



Deep trouble

How deep-sea bottom trawling costs the EU money and jobs and damages our valuable ecosystems

Vulnerable deep-sea species and habitats are subject to some of the most destructive fishing practices still in use by EU fleets. Deep-sea bottom trawling causes significant environmental damage and fails to make a positive economic return. Such activities are heavily subsidised by EU taxpayers. EU authorities now have a chance to stop this waste of economic, environmental and social value.

Executive Summary

Deep-sea bottom trawling is detrimental not only to deep-sea ecosystems but to our economies, societies and the wider environment. Bottom trawl operators don't pay these costs – we do. This briefing presents the economic, social and environmental case for a phase-out of deep-sea trawling.

The costs of the deep-sea fishery in EU waters are disproportionate to its commercial significance, accounting for only 1.5 per cent of the catch in the North-East Atlantic. We present evidence that each tonne of fish caught by deep-sea bottom trawling represents a cost to society of between €388 and €494. This is considered conservative since it does not include the significant costs to valuable deep-sea ecosystems, which are difficult to estimate.

Of all fishing practices, EU data suggests that trawling is among the lowest in terms of number of jobs sustained per tonne of fish. Methods such as long lining could sustain six times as many jobs and are not as harmful to the environment and ecosystems. These gear types

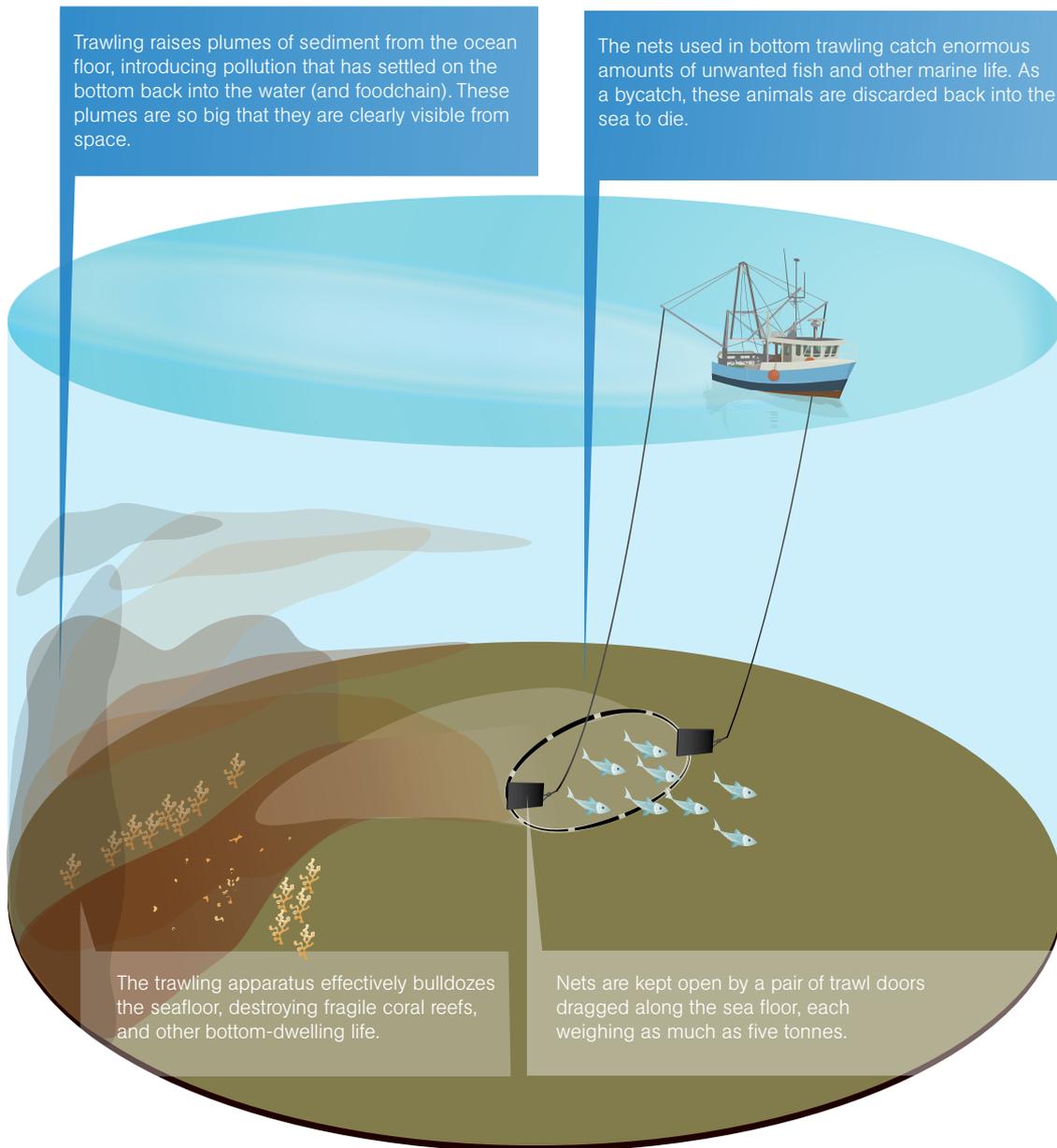
distribute relatively more of the benefits of fishing to people rather than to fuel companies and business profits.

Deep-sea bottom trawling is costly to the economy, society and the environment. In the EU we not only permit these activities but also subsidise them. This December a plenary vote of the European Parliament will provide the opportunity to adopt a phase-out of the most destructive deep-sea fishing methods, so that the European taxpayer must no longer subsidise socially, economically and environmentally costly activities.

The EU deep-sea fishery in the North-East Atlantic

Deep-sea bottom trawling involves dragging heavy metal beams, rollers or trawl doors across the seafloor, destroying fragile marine habitats and the species that inhabit them (Figure 1). In a recent report, the European Commission emphasised that deep sea species could be harvested in other ways.¹ Alternative methods such as bottom long lining, which involves hooked lines positioned along the seafloor, are less harmful to deep-

Figure 1: Bottom trawling technology



Source: <http://saveourseas.com/threats/overfishing>

sea ecosystems than bottom-trawling.² It is estimated that trawlers take 52 per cent of the total deep-sea species catch in the North-East Atlantic, while long liners take 38 per cent and gillnetters take only 2 per cent.³

The deep-sea fishery is economically insignificant

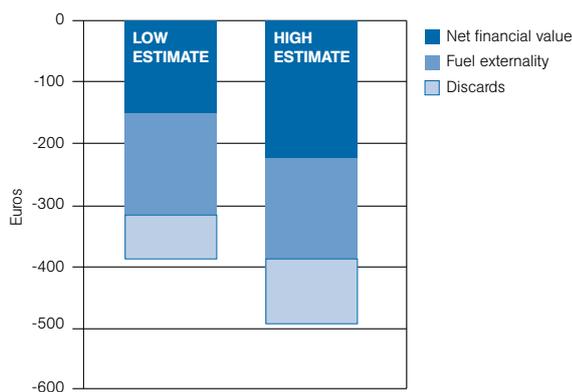
A phase-out of deep-sea bottom trawling would affect very few vessels. Deep-sea fisheries account for only 1.5 per cent of European catches in the North-East Atlantic, of which only 52 per cent are caught by bottom trawl, as above.⁴ Thus, the economic benefits that are currently derived from deep-sea bottom trawling are comparatively small. As this briefing demonstrates, these benefits are a meagre reward for the substantial costs that we incur.

The social value of deep-sea trawling

The true benefit of deep-sea bottom trawling to society is comprised of the net financial position of the activity (revenues minus costs), less any environmental damages such as greenhouse gases from fuel use and wastage through discarding. Social/community outcomes should be taken into account where possible. The following analysis estimates the true net benefit to society of bottom trawling for deep-sea species.

Comprehensive financial data for the years 2002–2011 was obtained from the French fishing firm Scapêche by the non-profit organisation BLOOM – including through legal proceedings for the 2009–2011 accounts, which Scapêche had failed to provide to the French Tribunal of Commerce despite legal obligations. Scapêche operates the largest French deep-sea bottom trawl fleet,

Figure 2: Net social benefit of deep-sea trawling per tonne of fish (€/t)



predominantly off the coasts of Scotland and Ireland. The fleet includes six deep-sea trawlers⁵ and a large proportion of the total catch (about 40 per cent) is deep-sea species.⁶ These financial records are the closest available approximation to the profitability of deep-sea bottom trawling in general.

Analysis by BLOOM shows that Scapêche has made an overall financial loss in recurring years.⁷ This situation is accentuated when significant public subsidies (€9.3 million between 2002 and 2011)⁸ and tax exemptions are subtracted. Using these data and estimating real resource costs and benefits (i.e. profits excluding taxes and subsidies) and an estimate of Scapêche's total catch,⁹ we estimate the financial loss per tonne of fish at between €153/t and €225/t for 2010.

Deep-sea bottom trawling is highly fuel-intensive. Estimates from Seafish show fuel consumption was 26 per cent of income on average across all UK trawling types in the years 2011 and 2012. This is compared to an equivalent figure of only 15 per cent for long lining, pots,

traps, and hooks.¹⁰ Such a degree of fuel dependency can have major social impacts when fuel prices are volatile.¹¹ Evidence from the Norwegian Institute of Food, Fisheries and Aquaculture Research (Nofima) suggests that diesel consumption for trawlers is 580–720 l/tonne of fish compared to only 180–320 l/t for long lining.¹² An internal memo of the Union des Armateurs à la Pêche Française (UAPF – an organisation representing French fishing vessel owners) indicates that the fuel intensity of French deep-sea industrial vessels was 920 l/tonne of fish. Monetising the greenhouse gases associated with this latter figure in line with Green Book¹³ principles (the UK Government guide to economic appraisal) suggests that the environmental damage of Scapêche's fuel consumption may be €165/tonne of fish.¹⁴

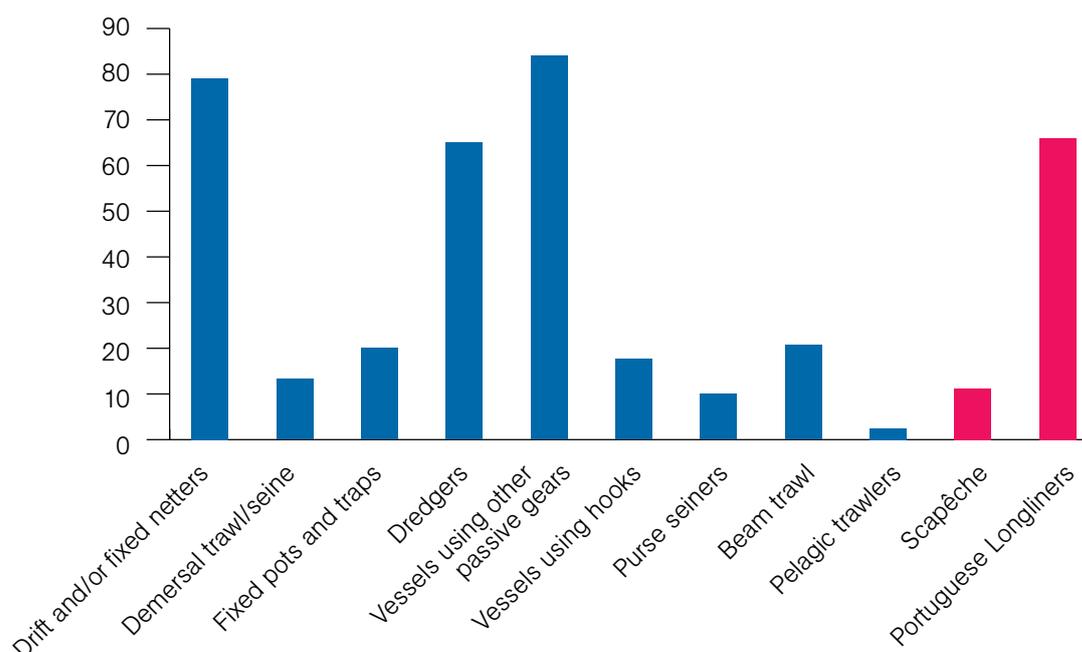
Conservatively assuming a discard rate of 20.8 per cent¹⁵ and a discard value of €339–500/t (or 20 per cent of the value of intended catch) yields a further externality associated with bottom trawling of €71–104/t.¹⁶ This estimate is conservative not simply due to the low discard rate and value assumed, but also because this does not account for the value of discarded fish as inputs into future harvests.

Taking all of these components together, the financial, environmental and social loss per tonne of fish is estimated between €388/t and €494/t (see Figure 2). In other words, deep-sea bottom trawling is a net destroyer of value. For every €1 of resources that Scapêche uses, society only regains between 79 and 82 cents. This does not even include the damages that are caused to the ocean floor and hence should be considered an underestimate of the true cost of deep-sea bottom trawling. Preventing this activity would be a net gain to society, even if it were not replaced by some other method of fishing. The scope of the analysis is defined in Table 1. This analysis confirms the finding in

Table 1: Scope of analysis

Component of net benefit to society	Data	Comments
INCLUDED		
Financial income	Scapêche financial records	Tax exemptions and subsidies excluded.
Financial costs	Scapêche financial records	Tax exemptions and subsidies excluded.
GHG damages	Fuel intensity estimates from Nofima and valuation based on UK Government guidance	
Discard waste	Assumed discard rate of 20.8 per cent Assumed value equals 20 per cent of landed value	Conservatively estimated for illustrative purposes.
NOT INCLUDED		
Damage to ecosystems	No monetised figures	Expected to be substantial; therefore, estimate of net benefit suffers large positive bias.
Social/community costs and benefits	No monetised figures	Employment benefits considered separately below.

Figure 3: FTEs per Mt of fish landed by gear type



our previous report *Value Slipping Through the Net*¹⁷ that trawling can be a particularly socially destructive fishing method.

While data limitations make a robust comparison difficult, there are reasons to conclude that alternative fishing methods, such as long lining, may perform better than trawling. Firstly, as argued above, fuel intensity may be lower for long lining, which is a financial and environmental benefit. More importantly, passive methods such as long lining are less harmful to valuable marine ecosystems. In terms of financial performance, there is some limited evidence that alternative fishing methods can produce greater profits, largely due to a better quality product.¹⁸

Catching fish, losing jobs

The industry has argued that the phase-out of certain methods will result in the loss of employment.¹⁹ It has been argued elsewhere that this is an exaggeration of the reality.²⁰ However, taking the argument on its own terms, it can be seen that a ban may actually *create* jobs in the long term.

Trawling is a capital- and energy-intensive fishing method. Relatively little labour is required to catch a large volume of fish. This low level of labour input is compensated by lots of machinery and energy. Analysis of EU Annual Economic Report data for the North Atlantic fleet in 2011²¹ reveals that, of all gear types, trawling sustains one of the lowest levels of employment (full-time equivalent – FTEs) per tonne of fish landed. Other gear types, such as “vessels using hooks”, which includes long lining,²² sustain far more jobs (see Figure 3). These gear types distribute relatively more of the benefits of fishing to people rather than to fuel companies and business profits.

This conclusion is supported by the analysis of two case studies. The Portuguese fleet of bottom long liners fishing for deep-sea black scabbardfish sustained an estimated 65 jobs per Mt of fish landed in 2009;²³ the Scapêche fleet, of which a large proportion is engaged in trawling,²⁴ sustained an estimated 9–13 jobs per Mt of fish landed in 2010²⁵ (see red bars in Figure 3). Therefore, using bottom long lining methods may sustain six times more jobs per Mt of fish compared to deep-sea bottom trawling.

Thus, in terms of social benefits, it seems that the alternatives to fishing deep-sea species by bottom trawling may have greater job creation potential in the long term, in contrast to the industry’s assertion that a phase-out of destructive gears will necessarily be detrimental to employment. In the context of high and persistent unemployment rates in many of the countries with deep-sea fishing fleets, the current allocation of the returns from deep-sea fishing away from labour and towards other inputs is particularly poignant.

The damage beneath the surface

The deep sea is the largest and least explored habitat on Earth. There is a large and conclusive body of evidence demonstrating that (1) deep-sea ecosystems are high in biodiversity as well as both valuable and vulnerable, and (2) bottom trawling has significant negative impacts on such ecosystems.²⁶ More than 300 scientists from around the world have signed a statement in support of the proposal to phase-out deep-sea bottom trawling, due to their concern over the impact of the practice on deep-sea ecosystems.²⁷

The analysis above provides estimates for a number of aspects of deep-sea fishing, but some elements have not been monetised: the large expected cost associated

with damage to the seafloor is not included in the analysis above. These damages exist in a number of forms, such as:

- a reduction in the ability of deep-sea ecosystems to sustain commercial species in the future;
- a decline in ecosystem services such as nutrient cycling and waste absorption;
- a loss of biodiversity and genetic material of potential use to humans.²⁸

If it were possible to include these costs then the estimate of value lost to society derived above would be significantly greater.

An opportunity for change

The European Parliament has the chance to reduce the costs outlined in this briefing. Limits on deep-sea bottom trawling will benefit not only vulnerable deep-sea ecosystems but also Europe's economy, society and environment.

Endnotes

- 1 COM. (2013). Complementary information to the Commission's Impact Assessment (SWD(2012)203 final) 13th June 2013.
- 2 For example: Norse, E.A., & Watling, L. (1999). 'Impacts of Mobile Fishing Gear.' *American Fisheries Society Symposium* 22, pp 31–40; Ministry of Fisheries. (2008). *New Zealand bottom fishery impact assessment*. Retrieved from <http://www.fish.govt.nz/NR/rdonlyres/344F062B-5331-481B-ADD7-FBF244566A96/0/NewZealandBottomFisheryImpactAssessmentv11cDec20082small.pdf>; Morgan, L.E., Norse, E.A., Rogers, A.D., Haedrich, R.L. & Maxwell, S.M. (2005). *Why the world needs a time-out on high-seas bottom trawling*. Retrieved from http://mcbi.marine-conservation.org/publications/pub_pdfs/TimeOut_english.pdf
- 3 COM. (2013). 'Complementary information to the Commission's Impact Assessment (SWD(2012)203 final) 13th June 2013.
- 4 *Ibid.*
- 5 BLOOM Association. (2013). *Analysis of the accounts of Scapêche Intermarché's Fishing Fleet*. Retrieved from http://www.bloomassociation.org/download/Accounts_Scapeche_Eng.pdf
- 6 BLOOM Association. (2013). *The Impact of Deep-Sea Fishing on Employment in France*. Retrieved from http://www.bloomassociation.org/download/2013_19_March_BLOOM_JOB_ANALYSIS.pdf
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- 19 For example, hear MEP Kriton Arsenis discuss the opposition that he and other MEPs are facing from industry: Gregston, B. (30 September 2013). 'EU to ban deep-sea trawling.' *RFI website*. Retrieved from <http://www.english.rfi.fr/europe/20130930-eu-ban-deep-sea-trawling>
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- 24 In any case deep-sea trawling is likely to be similar to non-deep-sea trawling in terms of labour intensity.
- 25 Based on catch and employment estimates from: Nouvian, C., (2013). *French deep-sea fisheries: Case study*. BLOOM Association to PECH Committee. Retrieved from <http://www.europarl.europa.eu/document/activities/cont/201302/20130220ATT61452/20130220ATT61452EN.pdf>
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