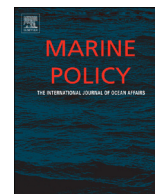




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A methodology to measure the social impact of the EU quota setting procedure

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ABSTRACT

A methodology is described to measure the short to medium term social impacts of the European Union (EU) quota setting procedure. The method utilises data that is collected nationally within the EU and so allows timely estimation of possible social impacts as a result of changes in total allowable catches that could affect national fishing fleets and fishing dependent communities. Social impacts can extend to a very broad set of characteristics such as employment, wages, health and safety, gender participation, education, traditions, 'well-being', etc. Here, the use of the term 'social' is in a narrow sense in that the indicator that is relied on is employment (including downstream effects) due to the characteristics of the indicator and its availability in terms of data collection. The methodology is described in terms of its application in Ireland and measures are suggested to enable its application at an EU level.

1. Introduction

The social dimensions of fisheries are mentioned frequently in European Commission regulations on the sector. The latest Common Fisheries Policy (CFP) legislation states that “*The CFP shall ensure that fishing and aquaculture activities are environmentally sustainable in the long-term and are managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the availability of food supplies*” [1]. On the measures to be included in multiannual plans the legislation states “*Before measures are included in the multiannual plans, account shall be taken of their likely economic and social impact*”.

The European Union (EU) is ‘firmly committed’ to sustainable development as a strong supporter of the Rio 1992 Declaration and signatory of the Amsterdam Treaty in 1997 [2]. In the literature on sustainable development the social pillar has commonly been noted as the weakest at the expense of the environmental and economic pillars [3]. With ecosystem based management now firmly incorporated into EU fisheries policy and the environmental pillar given more priority the position of the social dimension has been further weakened [4].

In the impact assessment of the proposed CFP reform [5] it was noted how the fisheries sector in the EU lacked social sustainability, evident through low wages and high safety hazards, which had led to

low demand for employment in the sector. Interlinked with the low levels of environmental and economic sustainability this had led to declining levels of employment over the preceding 15 years [5]¹ This low local demand for employment has led to the significant growth in non-EU crew employed in the fisheries sector across the EU [6–8] and elsewhere [9].

One of the key problems affecting the social dimension of fisheries is the availability of indicators that readily signal the social state or changes therein. [10] developed a systematic process to create frameworks of indicators for monitoring sustainable development in fisheries. Eight criteria² were listed to evaluate the strength and weaknesses of indicators of which the authors noted two were essential; relevance and measurability. Outside of the use of the employment indicator, there has been a distinct lack of social indicators that evaluate well against these two characteristics.

The fact that no readily measurable social indicator has been developed should come as no surprise as social aspects are many and, of the three sustainability dimensions, the social is the most multifaceted. In fisheries a commonly used environmental indicator is F_{msy} , the fishing mortality that is estimated to lead to the fish stock reaching a maximum sustainable yield biomass level. Many other biological indicators could be used however there seems to be general agreement (evident through widespread use in the International Council for the

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¹ Technological advances as another factor in falling employment is mentioned later in the document.

² Relevance; Reference values; Sensitivity; Measurability; Sensible expression; Simplicity/understandability; Ease of interpretation; Timeliness.

Table 1
Variables utilised and sources in socioeconomic impact assessment methodology.

Variable	Symbol	Source
TAC Proposals	θ	European Commission
Sales notes prices	β	Sales notes ^a
Landings by fleet segment	γ_{fs}	Landings declarations ^a
Landings by vessel county	γ_{co}	Landings declarations ^a
Landings by port	γ_p	Landings declarations ^a
% change (Δ) Landings by fleet segment	δ_{fs}	Own calculation
% change (Δ) Landings by vessel county	δ_{co}	Own calculation
% change (Δ) Landings by port	δ_p	Own calculation
DCF raised employment by segment	ε_{fs}	DCF ^b
DCF raised employment by vessel county	ε_{co}	DCF ^b
Employment multipliers by port	π_p	Socioeconomic reports on ports ^c
Final employment impact calculation	FEI	Own calculation

^a Sales notes and landings declarations/logbook data are collected by the SFPA in Ireland.

^b Data Collection Framework (DCF) fisheries and aquaculture data are collected in Ireland by Bord Iascaigh Mhara (BIM).

^c In Ireland, three socioeconomic reports have been carried out on important ports and their hinterlands by BIM.

Exploration of the Sea (ICES) advice³) that this indicator is relevant and measurable. In economic terms the RoFTA, the return on fixed tangible assets, indicator is commonly used to assess the long term economic viability of investments in the fishing sector. As RoFTA depends on the profitability of the latest year of data it indicates short term and long term economic states in a measurable and relevant manner. The environmental and economic indicators here also score well compared to the other six criteria outlined by [10]. Employment as the social indicator to truly represent the social dimension has only ever partially been accepted given that aspects such as demography, literacy and education, fishing traditions and culture and gender distribution in decision-making are listed as only a brief sample of the social aspects in the Food and Agriculture Organisation indicators for sustainable development of marine capture fisheries [11].

Nevertheless, the employment indicator is relevant and measurable in a social context. Accepting its limitations to characterise the social dimension of fisheries thoroughly the indicator is informative and can be readily applied in a timely manner like the environmental and economic indicators mentioned previously. In this paper, a methodology is described to estimate the short-term social impacts of the European Union's annual total allowable catch (TAC) setting procedure in terms of the impact on employment. The data sources and methodology will be described in the methods and materials section.⁴ The impact of proposals on a selection of stocks and the subtotal of all quota species for Ireland are described in the results section. In the discussion the methodology is analysed and the next steps required to expand this approach at an EU level will be explored.

2. Methods and materials

In Ireland, socio-economic impact evaluations are carried out annually on the proposed and final total allowable catches for the quota species of interest to the Irish fleet. The evaluations aim to assess the economic and social impacts on the Irish fleet segments and the distribution of impacts around the main fishing communities of Ireland. As mentioned in the introduction the social impact is measured crudely through the most adequate indicator available, employment.

A number of data sources are used as part of this methodology such as the TAC proposals, sales notes, landings declarations, data collection framework socioeconomic data, vessel register and socioeconomic multiplier estimates. In Table 1 the variables are listed with their sources. In the months leading up to the December Council meeting of

fisheries ministers where the TACs are finalised the European Commission publishes proposals on TACs for selected species based on scientific advice from advisory bodies such as ICES and STECF (the Scientific, Technical and Economic Committee for Fisheries). Sales notes data are collected under EU law [12] in Ireland by the Sea Fisheries Protection Agency (SFPA). Data on landings is collected under the same legislation by the same agency in Ireland. Data on employment is collected under the Data Collection Framework (DCF) [13]⁵ by Bord Iascaigh Mhara in Ireland. Economic and employment multipliers are sourced from an on-going series of reports carried out for important ports in Ireland. The ports of Killybegs, Castletownbere and Ros an Mhíl and their environs were assessed and downstream multiplier factors calculated [14–16]. The initial report on Killybegs was part of a series of reports led by MRAG consortium on fisheries dependent communities around the EU.⁶ The other data source used was the vessel registers to determine the fleet characteristics not only by fleet segments but by registered county also.

A schematic of the methodology can be viewed in Fig. 1. The process begins with the TAC proposals circulated in the lead up to the December Council. Proposals are made for a number of species for the following year (year $t + 1$) and these are listed and compared with the current year's TAC (year t). A number of rounds of proposals are distributed in October and November to all stakeholders with more species included as the rounds progress. The change in TAC proposed is calculated (θ). Sales notes prices (β) for the quota species are now listed using the latest available data (which generally will be $t-1$). The next step disaggregates landings declarations (using the latest available data, generally $t-1$) in list form for the quota species in three ways; by fleet segment (fs); by registered county (co); and by landing port (p). Landings are disaggregated by fleet segment to show the direct employment effect on the fleet. Landings are disaggregated by registered county by linking vessels from the landing declarations to the vessel register to show where the vessel owner resides. This creates the link between the economic activity and the geographical location of the direct and further downstream benefits of the fishing sector. Landings are disaggregated by port to assess possible impacts on key ports.

Impacts of TAC proposals are now estimated for each disaggregation of landings (γ_{fs} , γ_{co} , γ_p) by incorporating the sales notes prices per quota species (β) and the proposed change (θ) for all quota species sp_n . The change in landing value by segment is;

$$\delta_{fs} = \sum (\theta_{sp_n} \times \beta_{sp_n} \times \gamma_{fs_sp_n}) \quad (1)$$

³ See <http://www.ices.dk/community/advisory-process/Pages/Latest-Advice.aspx>.

⁴ Data sources listed here are Ireland specific however originate from EU regulations.

⁵ Formerly Council Regulation (EC) 199/2008.

⁶ https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/killybegs_en.pdf.

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