

# An economic analysis of illegal, unreported and unregulated (IUU) fishing: Key drivers and possible solutions<sup>☆</sup>

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## Abstract

The fight against illegal, unreported and unregulated (IUU) fishing activities has recently become a high priority in the international fisheries management agenda. While a number of academic contributions have sought to improve the understanding of the problem, most remain limited in scope. To help policy makers obtain a more comprehensive picture of the situation, the OECD Committee for Fisheries recently completed a study addressing the full economic dimensions of IUU fishing in an integrated manner. This paper presents the analytical framework developed by the OECD as well as some of the key results of the study regarding the causes of and the potential solutions to this widespread problem.

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## 1. Introduction

While the problem of fishing activity regarded as illicit is scarcely new [1], only recently has it become a major international issue. One reason is the recognition by the international community of the extent of the problem, which affects both domestic waters and the high seas, as well as all types of fishing vessels, regardless of their size or gear. The international community has also become increasingly concerned by the contribution of illegal, unreported and unregulated (IUU) fishing to the downward trend in stock status observed since the 1950s. In this context, any behaviour likely to undermine endeavours to manage and rebuild fish stocks, such as IUU fishing, is no longer considered as economically and politically accep-

table. Indeed, some countries, such as Australia, consider the breach of sovereignty associated with IUU fishing operations as a particularly sensitive issue [2].

Following the first major international initiative to deter and eliminate IUU fishing, the 2001 FAO International Plan of Action [3–4], the necessity to curb this economically, environmentally and socially harmful activity has been echoed and reinforced in various international fora. These include the 2002 World Summit on Sustainable Development (the WSSD, where governments called for the control of IUU by 2004 [5]), the 2003 G8 (the Action Plan of which urged for the elimination of IUU fishing) and the UN General Assembly. The subject has also received some interest from the academic community [6–10]. However, most of the papers published to date either remain at a theoretical level or focus only on specific, selected facets of IUU fishing. For example, Erceg [10] focuses her analysis on the controls imposed by State on their nationals as a way of deterring IUU fishing.

Pursuing an alternative strategy, the OECD Committee for Fisheries recently completed a major 3-year study, the explicit objective of which was to address the full economic dimensions of IUU fishing in an integrated and

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comprehensive manner [11]. The rationale for this decision was to make sure that all underlying causes of IUU fishing have been correctly identified in order to select the most appropriate solutions to the problem. This work has been partly based on the outcome of an international workshop hosted in April 2004 by the OECD Committee for Fisheries, which sought to present empirical evidence on the nature and extent of IUU activities. Participation came from governments, IGOs, NGOs, RFMOs and academia [12–16].

The aim of this paper is to present the analytical framework used in the OECD study (see [11]), which elaborates on the model developed by Charles et al. [6]. Drawing on a systematic comparison between fishing operators complying with regulations and IUU fishing operators, the following section describes the major causes for engaging in IUU fishing activities. The final section explores actions that could be taken to modify IUU operators' incentives structure by reducing revenues from IUU fishing, increasing the operating costs for IUU activities, increasing the capital costs of IUU/FOC vessels, and by increasing the cost of risk of engaging in IUU activities.

## 2. The causes of IUU fishing

IUU fishing is primarily an economic activity. Recognising that incentives to engage in IUU fishing activities are also economic by nature, the general economics of crime and punishment can be used to model this phenomenon. A key outcome of this theory, the basis of which are the works by Becker [17] and Stiegler [18], is that a risk-neutral individual will commit an offence if and only if his private expected benefit exceeds the expected sanction for doing so. In the context of IUU fishing, this means that incentives to engage in IUU fishing operations will exist (increase) as long as the expected profit of IUU fishing is positive (increases; see [11] for a detailed description of the model).

### 2.1. Economic causes of IUU fishing

Overcapacity, ineffective management and subsidies are identified as three of the major economic causes of IUU fishing. At the level of the vessel, overcapacity can be caused by a situation of general imbalance between fishing capacities and fishing possibilities in the domestic fleet or inappropriate allocation of fishing rights, both of which result from inappropriate management regimes. The analysis shows that incentives to engage in IUU fishing exist as long as the expected return from using the excess capacity is greater than the regular best alternative, which is a zero profit [11]. In the same vein, IUU fishing activities may take place at the level of Regional Fisheries Management Organisations (RFMOs) because some RFMO members are not granted "sufficient" fishing possibilities in comparison to their—sometimes emerging—fishing capacities. This may be due to the closed nature of some

RFMOs or to the lack of fishing history of some members which restricts their claims to a greater share of a Total Allowable Catches (TAC).

The provision of subsidies that contribute to the maintenance, the development or the transfer of fishing capacities are likely to artificially reduce the cost of IUU fishing capacities both locally and internationally. This was recognised by governments in the WSSD Implementation Plan in which they undertook to "*eliminate subsidies that contribute to illegal, unreported and unregulated fishing and to over-capacity, while completing the efforts undertaken at WTO to clarify and improve its disciplines on fisheries subsidies...*" [5]. There is an emerging consensus in the current WTO negotiations that any support for new vessel construction should be prohibited.

The way domestic management regimes are designed and the effectiveness with which they are enforced is an important determinant of the income of individual fishers. In principle, the higher the income generated by domestic fisheries, the lower the incentive for fishers in those fisheries to engage in IUU activities. Hence, countries with weak and poorly enforced management regimes may be a likely source of vessels for IUU operations. The importance of introducing capacity restrictions in national fleets is also significant in this regard, although caution is required in managing the transition towards more economically viable fleet structures to ensure that capacity does not shift to IUU operations.

### 2.2. Institutional factors

Gaps in the current international legal framework for the sea (in particular as provided by the UNCLOS) allows for some fishing activities to be in practice beyond the reach of national and international regulations [11]. Unregulated fishing activities are defined as those activities conducted by vessels without nationality or flying the flag of States not parties of relevant fisheries organisations [3] and who do not therefore consider themselves bound by their rules. Of particular interest are those IUU operations conducted by citizens of a given State who register and flag their vessels in a foreign State with the explicit objective to circumvent domestic and international regulations. These foreign States are often referred to as Flag of Convenience (FOC) [19, 20] or, in the OECD study, Flag of Non-Compliance (FONC) States. In the high seas, whether or not under an RFMO's jurisdiction, IUU/FOC vessels are not forbidden to fish under current maritime law. Thus, even where they undermine existing fisheries management arrangements, IUU/FOC vessels can hardly be punished for doing so, dramatically reducing the potential effectiveness of sanctions.

Other institutional problems can exacerbate the IUU problem, with direct consequences for the economic returns of IUU operators. First, it is well recognised that there is generally an insufficient level of Monitoring, Control and Surveillance (MCS) both domestically and in

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