

Avoiding the “Tragedy of the  
Commons”: Fisheries in Iceland

by

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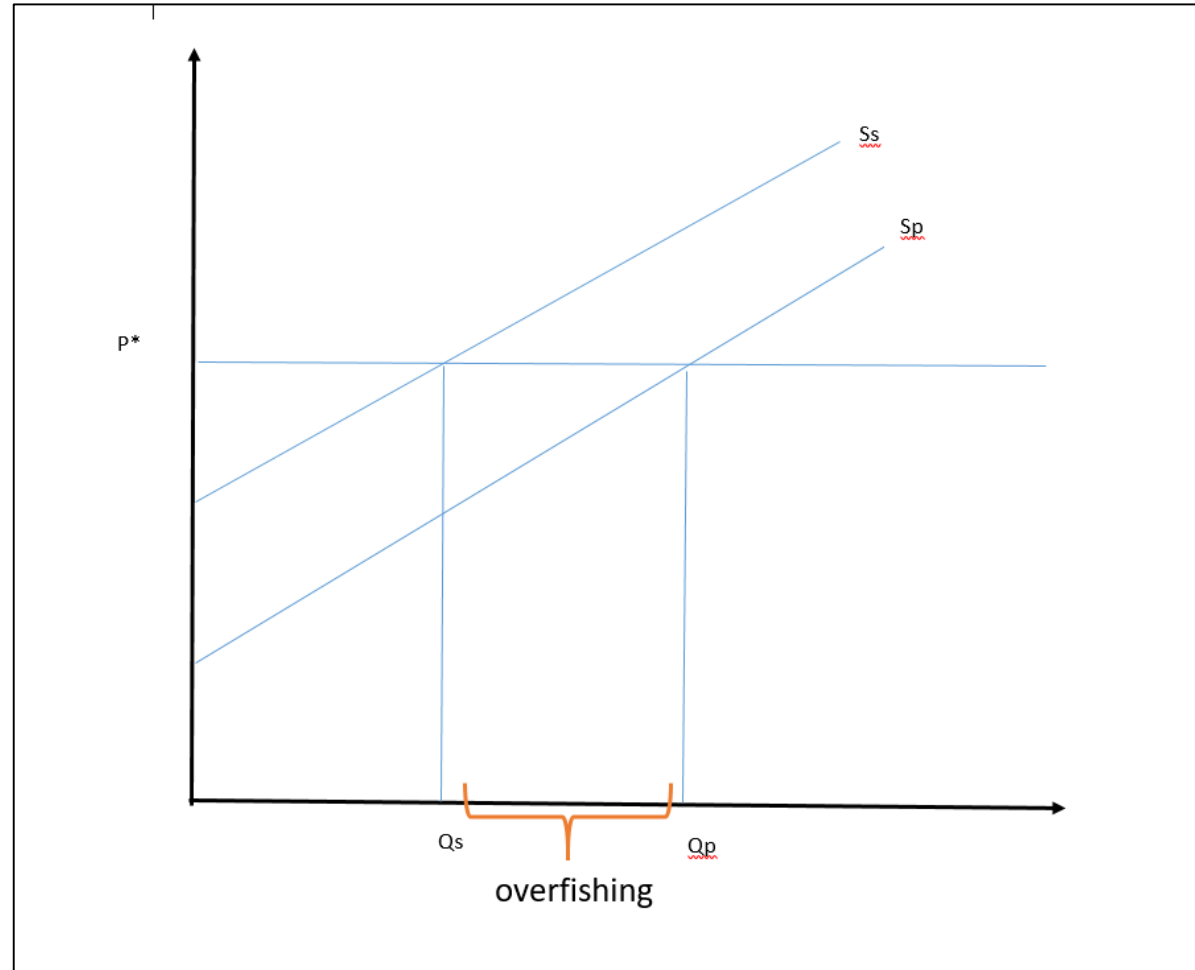
*May 23, 2019*

# Outline

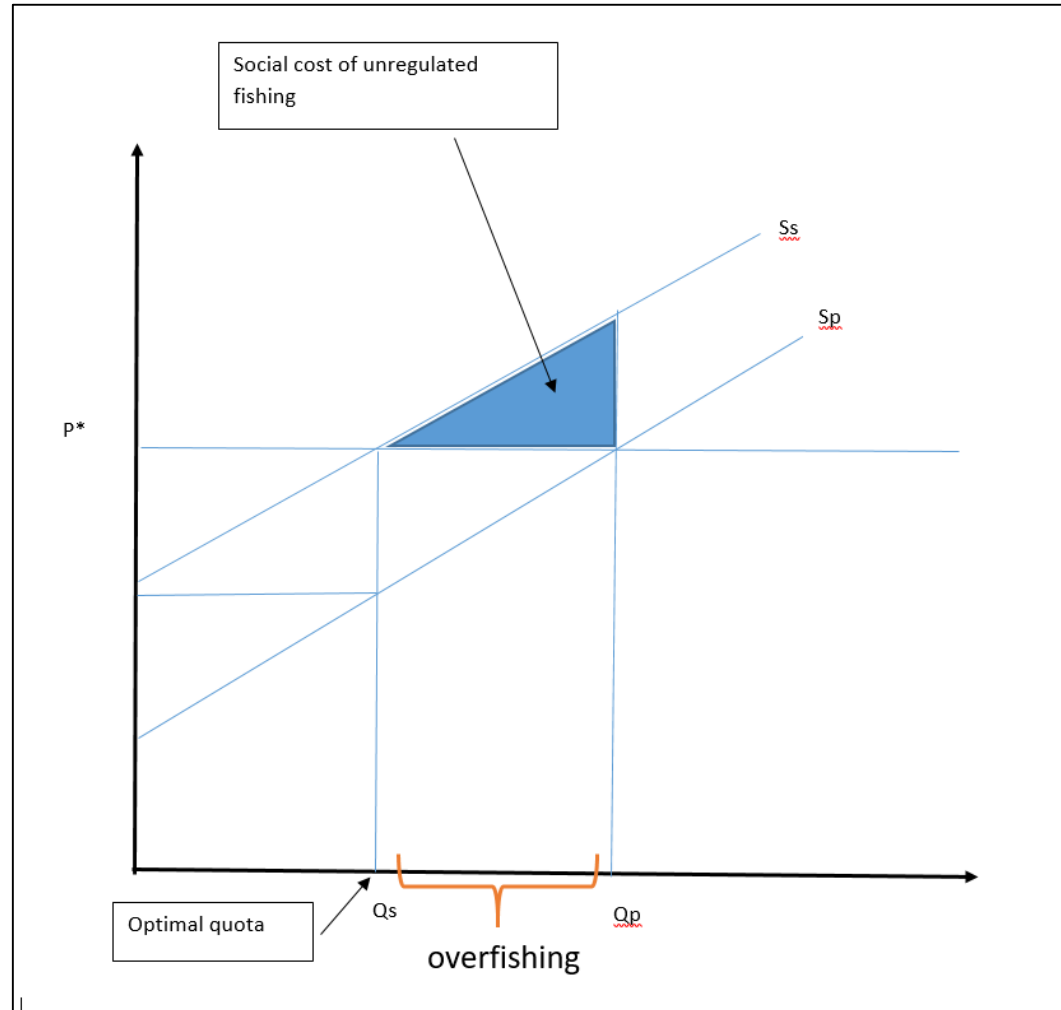
- Basic analytical issues
- Iceland as a useful case study of “best practices”
  - Iceland
  - Social pact
  - Timeline
- Main characteristics of Icelandic system
- Criticisms
- Comparison with other countries: New Zealand and Nordic nations
- Concluding remarks

# 1. Basic analytics

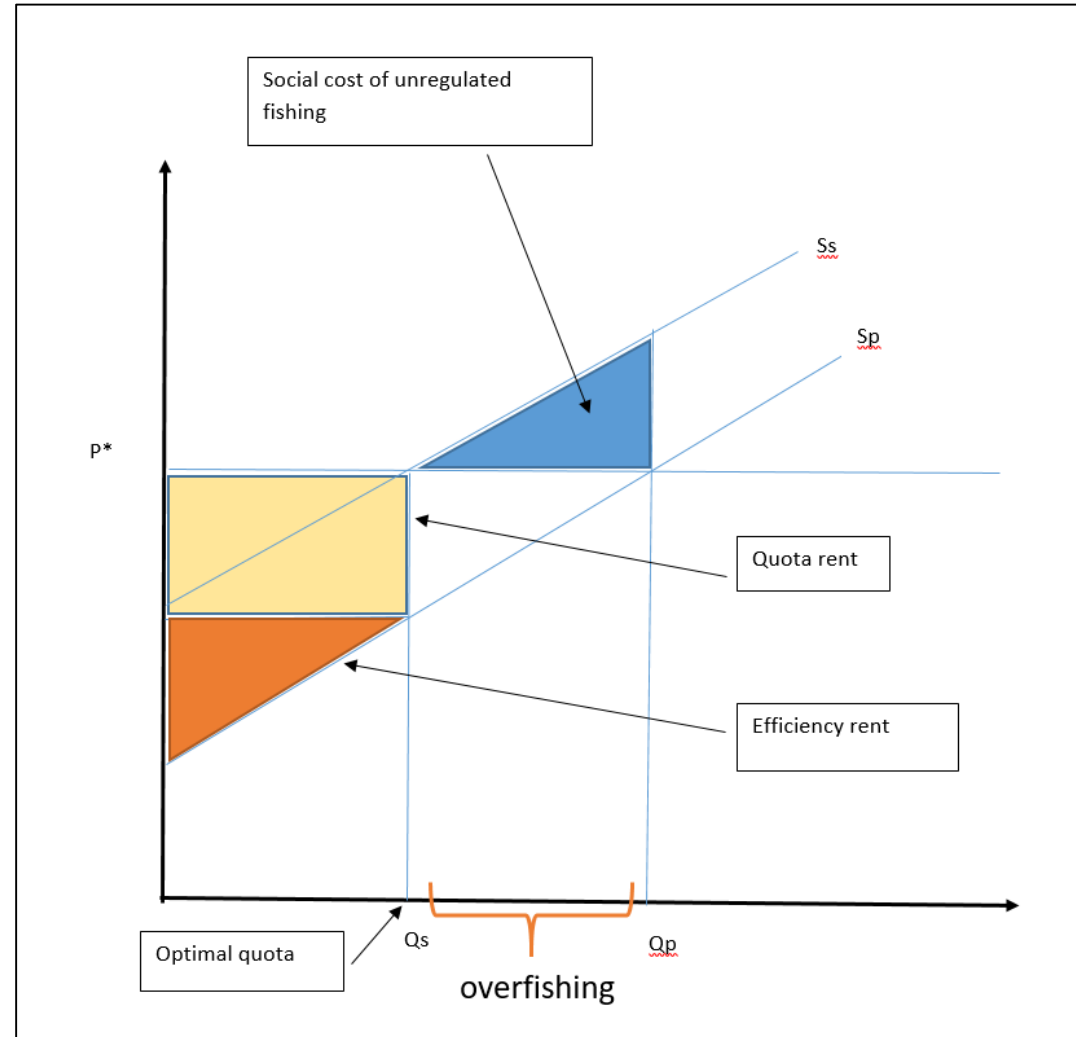
# Tragedy of the commons: Discrepancy between private ( $S_p$ ) and social costs ( $S_s$ ) leads to overfishing



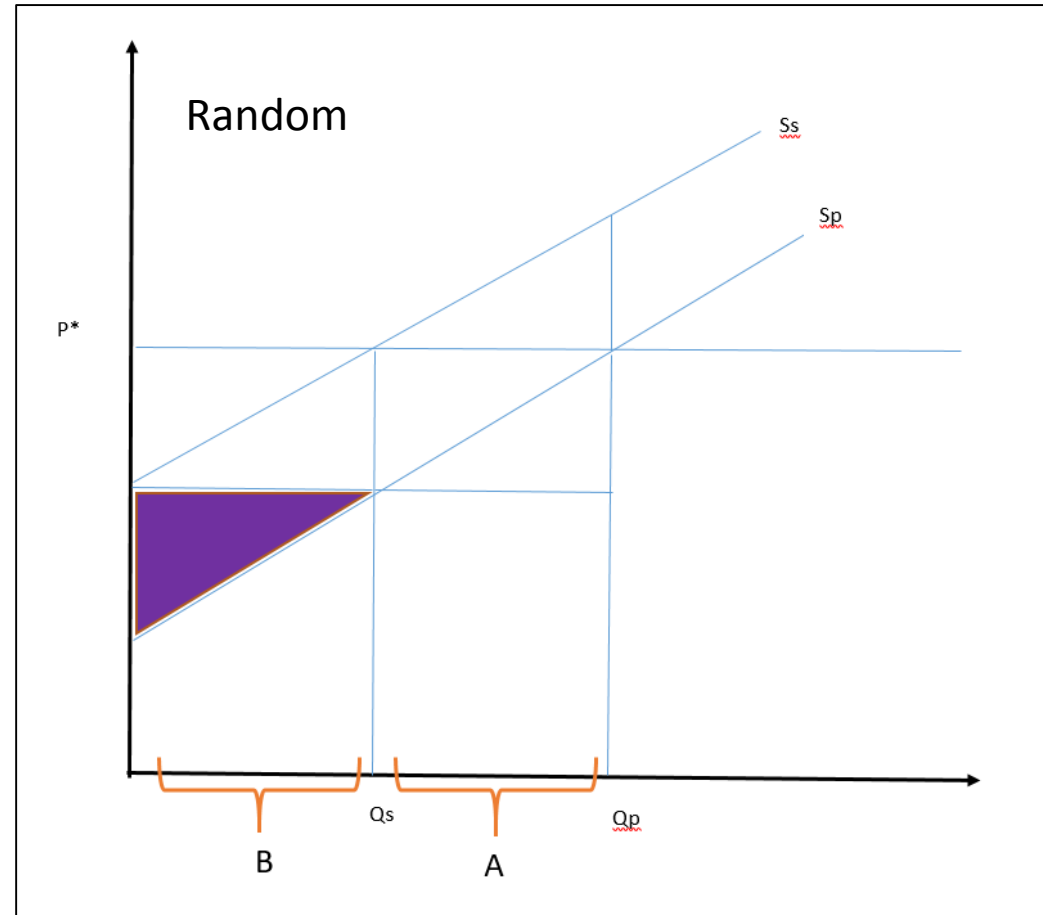
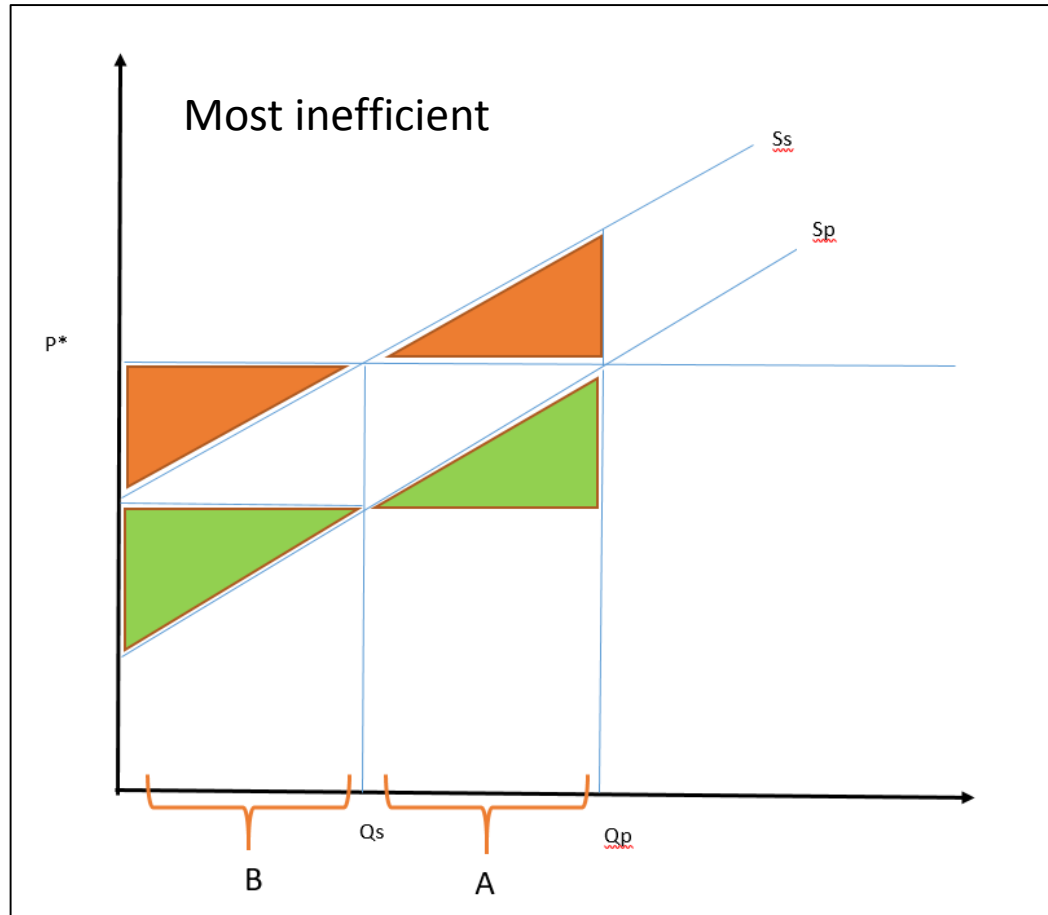
# Welfare cost of overfishing



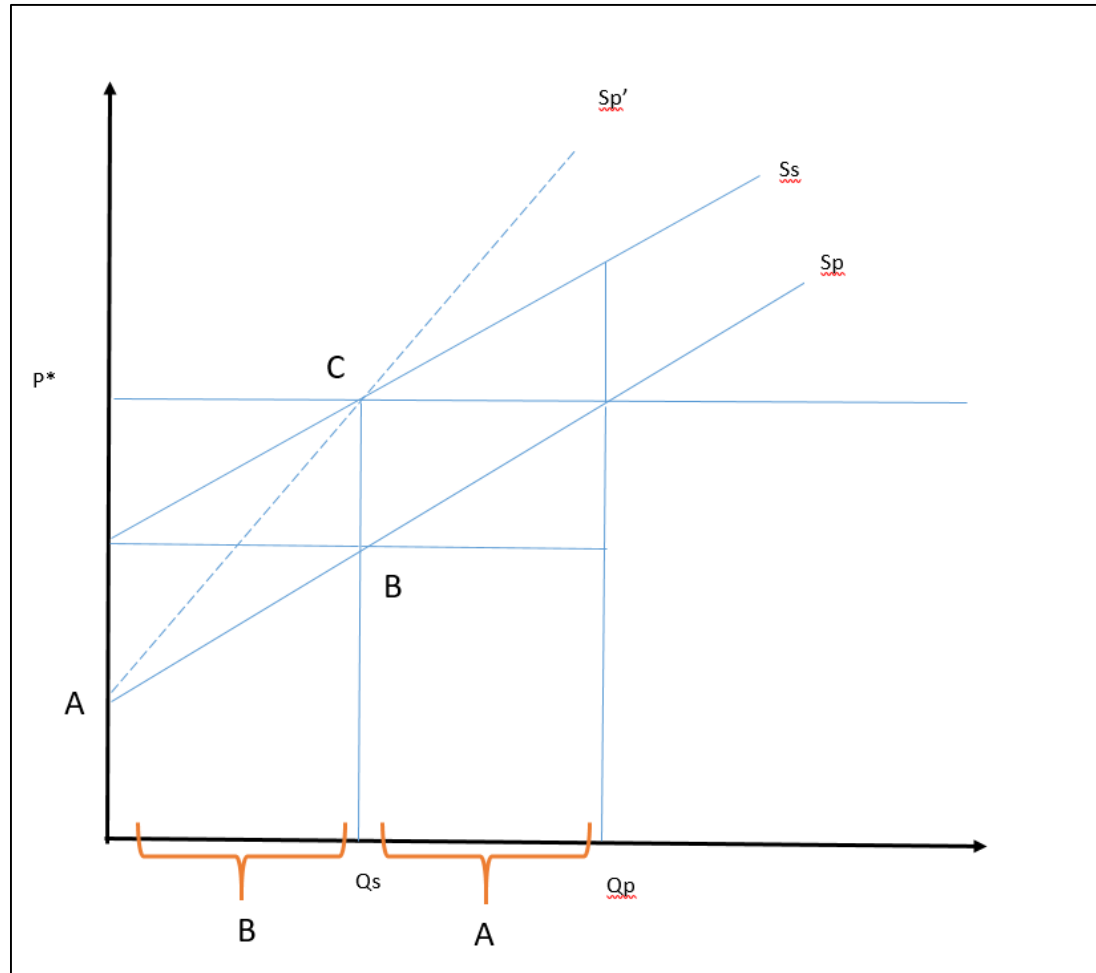
# There is an optimal quantity (TAC). Costs and rents assuming that quota is allocated to most efficient operators



# Alternative allocations of the quota: Incremental costs of using alternative allocations, instead of most efficient operators



# Cost of assigning quota proportionally, relative to most efficient allocation (Area ABC)





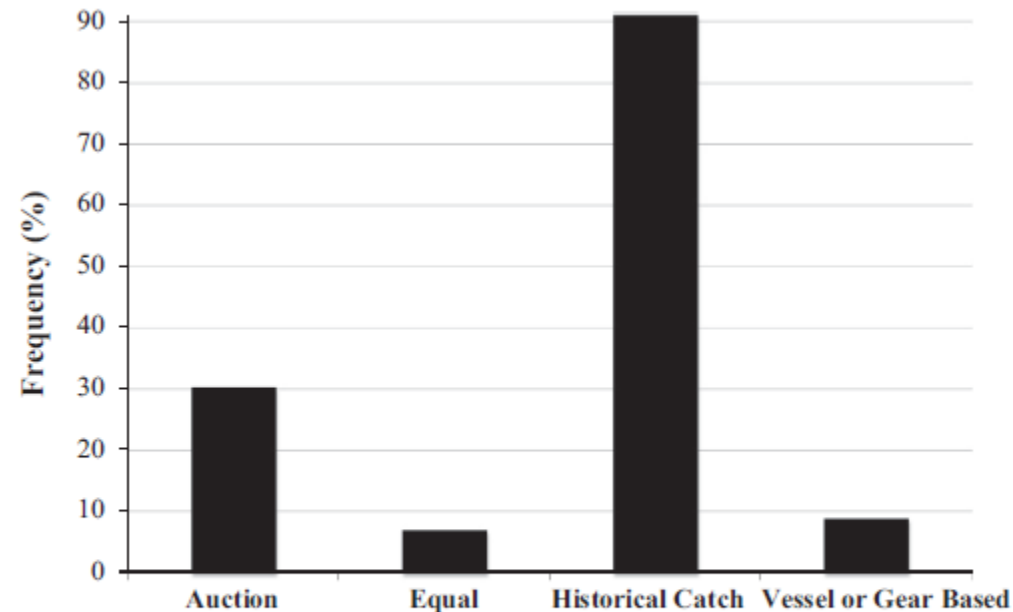
# Some additional analytical considerations

- Elinor Ostrom (Nobel Prize 2009): “Governing the Commons: The evolution of institutions for collective action” (1990)
  - There are governance designs that allow communities to effectively manage the commons avoiding the “tragedy”
  - Ostrom’s eight principles for managing the commons.
- Walter Oi, “Labor as a quasi fixed factor” and Ricardo-Viner model for analyzing welfare consequences of different policies.
- Strategic behavior of different agents in dealing with ITQs, and possible auctions.

- The efficiency effects of other allocation systems can be analyzed as a combination of the ones presented above. A particularly interesting one is the “quotas set aside” system to favor small fishermen and indigenous groups. (*Nayani & Warlik, 2018*).
- There is a need to analyze the short and long run effect of the assignment method.
- *Sustainable Fisheries Management (SFM)* finds a balance between maintaining the stock of fish and assuring a livelihood to communities and the fishing industry.
- SFM aims at maintaining the following ratio stable throughout the cycle:

$$\sigma = \frac{\text{Income of fisheries and communities}}{\text{Stock of fish relative to human population}}$$

# Catch share allocation methods in 158 fisheries from around the globe *(J. Lynham, 2014)*



**Fig. 2.** Catch share allocation methods by frequency: 91% of the fisheries in the database allocated some fraction of the TAC on the basis of historical catch, 30% used auctions, 9% used vessel- or gear-based rules, and 7% used equal sharing rules.

## 2. Iceland:

# Economics, society, and fisheries

- Small island with a population of 350 thousand
- High income per capita (USD 47 thousand)
- Three main export activities:
  - Fish products
  - Energy (geothermal)
  - Tourism (third highest number of tourists per capita/year in the world)
- Very low level of inequality (Gini 0.25).
- To maintain very low inequality it is necessary to protect fishing at all levels.
- Recovering from severe currency and banking crisis (2008).
- Politically independent. Does not belong to Eurozone or EU.
- Does not have an “indigenous population.”



Photo: Sebastian Edwards

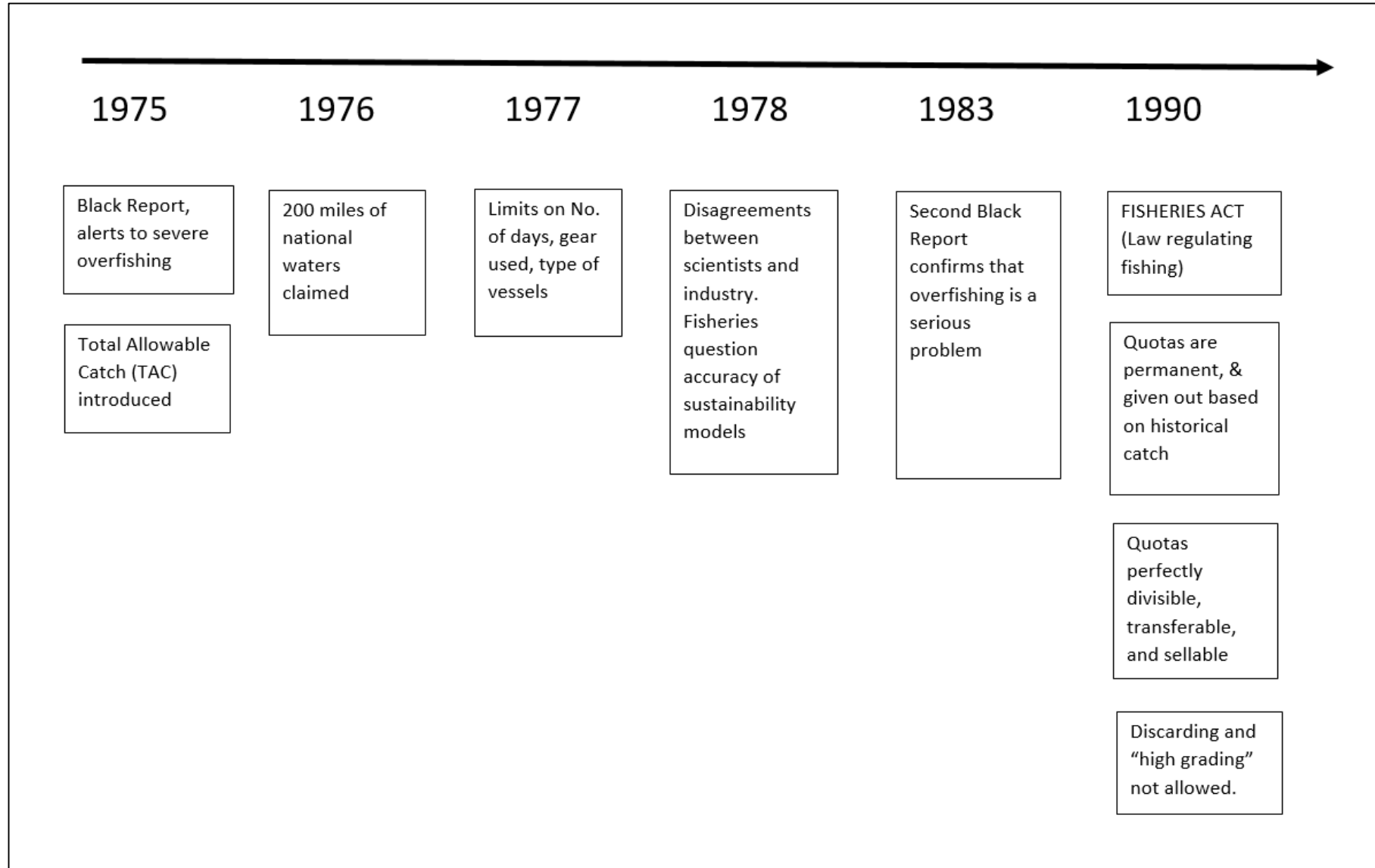
# 3. Iceland's fisheries: An analytical description

# Management of Iceland's fisheries : Basic Summary

- Scientific commission determines every year Total Allowable Catch (TAC) by specie and geography or management area. Not all species are included.
- Individual Tradable Quotas (ITQs) are assigned to vessels, mostly based on historical catch; some assigned on equal bases.
- ITQs are perpetual but can be revoked under certain conditions.
- Certain quota is set aside for communities and villages in hardship. Some are set aside for research.
- Fishing every year is determined, for each vessel, as  $TAC \times ITQ$ .
- There are fishing fees.
- Strict monitoring and very stiff penalties.
- Evolving regulations to deal with criticisms and limitations of scheme.



# Timeline, 1975- 1990: From concern to legislation



# 1990-2019: Social and political issues

- In the late 1990s political tensions arose, and a number of initiatives were undertaken to deal with them
- In 2002, regional quotas were established. These were taken from original quota holders.
- In 2004, smaller vessels were incorporated into the ITQ, as a way to avoid overfishing through that channel.
- In 2009, a Coastal Fishery System set aside for small vessels was established. It is only open for hand-line fishing during summer months.
- In 2006, the Fisheries Management Act was passed (details below).
- In 2012, a “resource tax” was introduced. The tax yielded ISK 7.7 billion in 2014/15. Total corporate taxes were roughly ISK 58.6 billion in 2015.

# Management of Iceland's fisheries : Main characteristics

(From official documents)

- Fisheries management in Icelandic waters is primarily based on catch limitation (output control) through individual transferable quotas (ITQs);
- Each vessel is assigned a quota share (%) in each stock, initially based primarily on catch history over a reference period.
- The annual allowable catch for each vessel from each stock is obtained by multiplying the *TAC of the year* and the vessel's quota share (as a proportion).
- Quotas can be transferred between vessels; this applies both to quota shares and annual catch allotments. Quota transfer is mainly intended to promote rationalization and thus increase profitability in the industry.
- Exceptions include: Community quotas (not based on vessel's quota share, all other provisions apply; limited amount); summer inshore hand line (jigging) fishery (limited amount).

# The ITQs system is supported by a number of supplemental policies

- Discarding of commercial species is prohibited by law.
- Extensive area closures to fishing for the protection of juvenile fish: Large nursery areas closed on long term basis; temporary real time closures.
- Fishing gear selectivity in demersal fisheries ensured through requirements for minimum mesh size and/or the use of sorting grids to allow small fish to escape capture.
- Closure to fishing of main spawning grounds for the major demersal fish stocks during peak spawning season.
- Closures to protect stony corals and thermal vents.

# Principles governing Iceland's fisheries

*(<https://www.responsiblefisheries.is/seafood-industry/fisheries-management/statement-on-responsible-fisheries>)*

*2007 after approval of Law 116 in 2006*

1. Icelandic fisheries are responsible fisheries
2. The catch limitation system is the cornerstone of the fisheries management system
3. Stock assessments and fisheries advice in conformity with international criteria
4. Deciding the total allowable catch (TAC) based on scientific grounds
5. Effective catch control and enforcement
6. Reliability of catch information ensured
7. Severe penalty for breaches of the fisheries management legislation
8. Extensive research of the impact of fisheries on the marine ecosystem
10. Clear rules on discards and the disposition of by-catch
11. Steady improvements

# Some descriptive statistics

**The TACs (in tons) for the main species for the fishing year 2017-2018:**

Species name	TAC, metric tons	Latin name
Cod	257,572	Gadus morhua
Saithe	60,237	Pollachius virens
Haddock	41,390	Melanogrammus aeglefinus
Golden redfish	41,390	Sebastes marinus
Greenland halibut	24,000	Reinhardtius hippoglossoides
Deepsea redfish	11,786	Sebastes mentella
Atlantic wolffish	8,540	Anarhichas lupus
Ling	8,598	Molva molva
Tusk	4,370	Brosme brosme
Plaice	7,103	Pleuronectes platessa
Herring	38,712	Clupea harengus
Lobster	1,150	Nephrops norvegicus
Lemon sole	1,304	Microstomus kitt
Witch	1,116	Glyptocephalus cynoglossus
Dab	500	Limanda limanda
Long rough dab	0	Hippoglossoides platessoides
Monkfish	1,116	Lophius piscatorius

**Table 2 Size distribution of Icelandic fishing companies<sup>a</sup>**

Share of allocated quota	Number of companies
Less than 0.005 %	198
0.005–0.01 %	102
0.01–0.02 %	67
0.02–0.05 %	64
0.05–0.10 %	42
0.1–0.15 %	20
0.15–0.25 %	24
0.25–0.5 %	23
0.5–1 %	11
1–2.5 %	8
2.5–5 %	9
5–10 %	2
More than 10 %	1
<b>Total</b>	<b>571</b>

<sup>a</sup>From Icelandic Fisheries Directorate (<http://en.fiskistofa.is/>).

# Illustrations of allocation methods since 1975

<u>Country</u>	<u>Year Catch Shares Adopted</u>	<u>Specific Epithet</u>	<u>Common Name</u>	<u>Initial Allocation Mechanism</u>
Iceland	1975	harengus	Herring	Equal Catch Shares
Iceland	1984	aeglefinus	Haddock	Historical Catch
Iceland	1984	norvegicus	Lobster	Historical Catch
Iceland	1984	platessa	Plaice	Historical Catch
Iceland	1984	virens	Saithe	Historical Catch
Iceland	1984	hippoglossoides	Greenland halibut	Historical Catch
Iceland	1984		Rockfish	Historical Catch
Iceland	1984	marinus	Red ocean perch	Historical Catch
Iceland	1984	mentella	Red-fish	Historical Catch
Iceland	1975	borealis	Shrimp (Inshore)	Equal Catch Shares
Iceland	1975	islandica	Scallop	Historical Catch
Iceland	1990	cynoglossus	Witch	Historical Catch
Iceland	1990	platessoides	Long Rough Dab	Historical Catch
Iceland	1990	limanda	Dab	Historical Catch
Iceland	1990	merlangus	Whiting	Historical Catch
Iceland	1990	poutassou	Blue Whiting	Historical Catch
Iceland	1990	kitt	Lemon Sole	Historical Catch
Iceland	2001	brosme	Tusk	Historical Catch
Iceland	2001	piscatorius	Angler	Historical Catch
Iceland	2001	molva	Ling	Historical Catch
Iceland	2001	brosme	Tusk	Historical Catch
Iceland	2001	piscatorius	Angler	Historical Catch
Iceland	2001	molva	Ling	Historical Catch

# Transparency and verifiability: Quotas by harbor and vessel

**FISKISTOFA**

Forsiða > Quotas and catches > Total catches by harbours, months and vessel type

**Search in active data**  
Catch info according to date of search 04.06.2019

Catches in all species:  
By landing harbor

From: 01.01.2019 To: 31.05.2019

**Note:**  
This data is taken from an active database. When new landings are registered in the base, this can affect queries on recent periods.

On average, data on landings reach Fiskistofa one to three days after the date of landing. Older data can also change due to corrections in the database.

Catches are in tons (live weight).

Species	Vestmannaeyjar	Þorlákshöfn	Grindavík	Sandgerði	Kellavík	Hafnarfjörður	Reykjavík	Akranes	Amanarstapi	Rif	Ólafsvík	Grundarfjörður	Stykkishölmur	Þránsælkur	Patreksfjörður	Tálknafjörður	Bliddu
Cod	8.743	5.553	16.258	6.356	3.033	5.429	8.694	1.172	763	10.066	7.506	5.403	77	9	2.254	824	
Haddock	4.818	957	3.694	944	214	1.983	3.676	120	79	1.585	1.900	1.467	2	0	269	47	
Saithe	4.348	959	2.821	752	196	1.410	8.611	10	38	307	389	649	0	0	12	5	
Redfish	2.104	339	1.701	84	200	1.742	6.646	3	4	170	138	862	0	0	18	2	
Ling	506	355	2.167	138	62	164	198	13	8	429	61	52	0	0	67	25	
Blueling, European ling	6	0	23	0	0	3	18	0	0	20	2	1	0	0	0	0	
Tusk, torsk, cusk	10	28	620	15	7	27	27	2	2	132	9	0	0	0	13	0	
Atlantic wolffish	209	196	453	90	11	26	46	27	9	223	332	503	2	0	479	168	
Spotted wolffish, leopardfish	8	1	60	0	3	14	58	0	0	31	1	7	0	0	8	1	
Monkfish	102	61	2	1	1	2	4	0	0	0	0	1	0	0	0	0	
Greater argentine	55	0	435	0	0	129	665	0	0	0	0	0	0	0	0	0	
Greenland halibut	0	0	42	0	0	0	1.291	0	0	0	0	0	0	0	0	0	
Plaice	205	284	31	309	64	79	5	0	11	254	381	758	2	0	159	3	
Lemon sole	213	115	13	59	4	2	5	0	0	31	43	68	0	0	7	0	
Witch	65	142	8	56	0	1	1	0	0	2	2	3	0	0	0	0	
Dab	1	23	6	67	0	0	1	0	0	15	20	5	0	0	0	0	
Long rough dab	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
Norway haddock	3	0	44	0	0	1	34	0	0	0	0	0	0	0	0	0	
Deepwater redfish	1.038	109	198	0	0	499	1.741	0	0	0	0	0	0	0	0	0	
<b>Total Demersals</b>	<b>22.435</b>	<b>9.121</b>	<b>28.577</b>	<b>8.870</b>	<b>3.796</b>	<b>11.510</b>	<b>31.723</b>	<b>1.348</b>	<b>914</b>	<b>13.265</b>	<b>10.784</b>	<b>9.779</b>	<b>83</b>	<b>9</b>	<b>3.287</b>	<b>1.074</b>	
Herring	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Blue whiting	25.553	0	0	0	0	5	183	0	0	0	0	0	0	0	0	0	
Atlantic mackerel	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Deep water prawn	0	0	0	0	0	0	0	0	0	0	0	31	0	0	28	0	
<b>Total Pelagics</b>	<b>25.607</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>183</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>31</b>	<b>0</b>	<b>0</b>	<b>28</b>	<b>0</b>	
Norway lobster	16	40	2	0	0	0	0	0	0	0	0	0	0	0	0	0	
Deep water prawn	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
Iceland scallop	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0	0	
<b>Total shellfish and carls</b>	<b>16</b>	<b>40</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>28</b>	<b>0</b>	<b>0</b>	<b>0</b>	
Whiting	369	36	54	4	0	50	41	0	0	6	2	0	0	0	0	0	
Roundnose grenadier	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Starry ray, thorny skate	0	1	83	13	8	2	6	0	0	0	0	2	0	0	32	0	
Skate	16	14	60	1	3	6	1	0	0	0	0	0	0	0	0	0	
Dogfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

**FISKISTOFA**

Forsiða > Quotas and catches > Catches in individual species

**Quotas and catches**

Catches in individual species  
Mackerel fisheries  
Quota status and catches of species by vessel  
Total catch and quota status  
Total catches by harbours, months and vessel type  
Individual vessels

**Fisheries management**

Salmonids  
International cooperation  
About the Directorate

**Vessel search**  
Vessel no or name  
SEARCH

**Catch for individual species**  
Here you can retrieve all the catch for a given time period and species, independent of the fishing grounds. Please note that if the period selected is longer than one year the process can take several seconds.

Select species: 1 Cod  
From and including: 01.05.2019  
To and including: 31.05.2019  
Enter

**COD**

Please note that the query retrieves only the quantity by species but not by quota of a species and therefore details of the entire cod catch regardless of whether it's caught in Icelandic waters or the Barents Sea are shown. Information on the allocation of quotas and cod catch by quota of a species, fishing years and ships can be accessed at Quota status list

Reg. no.	Vessel	Class	Kg/Ungutted
89	Grímsnes GK 555	A	85,132
173	Sigurður Ólafsson SF 44	A	47,467
182	Vestri BA 63	A	4,103
233	Erling KE 140	A	142,832
264	Hörður Björnsson ÞH 260	A	180,946
363	Marón GK 522	A	115,908
396	Trausti EA 98	?	5,801
972	Kristín GK 457	A	257,192
1019	Sigurborg SH 12	A	91,548
1028	Saxhamar SH 50	A	188,793
1030	Páll Jónsson GK 7	A	217,363
1043	Jóhanna ÁR 206	A	3,885
1054	Sveinbjörn Jakobsson SH 10	A	95,753
1062	Kap II VE 7	A	256
1076	Jóhanna Gísladóttir GK 557	A	186,255
1081	Valþór GK 123	A	21,876
1092	Andvari VE 100	?	2,718
1102	Reginn ÁR 228	A	67,293
1126	Harpa HU 4	A	18,521
1134	Steinunn SH 167	A	224,391
1136	Fjölur GK 157	A	303,846
1184	Dagrún HU 121	A	639
1246	Egill SH 195	A	93,407
1272	Sturla GK 12	A	144,887
1277	Ljósafell SU 70	A	251,955
1281	Múlaberg SI 22	A	13,326
1304	Ólafur Bjarnason SH 137	A	122,803
1318	Onni HU 36	A	2,771
1321	Guðmundur Jensson SH 717	A	52,372
1343	Magnús SH 205	A	189,518
1345	Blængur NK 125	A	66,094
1360	Kleifaberg RE 70	A	168,228
1401	Hrafn GK 111	A	183,862
1416	Sighvatur GK 57	A	421,374
1434	Þorleifur EA 88	A	154,042
1451	Stefnir ÍS 28	A	228,902
1458	Ísey ÁR 11	A	18,576
1476	Hjalteyrin EA 306	A	516,232
1489	Anný SU 71	?	3,236
1499	Ýmir ÁR 16	?	3,798
1502	Páll Helgi ÍS 142	A	4,406
1511	Ragnar Alfreðs GK 183	K	148
1516	Fjóra GK 121	K	4
1523	Sunna Líf GK 61	A	45,347



# Verifiability: Catches, quotas and overfishing



**Quotas and catches**

- Catches in individual species
- Mackerel fisheries
- Quota status and catches of species by vessel
- Total catch and quota status**
- Total catches by harbours, months and vessel type
- Individual vessels

**Fisheries management**

- Salmonids
- International cooperation
- About the Directorate

Forsíða > Quotas and catches > Total catch and quota status

**Total catches of species in the Icelandic quota system**

Icelandic stocks  
Stradling stocks

Icelandic stocks  
Fishing year 01.09.2018 - 31.08.2019      04.06.2019 | 17:25

Species	Cod	Haddock	Saithe	Redfish
Alloc. quota	208,416	45,104	62,916	37,160
Compensations	6,898	1,578	2,619	2,127
Trfr. prev. year	391	2,958	2,793	1,957
Allowed catch	215,705	49,640	68,328	41,245
Catch	176,695	40,223	43,270	32,644
Balance	39,010	9,417	25,058	8,601
Transfers	-944	381	-773	1,204
New balance	38,066	9,798	24,285	9,805
Trfrf next year	19,264	4,030	8,001	3,357
Over fished	9	2	1	10
Net quota status	18,810	5,770	16,285	6,457

Species	Ling	Blue ling, European ling	Tusk	Atlantic wolffish
Alloc. quota	3,940	1,152	2,642	7,668
Compensations	157	85	119	296
Trfr. prev. year	665	210	465	600
Allowed catch	4,762	1,427	3,226	8,784
Catch	4,626	278	1,409	5,970
Balance	137	1,149	1,818	2,815
Transfers	676	-46	14	171
New balance	813	1,102	1,831	2,986
Trfrf next year	254	163	353	688
Over fished	1	0	6	9
Net quota status	560	939	1,484	2,306

Species	Spotted wolffish, leopardfish	Angler	Greater argentine	Greenland halibut
Alloc. quota	615	7,200	11,562	11,562
Compensations	853	37	403	659
Trfr. prev. year	48	83	1,246	1,216
Allowed catch	0	735	8,849	13,437
Catch	901	426	2,420	7,136
Balance	811	309	6,429	6,302
Transfers	91	-25	-426	-154
New balance	173	284	6,003	6,148
Trfrf next year	264	63	1,015	1,027
Over fished	76	0	0	0
Net quota status	188	221	4,989	5,121


**Vessel search**

Vessel no or name

SEARCH

**Fishing period**

1819



**Quotas and catches**

- Catches in individual species
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**Fisheries management**

- Salmonids
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- About the Directorate

Forsíða > Quotas and catches > Quota status and catches of species by vessel

**Catch and quota status by fish species**

1 Cod      1819/2019      Enter

Fishing year 2018/2019

Cod  
Numbers below are in kilos of gutted catch

Reg. no.	Vessel	Class	Alloc. quota	Compensations	Trfr. prev. year	Trfr. b/t vessels	Allowed catch	Catch	Balance	Overfished
78	Isborg IS 250	A	0	20,195	0	21,300	41,495	0	41,495	0
89	Grimnes GK 555	A	55,068	0	0	541,710	596,778	587,846	8,932	0
173	Sigurður Ólafsson 44	SFA	611,284	0	-1,895	19,327	628,716	645,308	-16,592	0
177	Fónix ST 177	A	7,701	5,896	1,125	-8,469	6,253	2,652	3,601	0
182	Vestri BA 83	A	508,208	-41,834	-19,633	-37,339	409,402	422,000	-12,598	0
233	Erling KE 140	A	1,229,307	3,386	126,523	198,622	1,557,838	1,242,123	315,715	0
253	Hamar SH 224	A	626,245	0	-8,918	-6,667	610,660	628,135	-17,475	0
264	Höfður Björnsson 290	DH A	500,363	649,172	-11,594	604,473	1,742,414	1,645,352	97,062	0
363	Maron GK 522	A	11,451	0	-558	600,821	611,714	610,272	1,442	0
530	Hafrín HU 12	A	19,100	52,252	-781	46,000	116,571	76,392	40,179	0
741	Grimsey ST 2	A	68,662	20,412	0	32,404	121,478	21,357	100,121	0
926	Dorsteinn DH 115	A	190,056	32,055	26,535	0	248,646	243,749	4,897	0
968	Sleipn VE 83	A	493,388	0	502	0	493,890	0	493,890	0
972	Kristín GK 457	A	2,176,693	0	-39,661	-139,810	1,997,202	1,810,125	187,077	0
975	Sighvatur GK 357	0	0	0	0	51,380	51,380	0	0	0
1006	Krummi GK 10	0	0	3,386	0	-3,386	0	0	0	0
1019	Sigurborg SH 12	A	239,073	13,005	1,082	250,000	503,160	469,099	34,061	0
1028	Saxhamar SH 50	A	1,054,105	343,591	-5,845	86,077	1,477,928	1,416,757	61,171	0
1030	Páll Jónsson GK 7	A	2,138,539	0	-79,313	-10,000	2,049,226	1,795,615	253,611	0
1043	Jóhanna ÁR 208	A	0	-2,000	0	210,731	208,731	86,647	122,084	0
1054	Sveinbjörn Jakobsson SH 10	A	300,317	21,866	-8,195	55,212	369,220	383,332	-14,112	0
1062	Kap II VE 7	A	747,775	0	-96	201,059	948,738	885,190	63,548	0
1076	Jóhanna Glásdóttir GK 67	A	2,190,098	-5,372	-7,223	0	2,177,503	1,932,529	244,974	0
1081	Valþór GK 123	A	0	0	0	137,384	137,384	0	0	0
1084	Friðrik Sigurðsson ÁR 17	A	0	225,985	0	0	225,985	225,985	0	0
1102	Reginn ÁR 228	A	208,038	31,659	-1,803	46,757	284,651	259,533	25,118	0
1126	Harpa HU 4	A	0	38,121	0	8,037	46,158	36,300	9,858	0
1134	Steinnunn SH 187	A	1,051,993	0	-10,096	-37,878	1,004,019	1,014,035	-10,016	0
1136	Fjalnir GK 157	A	2,068,543	0	0	3,554	2,072,097	1,831,905	240,192	0
1149	Fridel ST 13	A	0	4,136	0	6,010	10,146	0	10,146	0
1164	Dagfinn HU 121	A	27,480	26,593	3,950	-8,874	49,149	47,563	1,586	0
1246	Egill SH 195	A	494,218	29,598	-21,623	-10,000	492,193	444,758	47,435	0
1254	Sandvíkngur ÁR 14	A	2,790	0	0	0	2,790	0	2,790	0
1272	Sturla GK 12	A	2,580,937	0	-6	-500,000	2,080,931	2,029,376	51,555	0
1274	Sindri VE 80	0	0	0	0	114,349	114,349	114,349	0	0
1277	Ljósafellíu SU 70	A	3,349,779	-362,606	-29,567	-580,720	2,376,886	2,243,815	133,071	0
1281	Múlafjall SH 22	A	1,057,274	352,545	154,458	-200,263	1,364,014	917,159	446,855	0
1304	Ólafur Björnsson SH 137	A	758,463	41,819	-4,565	68,362	864,079	867,816	-3,737	0
1318	Onni HU 38	A	0	4,012	0	54,170	58,182	58,182	0	0
1321	Guðmundur Jónsson SH 717	A	337,734	-35,600	0	4,974	307,108	322,901	-15,793	0
1343	Magnús SH 205	A	748,604	352,700	-530	28,000	1,128,774	1,149,130	-20,356	0
1345	Blængur NK 125	A	2,523,540	-1,379	-105,666	-1,249,859	1,166,636	495,706	670,930	0
1360	Kleifaberg RE 70	A	651,555	0	-10,012	447,595	1,089,138	991,810	97,328	0
1399	Patrekur BA 84	A	386,988	397,337	0	274,150	1,058,475	1,025,319	33,156	0
1401	Harfa GK 111	A	1,708,205	1,129	-26,750	575,777	2,258,361	2,082,341	176,020	0
1403	Haldór Sigurðsson ÍSA 14	A	0	2,555	0	893	3,448	169	3,279	0
1416	Sighvatur GK 57	A	2,140,117	0	21,834	-10,990	2,150,961	1,820,602	330,359	0

**Vessel search**

Vessel no or name

SEARCH

## 4. Criticisms

# Main criticisms

- System developed by scientists, academics and politicians.
- Trade unions were not consulted.
- Communities were not consulted.
- Hoarding (accumulation) of quotas seen as a destabilizing force.
- Concentration of high percentage of quotas in few hands reduces competition.
- No consideration given to different geographies. In particular, villages/harbors in distress were not considered.
- Partial equilibrium approach. Definition of TAC's ignored the "general equilibrium" aspect of the ecosystem and the maritime food chain. (Fish eat fish).

# Responses to the critics

- Communities and negatively affected harbors/villages: Ministry reserves for itself a quota of demersal fish that can be allocated to distressed villages. (Article 10, Act 116).
- Regional balance and protection of fishing villages: Municipalities have option to buy vessels that are offered for sale to other regions. (Article 12).
- Concentration of ITQs. Act of 2006 establishes limits to concentration. (Article 13).
- Hoarding of ITQs: Vessels that catch less than 50% of quota in two consecutive years have quota taken away. (Article 15).
- Revocation of ITQs: ITQs are assigned, in principle, in perpetuity, but they can be revoked for a number of reasons. (Article 15).

5. Comparison with other  
Countries: New Zealand and  
Nordic Nations

# NEW ZEALAND: (QMS 1984)

- Maori's Fisheries Act 1989: Maori Commission created. 10% of existing quotas, 20% of new species and 50% of largest seafood company.
- Treaty of Waitangi Fisheries Commission (1992). Some fishing areas set aside “as source of food or for spiritual and cultural reasons.”
- TAC's have been remarkably stable. Lack of data to alter the TAC; lack of funding.
- ITQs granted, mostly, on bases of historical catch; granted in perpetuity.
- Long vs short term incentives: ITQs can be leased, through the Annual Catching Entitlements (ACE). There is an issue with discarding, high grading and misreporting.
- 2016 attempt to reconcile interests of commercial and recreational fishing.
- Maori's now own 40% of the quota, and majority interests in three of largest seafood companies. Distribution of benefits across *iwi* has been unequal.

# Nordic countries

- Comparison group: Norway, Finland, Netherlands.
- The three countries use TACs and ITQs.
- All of them used “historical catches” as the main assignment mechanism to allocate ITQs.
- In all three countries the ITQs are transferable and divisible.
- In the Netherlands ITQs are given in perpetuity.
- In the Norway and Finland the ITQs are renewable.

## 6. Concluding remarks



# Summary

- Iceland was one of the first countries to recognize problems with overfishing (1975 Black Report).
- Fisheries Act passed in 1990. System based on TACs and ITQs. (NZ in 1986)
  - A TAC is determined every year for each specie and geography
  - Each vessel has an ITQ. The amount of catch each year is  $ITQ \times TAC$ .
- ITQs assigned (mostly) based on historical catch. Similar to system used since 1980s by New Zealand.
- In response to controversies, the 1990 Act was amended several times. New law passed in 2006 (116).
  - Set asides for communities
  - Buffers
  - Protection of ecosystem rather than of individual species
- In a very small number of cases (species), part of the ITQ has been assigned based on the “equal allocation method.”

# Evaluation: OECD 2017 Report

*(There are other less sanguine views)*

- “There is ample evidence to support the view that the Icelandic ITQ system has been very successful in increasing efficiency in the fisheries.”
- “[B]efore the ITQ system, the exchange rate of the national currency was regularly adjusted to improve the competitiveness of Iceland’s fish exports. These support measures all ceased after the introduction of the ITQs.”
- “Following the ITQ reforms, total productivity in the fishing industry increased.”
- “It is more difficult to evaluate the biological success of the system... However, it is clear that the reduction in fishing effort has secured the sustainability of most of the commercially exploited species.”
- “People who live in fishing regions where quotas are sold or leased are often left with few other employment opportunities and can experience economic and social hardships.”

- “A resource rent tax introduced in 2012 sought to remedy some of these [social and fairness] concerns. The tax takes into consideration the profit margin of harvesting different species and the revenues raised go to the general government budget.”

