

## HNAKKAPÖN 2016 – THE FISHERIES CHALLENGE

An historic agreement on climate change was made in Paris last December. All 195 member states of the UN committed to a significant reduction of greenhouse gas emissions, to strengthen societies' ability to deal with, minimize and avert the impact of climate change, to ensure funding for the development of green solutions and provide support to developing countries threatened by climate change. Iceland has aligned itself with the EU and Norway on the target of a 40% reduction of 1990-level emissions by 2030.

Icelandic fisheries have already achieved great success in reducing the environmental impact of its industry but there is still room for improvement. There are several indications of a deteriorating condition of the oceans; sea acidification, global warming and other environmental factors will be a growing threat to marine ecosystems in the years to come. In order to reach Iceland's goal on climate change the annual oil use of the fishing industry needs to decrease to 160.000 tons by 2030. In other words, the fishing industry needs to cut its current use of 180.000 tons of carbon fuel to 160.000 tons or 20.000 tons in the next 15 years. It also needs to seek every measure to reduce pollution and waste.

It is therefore an imperative challenge for the fishing industry to reduce pollution and emission of greenhouse gases – and to consider environmental protection as an opportunity and not a threat.

***The Challenge:***

*How can Þorbjörn hf., as an example of an Icelandic fishing company, excel in terms of sustainability and environmental management?*

*Conduct a SWOT analysis of the company's operations aimed at reducing waste and emissions. Develop suggestions for improvement that also enhance Þorbjörn's efficiency and competitive advantage.*

## Requirements

- The solution needs to take **the entire value chain** into consideration, i.e. fishing, processing, transport, sales and marketing, but also identify the area that offers the greatest chance of improvement.
- The solution needs to include a **novelty**, i.e. a change to the current operation.
- The solution needs to **improve at least one part of the process**.
- The solution needs to increase the company's **efficiency and the competitiveness**.
- The presentation needs to be **clear and concise**.

The evaluation will take into account:

- Environmental protection
- Efficiency
- Development and presentation of solutions
- Innovation
- Holistic vision
- Quality of the presentation

## **Porbjörn hf., Grindavík**

Porbjörn hf. is a family-run fishing company in Grindavík. It was founded in 1953 and has since merged with several other companies, including Fiskanes hf. (fishing company in Grindavík) and Valdimar hf. (fishing company in Vogar á Vatnsleysuströnd). The company has 300 employees, at sea and in the processing plants in Grindavík and Vogar. The main products are salted cod, fresh and frozen fillets, and lately the company has also moved towards full utilisation of the product through subsidiary companies.

Porbjörn hf. specialises mainly in demersal fish (cod, pollock, redfish, haddock, Greenland halibut and more). The company's total catch is 25.000 tons per year. About 15.000 tons are caught by freezer trawlers that use a bottom trawl and 10.000 tons are caught by longliners. The revenue in 2014 was 51,3 million EUR and the company turned a profit of 3,8 million EUR (see financial statements for 2014 in Annex I).

Porbjörn hf. runs six ships: two trawlers and four longliners (see further information about the ships in Annex II). There are no current plans for replacements and modernisation. The trawler Hrafn Sveinbjarnarson was remodelled in 2014 at the cost of 1 billion ISK. The price of a new trawler is approximately 5,5 billion ISK.

The longliners are getting old. One option is to modernize the current ships but then the question is how drastically? A new engine room can cost 100-150 million ISK, including a main engine, 2 diesel generators, gears and propellers and installation work. The cost depends on the choice of equipment. It would be possible to buy used longliners from abroad at the cost of 400-1.500 million ISK; depending on the size of the ship, equipment and the work that the ships would require upon arrival to Iceland. The cost of building a new longliner is 1,2-2 billion ISK, mainly depending on the choice of equipment. Ship engineers, e.g. at Skipasýn, know more about the options available and costs involved.

Porbjörn recently sold one of the trawlers in the company's fleet but managed to catch the same amount and the same value with only two trawlers instead of three by changing the work schedule of the crew. The current schedule runs a double crew for each trawler so the fishermen take one tour and rest for the second while remaining on a 50% salary throughout the year. Each tour lasts 20-28 days.

The longliners start out in early August after the summer holidays and follow the cod around the country. The main ports are in Skagaströnd, Siglufjörður, Dalvík and Djúpvogur. The ships are out at sea for 3-4 days; come to port in the morning and leave again as soon as it has unloaded. This system continues until Christmas which is when the ships return to Grindavík. In January and until early June the ships usually sail out of Grindavík and unload there directly into the processing plants. During this time the ships are out at sea for 4-5 days. The program depends on the quota level; if the company still has a lot of quota the ships come to port in the morning and leave again in the evening but if a small

quota remains then the ships only leave again late the next day. The longliners are on summer holiday from early June until early August and all major maintenance is done during that time.

The ships use a lot of oil. The longliners use 9.000-16.000 litres per week, depending on the ship's size, weather, sea condition and distance to the fishing grounds. One trawler uses 8.000 litres and the other 10.000 litres per day. One can assume that newer ships use less oil.

The ships also use a lot of oil while they wait at port. A trawler usually remains at port for 2-3 days before it leaves for the next tour, which lasts for about 3 weeks. Each trawler therefore goes on 13-15 tours per year. The ships' diesel generators use approximately 0,22 litres of oil per KWh, or 4,5 KWh per litre of oil. The generator in Hrafn Sveinbjarnarson uses about 40 litres per hour to generate electricity, or 4320 KWh per day. The main reason why the ships don't use a land connection to get electricity is the unreliability of electricity in the ports.

The generators are usually operating when the ship has recently arrived at port and the unloading begins. The crane and the ship's freezers need a lot of electricity and require the generator. One of the two trawlers has been equipped to receive electricity through two landlines. Work is under way to ensure a proper connection through a landline where the trawlers usually dock. This could work on average except when two power-intensive ships arrive at the same time; then there is not enough energy for both ships. It is also possible that a ship cannot dock at a port where it gets a reliable connection.

The energy use of longliners at port is about 700 KWh per day. There is no information available on how much the diesel generators are used vs. the landline connection.

The fish is frozen on board the trawlers and put on ice in the longliners. The iced fish is then processed in the plants in Grindavík and Vogar.

The processing plants are furnished with various specialized equipment to minimize physical strain and maximize quality. The working hours are regular and includes overtime only when needed. The plants run on electricity. The freezers are old and energy-intensive.

The electricity use in the facilities are on average:

- Containers waiting transport: 40 KWh per day.
- Trawlers: 500-1.000 KWh per day when at port but it varies depending on the crane and freezer use. There is no information available on how much the diesel generators are used vs. the landline connection.
- Processing plants, salt purifier and freezer storage: 245 KWh per day.
- Storage: 40 KWh per day.
- Offices: 220 KWh per day.
- Repair shop: 24 KWh per day
- Processing plant in Vogar: 600 KWh per day (freezer storage)

- Salt processing plant and freezer: 749 KWh per day (including freezer and refrigeration storage).

The salted fish is transported by sea to markets in Europe, mainly in Spain, Italy and Greece. Fresh fillets are flown to the US and transported by ship to Europe. Frozen fillets are transported in containers to markets all over the world.

Þorbjörn sells to foreign distributors and cooperates with them on marketing. The company also participates in projects that support the sale and marketing of Icelandic seafood, such as *Responsible fisheries* and projects run by Íslandsstofa.

Waste is not fully classified at Þorbjörn but iron, aluminum, fishing gear and oil are handled specially. Excess salt is purified by a subsidiary company, Haustak, which sells it to the road administration and municipalities to deice roads and streets.

The company places emphasis on the full utilisation of its raw material. Fish heads, bones and cut-offs are dried and sold by Haustak. The drying is done in Reykjanes with steam from HS Orka. The primary market for dried fish heads is Nigeria but that market has been closed for a while due to currency controls and low oil prices which has hit Nigeria's economy hard. New markets are being sought but meanwhile the product is kept in storage.

Fish skin and intestines are turned into liver oil and other health products, such as collagen and calcium by the innovation company Codland. It has already produced sellable products and others are in development. The next step is to fully develop the products for consumer markets and to build a factory for the production.

Þorbjörn enjoys a good cooperation with its neighbour, Vísir hf., a fellow fishing company in Grindavík. The two companies jointly run Haustak and Codland (see further information about the subsidiaries in Annex III).

## ANNEX I: FINANCIAL STATEMENTS 2014

*Numbers are in EUR*

### Rekstrarreikningur ársins 2014

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	<b>2014</b>
Rekstrartekjur.....	51.291.840
Aðrar tekjur.....	96.856
Efnisnotkun.....	(2.363.626)
Löndunar- og sölukostnaður.....	(915.507)
Laun og launatengd gjöld.....	(22.621.411)
Skrifstofu- og stjórnunarkostnaður.....	(391.892)
Annar rekstrarkostnaður.....	(13.782.396)
Veiðigjald.....	(1.157.159)
Afskriftir fastafjármuna.....	(2.548.351)
<b>Rekstrarhagnaður</b>	<hr/> 7.608.354
Hlutdeild í afkomu hlutdeildarféлага.....	123.002
Fjármunatekjur.....	454.642
Fjármagnsgjöld.....	(2.640.685)
Gengismunur.....	(84.379)
	<hr/> (2.147.420)
<b>Hagnaður (tap) fyrir skatta</b>	5.460.934
Tekjuskattur.....	(1.630.655)
	<hr/> 3.830.279
Hagnaður af áframhaldandi starfsemi.....	<hr/> 3.830.279
<b>Hagnaður ársins</b>	<hr/> <hr/> 3.830.279

# Efnahagsreikningur

## Eignir

31/12/2014

### Fastafjármunir

Varanlegir rekstrarfjármunir.....	30.736.234
Keyptar aflaheimildir.....	99.373.694
Eignarhlutar í dóttur- og hlutdeildarfélögum.....	2.049.043
Skuldabréfaeign og aðrar langtímakröfur.....	1.030.038
	<u>133.189.009</u>

### Veltufjármunir

Vörubirgðir.....	5.730.014
Viðskiptakröfur.....	4.477.989
Fjárfestingarverðbréf.....	206.440
Aðrar skammtímakröfur.....	1.765.294
Markaðsverðbréf.....	630.525
Sjóður og bankainnstæður.....	1.549.493
	<u>14.359.755</u>

## Eignir

147.548.764

## Eigið fé og skuldir

31/12/2014

### Eigið fé

Hlutfé.....	1.068.008
Yfirverðsreikningur hlutafjár.....	(83.846)
Lögbundinn varasjóður.....	342.825
Þýðingarmunur.....	194.427
Óráðstafað eigið fé.....	40.030.941

### Eigið fé

41.552.355

### Langtímaskuldir og skuldbindingar

Skuldir við lánastofnanir.....	70.818.312
Tekjuskattskuldbinding.....	21.175.230
	<u>91.993.542</u>

### Skammtímaskuldir

Viðskiptaskuldir.....	2.680.599
Skuldir við lánastofnanir.....	4.000.000
Næsta árs afborganir langtímaskulda.....	4.420.081
Staða framvirkra gjaldmiðlaskiptasamninga.....	728.779
Aðrar skammtímaskuldir.....	2.173.408

14.002.867

### Skuldir

105.996.409

## Eigið fé og skuldir

147.548.764

## Samandregin afkoma fyrir afskriftir 12/14

	Samtals Frystiskip	Samtals línuskip	Landvinnsla samtals
<b>Rekstrartekjur</b>			
Afurðir	25.580.107	0	22.005.364
Framleiðsla og seldur afli	(6.062)	14.877.614	569.943
Aðrar tekjur	19.587	1.624	1.135.830
Útflutningskostnaður	(196.752)	0	(19.277)
Þátttaka í rekstri stoðdeilda	82.214	47.796	76.167
Samtals rekstrartekjur	25.479.094	14.927.035	23.768.026
<b>Rekstrargjöld</b>			
<b>Bein rekstrargjöld</b>			
Efnisnotkun	10.595	22.779	15.214.188
Vinnulaun	9.169.567	5.349.229	2.815.203
Endurgreiðslur tryggingarféлага	(380.399)	(249.846)	(979)
Launatengd gjöld	1.785.566	1.033.451	526.809
Starfsmannatengdur kostnaður	662.863	355.232	89.562
Umbúðir og hjálparefni	927.974	76.678	1.644.909
Orka	3.734.127	1.395.538	110.707
Aflaheimildir	18.032	10.483	16.706
	15.928.325	7.993.544	20.417.105
Framlegð I	9.550.769	6.933.491	3.350.922
<b>Óbein rekstrargjöld</b>			
Löndunar- og sölukostnaður	818.636	850.080	(61.340)
Veiðarfæri	745.975	1.606.021	0
Viðhald	1.485.093	903.060	470.535
Tjónabætur	0	(65.410)	0
Tryggingar	250.426	158.731	62.642
Annar rekstrarkostnaður	331.962	124.833	217.814
Skrifstofu og stjórnunarkostanaður	264		412
Veiðigjald	636.533	520.626	0
Opinber gjöld	11.054	0	55.883
Þátttaka í rekstri stoðdeilda	76.066	44.222	70.471
	4.356.010	4.142.163	816.416
Framlegð II	5.194.759	2.791.328	2.534.506

## ANNEX II: SHIPS

### Ágúst GK-95



**Type** Longliner

**Categorization** Det Norske Veritas

**Build** Steel. Mandal, Noregi, 1974/12

Lengthened in 1995, decked 1977

Changed into a longliner in Dec 2002- Feb 2003

**Engine** Wichmann 1974/12, 1250 hö, 919 kW

**Torque** 15,7 tons

**Power index** 2439

**Earlier names** Gullberg VE, Gullfaxi KE

**Brúttórúml.** 446

**Brúttótonn** 601

**Nettótonn** 187

**Rúmtala** 1579,0

**M. lengd** 52,82 m

**Lengd** 48,46 m

**Breidd** 8,20 m

**Depth** 6,45 m

### Sturla GK-12



**Type** Longliner  
**Categorization** Det Norske Veritas  
**Build** Steel. Karömy Norway 1967  
**Engine** Mak 1967, 1100 hö, 810 kw  
**Torque** 14 tons  
**Power index** 0  
**Earlier names** Guðmundur VE

**Fax: Brúttórúml.** 486  
**Brúttótonn** 672  
**Nettótonn** 202  
**Rúmtala** 1829  
**M. lengd** 52,6 m  
**Lengd** 49,58 m  
**Breidd** 8,53 m  
**Depth** 6,8 m

### Tómas Þorvaldsson GK-10



**Type** Línuskip  
**Categorisation** Siglingastofnun Íslands  
**Build** Steel Ulsteinvik, Norway, 1966/06  
Covered 1977, lengthened 1971  
**Engine** Caterpillar 2001/10, 990 hö, 729 kW  
**Torque** 13,4 tonn  
**Power index** 1931  
**Earlier names** Háberg GK, Hrafn GK, Héðinn ÞH

**Brúttórúml.** 334  
**Brúttótonn** 504  
**Nettótonn** 151  
**Rúmtala** 1253,0  
**M. lengd** 47,74 m  
**Lengd** 44,74 m  
**Breidd** 8,20 m  
**Depth** 6,00 m

### Valdimar GK-195



**Type** Longliner  
**Categorisation** Siglingastofnun Íslands  
**Build** Steel. Norway, 1982/06  
Imported 1999. Lengd 1997  
**Engine** Callesen 1982/06, 690 hp, 507 kW  
**Torque** 6,8 tons  
**Power index** 682  
**Earlier names** Vesturborg GK, Vestborg M-500, Aarsheim Senior, Bömmelgutt

**Brúttórúml.** 344  
**Brúttótonn** 569  
**Nettótonn** 171  
**Rúmtala** 1351,0  
**M. lengd** 41,36  
m  
**Lengd** 38,00 m  
**Breidd** 8,50 m  
**Depth** 6,55 m

### Gnúpur GK-11



**Type** Freezing trawler  
**Categorisation** Det Norske Veritas  
**Build** Steel. Flekkefjord, Norway, 1981  
**Engine** M.a.k, 6-1981, 3200 hp  
**Torque**  
**Power index**  
**Earlier names** Guðbjörg

**Brúttórúml.**  
**Brúttótonn**  
**Nettótonn** 342  
**Rúmtala**  
**M. lengd** 68,20 m  
**Lengd** 61,79 m  
**Breidd** 10,20 m  
**Depth** 6,81 m

## Hrafn Sveinbjarnarson GK-255



**Type** Freezing trawler

**Categorisation** Det Norske Veritas

**Build** Steel. Flekkefjord, Norway,  
1988/10

**Engine** Deutz 1988/10, 2515 hp, 1850  
kW

**Torque** 38,7 tons

**Power index** 8803

**Earlier names** Snæfell EA

**Brúttórúml.** 390

**Brúttótonn** 1028

**Nettótonn** 308

**Rúmtala** 2250,0

**M. lengd** 62,96 (before lengthening  
47,90 m)

**Breidd** 11,00 m

**Depth** 7,45 m

### ANNEX III: SUBSIDIARIES

Here are a few companies that Þorbjörn has participated in creating.



"Fishing supplies service" was founded on Jan 1, 2002 with the merger of Thorfish fishing gear department and SH fishing gear in Grindavík. The companies Thorfish ltd and Fiskanes, that later merged, ran a dedicated fishing gear department for decades. But SH-fishing gear was founded in 1997 and specialized in installing and maintaining seine fishing gear and various other gears. Employees experience in servicing fishing gear and working at sea is great.

[www.veidarfaeri.is](http://www.veidarfaeri.is)



Haustak was founded in 1999 by Thorfish ltd and Visir ltd in Grindavik. Haustak is the biggest fish drying company in Iceland and specializes in drying various fish products. It is located in Reykjanes peninsula, close to the lighthouse. In 2006, a fish-drying company in Egilsstaðir joined Haustak expanding the production. Today, there are approximately 50 people working for the company. The products are mainly dried indoors in the so-called drying cells. However the conventional method is used by drying some products outdoor. Nigeria is the largest and most stable market for dried products.

In Grindavik, Haustak operates a salt refinery that receives salt from the bacalao making process and refines the salt for reuse in other industries. For example, for salting the streets in the winter time, etc.

[www.haustak.is](http://www.haustak.is)



Codland is a company focused on research and development in fish processing and better raw material utilization. Codland works closely with companies in the seafood industry and promoting discussion and cooperation on adding value to the business.

**[www.codland.is](http://www.codland.is)**

### **Klafar ehf**

Klafar ltd handle the unloading and loading of the ships for Thorfish and other companies, cold storage servicing, pallet making, and more.

**[www.klafar.is](http://www.klafar.is)**

## **Annex IV**

Porbjörn recently did a survey of the unloading process for the freezing trawlers which showed that you can reduce the use of the forklift with a more strategic positioning of the containers and improved categorization of the unloaded products. Each unloading requires approximately 250-300 pallets, which are driven to categorisation, plastic covering and then containers. By shortening this distance by 10 metres you can save several hundred kilometers of driving the forklift every year.

Porbjörn also changed the landing site and moved the facilities to a house by the port. This shortened the distance that service providers and dock workers need to drive to get to the ship by 1100 metres. This saves a lot of time and driving. There are usually several dozen people working on the trawlers every day and they, like others, take coffee and lunch breaks. Now they can walk to the facilities instead of driving over a kilometer back and forth for each break, adding up to 8 km per worker per day, or 5-10.000 km per year.