

## Side-effects of vessel scrapping in Sweden

In 2008-2009, Sweden implemented a vessel scrapping program for demersal trawlers funded by the European Fisheries Fund (EFF). The purpose was to reduce overcapacity, since the fleet was considered too large. However, funds received from scrapping might be used by fishermen to invest in other fleet segments. We analyze these side-effects of the scrapping program and conclude that:

- Many fishermen participating in the program did not leave the fishing sector.
- Part of the scrapping subsidies received was reinvested in new vessels in other fleets. The new vessels target other species, mainly lobster and mackerel.
- A potential side-effect of scrapping programs is thus generation of overcapacity in other fleets.

### Overcapacity and scrapping subsidies

Overcapacity is one of the major problems in fisheries. Overly large fleets are economically inefficient and can also contribute to overfishing if the management system does not restrict catches appropriately. One of the most common management measures to reduce overcapacity is to provide scrapping subsidies. The idea is to buy out fleet capacity in order to balance the fleet's catch capacity with the biologically sustainable catch.

In practice, scrapping subsidies typically target specific fleet segments. This was the case for the Swedish scrapping program in 2008-2009, which targeted demersal trawlers fishing for cod (*Gadus morhua*) or mixed fishery of cod and Norwegian lobster (*Nephrops norvegicus*). However, Swedish fishermen are commonly involved in multiple fisheries and the money received from scrapping a vessel in one fleet segment might be invested in other segments, contributing to overcapacity in these segments. Here, we provide an analysis of reinvestments in new vessels and an assessment of the species now targeted by vessel owners who participated in the scrapping program. In addition to the fishing activities, we analyzed labor market outcomes, e.g., occupational status of individuals who participated in the program.

### The Swedish Scrapping Program

In 2008-2009, a total of 29 vessels were scrapped within the Swedish scrapping program, at a cost of around €15 million. This was primarily funded by the European Fisheries Fund (EFF), which contributed around 70% of the total funding. The scrapping program was implemented in two phases, one for vessels primarily targeting cod in the Baltic Sea (2008) and one for vessels primarily targeting cod and Norwegian lobster in the Kattegat and Skagerrak (2009). The program has been evaluated within the European Commission's retrospective evaluation on the common fisheries policy, where the fleet reduction was estimated to be 26% of total gross tonnage. However, the evaluation did not consider potential spill-over effects of the program on other segments.

### Data

Information about the scrapping subsidies was obtained from the Swedish Board of Agriculture. Although only one vessel owner formally received the subsidy payments, all owners of a scrapped vessel were assumed to benefit from the subsidy and were thus included in the analysis. Vessel statistics (e.g., catches, length, gross tonnage) and vessel ownership for all Swedish vessels were provided by the Swedish Agency for Marine and Water Management (SwAM). It was possible to split the data into one group participating in the program and a control group of non- participants. These were used in a difference-in-difference regression in which investments in new vessels by both groups were compared.

To analyze the labor market status of the owners after the scrapping program took place, data were obtained from Statistics Sweden about labor market outcomes (LISA database). In total, 47 owners were included in the analysis, of which 38 were private individuals and nine were firms.

### Investment in new vessels

The trend in investments in new vessels is shown in Figure 1. The green bars in the diagram show, for owners participating in the scrapping program, the average number of newly acquired vessels per owner for each year 2005-2013. For example, a value of 0.1 implies that in a particular year, investments corresponded to one vessel per 10 owners. The orange bars in the diagram show the average number of newly acquired vessels for all vessel owners in Swedish fisheries.

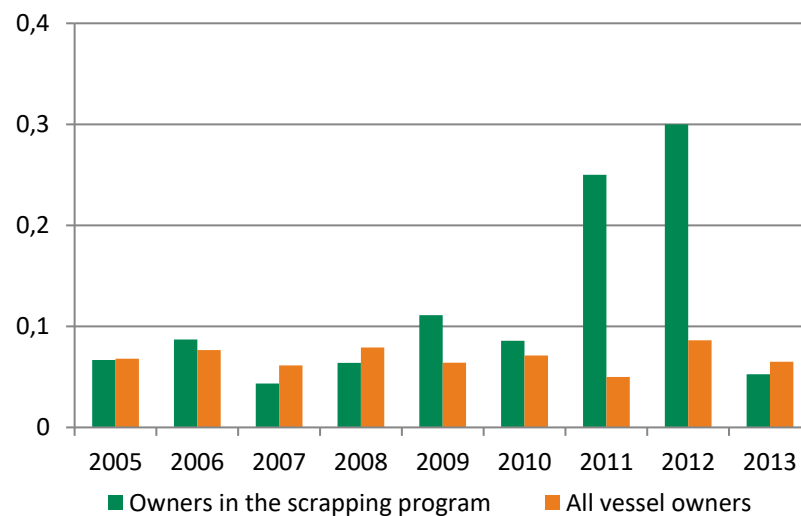


Figure 1. Average number of newly acquired vessels per Swedish owner, 2005-2013. Source: Blomquist and Waldo (2018).

As can be seen in Figure 1, the average investment per owner was approximately the same between owners participating in the scrapping program and all owners in Swedish fisheries for most years. However, in 2011 and 2012, the years after the scrapping program, the investments were considerably higher for those participating in the program, suggesting that the program indeed resulted in investments in new vessels. The time lag between the program ending (2009) and the investments is explained by the ownership data measuring the number of vessels on January 1 each year. E.g., the increase in vessels in 2011 refers to vessels bought some time during 2010.

In 2013, 19 of the vessel owners participating in the scrapping program still owned at least one vessel. In the period after the scrapping program (2011-2013), these owners invested in 12 new vessels. The difference-in-difference analysis showed that about eight of these vessels were due to the scrapping program. Since 29 vessels were scrapped, the reinvestment rate was about 30% (8/29) in terms of number of vessels. However, the new vessels were on average smaller and, measured as gross tonnage, the reinvestment was about 5%.

### New target species

The fisheries for cod and Norwegian lobster, which were the target fleets in the scrapping program, have decreased substantially for the owners participating in the program, from about 3500 days at sea in total before the scrapping program to about 1300 days at sea after the program. Since these fleet segments were closed to new entrants, there

have been no reinvestments in new vessels in these fisheries. However, some participants in the program continue to fish for cod and Norwegian lobster because they owned more than one vessel within these fleets before the scrapping program. Moreover, investments in new vessels have opened the way for new target species. Many of the new vessels are small and thus permitted to fish under regulations that are specific for small-scale vessels. Catches made by owners who participated in the scrapping program have increased especially for two species; mackerel (*Scomber scombrus*) and lobster (*Homarus gammarus*). In fact, participants in the scrapping program have increased their landings of mackerel from 0.5% to about 8% of the total quota set aside for small-scale vessels, and their landings of lobster from about 2.75% to 5% of total commercial landings in Sweden.

### Labor market outcomes

Of the 37 fishermen participating in the scrapping program, 19 did not own a vessel in 2012. Of these 19 individuals, five had mainly non-labor market income such as unemployment benefits and parental allowance and only very low levels of earned income. Among the individuals active in the labor market, about half (six of 14) had fishing as their main source of income. This could be through e.g., working as crew members. Adding these to the 18 individuals still owning a vessel in 2012, it can be concluded that few of the fishermen in the scrapping program have left the sector altogether. Notably, some of these fishermen had part of their income from a pension. The average age of the owners participating in the scrapping program was 58 years, which can be compared with the official Swedish retirement age of 67.

### Discussion

Our conclusion from the analysis is that capacity has been reduced in the fleet segments targeted by the vessel scrapping program, but that many of the fishermen did not leave the fishing sector and part of the scrapping subsidies were reinvested in other fleets. The new vessels target other species, mainly lobster and mackerel. For vessels targeting lobster, the increased catches might contribute to overfishing since the lobster fishery is not regulated with quotas and the lobster stock is at a historically low level. Mackerel catch by small-scale vessels is regulated by a common pool quota set aside for small-scale vessels. New vessels mean increased competition for the quota, and quota shortages have caused several stops in the fishery over the years. Thus, a potential side-effect of the scrapping program is overcapacity in other fleet segments.

## More to Read

European Commission. 2013. Lot 2: Retrospective and prospective evaluations on the common fisheries policy, excluding its international dimension. Sweden Case Study Report for Retrospective Evaluation of Scrapping and Temporary Cessation Measures in the EFF. Brussels, EU.

Blomquist, J., and Waldo, S. 2017. Socioekonomiska effekter av fartygsskrotningar inom svenskt fiske. Utvärderingsrapport 2017:3. Swedish Board of Agriculture, Jönköping (in Swedish).

## Source

Blomquist, J., and Waldo, S. 2018. Scrapping programmes and ITQs: Labour market outcomes and spill-over effects on non-targeted fisheries in Sweden. *Marine Policy* 88:41-47.

## More Information

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