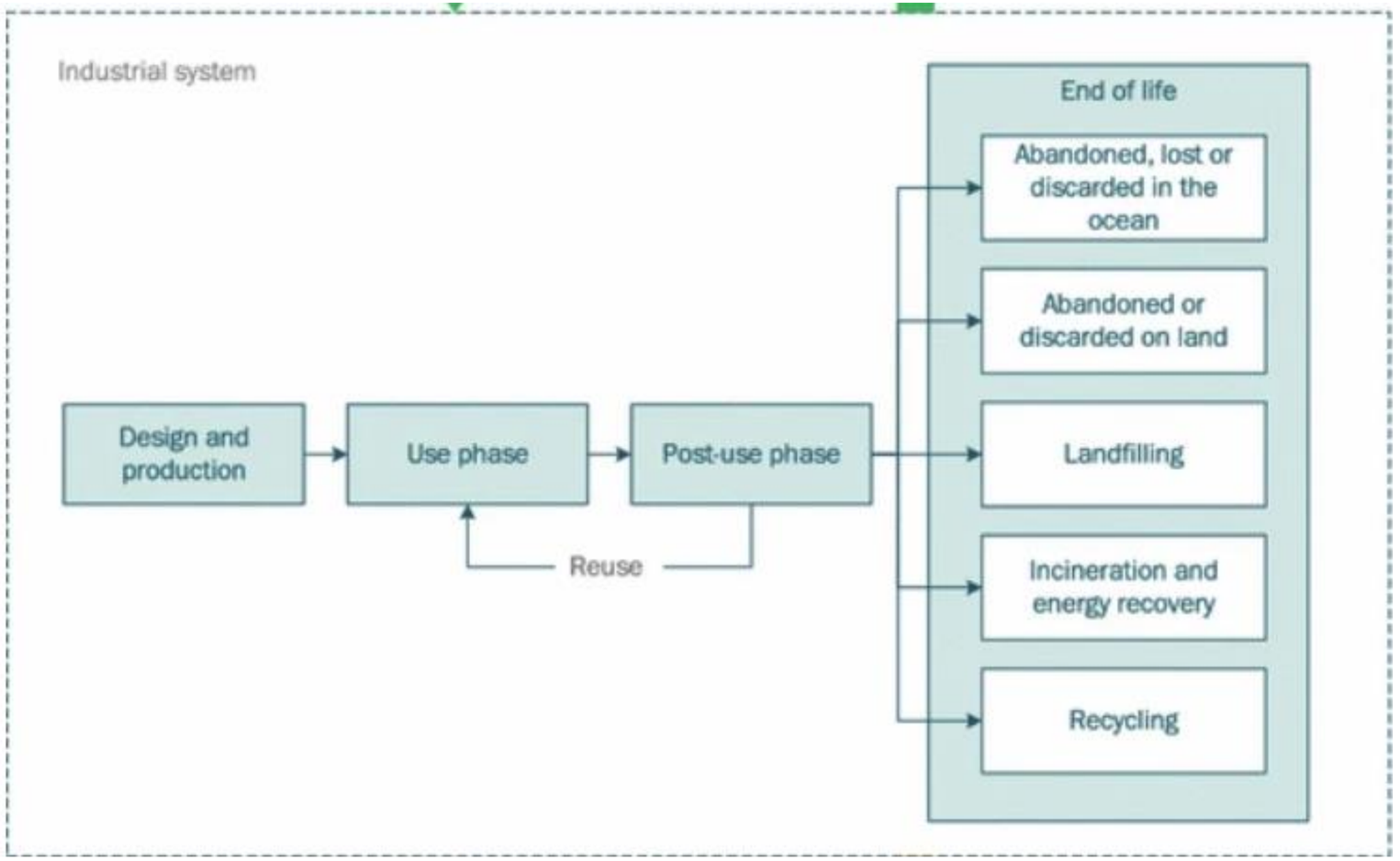
Life cycle stages of fishing and aquaculture gear, from design and production to end-of-life options
(Deshpande & Aspen, 2018)



Main findings

COLLECTION:

Norway: Most ports in the NPA area have waste reception facilities, but only about a third have separate collection system for EOL FG – there are no systematic collection scheme for FG nationwide and the EPR directive is not implemented yet, but key actors such as Oceanize and Nofir collects 25000tons/yr and 7000 tons/yr respectively. No PRO in place yet, the implementation of EPR is delayed.

Finland: No separate collection of EOL fishing gear prior to EPR. A pilot collection of FG was carried out in November 2024, which became nationwide in April 2025. Terminal collection for professional & aquaculture gear, collection points at ports, recycling points and stores for recreational gear. The Finnish PRO is the Finnish SUP Producer Group Ltd - approved Sept. 2024

Ireland: Currently no system for collection of EOL FG (only Fishing for Litter campaign starting in 2015 - can be a starting point). The PRO "Haul it back", if approved - will start operating in Jan. 2026.

Iceland: Nationwide collection for EOL fishing gear. Gears made in Iceland can be returned to the collection points that are located in 14 major fishing ports free of charge. Icelandic Recycling Fund and the Association of Fisheries Companies (SFS) assumes responsibility for the collection and handling of fishing gear waste.

Sweden: Swedish municipalities have collection points where gear can be returned free of charge. Stena Recycling collects FG from the municipalities. The municipalities invoice these costs from the PRO, Fiskekretsen, which has been registered as a PRO for fishing ge[illegible] 2024.

Main findings

PRETREATMENT:

Norway: Some recycling companies receive FG, which is sorted before being turned into recycled plastics (no official PROs in place yet and thus EPR not implemented)

Finland: Some sorting takes place in the terminals for professional and aquaculture gear. No centralized sorting facility yet.

Ireland: Some small-scale recycling takes place in the country, FG sorted and materials are separated at these facilities.

Iceland: Icelandic gear producers offer a service for their customers, who can return their broken gear to the producer to be fixed. If the gear is beyond the point of repair, reusable components are salvaged and broken parts are shipped abroad to be recycled. Sorting of materials takes place there.

Sweden: There is a pretreatment facility in the country dedicated for fishing gear, Sotenäs Marine Recycling Centre.

Main findings

RECYCLING:

Norway: Around 55% of the total FGs collected by waste management facilities are segregated and sent to recyclers for further processing - 21% sent for incineration - 24% landfilled (both the chemical and mechanical recycling of PP, PE, and nylon takes place abroad although there are pilot plants for testing of recycling in Norway)

Finland: FG is not recycled at the moment, but there are several plastic recycling plants in Finland, both mechanical and chemical. Some of them would be interested to do test recycling runs with FG plastics, if the material is sorted and meets other requirements regarding cleanliness, etc.

Ireland: There are a couple of small plastic recyclers, which have recycled also plastics from FG. There is other plastic recyclers in the country, but it is unclear, whether they would be interested to receive FG plastics.

Iceland: EOL FG is sent abroad to be recycled. The recycling rate is high, less than 5% of the collection volumes in 2022 and 2023 was either landfilled or incinerated, the rest was recycled.

Sweden: The gear that is collected and sent to Sotenäs to be sorted, is sent abroad to be recycled. There is mechanical and chemical recycling capacity in the country, but at least earlier no interest to recycle plastics from FG.

Challenges for designing a functional system for recycling EOL FG

CHALLENGES:

- **Highly heterogeneous gear (e.g. mixed polymers, metal cores, contamination)**
- **Lack of standard best practice for sorting and pre-treatment**
- **Low and unstable economic value of the recycled output**
- **Too small quantities of plastics from FG to establish recycling facilities in each country**
- **There is plastic recycling capacity in most countries, but FG plastics is not the preferred waste segment**

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Recommendations for an improved system for FG recycling in the NPA-area

- Reduce waste through high quality extruded plastic (HDPE), improved recycling
- Reduce ALDFG through best practices
- Mandatory labelling of all FG
- Closer control and tracking measures for FG
- Get well functioning EPR schemes in the NPA -area - crucial in minimizing environmental impact through sustainable and circular management of plastic
- Design for disassembly and recycling - streamlined waste collection legislation, this enables higher innovation rates in recycling, repurpose and reuse

Recommendations for an improved system for FG recycling in the NPA-area

- More cooperation at least between the geographic close NPA countries (e.g. such as Norway and Sweden - Sweden and Finland) to increase volumes which makes it viable to establish recycling facilities for FG made of plastic closer to home
- Establish incentives for using recycled plastics in the production of FG (and tax virgin plastics)
- Tariffs on landfill (at least in Norway it is a problem with hard to recycle FG ending up in landfills – in EU this is not supposed to happen)
- Incentives to recycle through EPR schemes and other policies
- Collect fees from customs through higher import duty (with imported gear from outside of EU). Then all will pay - gets less free riders

The Blueprint for FG recycling in the NPA area

DESIGN STAGE:

– Design for recyclability, use durable materials and mark for tracking

COLLECTION

- Improve maintenance regimes, give incentives to recover lost gear
- Improve collection systems (e.g. more collection points)

TREATMENT/LOGISTICS

- Encourage (incentives) for establishing facilities closer to home – either nationally or at least in neighboring countries (in Norway and Iceland the majority of EOL FG is sent abroad for recycling)

RECYCLING

– Review and consider restrictions on export of FG waste to increase national recycling

– Cooperate between Nordics to increase volumes and make better business model for setting up recycling facilities in the Nordics

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