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# Capacity reducing measures in Norway

The case of the cod trawlers

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# Content

- History
- Biological and regulatory concerns
- How to measure fleet capacity?
- Governing fleet capacity

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# Capacity (structure?) in retrospect

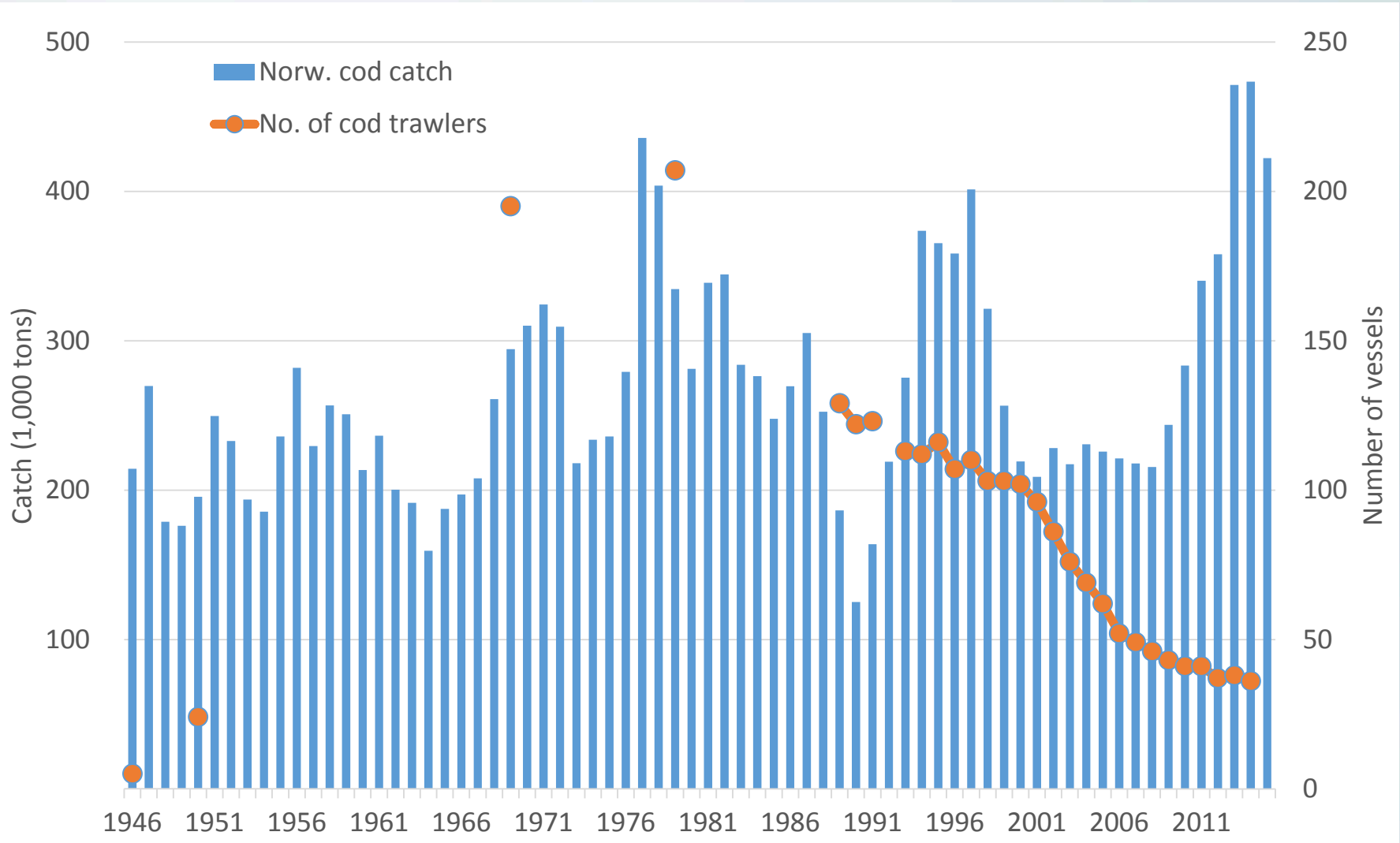
- Former structure
  - 1946: 118 000 fishers, 31 000 vessels (max in 1960: 41 400)
  - 2015: 11 000 fishers, 5 900 vessels
  
- Political and historical paths
  - The self employed fisher, owning his vessel, important for coastal societies
  - High political legitimacy with retained value chain ‘advantages’
  - Status: Only active fishers are allowed to own fishing vessels
  
  - Open access (closing 1970’s–2000’s)

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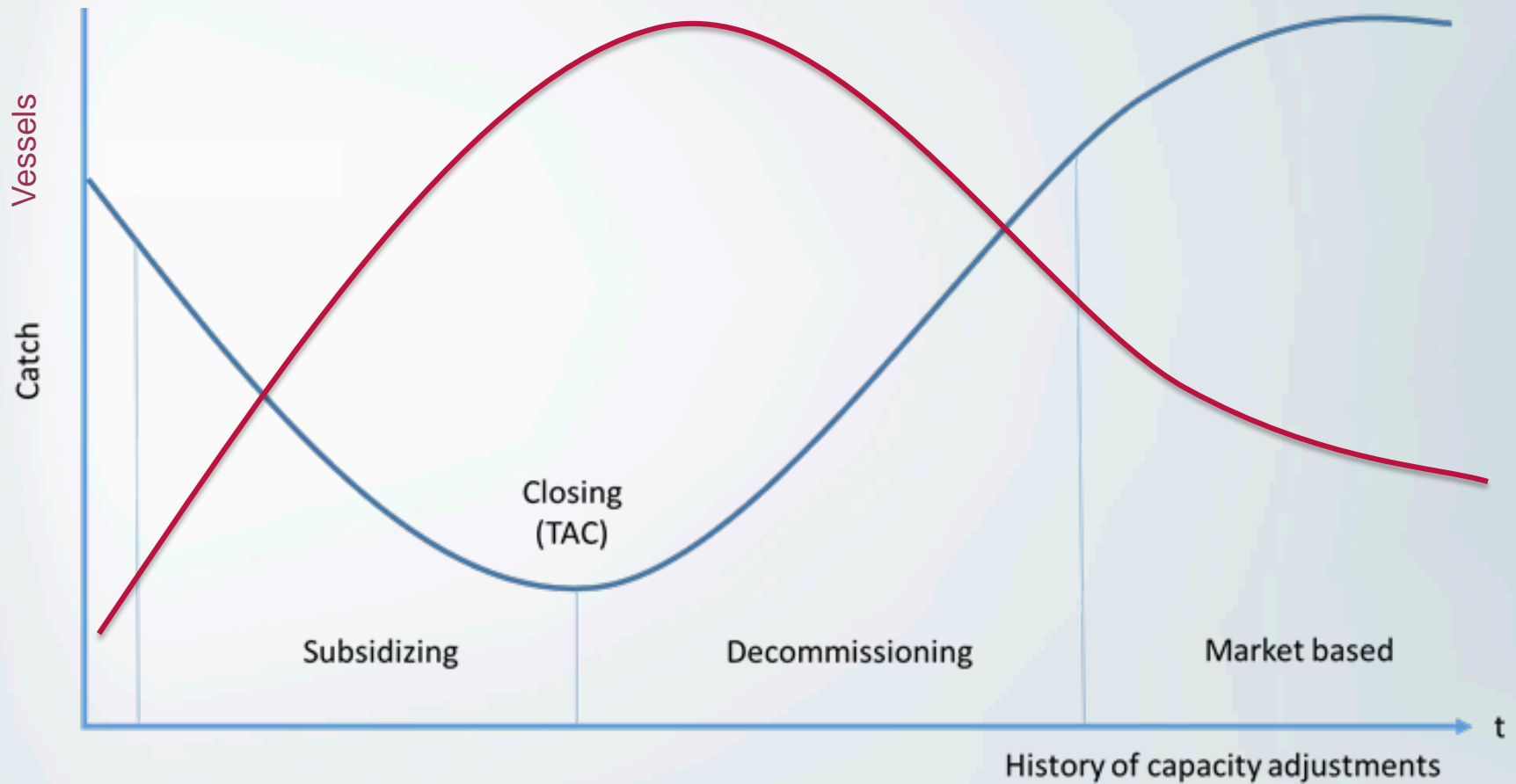
# The Norwegian cod trawler fleet

- Prohibited by law in 1908
- 11 trawlers by onset of WWII
  - UK: 1 650; NL, GER, FRA: 200-450; SOV: 75 and ICE: 40
- Post WWII industrialisation
  - trawlers to supply the filleting industry
  - 1968-1974: 6-7 new licenses annually
- Over capacity;
  - Quotas from 1976, decommissioning support (1980-87), market based restructuring from 1984 (“unit quota”), 1990, 1997, 2005/7
- Quota-ceiling per vessel, and concentration rules
- Driving forces; biology, profitability and governance

# Biological and regulatory concerns



# Capacity adjustment



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# But how to measure capacity?

- Number of vessels is too narrow...
- Literature suggests a number of measurements:

## Input based measures:

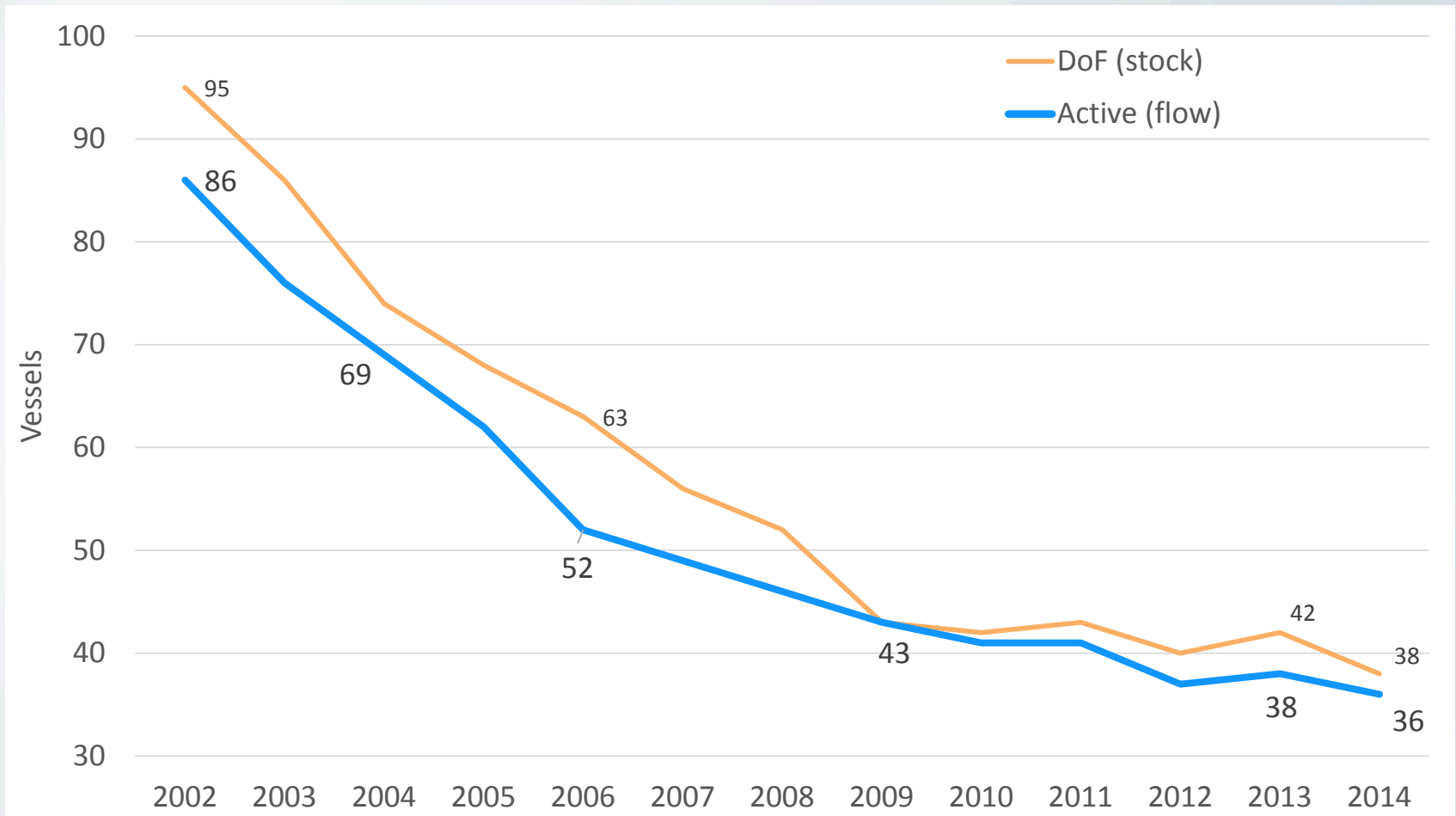
- Tonnage (GT)
- Engine power
- Days at sea
- Investments

## Output based measures:

- Catch per unit of effort (CPUE)
- Capacity utilization (VIU)
- Cost/revenues
- Break even analysis

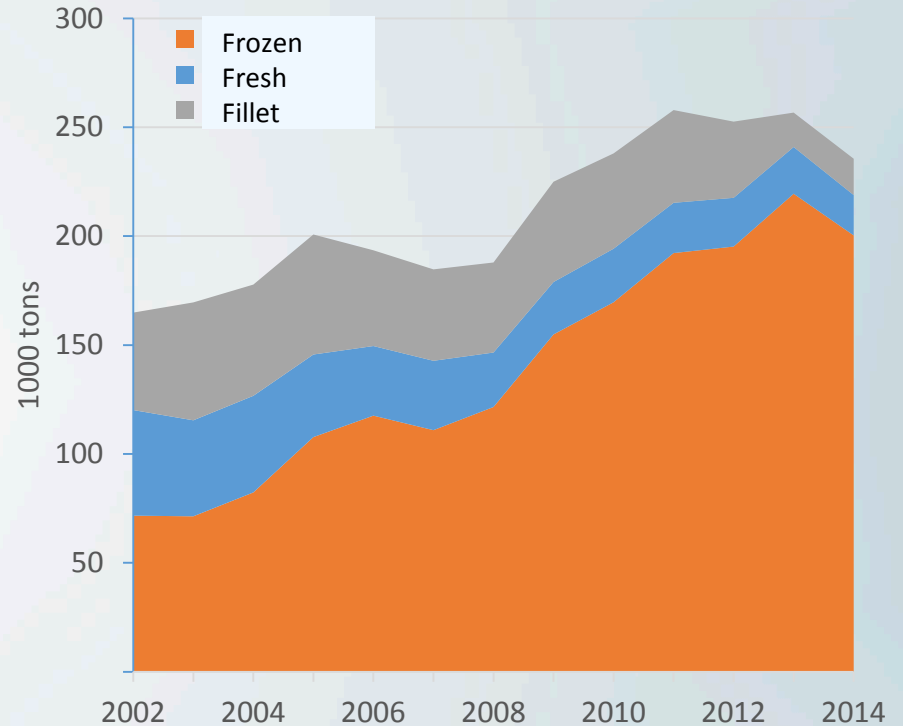
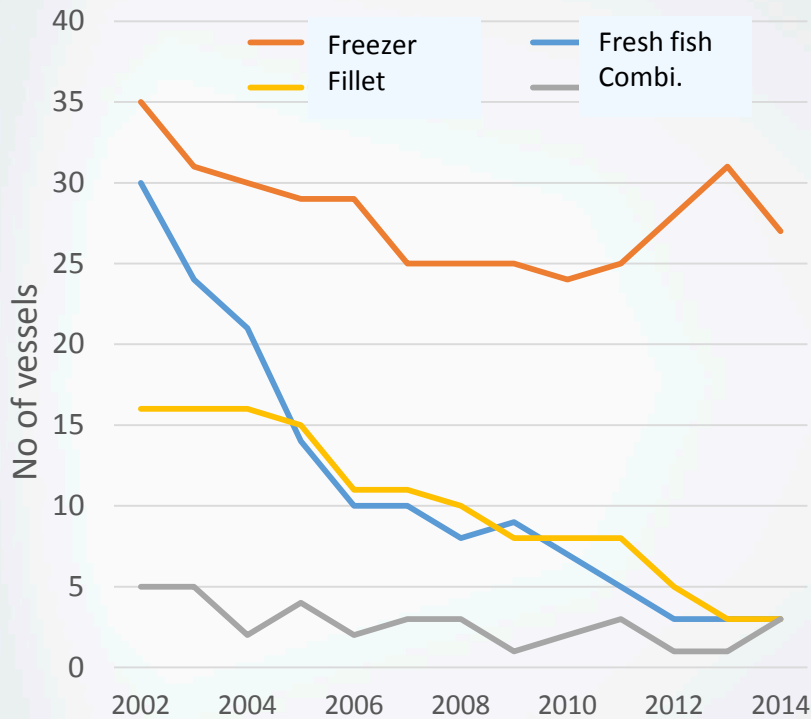
- We employed several measures  
...and more is to come...

# Number of vessels (2002–2014)





# Freezing, freshfish and fillet trawlers



# Capacity development 2002–2014

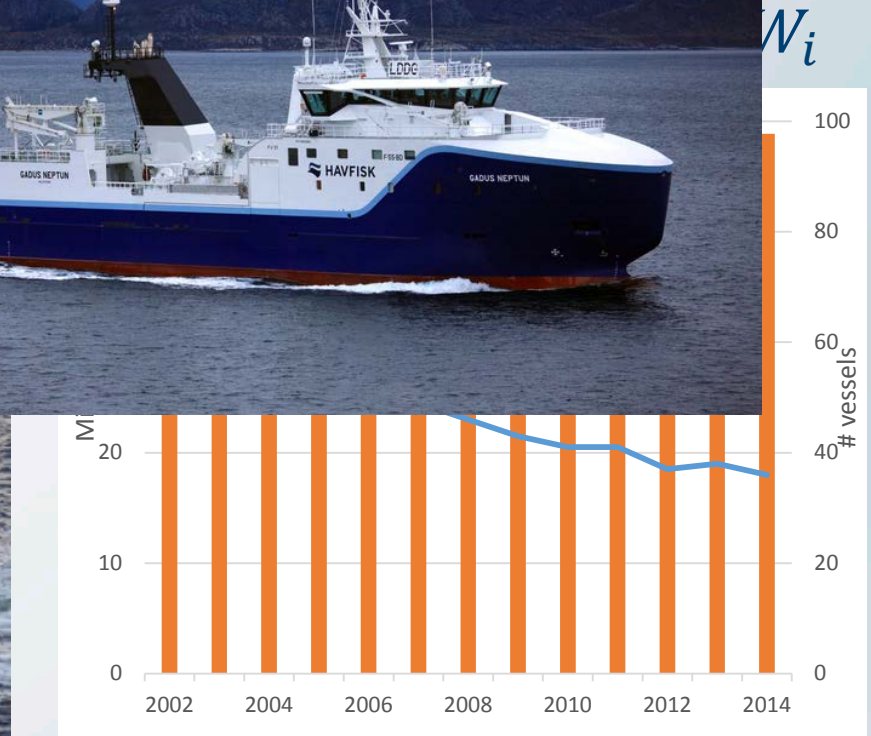
2014; 70m/16m, 3 441 GT, 6 400 kW

- Vessel group:

- # vessels: 86 → 36 (-58)
- GT: 85' → 71' (-16)
- kW: 214' → 170' (-20)



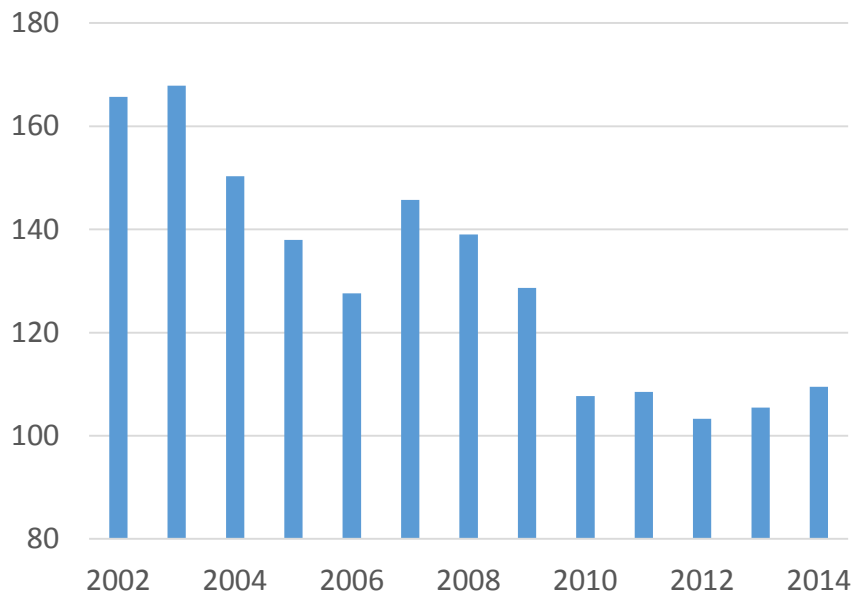
1972; 41m/9m, 585 GT, 1 815 kW



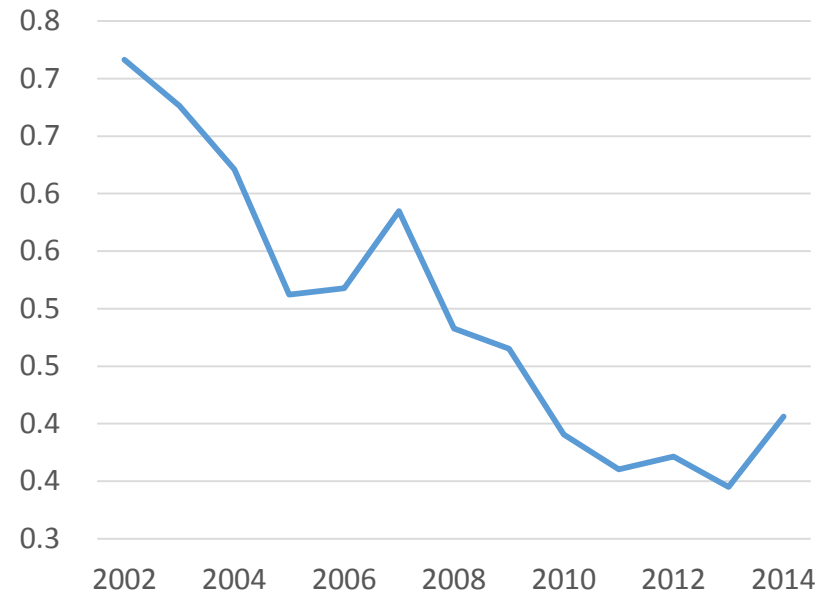
# Technical or economic capacity

- Structuring (more quota per vessel) have increased profitability and improved the capacity utilization
- Can there also be detected a “green effect”?

Estimated fuel consumption



Litres fuel per kilogram catch



# Future governance:

## Balancing the aims and choosing the tools

