

NOS-H Workshop Series

The advantages and disadvantages of strong user rights in fisheries

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Assessing the impacts of strong user rights in fisheries

Workshop 2

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Preliminaries

- Consider the impact of SURFs (Strong User Rights in Fisheries) relative to those of WURFs (Weak User Rights in fisheries)
- Assume SURFs are accompanied by profit maximizing centralized FM measures (TACs etc.)

Modelling framework

Extent of user rights: $Q \in [0,1]$

Change in user rights: dQ

Consequences of Q : x (a long vector)

To assess advantages/disadvantages of dQ need:

- A relationship between dQ and the consequences.
- An evaluation function for the consequences.

Consequences relationship: $\mathbf{x} = \Gamma(Q, z)$

Typical element of \mathbf{x} is $x(i, j, t)$,

i : a particular consequence,

j : an individual,

t : time.

z : Other variables that affect \mathbf{x} (e.g. government measures)

Evaluation function: $W(\mathbf{x})$

A simple social welfare function

Impacts of dQ on social welfare

Impact of consequence i on individual j at time t

$$W_Q(i, j, t) = \frac{dW(x)}{dx(i, j, t)} \cdot \frac{dx(i, j, t)}{dQ}$$

Total welfare impact of dQ

$$W_Q = \sum_{i=1}^I \int_0^T \left(\sum_{j=1}^J \frac{dW(x)}{dx(i, j, t)} \cdot \frac{dx(i, j, t)}{dQ} \right) \cdot \phi(t) dt$$

Assessment in practice

- Applying the theory is not feasible
 - Primarily empirical problems
 - Theory is more like an ideal... a benchmark
- Practical approach: Cost-benefit analysis
 - Approximates the theory
 - Interesting variants:
 - Contingent valuation
 - Laboratory experiments

Here: Only a very preliminary, rough assessment

Impacts of SURFs

Convenient classification

1. Economic
2. Environmental
3. **Social** (including political, cultural etc.)

Economic impacts

Impact	Evaluation	Cyclical	Modifiable
Reduced fishing effort and use of fishing capital	0	Yes	No
Reduced cost of fishing per unit of landings	+	No	
Increased profitability in fishing.	+	Yes	
Alteration in fish supply	+/-	Yes	No
Higher quality and unit value of landings	+	No	
More operational stability in the fishing industry	+	Yes	
Increase in the value of the user rights.	+	No	Yes (by taxation)
Reduced employment in fishing	-	Yes	No
Costly implementation and enforcement of SURFs	-/+	No	No
Altered structure of the fishing industry	0	No	
Altered geographical location of the fishing industry	-	No	Yes (e.g. by limited transferability)
Shift to a higher economic growth path	+	Yes	
Unequal distribution of benefits and costs	-	Yes	Yes (by taxes and allocation of rights)

Environmental impacts

Impact	Evaluation	Cyclical	Modifiable
Reduced fishing effort	+	Yes	
Larger commercial stocks	+	No	
Increased interest in aquatic health	+	No	
Platform for fighting external pollution	+	No	
Tendency to reduced biological diversity (the farming effect)	-	No	Yes (by direct or indirect control)

Social impacts

- Most social impacts are either an aspect of or caused by the economic impacts
- Difficult to assess desirability/undesirability
 - Little is known about relative social values
- Changes in existing social structures are probably costly to most people
- Many social changes will probably be liked by some and disliked by others (social distribution)

Social impacts (cont.)

Impact	Evaluation	Modifiable
Fewer, larger fishing companies.	(-)	No
Geographical rearrangement of the fishing industry	-	Yes (to a certain extent)
Altered pattern of labour use	-/+	No
More technically advanced fishing industry	+/-	No
Contraction in production of fishery inputs	-	No
Increased income in fishing industry and fishing communities.	+	
Altered distribution of income	-	Yes (to a limited extent)
Altered power and social status relationships	-	No
Cultural shifts.	-	No
Altered economic social and environmental evolutionary path	(-)	No
A period of social adjustments	-	No

Impacts of SURFs (relative to WURFs)

Summary

1. Economic impacts: **Largely positive**
2. Environmental impacts: **Mostly positive**
3. Social impacts: **Largely negative**

⇒ **Cannot assert shift to SURFs is desirable!**

N.B. Same could have been said of the industrial revolution and globalization.
Few would like to go back now!

END