

# Science for Environment Policy

## Viewing fish stocks as economic investments



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1. [http://ec.europa.eu/fisheries/cfp/index\\_en.htm](http://ec.europa.eu/fisheries/cfp/index_en.htm)
2. [http://ec.europa.eu/commission\\_2010-2014/damanaki/documents/halfway\\_there.pdf](http://ec.europa.eu/commission_2010-2014/damanaki/documents/halfway_there.pdf)
3. <http://www.cbabuilder.co.uk/Quant2.html>

**In economic terms**, overfishing can be regarded as borrowing natural capital at a high rate of interest, according to a new study. Combining economic and biological principles, the study develops a concept that expresses overfishing in terms of the 'interest' that the fishing industry have to repay in future years as a result of lost income from depleted fish stocks.

**The EU is currently** reforming its Common Fisheries Policy<sup>1</sup> to promote sustainable fishing. The plans for reform are centred on the concept of maximum sustainable yield (MSY) as a limit, above which fishing is unsustainable because only a small number of fish available to breed remain. Fishing more sustainably benefits the industry, because it leaves a larger breeding stock and therefore increases future profits. Figures from this year<sup>2</sup> suggest that some recent progress has been made in the EU; a rise in the number of fish stocks being harvested sustainably is associated with additional profits of €135 million.

To develop a better understanding of the relationship between sustainable fisheries and economics, German researchers from economic and oceanography backgrounds worked together to develop a shadow interest rate (SIR) for the fishing industry. In other industries, shadow prices and shadow interest rates are sometimes used to express values that differ from the market value due to external factors, for example, shadow prices for steel production account for the social cost of pollution from the industry<sup>3</sup>.

For the fishing industry, the SIR developed by this study is high when the level of overfishing is significant and low when overfishing is minimal. The higher the value of SIR, the more an 'investment' is worth. An 'investment' in this case, is catching fewer fish. SIR therefore links the level of overfishing to the level of profit that fishermen will make in the future.

The researchers calculated the SIR for 13 different fish stocks, including herring, plaice and sole stocks in the North Sea, and Eastern Baltic cod, one of the most important fish stocks in Europe, based on data from 1984-2008 stock assessments published by the International Council for the Exploration of the Sea.

The results suggest that, based on the concept of SIR, all stocks were overfished during this time. According to the researchers, lowering the total allowable catch – the catch limit under EU fisheries policy – and thus reducing catches, could be regarded as an investment in future fish stocks that could lead to a considerable return in profits.

The concept could be used to help those responsible for setting catch limits understand the economic impacts of different limits. In addition, SIR values can be calculated and compared for different fish stocks. For example, if reducing the catch limit for one fish stock promises a larger economic benefit in the future than for another, this might be considered a more profitable management strategy.