

Oceanize. (2025). Collection of plastic. Retrieved February 5, 2026, from https://oceanize.no/en/innsamling-av-plast/

Oceanize, (2023a). Enabling the Norwegian aquaculture industry to reuse more of its own plastic waste. Retrieved February 5, 2026, from https://oceanize.no/en/2023/04/13/gjor-det-mulig-for-norskhavbruksnaeringa-gjenbruke-mer-av-sitt-eget-plastavfall

Oceanize, (2023b).Our rope granules become shopping baskets. Retrieved February 5, 2026, from https:/7oceanize.no/en/2024/02/07/vart-tangranulat-blir-til-handlekurver/

Oceanize, (2023c).Oceanize makes industrial plastic traceable and circular. Retrieved February 5, 2026, from https://oceanize.no/en/2021/03/24/allerede-er-10-000-tonn-havbruksplast-blitt-til-nyeprodukter/

Ólafur Egilsson, N., Bekken Björkman, M., & Hammar, M. (2023). En analys av ekonomisk samt klimatmässig potential för materialåtervinning av uttjänta fiskeredskap “An analysis of the economic and climate potential for recycling of end-of-life fishing gear.” www.chalmersindustriteknik.se

SEARCULAR. (2025). Executive Summary: Guidelines on Good Management Practices for End-Of-Life fishing gear.

Salla, A., & Richardson, K. (2023). Fishing gear recycling technologies and practices. In Fishing gear recycling technologies and practices. FAO; International Maritime Organization (IMO); https://doi.org/10.4060/cc8317en

Schneider. (2020). A Life Cycle Assessment (LCA) on the retrieval and waste management of derelict fishing gear.

Stolte, A., Lamp, J., Schneider,F., and Dederer, G., (2019). A Treatment Scheme for Derelict Fishing Gear. www.marelittbaltic.eu

SNG. (2025). 24-Hour Net Care & Fishing Net Repair Services. https://sng.ie/net-care-repair/

Southwest Finland ELY centre, Finnish Environment Institute (Syke), & Ministry of the Environment. (2023). Collection, transport and brokerage of waste within Finland. https://www.ymparisto.fi/en/permits-and-obligations/collection-transport-and-brokerage-waste-within-finland

Suomen SUP-Tuottajayhteisö. (2024). Kalastusvälinekeräyspilotti on aloitettu "Fishing gear collection pilot has been started." 2024. https://suptuottajat.fi/en/kalastusvalinekerayspilotti-on-aloitettu/

Suomen SUP-Tuottajayhteisö. (2025a). About us. https://suptuottajat.fi/en/tietoa-meista/

Suomen SUP-Tuottajayhteisö. (2025b). Muovia sisältävien kalastusvälineiden keräys laajenee: vapavälinekeräys on alkanut Motonet-ja Ruoto-myymälöissä "Collection of fishing gear containing plastic is expanding: Fishing gear collection has started at Motonet and Ruoto stores." https://suptuottajat.fi/muovia-sisaltavien-kalastusvalineiden-kerays-laajenee-vapavalinekerays-on-alkanut-motonet-ja-ruoto-myymaloissa/

Suomen SUP-Tuottajayhteisö. (2025c). Kotitalouksien passiivisesti pyytäviä muovia sisältäviä kalastusvälineitä kerätään LSJH:n alueella 75 kohteessa "Household passive fishing gear containing plastic is collected at 75 locations in the LSJH area." https://suptuottajat.fi/en/kotitalouksien-passiivisesti-pyytavia-muovia-sisaltavia-kalastusvalineita-kerataan-lsjhn-alueella-75-kohteessa/

Swedish Environmental Protection Agency. (2024). Extended producer responsibility for fishing gear. https://www.naturvardsverket.se/en/guidance/extended-producer-responsibility-epr/extended-producer-responsibility-for-fishing-gear?utm_source=chatgpt.com#E1188680130

Swedish Government (Klimat- och näringslivsdepartementet). (2021). Förordning (2021:1001) om producentansvar för fiskeredskap [Regulation (2021:1001) on producer responsibility for fishing gear]. Svensk författningssamling. Retrieved from https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/forordning-20211001-om-producentansvar-for_sfs-2021-1001/

Team Finland. (2025). Legislation and instruments. Waste policy – general objectives and principles. https://www.eastcham.fi/finnishwastemanagement/municipal-solid-waste/legislation-and-instruments/

Utkast Forskrift Om Produsentansvar Fiskeutstyr "Draft Regulation on Producer Responsibility for Fishing Equipment" (2025).

Valtioneuvosto [Finnish Government]. (2022). Valtioneuvoston asetus muovia sisältävistä kalastusvälineistä (Government Decree No. 1319/2022 on fishing gear containing plastic). Finlex.

Van Nijen, J. (2021). How to come to a more circular (management) system of fishing gear in the OSPAR-region.

Waste Management Act 1996, Pub. L. No. 10 (1996).

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