NET FREE SEAS

A Circular Economy for Combatting Abandoned, Lost, Discarded Fishing Gear

A report by the Environmental Justice Foundation

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> ***"A circular economy is the answer. But if governments don't support it, then the circular economy will never be successful."***
>
> ***Pongsakorn Atichartsrikul,***
> *Executive Director, Teamplas Chemical*

Overview

Abandoned, lost, or discarded fishing gear (ALDFG) is a significant threat to marine life and the health of our oceans. In 2020, the Environmental Justice Foundation (EJF) launched its first multistakeholder ALDFG management project in Thailand – Net Free Seas.

The project adopts a circular economy approach (CE) to work directly with artisanal fishing communities to create a cost-effective and durable supply chain for discarded fishing gears. So far, over 80 tonnes of fishing nets and ropes have been collected, recycled, and upcycled into lifestyle products and industrial components by Thai recycling companies and end-user producers. Over $26,000 in revenue has been generated for participating communities.

Drawing from the experiences of implementing NFS, EJF believes that full adoption of a CE approach is one of the most effective means of establishing best practices for ALDFG management in Thailand. This report summarises challenges, gaps, and benefits of a CE approach as well as EJF's recommendations to improve CE for ALDFG management in Thailand.

A Circular Economy landscape in Thailand

The CE approach has gained increasing attention globally as an innovative approach to prevent waste from entering landfills. Thailand has also included CE thinking in a number of the country's roadmaps and action plans to tackle the plastic crisis including; Thailand's Roadmap on Plastic Waste Management (2018 - 2030) and the National Action Plan on Plastic Waste Management in Thailand. These roadmaps came in response to Thailand being ranked the world's sixth biggest contributor of marine plastic litter back in 2018.[1] Although Thailand was ranked 10th in this list in 2022, there is still much progress to be made in tackling plastic waste leakage.[2]

While roadmaps and action plans have been developed to address the issue at hand, there are certain challenges and gaps to putting these plans into practice. Challenges in developing a CE in Thailand are:

- Waste management related regulatory frameworks in Thailand are unintegrated, with different government agencies responsible for different aspects of waste management. Furthermore, there is yet no host agency for implementing a CE approach. This can make it difficult to implement a cohesive CE strategy that addresses all aspects of waste management and resource efficiency.
- Existing laws and regulations (i.e., Public Health Act B.E. 2535 and Act on The Maintenance of the Cleanliness and Orderliness of the Country B.E. 2535 and 2560) surrounding waste management conflict with CE principles. For instance, the duties listed in the regulations for municipal governments - the host agencies responsible for land-based waste management - only require these agencies to "collect, transport, and dispose of" solid waste.
- Waste segregation by public and private sector is voluntary, resulting in contamination and a reduced recycling rate.
- Waste management is not being implemented nation-wide. Communities, especially those on islands, still have to manage their own waste.
- Lack of infrastructure and technology to support reduction, reuse, and recycling. Also, many small-scale recycling facilities don't meet environmental standards.
- Lack of awareness and education about the CE model amongst the public, policymakers, and businesses. There is a need for greater deployment of education and awareness campaigns to help people understand the benefits of a CE and how this can be applied in their daily lives and business practices.

A CE requires a shift in mindset and behavior, not only among individuals but also among businesses and policymakers. This requires a significant investment in collaboration among different stakeholders across Thailand.

Circular Economy Approach for ALDFG Management - the case of Net Free Seas

Despite challenges and gaps, Thailand has the potential to be a leader in implementing a circular approach in addressing ALDFG. The successful implementation of the Net Free Seas project has resulted in over 100 fishing communities in Thailand being connected with local recyclers and end-user producers. Under this project, more than 75 tonnes of discarded fishing nets have been transformed into over 100,000 pieces of lifestyle products and industrial components such as spools, egg trays, and anti-rat cover for washing machines.

1 UNEP (2018) https://www.sea-circular.org/country/thailand/#:~:text=Thailand%20is%20the%20world's%20sixth,into%20the%20sea%20each%20year.
2 Visual Capitalist (2023) https://www.visualcapitalist.com/cp/visualized-ocean-plastic-waste-pollution-by-country/

Leather back turtle bottle opener *(left)* and Whale shark ceramic tea-cup *(right)* from Qualy Design, a NFS end-user producer.

The key success factors for the project include

• Geographical scope – The majority of fishing communities in Thailand are located on the mainland which makes it less difficult to transport nets and ropes to recycling facilities in comparison to archipelagic countries.

• There are over 1,300 recycling facilities and over 19,000 waste collection centers in Thailand.[3] The size and breadth of the existing recycling ecosystem has played an important role in initiating a recycling network.

• Market shift towards sustainability – in response to the global demand for sustainability, there is a clear market shift towards integrating sustainability aspects into business development strategies by the private sector.

• Awareness and willingness to protect the oceans are high among local communities, given the NFS project's equal participation approach and fair incentivization scheme.

However, there is rooms for improvement in making fishing gear management more in line with CE strategies

• Voluntary to mandatory: Leading governmental bodies should lead and support the development of a circular economy ecosystem. This requires implementing effective CE policy instruments and economic mechanisms to ensure that voluntary actions become mandatory.

• Recycling companies are currently bearing the full operational costs, limiting participation to only those with available capital. The risks to experimenting with recycling fishing nets currently outweigh the benefits for most companies. This model is also unsustainable if market trends shift.

• There is inadequate infrastructure for fishing net collection, hindering small-scale fishers from participating due to the small number of discarded nets they generate each month.

• Fishing gears are made of various types of plastics which make it difficult to recycle.

EJF – drawing from NFS experiences – has created a step-by-step CE ALDFG management best practice guide to visualize how ALDFG should be managed in Thailand and the wider ASEAN region.

Egg trays, spools, and anti-rat cover for washing machines by Teamplas Chemical Co.,Ltd, a NFS recycling partner

3 Government Savings Bank Research (2022) https://www.gsbresearch.or.th/wp-content/uploads/2023/02/Recycle_230266_internet.pdf

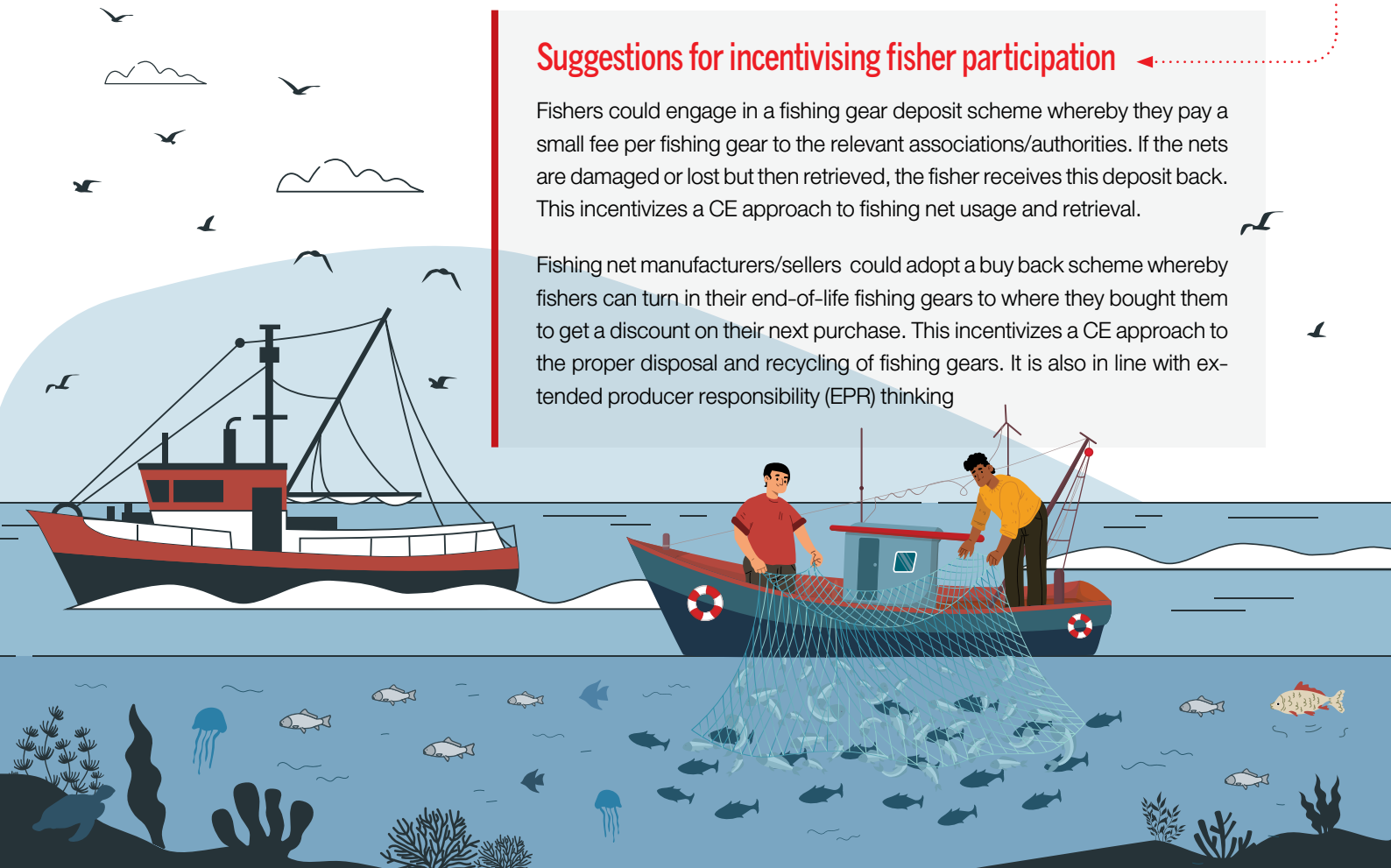
EJF's Circular Economy ALDFG management best practice approach

1. Fishing net manufacturers should design fishing gears to be durable and easily recycled.
2. Fishers use these gears to harvest their target species.
3. Before leaving port, fishers check the below conditions:
   - Inspect and secure their boats and fishing gear, appropriate for fishing and weather conditions.
   - Check that their gears are clearly marked, making them identifiable if lost.
   - Plan fishing locations and avoid fishing in coral reef or rocky areas to prevent nets snagging.
4. Despite best efforts, if nets get stuck on rocks or other underwater objects, fishers identify if it is possible to retrieve nets or not. Fishers remember to only retrieve nets when it is safe.
5. If nets cannot be retrieved, fishers mark the spot where the gears went missing using either a map or GPS coordinates. This can help them or someone else find the gear in the future.
6. Fishers report lost, found, or retrieved fishing gear to the competent authorities/fishery management organisation.
7. The competent authorities or organisation receives this up-to-date information about gear losses and updates maps and patrol efforts to help deter future losses.
8. Competent authorities simultaneously organise clean-up activities to responsibly remove gears from underwater structures. This can involve government agencies, dive centres or other trained operators.
9. Fishers/authorities or organisations bring recovered gear back to land. Nets that can be used again are returned to original owners.
10. Nets that cannot be used again are collected by external stakeholders. These nets will be recycled or upcycled according to circular economy principles.

Suggestions for incentivising fisher participation

Fishers could engage in a fishing gear deposit scheme whereby they pay a small fee per fishing gear to the relevant associations/authorities. If the nets are damaged or lost but then retrieved, the fisher receives this deposit back. This incentivizes a CE approach to fishing net usage and retrieval.

Fishing net manufacturers/sellers could adopt a buy back scheme whereby fishers can turn in their end-of-life fishing gears to where they bought them to get a discount on their next purchase. This incentivizes a CE approach to the proper disposal and recycling of fishing gears. It is also in line with extended producer responsibility (EPR) thinking



Fishers loading nets onto a truck to be sent to a NFS recycling facility

Extended Producer Responsibility (EPR) for fishing gear

The concept of EPR is one of the cornerstones for achieving a CE. It proposes that producers and importers should take responsibility for the sustainable disposal of products and packaging, rather than leaving it to other stakeholders such as the government or the public. EPR can improve circularity from up to downstream by maximizing product lifecycles through better design. It can also include product redundancies that facilitate improved reuse, repair, and durability, as well as incentivizing designs for improved recyclability.

Once a product reaches the end of its life, EPR laws can mobilize funding for waste collection and recycling, supporting the transition to a circular economy. In Thailand, there are over 60 fishing net manufacturers and seafood suppliers who can play a significant role in making circular ALDFG management possible. However, Thailand is still to enact its own variation on an EPR law. Countries in Southeast Asia such as Singapore, the Philippines, and Vietnam have either published or started to draft EPR legislation on plastic packaging and/or other types of waste which is a crucial first step. These laws should serve as baselines for implementation of EPR for fishing gear at a later stage.

Benefits of CE for ALDFG management

Apart from contributing to the conservation and restoration of the natural environment, applying a CE approach to ALDFG management can also generate economic and social benefits to local fishing communities. Incentivization plays a big role in increasing engagement as well as alternative incomes for fishers. The NFS project has generated over US$ 22,000 in revenue for participating communities. It is also evident that the scheme has positive social impacts. In Laemsak District, Krabi province, a NFS participating community has allocated the profits from fishing net sales to cover public health service costs such as providing fuel for a community ambulance and to support Covid-19 patients' isolation during the pandemic.

> ***"What we are doing in the community is if you turn in your waste, you get money. Plus, you are helping less fortunate people who have trouble getting to hospitals."***

Saidey Romin,
NFS member and Village Headman,
Laemsak District, Krabi Province, Thailand

A community ambulance funded by profits from fishing net sales, Laem Sak district, Krabi province, Thailand

A community space where villagers come to sell discarded nets, plastics and other recyclable waste, Laem Sak district, Krabi province, Thailand.

Recommendations for governments

> ***"Government[s] must ban littering at sea and be strict about it. Otherwise, the issue will never be solved."***
>
> ***Somkid Phuangmuli,***
> *NFS member, Had Yao, Trang province, Thailand*

EJF provides the following recommendations for effective and CE management of ALDFG in Thailand. These recommendations come from EJF's own experience in dealing with ALDFG through the NFS project as well as through EJF's national workshop "Strengthening Thailand's Efforts to Combat ALDFG", held in Bangkok on the 21st November 2022 and the "Untangled: Regional workshop on ghost gear in the East Asian Seas" co-hosted by EJF and Coordinating Body of the Seas in East Asia (COBSEA) funded by the Ghost Gear Fund of Fisheries and Oceans Canada.

To prevent abandoned, lost, or otherwise discarded fishing gear (ALDFG) from entering the oceans, all governments should:

1. Prioritize ALDFG management and mitigation and call for ALDFG management to be highlighted in the Global Plastic Treaty.

2. Adopt international measures that set clear standards for fishing vessels that contribute to the fight against illegal, unreported, and unregulated (IUU) fishing and prevent marine plastic pollution from ALDFG and other equipment. These include MARPOL Annex V and the Cape Town Agreement.

3. Develop a sustainable and inclusive localized framework for ALDFG management best practices as an integral part of marine litter and sustainable fisheries action plans. Fishing practices vary across the globe and even within countries. This requires the development of both universal best practices to serve as a baseline as well as localized policies to suit local needs. Localized best practices for ALDFG management should take into consideration the unique characteristics and context of each location.

4. Strengthen fishing gear zoning regimes to limit conflict between static and mobile gear in inshore fisheries, inshore exclusion zones and marine protected areas. Fishing gear conflicts and IUU fishing are both significant contributors of ALDFG.

5. Establish fishing gear marking and registration programmes that include Fish Aggregating Devices (FADs). Markings should include details about the deployment vessel, FAD registration number, FAD construction materials and GPS coordinates (if anchored).

6. Invest in a robust and innovative monitoring system for waste disposal and other pollution leakages at sea. The lack of effective surveillance systems far out at sea allows illegal disposal to persist and damage marine ecosystems.

7. Provide waste drop-off facilities for different types of plastic at commercial fishing ports and within artisanal fishing communities. This will allow fishers to dispose of their end-of-life fishing gear and other litter quickly and conveniently upon reaching shore.

8. Adopt a circular economy approach to managing ALDFG. Economic incentive mechanisms should be used to motivate fishers to bring back their end-of-life nets and other litter to shore.

In the case of fishing gear loss at sea, governments should:

1. Establish a monitoring and reporting system alongside policy mechanisms for lost gears. Fishers must report these to a responsible agency in case of loss. These should come in the form of a hotline as well as a website portal.

2. Establish standardized underwater retrieval protocols that related authorities and trained dive groups can easily reference and utilize. Such protocols can help ensure that retrieval operations are conducted in a safe and responsible manner, with due consideration given to the unique characteristics of each location and the potential impact on local ecosystems.

To ensure ALDFG are recycled, governments should:

1. Integrate ocean governance, land-based waste management, and sea-based waste management policies. Integrated or aligned policies would enable a more holistic approach to tackling the issue of ALDFG at all relevant nodes along the waste stream – from source to sea. The establishment of national committees to address ALDFG issues and coordinate efforts across government bodies is highly recommended. This would facilitate a more effective and collaborative approach.

2. Establish design and manufacturing standards for fishing gears (design for ease of material identification and recyclability), ensuring that fishing gears are designed to be easy to identify (in terms of their plastic material) durable, easily recycled, and/or biodegradable.

3. Provide training and resources to fishers and local communities on segregating fishing gear and other marine litter into different types of plastic. Resources should include but are not limited to fund mobilizations for sorting, cleaning, and transporting fishing nets to recycling facilities. Enabling local communities to be part of the solution is a cost-effective way of improving compliance regarding waste management.

4. Regulate Extended Producer Responsibility (EPR) laws for fishing gear. This should include encouraging the participation of fishing net manufacturers in ALDFG management. This is pivotal in mobilizing funding and technologies to enhance fishing gear design and development of disposal facilities. As critical stakeholders in the production of fishing gear, their leadership in this area could contribute significantly to the development of more sustainable and practical approaches to managing ALDFG.

> ***"It will be beneficial if there is a standardized identification system, and everyone contributes to them so that their fishing gear could be found if it is lost. Losing fishing gear means losing money."***
>
> *A retired fisher and the NFS member in Laemklad, Trad province, Thailand*

Circular economy solutions beyond recycling

- All governments must work to eliminate plastics from supply chains, beginning with near-term or immediate bans on all non-essentials (e.g., excluding plastics for essential medical uses) single-use plastics. It is vital that plastic pollution is dealt with at its source and that recycling, re-purposing, biodegradable plastics, waste to energy, and waste export schemes are not adopted as long-term solutions.
- Reduction of plastics usage in supply chains alongside the reuse of non-plastic products should be prioritized across supply chains and sectors. For example, governments, municipal authorities, and other stakeholders can install water refill stations and provide filtered, clean drinkable tap water to facilitate the move away from plastic bottled water.

60% of 'home-composable' labeled bioplastics do not fully compost in home compost bins.[4] Most biodegradable plastics available in the market require an industrial method of composting with defined temperature, microorganism, moisture, and time - meaning they do not simply degrade on their own in room or outdoor temperature. This type of plastic can also disrupt the recycling stream if mixed with petroleum-based plastics. Therefore, the reduction of plastic at the source should instead be promoted.

4 Purkiss D, Allison AL, Lorencatto F, Michie S and Miodownik M (2022) The Big Compost Experiment: Using citizen science to assess the impact and effectiveness of biodegradable and compostable plastics in UK home composting. Front. Sustain. 3:942724. doi: 10.3389/frsus.2022.942724

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