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Original Article

A 20-year retrospective on the provision of fisheries subsidies in the European Union

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The next few months will be crucial in determining whether the world's major fishing nations will deliver on commitments under the Sustainable Development Goals (SDGs) of the United Nations to prohibit harmful fisheries subsidies. Timing is of heightened importance given that the EU—the second-largest subsidizer—is reforming its financial instrument for fisheries. This article therefore examines the last 20 years of subsidies provided to the fisheries sector by the EU and supports discussion of the potential future for EU fisheries subsidies and the chance of success for the SDGs. Significant changes have occurred to EU fisheries subsidies during this period. Partly these changes have occurred as a result of the removal of certain capacity-enhancing subsidies and partly due to additional funds being allocated to beneficial forms of public funding. However, progress is slow and a significant amount of capacity-enhancing subsidies remain. Furthermore, the true extent of any reduction in capacity-enhancing subsidies may be shrouded by the Pollyannaish classifications of subsidization, but most disconcerting are the recent positions adopted by both the European Parliament and Council of the EU, which aim to reintroduce some of the most harmful subsidies, thereby putting the progress needed to achieve sustainable fisheries at risk.

Keywords: harmful subsidies, overcapacity, overfishing, Sustainable Development Goals, World Trade Organization

Introduction

There is agreement across academia that subsidy-based fisheries policies that artificially increase profits, whether directly or indirectly, can result in overcapacity that can subsequently lead to unsustainable fishing practices and ultimately increases the risk of overfishing fish stocks (Munro and Sumaila, 2002; Froese *et al.*, 2018; Cisneros-Montemayor and Sumaila, 2019; Sakai *et al.*, 2019; Smith, 2019). These harmful impacts, and the risk of overfishing, could be mitigated by beneficial forms of government intervention, such as investment in fisheries management, conservation, and control, but this mitigating effect can be difficult to ensure (Milazzo, 1998; Munro and Sumaila, 2002; Arthur

et al., 2019; Le Manach *et al.*, 2019). The mounting evidence of the deleterious effects of harmful subsidies has resulted in worldwide commitments to discipline, eliminate, or redirect them. The Sustainable Development Goals (SDGs) of the United Nations demand that by 2020 "certain forms of fisheries subsidies which contribute to overcapacity and overfishing" be prohibited (United Nations, 2015), and in December 2017 members of the World Trade Organization (WTO) renewed their commitment to continue negotiating towards "an agreement on comprehensive and effective disciplines" for harmful fisheries subsidies at the next WTO Ministerial Conference in 2019 (WTO, 2017). However, with time having run out for the world's major fishing nations to deliver on these commitments and the 2019 WTO Ministerial Conference having been postponed, the challenge now is to ensure that tangible steps towards these goals are taken in 2020. As such, the next few months are crucial to gauge progress towards delivering on their collective responsibility to help ensure sustainable fisheries by disciplining harmful fisheries subsidies.

The timing is further critical given that this coincides with the EU fisheries policy cycle. The next iteration of the EU's financial instrument for fisheries and aquaculture is being negotiated and is due to cover the period from 2021 to 2027. Besides being the world's largest trader of fishery and aquaculture products (EUMOFA, 2018), the EU harvest a significant amount of seafood—landing 5 million tonnes in 2016, i.e. >5% of the reported total global catch (FAO, 2018)—and is an important political actor with regard to fisheries subsidies—estimated to have provided EUR 3.2 billion in 2018, contributing 11% of the global total (Sumaila *et al.*, 2019a). This key juncture therefore presents an opportunity for EU institutions to ensure that the next EU-wide fisheries financial instrument, the 2021–2027 European Maritime and Fisheries Fund (EMFF), is framed in a way that eliminates harmful fisheries subsidies altogether (Sumaila *et al.*, 2019c).

Here, we provide, for the first time, a retrospective view on EU fisheries subsidy trends over the past 20 years. The paper uses recognized fisheries subsidies nomenclature to define and identify potentially harmful subsidy types (Sumaila *et al.*, 2010) and broadly classifies subsidies as either "capacity enhancing", "beneficial", or "ambiguous", based on the nature of the subsidy rather than the fisheries or fleets they may impact. The purpose in doing so is to enable an overview in terms of the relative contribution of and balance between, in particular, "beneficial" subsidies and "capacity-enhancing" or harmful subsidies. The trends described support a discussion about the potential future of EU fisheries subsidies in light of the reformed framework for the EMFF and progress towards prohibiting all harmful fisheries subsidies in accordance with international commitments.

Material and methods

This article reviews EU policy regulations, peer-reviewed scientific papers, technical reports, and evaluations prepared for the European Commission. All documents were sourced using Google Scholar or the Publications Office of the EU website and were publically available. The review focuses on three key periods of the EU's Common Fisheries Policy (CFP) and the associated financial instruments, namely the second iteration of the Financial Instrument for Fisheries Guidance (FIFG, 2000–2006) (Council of the EU, 1993), through the European Fisheries Fund (EFF, 2007–2013) (Council of the EU, 2006; European Commission, 2007), and ending with the current iteration of the EMFF (2014–2020) (European Parliament and Council of the EU, 2014).

Restricting the analysis to the FIFG, EFF, and EMFF represents a conservative approach for three reasons. First, substantial public subsidies have been allocated to the EU fisheries sector outside these three financial instruments, for instance, to secure public fishing access agreements with countries in Africa (Le Manach *et al.*, 2013). Second, indirect subsidies such as fuel tax concessions, which represent a large portion of subsidies (Sumaila *et al.*, 2016), are not accounted for in the FIFG, EFF, and EMFF. Finally, EU sources of funding are not necessarily the only financial support provided to the EU fisheries sector, as Member States can supplement support within their own national budgets (e.g. State and sub-State aids). The review is therefore supplemented by work previously published by the authors that provide broader estimates of global fisheries subsidies for 2003, 2009, and 2018 (Sumaila *et al.*, 2010, 2016, 2019a, b). All amounts are presented in constant 2018 Euros (EUR_{2018}) using annual averages of Consumer Price Index data from the International Monetary Fund (IMF, 2019) and 2017 currency exchange rates from The Bank of International Settlements (BIS, 2019).

For the purpose of this article, fisheries subsidies are defined as financial payments, either direct or indirect, from public entities to the private fisheries sector (Milazzo, 1998), and excludes "fuel subsidies". It is important to note that while fuel subsidies are not included herein, they are recognized as harmful fisheries subsidies (Harper *et al.*, 2012). Due to the vastness of this field of research the analysis is confined, to the extent possible, to wild capture marine fisheries (i.e. excluding aquaculture and inland fishing). We therefore only include subsidy types where wild capture marine fisheries are the key beneficiary, as such, subsidies including the investment in processing and marketing that are known to benefit many segments of the fisheries sector are excluded from the analysis, although they are still considered to be harmful fisheries subsidies (Sumaila *et al.*, 2010). It is acknowledged that some subsidies may still benefit multiple sectors; where data allow, these subsidies were split between the relevant sectors and only those going to marine fisheries were included.

There are a number of different but closely related classifications of fishery subsidies (FAO, 1995; Milazzo, 1998; APEC, 2000; United Nations, 2002; Porter, 2004; Westlund, 2004; Cox, 2006). This article uses the subsidies classification provided by Sumaila *et al.* (2010), which in itself drew from the various existing classifications in the literature. The authors describe the potential impacts of different types of subsidies on biological sustainability, therefore setting aside issues of social and economic sustainability on the basis that these are, in the first place, underpinned by the biological sustainability. Subsidies are thus classified as being either; (i) "beneficial", (ii) "capacity enhancing", or (iii) "ambiguous" in relation to their likely effect on the health of fish stocks:

(i) Beneficial subsidies are considered to promote conservation and management (Milazzo, 1998), and may mediate the impact of overcapacity (Sumaila *et al.*, 2010). They aim to enhance or restore fish stocks through conservation, stock assessment, and the recording of catch rates through monitoring, control and surveillance, helping ensure appropriate management, and enforcement (OECD, 2005).

(ii) Capacity-enhancing subsidies are those that are expected to lead to disinvestments in natural capital assets by overfishing (Sumaila *et al.*, 2010). They include all forms of capital inputs and infrastructure investments from public sources

that artificially reduce costs or enhance revenue, and in the context of EU fisheries include vessel construction, renewal, and modernization.

(iii) Ambiguous subsidies are defined as those that could lead to either investment or disinvestment in the fishery resource (Sumaila *et al.*, 2010). These subsidies may lead to positive impacts on the health of fish stock, or negative impacts due to excessive exploitation. The impact of this category of subsidies is dependent on precisely how they are designed and implemented. Subsidies in this category include interventions such as fisher assistance, income support programmes, and vessel cessation programmes (Clark *et al.*, 2005).

As in most policy areas, regulations governing the allocation of EU funds such as EMFF follow the ordinary legislative procedure: since entry into force of the Lisbon Treaty, they are broadly determined by the European Commission in a proposal, which is then amended and approved by both co-deciders, i.e. the Parliament and Council of the EU. A "trilogue" between these three institutions then ensues—which is the current stage of the EMFF 2021–2027, at the time of writing—before they adopt the post-trilogue common-ground position and the new regulation enters into force. The precise spending of allocated funds within the parameters set is subsequently determined by individual Member States. Their intentions and objectives are presented within national Operational Programmes (or similar), which often include expected expenditure against individual measures or programmes (European Parliament and Council of the EU, 2014). These documents were therefore the primary source for reviewing EU subsidies. During the execution of a funding period, each Member State's administration must submit annual implementation reports to the Commission for their review and approval. Where available, these documents provide further information about how the funds are disseminated and what projects were funded under each measure. A transparent process of the EU allocation of public subsidies to fisheries, like other EU measures, needs to be consistently evaluated over time to increase the institutional reputation and credibility of EU institutions (Da Rocha *et al.*, 2012; Carpenter *et al.*, 2016). As such, the effectiveness, efficiency, and relevance of the entire fund are subsequently evaluated via *ex post* evaluations. These provide the best evidence in terms of realized fisheries subsidization from EU funds.

Each relevant measure or article under each funding period was categorized as either capacity enhancing, beneficial, or ambiguous. The definitions in the regulations or to the extent possible the types of projects funded were used to inform this categorization. Spending across individual measures or clusters of measures within each Member State was then summed to provide an estimate of subsidization from each of the financial instruments. While acknowledging that this broad-brush approach may lead to some estimation error, the authors considered it suitable for the purpose of providing a narrative of fisheries subsidies trends across the EU as a whole. The resultant estimates were compared to previous estimates of EU fisheries subsidies that include, e.g. Member State contributions through their national budgets and other types of subsidies (cf. above). These two sources of subsidy estimates are presented side by side to give a more complete view of the evolution of EU fisheries subsidies over time. Given the differences in how estimates are produced and that the number of EU Member States varies over time, we do not compare quantitative estimates directly, rather we support the discussion using relative proportions of the three subsidy types.

Fisheries subsidies in the European Union

The FIFG (2000–2006)

The FIFG provided financial support for the implementation of EU fisheries policies from 1994 to 1999 and again from 2000 to 2006. Its core aim was to fund solutions to economic and social problems while improving competitiveness, market supply, and value addition to EU products and to address the imbalance between resource availability and fishing capacity—that is, to reduce fleet overcapacity.

The budget between 2000 and 2006 totalled around EUR_{2018} 6.7 billion (ca. EUR_{2000} 4.9 billion) and covered six key intervention areas (axes), each linked to one or more structural measures (Council of the EU, 1999). Of the measures related to marine capture fisheries, we classify six as being ambiguous in their nature, four as being capacity enhancing, and two measures as beneficial (Table 1). Based on this classification, 27% of the total funds were in the form of capacity-enhancing subsidies while 7% were beneficial. Indeed, 17% of funds went towards vessel construction and modernization, compared to 15% towards vessel scrapping (Cappell *et al.*, 2010). This distribution is similar to the preceding FIFG period, 1994–1999, where 1% was allocated to the protection of marine resources, the only beneficial measure during this period, while capacity-enhancing measures accounted for ∼67% (Lagares and Ordaz, 2014).

Despite real-terms net reductions in fleet capacity, in terms of number of vessels, for particular regions (Chen, 2010), the FIFG was ultimately criticized for failing in this respect (Hatcher, 2000). Between 2000 and 2006, the FIFG supported the construction of around 3000 vessels and the modernization of nearly 8000, compared to the scrapping of 6000 mostly small inshore vessels. This was thought to have resulted in an actual net increase in overall EU fishing capacity (Cappell *et al.*, 2010; Villasante, 2010). The prevalence of capacity-enhancing subsidies and the few funds allocated to the protection of fish stocks that could mitigate the effects of such subsidies could be seen as in direct conflict with the overarching goals of the CFP to limit overcapacity, reduce overfishing, and rebuild depleted fish stocks (Economics London, 2004). Cappell *et al.* (2010) went as far as stating that the FIFG had directly contributed to the overfished status of several stocks. The lack of a targeted approach and significant vessel construction irrespective of target stock status meant that the overall legacy of the FIFG was considered as a negative contribution in terms of sustainability, both due to its role in exacerbating fishing capacity and ultimately in failing to alleviate fishing mortality of overfished stocks (Cappell *et al.*, 2010; Villasante, 2010).

Sumaila *et al.* (2010) estimated that in 2003 the EU Member States spent a total of EUR_{2018} 2.6 billion supporting the fisheries sector, including other subsidies that are not accounted for within the FIFG (e.g. State aids; see above). Although a larger share of this was attributed to beneficial subsidies (25%), compared to spending under the FIFG, the majority was still deemed to have been capacity enhancing (54%), some EUR_{2018} 1.4 billion (Figure 1). Indeed, the two highest subsidy sub-types estimated by Sumaila *et al.* (2010) were for vessel construction and renovation (21%) and fishing access agreements (20%).

Table 1. Priority axes and strategic measures of the FIFG from 2000 to 2006 (Council of the EU, 1999) and the proportion of the total FIFG funds spent on each measure (Cappell *et al.*, 2010).

Priority axis	Measure	Subsidy category	% of FIFG
1: Adjustment of the fishing effort	11: Vessel scrapping	Ambiguous	15
	12: Transfer to a third country or reassignment	Ambiguous	1
	13: Joint enterprises	Ambiguous	1
2: Fleet renewal and modernization	21: Construction of new vessels	Capacity enhancing	13
	22: Modernization of existing vessels	Capacity enhancing	4
	23: Withdrawal of vessels in association with fleet renewal with public aid	Capacity enhancing	0
3: Protection and development of resources, aquaculture, ports facilities, processing and marketing, and inland fishing	31: Protection and development of aquatic resources	Beneficial	2
	32: Aquaculture	n/a	9
	33: Fishing port facilities	Capacity enhancing	10
	34: Processing and marketing	n/a	18
	35: Inland fishing	n/a	0
4: Other measures	41: Small-scale coastal fishing	Ambiguous	0
	42: Socio-economic measures	Ambiguous	1
	43: Promotion	n/a	3
	44: Operations by members of the trade	n/a	6
	45: Temporary cessation of activities and other financial compensation	Ambiguous	8
	46: Innovative measures	Beneficial	5
5: Technical assistance	51: Technical assistance	n/a	2

n/a, not applicable

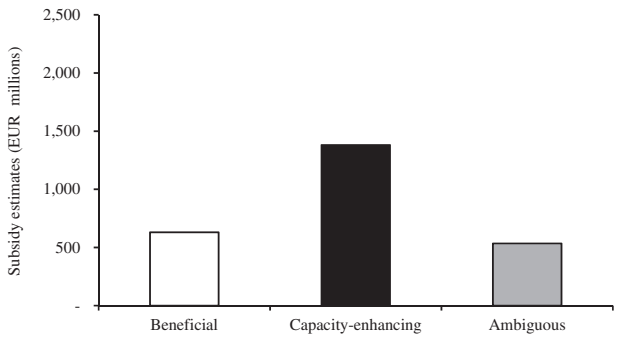

Figure 1. Total subsidy estimates per subsidy type for EU Member States in 2003; beneficial (25%), capacity enhancing (54%), and ambiguous (21%). Amounts as reported within Sumaila *et al.* (2010), presented in 2018 real EUR.

The EFF (2007–2013)

Following wide-ranging fisheries policy changes (Surís-Regueiro *et al.*, 2011), partly as a result of EU enlargement, the EFF was established in 2006 (Council of the EU, 2006; European Commission, 2007) with the aim of being a simpler system for reducing overcapacity while also aiming to emphasize the environmental dimensions of fisheries. The total budget of the EFF was approximately EUR_{2018} 5.1 billion (EUR_{2007} 4.3 billion), between 2007 and 2013.

The EFF supported many of the same measures as the FIFG although some new measures were introduced, including seemingly more "environmentally focused" measures such as the promotion of more selective fishing methods under the pilot operations measure. Some of these allegedly beneficial subsidies—namely those promoting pilot projects for the reduction of unwanted catches—were later shown to have contributed to the illegal expansion of electric fishing in the southern North Sea, which provoked an outcry from the small-scale fishers communities (Le Manach *et al.*, 2019), a method eventually banned in 2019 (European Parliament and Council of the EU, 2019). Support for vessel construction was removed, and the ability to notionally reduce EU fleet capacity through the transfer of vessels to a third country was also eliminated (Economics London, 2004)—although, this practice continued via other arrangements such as "joint ventures" in Africa and South America (Villasante *et al.*, 2014).

Funds were divided across 5 axes, and 16 strategic measures. Of the measures linked directly to marine capture fisheries, we classified six as ambiguous, three as capacity enhancing, and two as beneficial (Table 2). It was estimated that 25% of the total fund was in the form of capacity-enhancing subsidies, while 5% was beneficial. This represents a slight reduction in the proportion of capacity-enhancing support since the FIFG.

The permanent cessation measure, in conjunction with economic downturn and heightened fuel prices of 2008, contributed significantly to overall fleet reductions during the EFF period (Anon, 2016). Between 2007 and 2015, the EU fleet gross tonnage decreased by an estimated 17%, of which 53% was through EFF measures (Lagares and Ordaz, 2014). However, improved technological efficiency of the EU fishing fleet (Villasante and Sumaila, 2010) led to an increase in the fishing capacity during this time (Villasante, 2010). As such, although it appeared to be achieving its aim of reducing fleet capacity, an *ex post* evaluation concluded it to be an inefficient method as it did not do so "at a reasonable cost [to the public] compared to the implementation of management measures supported by control systems" and recommended its discontinuation (MRAG, 2017). This was corroborated by a European Court of Auditors Special Report in 2011, which highlighted several weaknesses of permanent cessation, including

Table 2. Priority areas and strategic measures of the EFF from 2007 to 2013 (Council of the EU, 2006) and the proportion of the total EFF fund spent on that measure (MRAG, 2017).

Priority axis	Measure	Subsidy category	% of EFF
1: Adjustment of the fleet	1.1: Permanent cessation	Ambiguous	18
	1.2: Temporary cessation	Ambiguous	8
	1.3: Investments on board (modernization)	Capacity enhancing	4
	1.4: Small-scale coastal fishing	Ambiguous	1
	1.5: Socio-economic compensations	Ambiguous	2
2: Aquaculture, processing and marketing, and inland fishing	2.1: Aquaculture	n/a	11
	2.2: Inland fishing	n/a	0
	2.3: Investments in processing and marketing	n/a	16
3: Measures of common interest	3.1: Collective actions	Capacity enhancing	7
	3.2: Protection of aquatic fauna and flora	Beneficial	2
	3.3: Fishing ports and shelters	Capacity enhancing	14
	3.4: New markets and promotion campaigns	n/a	4
	3.5: Pilot operations	Beneficial	3
	3.6: Modification for reassignment of vessels	Ambiguous	0
4: Sustainable development of fisheries areas	4.1: Community development	Ambiguous	7
5: Technical assistance to finance the administration of the fund	5.1: Technical assistance	n/a	3

n/a, not applicable

the inadequacy of fishing capacity indicators to reflect the ability of vessels to catch fish and insufficient rules for the treatment of fishing rights following scrapping (European Union, 2011). Indeed, the European Commission conceded that "the fishing rights of decommissioned vessels [could not] be withdrawn from the fishing quotas allocated to the Member States" (European Union, 2011). That is, Member States could reallocate quotas from decommissioned vessels to other vessels within their fleets. So, while the fleet capacity reduction objective, in terms of power and gross tonnage, may have been met (MRAG, 2017), albeit many of the removed vessels operated outside of EU waters (Lagares and Ordaz, 2015), the retention of quotas and the modernization of the remaining vessels offset this decline in nominal capacity by maintaining fishing effort levels (Khalilian *et al.*, 2010; BLOOM, 2013).

This move towards reducing capacity-enhancing subsidies is reflected in the updated empirical estimates of total EU fisheries subsidies. Sumaila *et al.* (2016) estimated that in 2009 the proportion of capacity-enhancing subsidies had reduced from 54 to 46%, while beneficial subsidies had increased from 25 to 28% of the EU subsidy total (Figure 2).

Despite the EFF largely being considered as an improvement over the FIFG, it continued to provide financial support that is considered capacity enhancing under the present subsidies classification (Sumaila *et al.*, 2010). Ultimately pressure on overfished stocks was not sufficiently relieved during this period (MRAG, 2017). The root cause of continued overcapacity, however, was considered to have moved from direct vessel construction to vessel modernization, in particular the replacement of vessel engines (IISD, 2008). The claim was that vessel modernization increased vessel efficiency, but not capacity. However, providing funding for vessel modernization, thus increasing vessel efficiency, while simultaneously requiring these investments not to increase the ability of that vessel to catch fish was highlighted by the European Court of Auditors as a contradiction (European Union, 2011). This led to calls for more tangible progress towards eliminating these "perverse incentives" (Lutchman *et al.*, 2009). The Commission themselves stated that "while a few EU fleets [were] profitable with no public support, most of Europe's fishing fleets [were] either running losses or returning low profits. Overall

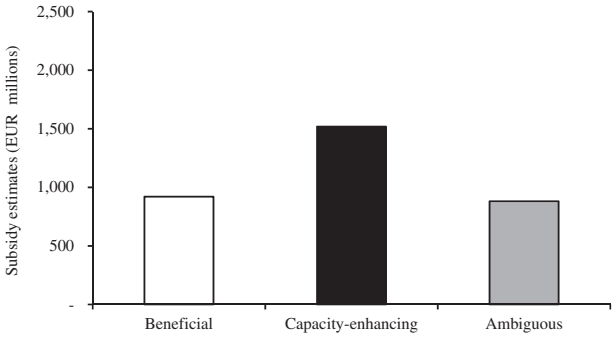

Figure 2. Total subsidy estimates per subsidy type for all EU Member States in 2009; beneficial (28%), capacity enhancing (46%), and ambiguous (27%). Amounts as reported within Sumaila *et al.* (2016), presented in 2018 real EUR.

poor performance [was] due to chronic overcapacity of which overfishing [was] both a cause and a consequence" (European Commission, 2009). The use of compensation for temporary cessation was also recommended to be limited after it was deemed to have possibly contributed to keeping some "unprofitable fleets active" (MRAG, 2017). Therefore, despite a number of regulatory changes, particularly the inclusion of additional environmental considerations and a change in focus from vessel construction to vessel modernization, the EFF continued to provide capacity-enhancing subsidies (Markus, 2010; Surís-Regueiro *et al.*, 2011).

The EMFF (2014–2020)

In 2014, the EFF was superseded by the EMFF (European Parliament and Council of the EU, 2014). Its aim was to assist the fisheries sector in adapting to the reformed CFP for the period 2014–2020. This reform was more substantial than previous efforts and included new policies such as the use of Maximum Sustainable Yield (MSY) as a biological target, a landing obligation for the catch of all species under quota control, and a move towards more regional governance (Salomon *et al.*, 2014). An important change was the removal of subsidies for scrapping vessels. Vessel construction remained unavailable; however, some

capacity-enhancing measures persisted, including support for the modernization and replacement of old engines, albeit now with spending limits per Member State. The EMFF introduced new beneficial measures, including the provision of funds to improve data collection, monitoring, and enforcement. Despite the persistence of modernization measures, overall the EMFF was seen as a positive step towards ending overcapacity (Pew, 2013).

Over its 7-year period, the EMFF had a budget allocation of EUR_{2018} 8.9 billion (EUR_{2014} 8.6 billion), divided across six union priorities (axes) and a broad range of fifty measures. As the EMFF is still being implemented, it is not feasible to report the final spending under each axis or measure, or that the total budget allocation will be spent. However, Member States report their intended spending under clusters of measures within their Operational Programmes and updates of spending for each measure are available in implementation reports (European Commission, 2019a). Some measures were split, due to different subsidy classifications existing within them, resulting in 12 measures (Table 3). Of the measures linked to capture fisheries, five were considered beneficial, five capacity enhancing, and two measures were considered to be ambiguous.

This increased focus on beneficial measures is also apparent in the results of the most recent update of the global fisheries subsidies estimates (Figure 3), where the majority of subsidies was estimated to be channelled through beneficial programmes (52%). The total amount of capacity-enhancing support is estimated to have reduced significantly to EUR_{2018} 1.0 billion, representing 40% of the EU total, and as such dropping below 50% of the subsidy total for the first time (Sumaila *et al.*, 2019a). A large driver of this was the continued reduction in vessel construction and modernization. There was also a significant increase in estimated spending on MPAs.

Although the ultimate successes and failures of the EMFF period are yet to be identified, it clearly makes greater concession towards mediating the environmental impacts of fishing. However, similarly to the EFF, it is also important to recognize that there were instances where "beneficial subsidies" have led to increased capacity, e.g. the expansion of electric fishing in the southern North Sea (Le Manach *et al.*, 2019). Nonetheless, more progress is required to meet the goals of the SDGs as the provision of capacity-enhancing subsidies persists. This is clear in the main recommendations for post-2020 fund to "improve the link between sustainable exploitation of fisheries as well as the protection and enhancement of the environment and natural resources by minimizing the negative impacts on the marine environment".

The proposed EMFF (2021–2027)

The structure and goals of EU fisheries fund beyond 2020 are still being discussed. The Commission presented its proposal on 12 June 2018 for the EMFF 2021–2027, which aims to move away from direct financial support for fishers and towards creating "enabling conditions for the sector". The proposal includes a number of changes from the previous EMFF, including citing only four Union Priorities (although these mirror the current EMFF); fostering sustainable fisheries; food security; growth of the Blue Economy; and international ocean governance. Importantly, this iteration of the EMFF intends to increase focus on small-scale fishers and outermost regions, aiming to support strategies for the sustainable exploitation of fisheries and the development of Blue Economy sectors. Furthermore, the post-2020 proposal aims to avoid listing eligible measures, instead describing programmes that are ineligible. As such, there is some uncertainty regarding how the estimated EUR_{2018} 6.14 billion of public funds will actually be spent should the proposal enter into force in its current state. Of the proposed measures linked to capture fisheries, two were considered capacity enhancing and four ambiguous, while seven were considered to be beneficial (Table 4).

The proposed post-2020 fund appears to strengthen the EU's position on a number of issues by providing further beneficial subsidies, including the implementation of an EU fisheries control system that would introduce support for widespread vessel tracking and electronic reporting systems, for example. However, there have been criticisms (e.g. Client Earth, 2018), with claims that it would continue to provide capacity-enhancing subsidies. Indeed, support under Priority 1 will continue to cover "innovation and investments on-board fishing vessels in order to improve health, safety and working conditions, energy efficiency and the quality of catches. Such support should, however, not lead to an increase of fishing capacity". Again, the contradiction of vessel modernization, particularly with regard to increasing energy efficiency, was previously highlighted by the European Court of Auditors, and the Commission now recognizes that modernization without increasing fishing capacity is not always achievable (European Commission, 2019b). There is also a return of permanent cessation of fishing activities "in fleet segments where the fishing capacity is not balanced with the available fishing opportunities", and while there appear to be additional controls in place for its implementation, this goes against the advice of previous evaluations and the European Court of Auditors as the possibility that capacity in terms of gross tonnage is reduced, while the overall effort exerted may remain constant if the fishing opportunities are redistributed within the remaining fleet. Finally, the Commission's proposal also allows for the provision of preferential treatment to small-scale coastal fleets, allowing them access to support for the first acquisition of a second-hand vessel, and the replacement or modernization of engines (European Commission, 2017). Essentially reintroducing capacity-enhancing measures that reduce the costs of fishing or increase existing vessels ability to catch fish.

Criticisms were enhanced when on 4 April 2019 the European Parliament established its first-reading position on the EMFF 2021–2027 proposal and voted on how they believed funds should be allocated. This vote was widely publicized, not least because of the interest from academia (e.g. Smith, 2019; Sumaila *et al.*, 2019c) and non-governmental organizations (e.g. Client Earth, 2018). The unified message was to eliminate harmful subsidies, as stipulated in a number of open letters to the Members of the European Parliament that urged them to use their vote to achieve such an outcome, and as mandated by the SDGs. However, despite the support of solid scientific evidence and robust recommendations, the vote indicates that the European Parliament is prepared to channel funding into a number of potentially capacity-enhancing measures, including the reintroduction of vessel construction subsidies that were eliminated in 2004, or have voted to remove some of the safeguards for these measures proposed by the European Commission, such as the proposal that support for vessel cessation should be linked to the achievement of conservation objectives.

The EMFF 2021–2027 proposal states that during the stakeholder consultation there was "a polarization of opinion concerning the support to fishing fleets . . . with stakeholders split nearly

Table 3. Priority areas and strategic measures included in the EMFF from 2014 to 2020 (European Parliament and Council of the EU, 2014) and the proportion of total EMFF fund intended to be spent on that measure.

Union priority	Measures	Subsidy category	% of EMFF[a]
1: Promoting fisheries	Articles 33 and 34—Temporary and permanent cessation of fishing activities	Ambiguous	6
	Article 41(2)—Support for replacement or modernization	Capacity enhancing	1
	Financial allocation for the rest of the Union priority 1 (excluding ports Article 43)[b]	Beneficial	18
	Financial allocation for the rest of the Union priority 1 (only ports, Article 43)[c]	Capacity enhancing	4
2: Fostering aquaculture	n/a	n/a	22
3: Fostering the implementation of the CFP	Article 13(4)—Improvement and supply of scientific knowledge and collection and management of data	Beneficial	8
	Article 76(2)(a)–(d) and (f)–(l)—Support to monitoring, control and enforcement, enhancing institutional capacity	Beneficial	6
	Article 76(2)(e)—Support to monitoring, control and enforcement; enhancing, modernization, and purchase of patrol vessels, aircrafts, and helicopters	Beneficial	2
4: Increasing employment and territorial cohesion	Support for community-led local development	Ambiguous	9
5: Fostering marketing and processing	Article 67—Storage aid	Capacity enhancing	1
	Article 70—Compensation for outermost regions	Capacity enhancing	2
	Financial allocation for the rest of the Union priority 5	Capacity enhancing	14
6: Fostering the implementation of the Integrated Maritime Policy	Support for operations contributing to integrated maritime surveillance and promoting the protection of marine environment	Beneficial	2
7: Technical assistance	n/a	n/a	5

[a]Authors' own calculations from Member State Operational Programmes, Table 8.2 EMFF contribution and co-financing rate for the union priorities.
[b]Including: advisory services; partnerships between scientists and fishers; promotion of human capital, job creation, and social dialogue; diversification and new forms of income; start-up support for young fishers; health and safety; mutual funds for adverse climatic events and environmental incidents; support for the systems of allocation of fishing opportunities; support for the design and implementation of conservation measures and regional cooperation; limitation of the impact of fishing on the marine environment; innovation; and protection and restoration of marine biodiversity.
[c]Including: fishing ports, landing sites, auction halls, and shelters.
n/a, not applicable.

equally between those in favour and those against the continuation of fleet measures". Although stakeholder consultation does not confer decision-making power on those stakeholders, based on this lack of consensus, it is surprising to see the Parliament's proposal for the return of measures considered to be capacity enhancing under the present classification (Sumaila *et al.*, 2010). A full comparison of the positions of the European Commission, the Council of the EU, and the European Parliament, with regard to the proposed subsidies within the EMFF 2021–2027, is provided in the Supplementary material.

Discussion

This article provides a timely overview of how the subsidization of EU fisheries has changed over the past two decades in their broadest sense. It is clear that a sequence of EU financial instruments and their implementation at the Member State level have failed to remove capacity-enhancing measures associated with EU fisheries. In particular, the renewal, modernization, and construction of fishing vessels are deemed to have exacerbated fleet overcapacity in the EU, or at least have failed to bring it in line with resource availability for some time (Symes, 2009; Markus, 2010; Villasante, 2010; Villasante and Sumaila, 2010; Surís-Regueiro *et al.*, 2011; Lagares and Ordaz, 2014). Although capacity-enhancing support has persisted in EU fisheries funds, the proportion has decreased over time (Table 5). Partly these positive

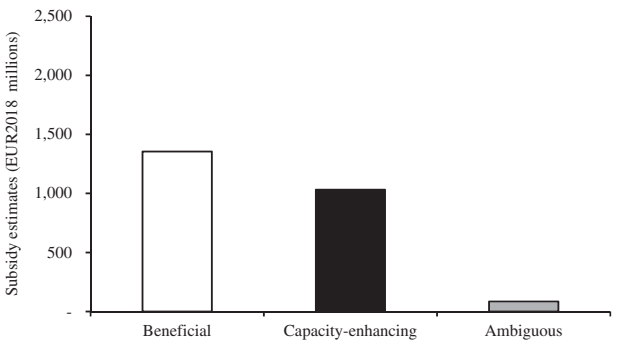

Figure 3. Total subsidy estimate per subsidy category for EU Member States in 2018; capacity enhancing (40%), beneficial (52%), and ambiguous (8%). Amounts as reported within Sumaila *et al.* (2019a, b, c), presented in 2018 real EUR.

Table 4. Priority areas and strategic measures included in the European Commission's proposal for the EMFF from 2021 to 2027.

Union priority	Measures[a]	Subsidy category	% of EMFF
1: Promoting fisheries	Article 14(1)—Achievement of the environmental, economic, social, and employment objectives of the CFP	Ambiguous	Unknown
	Article 16—Investments in small-scale coastal fishing vessels	Capacity enhancing	Unknown
	Article 17(1)—Management of fisheries and fishing fleets	Beneficial	Unknown
	Article 17(2)—Permanent cessation	Ambiguous	Unknown
	Article 18—Extraordinary cessation	Ambiguous	Unknown
	Article 19—Control and enforcement	Beneficial	Unknown
	Article 20—Collection and processing of data for management and science	Beneficial	Unknown
	Article 21—Compensation for additional costs in the outermost regions	Ambiguous	Unknown
	Article 22—Protection and restoration of biodiversity and ecosystems	Beneficial	Unknown
2: Food security	Article 23—Aquaculture	n/a	Unknown
	Article 24—Marketing of fishery and aquaculture products	n/a	Unknown
	Article 25—Processing of fishery and aquaculture products	n/a	Unknown
3: Blue economy	Article 26—Community-led local development	Capacity enhancing	Unknown
	Article 27—Marine knowledge	Beneficial	Unknown
4: International ocean governance	Article 28—Maritime surveillance	Beneficial	Unknown
	Article 29—Coastguard cooperation	Beneficial	Unknown
5: Technical assistance	Technical assistance	n/a	Unknown

Each measure is categorized based on the nature of the support. n/a, not applicable.
[a]COM/2018/390 final.

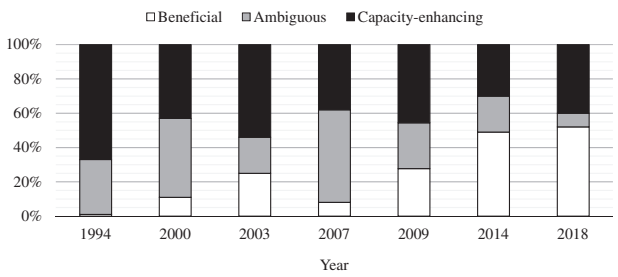

Figure 4. Proportion of subsidies spent or assigned to each subsidy category estimated from key EU fisheries funds in 1994, 2000, 2007, and 2014, and from three discrete publications in 2003, 2009, and 2018. Figure is based on Tables 5 and 6.

changes have occurred as a result of certain capacity-enhancing forms of support being removed, such as vessel construction, and partly due to funds being redirected towards beneficial support. This latter trend of redirection looks set to increase under the EMFF 2021–2027 proposal by the European Commission (Sumaila *et al.*, 2019c), with seven beneficial measures being proposed. The general trend is also reflected in broader estimates of EU fisheries subsidies, where the proportion of beneficial subsidies has been increasing (Table 6). However, capacity-enhancing subsidies are still in place (Sumaila *et al.*, 2019a) and look set to be continued in the proposals for EMFF 2021–2027.

Figure 4 shows the evolution of EU fisheries subsidies, taking into account subsidies directed through the EU fishery financial instrument (Table 5) and published estimates of total subsidies (Table 6). Clearly, there is a slight positive narrative to be drawn. However, the SDGs, to which all EU Member States have committed, aim to prohibit and redirect fisheries subsidies, which contribute to overcapacity and overfishing. Using the definition of fisheries subsidies presented herein, the EU has made some progress in removing such subsidy types, but that progress is slow and the bulk of capacity-enhancing subsidies remains present—even based on the most conservative estimates of the current EMFF. It is therefore important that the positive steps taken over the past 20 years are built upon and not quickly undone, as proposed by both the European Parliament and the Council of the EU for EMFF 2021–2027 (see Supplementary material). Subsidies for the construction or renewal of the fishing fleet, for example, or those that increase the fishing capacity of a vessel or increase the ability of an operator to make additional profit artificially, must be avoided.

The most striking observation therefore is that while there has been a positive redirection of subsidies, from capacity enhancing towards beneficial, the EU continue to provide harmful subsidies despite evidence of their deleterious and counterproductive effects (Symes, 2005). One explanation for this is that while the intentions of the policy interventions state certain objectives, the realized implementation is to the contrary. All of the funds analysed state aims to reduce overcapacity, and yet continue to provide subsidies that under the definition used herein are considered capacity enhancing. For example, the FIFG reduced EU fleet capacity in terms of the number of vessels, while simultaneously supporting the construction of new vessels and the modernization of many others. The underlying reasons behind this

Table 5. Proportion spent or assigned to each subsidy category for EU fisheries funds since 1994 including; the first FIFG,[a] the second FIFG,[b] EFF,[c] and EMFF.[d]

Fishery subsidy type	FIFG 1994–1999	FIFG 2000–2006	EFF 2007–2013	EMFF 2014–2020
Beneficial (% of total)	1	11	8	49
Capacity enhancing (% of total)	67	43	38	30
Ambiguous (% of total)	32	46	54	21

Figures are based on EU evaluations or Member State operational programmes and include only relevant measures, i.e. excluding aquaculture and inland fishing.
[a]Lagares and Ordaz (2014).
[b]Cappell *et al.* (2010).
[c]MRAG (2017).
[d]Authors' calculations, from Member State operational programmes and FAME SU, EMFF implementation report 2018.

Table 6. Estimated total proportion of expenditure across the EU by subsidy category for three discrete years 2003,[a] 2009,[b] and 2018.[c]

Fishery subsidy type	2003	2009	2018
Beneficial (% of total)	25	28	52
Capacity enhancing (% of total)	54	46	40
Ambiguous (% of total)	21	27	8

Figures are based on previous work and exclude fuel subsidy estimates.
[a]Sumaila *et al.* (2010).
[b]Sumaila *et al.* (2016).
[c]Sumaila *et al.* (2019a).

decoupling of the policy and the funding instruments are outside of the scope of this paper, but they are likely to lie within the functioning of the EU and the Member States.

It is important to recognize that many of the EU fisheries are managed with strict effort and quota limitations, which could prevent fleet overcapacity leading to overfishing. While the exploitation of many EU fish stocks has been decreasing over time, with some now within sustainable fishing levels, overfishing continues to be a problem [STECF (Scientific, Technical and Economic Committee for Fisheries), 2020]. Therefore, subsides that artificially reduce the cost of fishing and/or increase the price for fish would, almost surely, negatively impact the state of the fish stocks. Despite some progress in the reduction in fishing effort, up to 69% of assessed EU stocks are still considered subject to ongoing overfishing and 51% were outside of safe biological limits (Froese *et al.*, 2018). Indeed, Munro and Sumaila (2002) showed that subsidies can be damaging, even if the "common pool" aspects of fisheries are removed (Munro and Sumaila, 2002). In light of the legally binding commitment to end overfishing and rebuild fish stocks, the continued presence of harmful subsidies and the proposed reintroduction of some of the most directly capacity-enhancing subsidies within the proposed funding programme are clearly a significant step backwards and increase the risk that further progress to decrease overfishing will be slowed or reversed.

The EU operates throughout the world's oceans, either directly via access agreements (Villasante *et al.*, 2014; Sumaila *et al.*, 2015; Sala *et al.*, 2018; Chesnokova and McWhinnie, 2019) or indirectly via trade (Bayramoglu *et al.*, 2018; Fugazza and Ok, 2019) and considers itself "a global ocean actor . . . [with] a strong responsibility to protect, conserve and sustainably use the oceans and their resources". As such, the capacity-enhancing subsidies that the EU continues to provide not only fail to achieve the commitments of SDG 14.6 to prohibit fisheries subsidies that could contribute to overcapacity and overfishing in EU waters and other waters that the EU fleet operates within, but importantly they set a problematic course that other WTO Members may follow. The controls and measures that are in place in EU waters that, in some regions, are helping to reduce overfishing are not in place throughout much of the world. Given that reaching an agreement at the WTO negotiations requires multi-lateral consensus, it is important that the EU sets a precedent for removing public sources of funding that artificially reduce costs or enhance revenue, i.e. capacity-enhancing subsidies under the present definition. In this light, understanding the reasons for the present divergence between policy intentions and outcomes could become an important step towards achieving the SDGs as a whole.

The persistence of capacity-enhancing support and the EUs' failure to restrain overcapacity despite clearly stated policy intentions to the contrary are crucial but often overlooked concerns that have been brought to the fore by the EUs' commitments under the SDGs. Yet, a window of opportunity to reform EU fisheries subsidies still exists. The efforts to persuade decision-makers to keep taking steps towards achieving these goals must persist to safeguard our fisheries not only for present and future generations but the entire marine ecosystems and the coastal communities (and millions of people) that depend on them. With critical WTO negotiations planned until the end of 2020 regarding the global rules on fisheries subsidies, the EU must consider its role in this and take advantage of the opportunity to lead a positive transformative change in global fisheries. Will it spearhead the delivery of these international commitments and help change collective attitudes towards fisheries subsidies, celebrating and building on its efforts over the past two decades to remove capacity-enhancing subsidies, or will it take that backward step towards the proposed reintroduction of subsidies that support potentially harmful practices?

Supplementary data

Supplementary material is available at the *ICESJMS* online version of the manuscript.

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Author contributions

Individual contributions to this paper were as follows: conceptualization, DJS; methodology, DJS; literature review, DJS, VLB, FLM, SV; data curation, DJS, NE, VLB, FLM, AS; formal analysis, DJS, VLB, FLM, AS; writing—original draft, DJS; writing—review and editing, DJS, RA, VLB, FLM, SV, URS; visuals, DJS; supervision, URS; funding acquisition, URS.

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