



Climate partnership

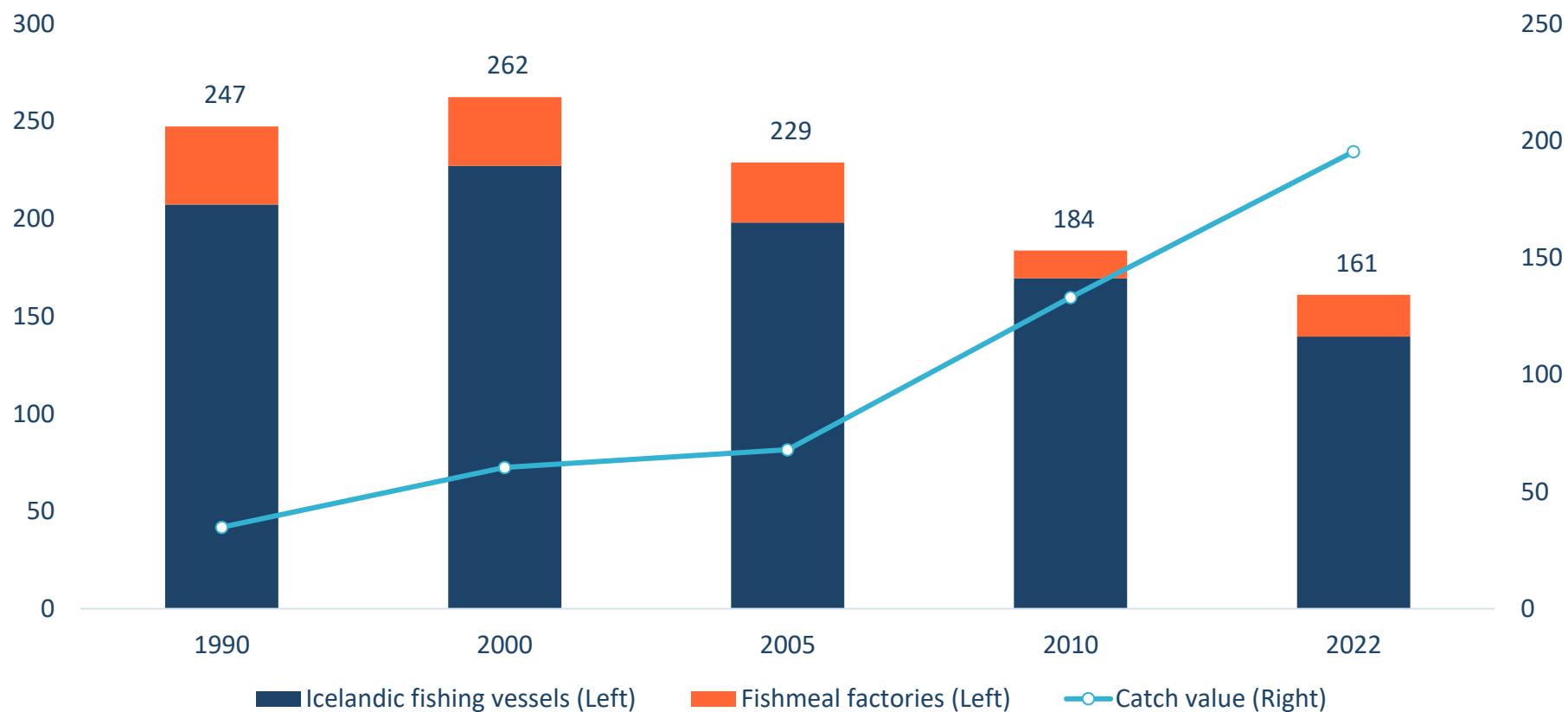
Policy and challenges for implementation

Hildur Hauksdóttir, sustainability officer, Fisheries Iceland

Sustainable fishing has led to less oil consumption and added value

Oil consumption compared to catch value

In 1000 t and billion ISK



Making of the roadmap

Leader: Ólafur Marteinsson, Chair of Fisheries Iceland

Project manager: Hildur Hauksdóttir

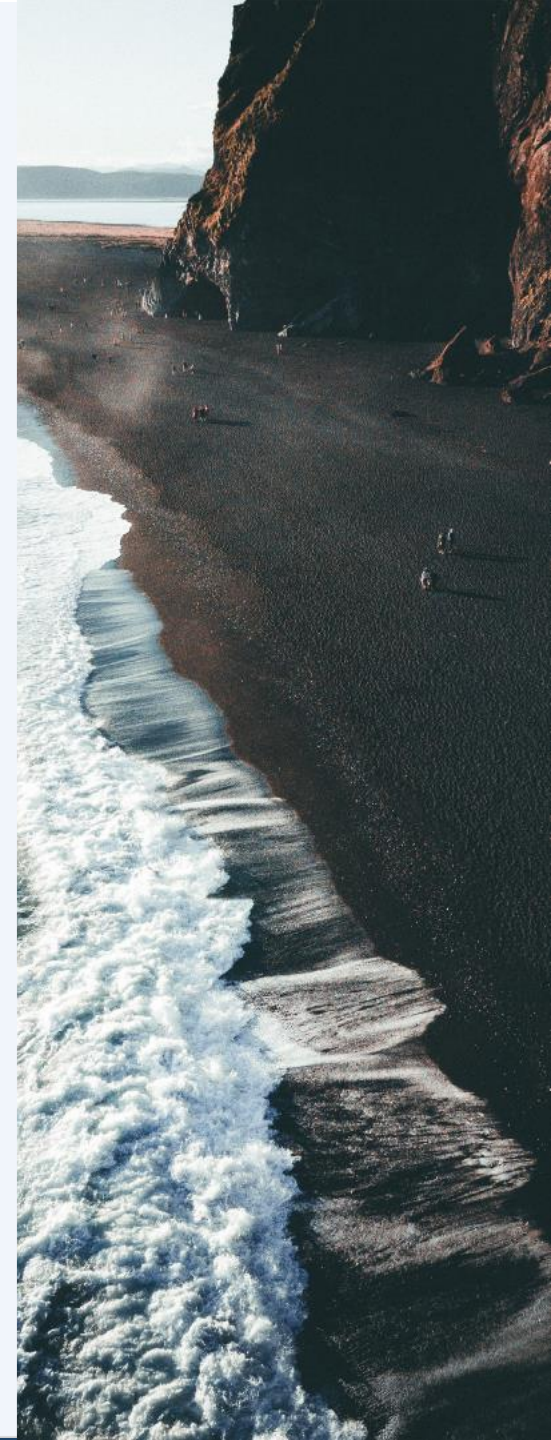
Development group: Birta Karen Tryggvadóttir, Elma Sif Einarsdóttir, Sveinn Margeirsson

Study: Action items regarding fishing vessels are based on „Decarbonization study for the fishing fleet in Iceland“ by DNV

Vessel technical group: Freyr Njálsson, Guðmundur Herbert Bjarnason, Gunnar Sævarsson, Kristján Vilhelmsson

Two workshops were held for the fishing industry and stakeholders, 70 people participated:

- **1.february 2023:** Fishing companies
- **20. january 2023:** Stakeholders invited: *financial companies, energy producers, fishermen, service providers, packaging producers, Energy Agency, Environment Agency, Marine and freshwater research institute, Ministry of fisheries, Environment, Energy and Climate, Ministry of Infrastructure, vessel designers, machine manufacturers, fishing gear manufacturers, environmental organizations, transporters, Ocean cluster, Running Tide, municipalities and ports, universities, innovation community, companies in further utilization of fish products, information companies, waste companies, classification companies.*

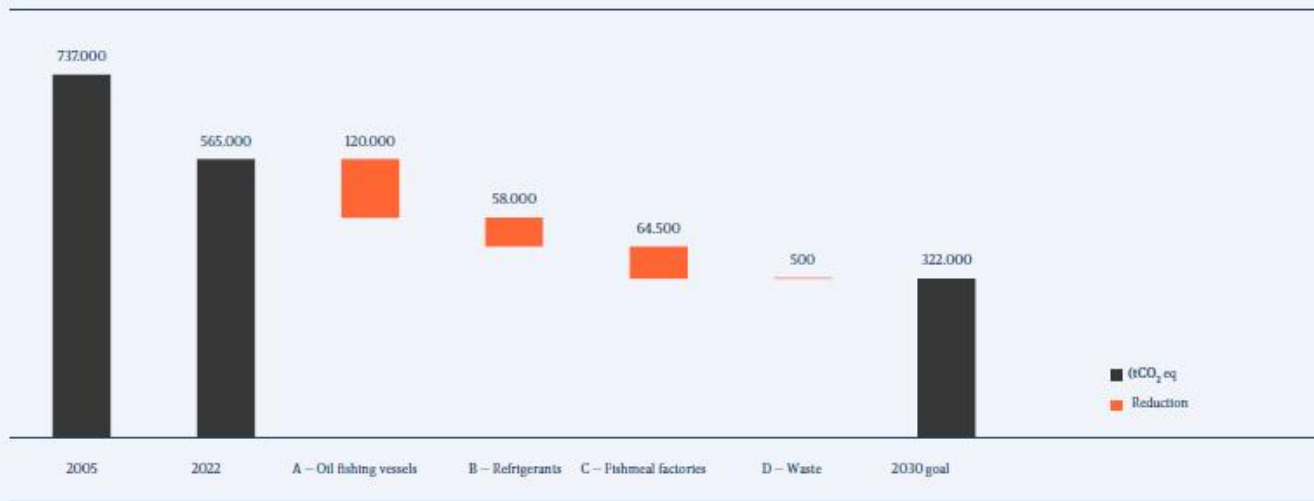




Climate goal

55% reduction

Roadmap for reduction in oil consumption by Icelandic fishing vessels, and fishmeal factories, phasing out of refrigerants and less waste



Reference:

Fisheries Iceland, Loftslagsvegvisir sjávarútvegs 2023

DNV, Decarbonization study for the Icelandic fishing fleet, 2023



Action proposals for fishing vessels

A.1. Accelerate renewal of fishing fleet

A.2. Energy efficiency

A.2.1. Operational measures

A.2.2. Technical measures.

A.2.3. Regulations and marine research

A.3. Drop in fuel

A.4. Energy transition





A.1. Accelerate renewal of fishing fleet

All vessels that have reached 30 years in 2030, with focus on improved energy efficiency

Assuming the typical lifetime of ships are around 30 years, 28 ships may be due for renewal by the end of 2030. These include 11 fresh fish trawlers, 4 freezer trawlers, 6 longliners, 1 pelagic vessel and 6 smaller trawlers.

A 20% energy saving is expected when an old ship is replaced with a new one due to the choice of engine and propulsion equipment, energy management, hull shape, etc. Potentially, the benefits may be greater as the impact of replacing two smaller vessels with one larger, more efficient vessel is not taken into account.

Estimated reduction until 2030: 25.000 tCO₂eq (5,5% from 2022)

Estimated cost of investment: Increased cost of renewal due to the best technology when it comes to energy efficiency is estimated 160mEUR, savings estimated 6mEUR.

Responsibility for the implementation: Fisheries with older vessels in their fleet

Improvements:

1. *Financial incentives for accelerating renewal*

Responsibility for improvements: Icelandic government



A.2 Energy efficiency 3 proposals



A.2.1. Operational measures

Optimizing the operation
of ships with respect to
energy efficiency



A.2.2. Technical measures

Investments in energy efficiency
through technical measures and
port connections



A.2.3. regulations and sustainability

Marine reasearch and fisheries
management



A.2.1. Energy efficiency - Operational measures

Measures in the operation of ships that have not reached their end of life in 2030

Operational measures may require adopting new methods and changed behavior to further minimize energy consumption.

Operational measures may require digital technology, while most actions are related to the operation of the ship such as reducing sailing speed and more frequent cleaning of the ship's hull and propeller. Estimations show that there are still opportunities for better energy efficiency related to changes in ship operation and increased management of oil consumption.

Estimated reduction until 2030: 13.000 tCO₂eq

Estimated yearly operational cost of fleet: 40 million ISK in cost, yearly fuel savings estimated 500 million ISK

Improvements:

1. *Improvements relate to the operation of the ship, where changes in its management could be considered to further minimize energy use*
2. *Optimizing fishing activities and composition of catches to minimize time spent on the voyage. There are some restrictions on the system and collective agreements (see A.2.3).*
3. *Increased disclosure and increased restraint due to oil consumption*



A.2.2. Energy efficiency – Technical measures

The technical measures are described in the DNV report. The measures differ by the type of vessel. Examples of actions from the DNV report: *Fleet management equipment, Battery hybridization, Shore power, Engine performance testing, Trawl doors, Fishing sensors, Trawl optimization, Engine performance testing and tuning, Energy efficient lighting system.*

Shore power: To ensure that the energy needs of large trawlers in ports can be met by 2023, infrastructure and energy supplies need to be secured. Land-based electricity has been available in Iceland for the past 50 years without major modernization or expansion.

Estimated reduction until 2030: 36.000 tCO₂eq (thereof 12.000 tCO₂eq due to shore power)

Estimated investment cost of fleet : 115 mEUR for technical measures, taken into account oil savings. Excluding cost of infrastructure in ports.

Responsibility for the implementation: Fisheries

Improvements:

1. *Analyze where infrastructure is lacking in ports*
2. *Secure funding for shore connections*
3. *Ensure sufficient energy in ports at a competitive price*
4. *Investment support for technical measures*

Reference: DNV, Decarbonization study for the Icelandic fishing fleet

Responsibility of improvements: Government, energy companies, ports and municipalities

A.2.3. Energy efficiency – Regulations and sustainability

Recently there has been a repeated decline in the monitoring of fish stocks, which result in increased uncertainty. There is an opportunity to increase the knowledge on the state of fish stocks, which may lead to less energy required for fishing and in navigating between fishing areas.

Greater optimization can also be achieved by increasing flexibility in fisheries management.

Improvements:

1. *Ensure sufficient funding for marine research to carry out intensive monitoring of main fishing stocks*
2. *Increased fishing flexibility*

Responsibility of improvements: Government, Marine research institute





A.3. Drop in fuel

Using the drop in fuel for existing engines is technically possible and it results in low investment costs.

A prerequisite for the use of drop-in fuel is that the energy meets the standards of the engine manufacturers and that the supply of such energy is guaranteed.

Estimated reduction until 2030: 46.000 tCO₂eq

Estimated yearly additional operational cost of fleet: 12 m EUR additional fuel cost per year

Improvements:

1. *Ensure a sufficient supply of non-emission drop in fuel, meeting engine manufacturer standards and European standards by 2030*
2. *Ensure competitive price of drop in fuel*

Responsibility of improvements: Government

Reference: DNV, Decarbonization study for the Icelandic fishing fleet

A.4. Energy transition

No significant reduction in emissions is expected for the year 2030.

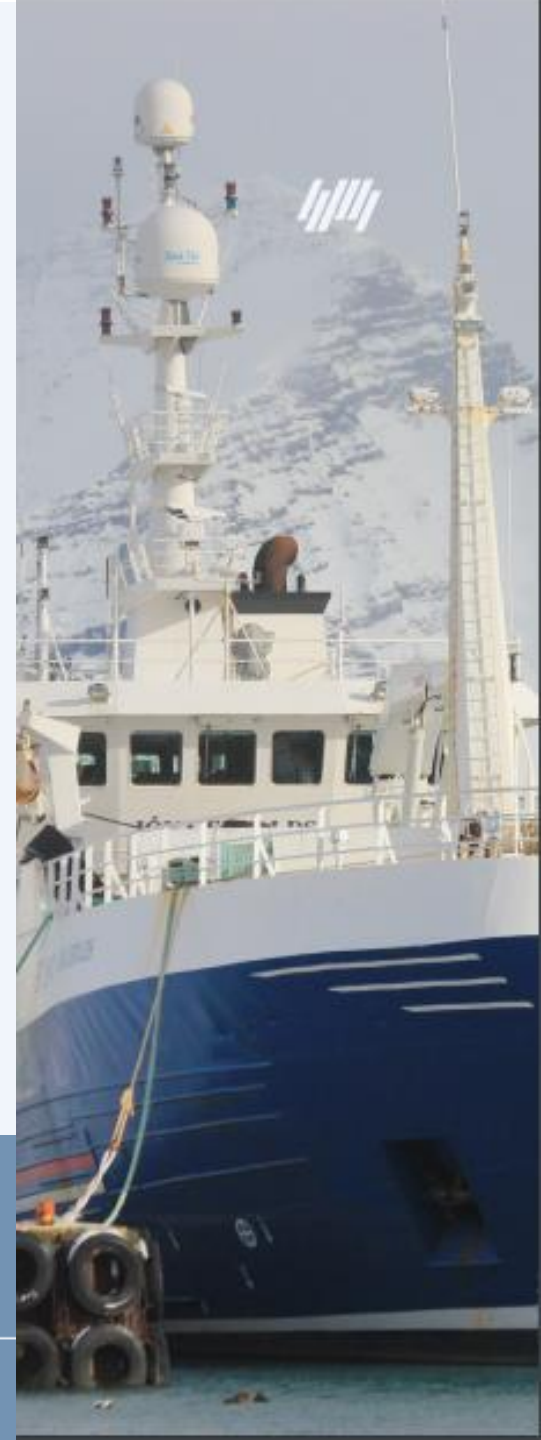
All options for energy transition for fishing vessels today involve uncertainties in terms of technology, safety, availability, infrastructure and the cost of ships, machinery and energy.

Cooperation between the fishing industry and the government is essential in this matter.

Improvements:

1. *Financial incentives for energy transition projects in the fishing industry*

Responsibility of improvements: Government





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