

Fishing Gear Recycling- Minimizing Waste and Promoting Sustainability

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SUMMARY

Fishing gear recycling, also known as end-of-life gear management, plays a crucial role in minimizing the environmental impact of discarded or old fishing equipment. This abstract provides an overview of the fishing gear recycling process and its significance in waste reduction and sustainable resource management. The first step in fishing gear recycling is the collection of used or unwanted gear, which is facilitated through designated collection points at fishing harbours, ports, and recycling centres. Sorting and segregation of the collected gear based on material composition follow, ensuring effective recycling. Cleaning and preparation of the gear are essential to remove debris, marine growth, and contaminants. Various techniques such as washing, soaking, or mechanical cleaning processes are employed to ensure the gear is ready for further processing. Material recovery is a critical stage in fishing gear recycling. Different approaches are employed depending on the materials involved. Plastic components, such as nets, ropes, or floats, are shredded or granulated, leading to recycled plastic pellets or fibres used in the production of new plastic products. Overall, fishing gear recycling is an essential process in mitigating the environmental impact of discarded fishing equipment. It not only contributes to waste reduction but also supports the transition towards a more sustainable and responsible approach to resource management in the fishing industry.

INTRODUCTION

Historically, fishing gear was made of natural materials such as hemp, cotton or sisal that would decompose relatively quickly and, thus, be less detrimental to the marine wildlife if lost into the sea. Nowadays, nets are typically made of synthetic fibres of polyethylene (PE), polypropylene (PP), polyester (PES) or nylon, which are all non-biodegradable. Some 640,000 metric tons (705,000 tons) of fishing gear are lost or discarded in the ocean every year and annually this gear captures and kills an estimated 136,000 seals, sea lions and whales. 'Ghost fishing gear' includes any abandoned, lost or discarded fishing gear, which often goes unseen. It is one of the deadliest wastes for sea wildlife, accounting for 10 per cent of global marine litter. The United Nations expects the amount of plastic in oceans to treble in the next 20 years. Fishing gear presents a growing waste management challenge and when managed poorly contributes to the accumulation of waste plastics in the marine environment. Waste fishing gear is increasingly being recognised as a key part of the ocean waste or marine litter problem and has gained further policy, media and NGO attention. In October 2020, WWF reported that between 0.5 and one million tonnes of fishing gear that is lost or discarded in the world's oceans each year.

There are essentially two categories of waste fishing gear: "end of life" of fishing gear; and abandoned, lost or discarded gear (ALDFG) which is commonly known as "ghost gear". "End of life" fishing gear is often left in piles in harbour facilities due to a lack of a waste management plan for fishing gear, which means it often goes to landfill or incinerators. Ghost gear is abandoned, discarded or accidentally lost fishing gear that fish or marine animal predators and scavengers can get caught in and, typically, die as a result. Recycling fishing gear is crucial for reducing the environmental impact of discarded or abandoned fishing gear, commonly referred to as "ghost gear." Here are some common methods and approaches used for recycling fishing gear:

Collection Programs: Establishing collection programs is an effective way to gather and centralize used fishing gear for recycling. This can involve designated collection points at fishing harbors or ports, partnerships with fishing communities, or collaboration with fishing associations. By providing convenient collection facilities, fishermen are encouraged to dispose of their gear responsibly.

Sorting and Segregation: Once collected, fishing gear needs to be sorted and segregated based on its material composition. This step ensures that different types of gear, such as nets, lines, or ropes made from various materials like nylon, polyethylene, or metal, can be processed separately for effective recycling.

Material Recovery: The next step involves processing the collected fishing gear to recover the materials for recycling. Various techniques can be employed based on the type of gear and materials involved:

Net Recycling: Fishing nets are often shredded or granulated into smaller pieces. The resulting material can then be used to produce new plastic products, such as bottles, bags, or other plastic items. Some companies have developed specific technologies to recycle fishing nets, including mechanical and chemical processes.

Rope and Line Recycling: Synthetic ropes and fishing lines made of materials like nylon or polyethylene can be melted down and extruded into new fibres. These recycled fibres can be used in the production of new ropes, textiles, or even molded plastic products.

Metal Recycling: Metal components, such as hooks, weights, or parts of fishing gear, can be separated and sent for metal recycling. Metal recycling involves melting and refining the metal to produce new metal products.

Repurposing and Upcycling: Some fishing gear, particularly those made of durable materials, can be repurposed or upcycled into new products without going through traditional recycling processes. For example, old fishing nets can be transformed into recycled plastic boards or used for creating innovative products like sunglasses frames or carpet tiles.

Some of the fishing gear materials repurposing are:

Plastic: Fishing gear, such as nets, ropes, and floats, often contains synthetic plastics like nylon or polyethylene. Through reprocessing, these plastics can be shredded, granulated, or melted down to create recycled plastic pellets. These pellets can then be used as raw materials for manufacturing new plastic products, including bottles, containers, packaging materials, textiles, or even 3D printing filaments.

Metal: Fishing gear may contain metal components like hooks, weights, or parts made of stainless steel, aluminium, or other metals. Metal recycling involves melting down the collected metal components to remove impurities and reshape them into usable forms. The recycled metal can be utilized in the production of new metal products or for various industrial applications.

Fibre: Fishing gear, particularly nets and ropes, often consists of synthetic fibres such as nylon or polypropylene. During reprocessing, these fibres can be mechanically separated, cleaned, and processed into recycled fibres. These recycled fibres can be used in the manufacturing of textiles, carpets, ropes, or non-woven materials.

Rubber: Some fishing gear, such as rubber boots or gloves, may contain rubber components. Rubber recycling involves shredding or grinding the rubber items to create granules or crumb rubber. The resulting material can be used in various applications, including sports surfaces, playgrounds, or as a component in the production of new rubber products.

Other Materials: Depending on the specific fishing gear, other materials such as wood, cork, or specialized components like electronics or lights, may be present. These materials can be separated and treated for appropriate recycling or disposal based on their composition. It is important to note that the reprocessing methods and materials obtained may vary depending on the available recycling technologies, the composition of the fishing gear, and local recycling capabilities. The proper segregation and processing of different materials during reprocessing are crucial for achieving high-quality recycled materials and minimizing waste.

Collaboration and Initiatives: Partnerships between fishing industries, recycling facilities, non-governmental organizations (NGOs), and government agencies play a vital role in developing effective recycling methods for fishing gear. These collaborations can help raise awareness, provide financial support, and establish infrastructure for the recycling process.



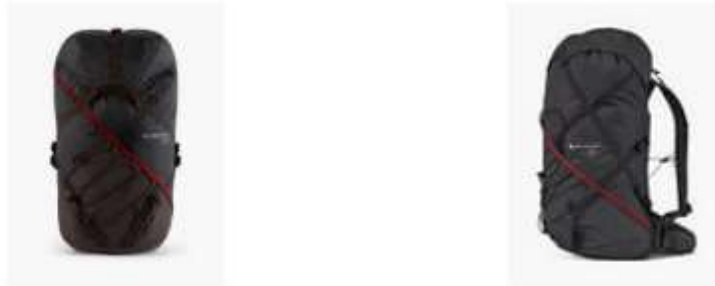
Retired fishing gear is being transformed into raw materials for new products like these blue-jean inspired carpet tiles



Rope made from Nylon monofilament gillnets



98% Econyl regenerated polyamide from fishing nets



Backpack from recycled polyamide



Household product from Recycled fishing gear



Skateboard from the recycled fishing gear

CONCLUSION

Recycling fishing gear offers several benefits. Firstly, it helps prevent entanglement and ingestion of gear by marine animals, reducing the risk of injury or death. It also minimizes the release of harmful chemicals and microplastics into the water, thereby safeguarding the overall health of marine ecosystems. Furthermore, recycling fishing gear can help conserve natural resources. Many fishing gears are made from valuable materials, such as nylon and metal, which can be reclaimed and reused through recycling processes. By recovering these materials, we can reduce the need for extracting virgin resources and lessen the energy and carbon emissions associated with manufacturing new gear. Recycling facilities should be equipped with the necessary infrastructure and technologies to process and transform the collected gear into new products or raw materials. Government regulations and policies can play a crucial role in promoting fishing gear recycling. By implementing legislation that mandates responsible disposal and incentivizes recycling, governments can encourage the adoption of sustainable practices.

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