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Sustainable objectives and commitments deceived by fisheries subsidies for ‘temporary cessations’ in times of COVID

Valérie Le Brenne, Laetitia Bisiaux, Frédéric Le Manach

1. Introduction

Since the 1990s, ‘harmful’ subsidies, i.e. those that artificially reduce the costs of fishing operations, have been identified as one of the main drivers of overfishing, marine ecosystems’ degradation, and inequalities in the fishing sector [1–5]. While over 62% of the USD 35.4 billions of global fisheries subsidies are considered to be part of this ‘harmful’ category [4], the state of global fish stocks continues to deteriorate notwithstanding regional improvements [6] and clear evidence that management works [7]. In Europe, which possesses the largest Exclusive Economic Zone (EEZ) in the world (on its own, France already ranks first) and which is also one of the main subsidizers [4], the situation is similar, with improvements for several commercial species, but severely degraded ecosystems [8] and prevalent overfishing [9].

Over the past twenty years, substantial improvements have been made in Europe with regards to subsidies, e.g. with the prohibition of construction subsidies in 2004 [10], and with an apparent willingness to support small-scale, low impact coastal communities under the basic regulation of the Common Fisheries Policy [CFP; e.g. Article 17, 11]. However, recent developments as part of the reform of the future 2021–2027 European Maritime Fisheries and Aquaculture Fund (EMFAF) — whose aim is to support the implementation of the CFP objectives — were largely seen as a major step backward (e.g. with the reintroduction of such construction subsidies), thereby contravening and threatening international commitments [3,12]. Most notably, this was the case for the Sustainable Development Goals (SDGs), which were adopted and remain cheered on by European institutions and individual Member states [13]. In particular, SDGs’ target 14.6 demanded to, “by 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing […] and refrain from introducing new such subsidies” [14]. This target was missed, as the World Trade Organization (WTO) is yet to reach a multi-lateral agreement on that matter.

In early 2020, the COVID pandemic hit the world and triggered a number of political responses worldwide. The European fishing sector was not spared by the ensuing crisis, chiefly due to the closure of restaurants and the cessation of the catering sector caused by the complete

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ABSTRACT

The European Commission launched the Coronavirus Response Investment Initiatives in March 2020, which aimed to help European economic actors, including the fishing sector, to cope with the COVID-19 crisis. This initiative was translated into French law in April 2020, through a decree laying down conditions for obtaining temporary cessation subsidies. Here, we demonstrate that, in stark contradiction with the European Union’s international commitments and binding objectives, France allocated this fund in a way that mostly benefited large-scale, high-impact fisheries. In particular, we show that seven companies/groups received 28.5% of all subsidies, for only 53 vessels, i.e. 0.8% of the French fleet. We also show that vessels smaller than 12 m and operating lower impact, ‘passive’ gears only accounted for 8.7% of subsidies although they account for 74.5% of the French fleet. In contrast, vessels larger than 12 m (and up to 89.4 m) and operating higher impact, ‘active’ gears captured 70.5% of all subsidies, although they only account for 10.7% of the fleet. These results support the fact that despite celebrated commitments and objectives aiming to support low impact, coastal communities and to rebuild thriving marine ecosystems — including during the COVID-19 crisis — a key fishing state such as France keeps implementing policies that are tailored by and for the most powerful companies and impactful fishing practices.
lockdown, which have deprived the sector of one of its main outlets while leading to falling prices [15,16].

Announced as a mechanism to prevent adverse consequences to the European economy, the European Commission launched in March 2020 the Coronavirus Response Investment Initiatives (CRII; [17]), followed by its updated ‘Plus’ version in April 2020 (CRII+; [18]). They both aimed to introduce flexibility in the use of the credits from the European Structural and Investment Funds (ESIF) in order to quickly respond to the economic consequences of the COVID-19 outbreak. As a result, the Commission proposed on 2 April 2020 to amend the European Maritime and Fisheries Fund (EMFF) to implement this COVID-19 response fund [19]. Adopted on first reading by the Parliament and the Council of the European Union on 23 April 2020, Regulation (EU) 2020/560 entered into force two days later [20], and added specific measures to support the fishing and aquaculture sectors. In particular, COVID-19 temporary cessation payments for fishing vessels were announced, and it was then up to each Member State to establish criteria for the allocation of these subsidies.

Looking at COVID-related communications, it appears that the ambition set by the SDGs and those who endorse them remained intact. For instance, one can read on the SDGs’ website that “the pandemic offers an opportunity to revive the ocean and start building a sustainable ocean economy” and that “the temporary shutdown of activities as well as reduced human mobility and resource demands due to the COVID-19 pandemic may provide marine environments the much-needed breathing space for them to start to recover” [21]. In May 2020, the European Commission’s President, Ursula von der Leyen, also stressed that “the Sustainable Development Goals are even more crucial now than at their inception”, and that “we will not just rebuild, but we reshape our economy to make it more resilient and sustainable. We are putting together the biggest package worldwide that links investments for recovery to the sustainable development spirit” [13].

Following the aforementioned decisions and announcements at the European level, the French Ministry for Agriculture and Food, in charge of fisheries, issued on 29 April 2020 a decree specifying conditions for benefiting from the temporary cessation subsidies — categorized in the academic literature as ‘ambiguous’ (i.e. either ‘beneficial’ or ‘harmful’ depending on their end use; [22]) — allowed by CRII and CRII+ in the context of the COVID-19 outbreak (referred to throughout as ‘the COVID fund’; [23]). As members of the French civil society, we immediately warned of the unfair treatment this decree would imply, and highlighted two major caveats demanding a reform of the decree [24]: i) A ‘first come, first served’ principle, which was thought to favor the larger companies due to their more important administrative and legal means to swiftly prepare eligible requests, in contrast with smaller companies that lack such means; and ii) an inequitable basis, as subsidies for vessels smaller than 12 m consisted in a lump sum based on a seemingly arbitrary reference turnover if a certain threshold was not reached, in contrast with larger vessels whose subsidies were based on real turnover, with no ceiling (Fig. 1).

Here, we contrast our initial intuition with objective data, by analyzing the list of beneficiaries of the COVID-fund allocated to the French fishing sector, in order to determine who benefited from it and whether this fund i) was allocated in line with the overarching objectives of the SDGs, or ii) instead reinforced existing inequalities and failed to secure the fulfillment of these objectives and commitments. In the following section (Section 2), we describe the data that was gathered and analyzed to answer the aforementioned questions. We then explore the most important trends that were identified in these data (Section 3), and endeavor to explain them (Section 4) and contrast them with international objectives and commitments (Section 5).

### 2. Materials and methods

Our analysis of the allocation of the COVID fund to the French fisheries sector is based on two distinct datasets: i) the list of beneficiaries of the European Maritime and Fisheries Fund (EMFF), and ii) the European fleet register. All data that support the findings of this study as well as all codes (written in R language; [25]) used for figures and statistics are available through a Mendeley repository [26]. An RMarkdown document provides a step-by-step explanation of the process used to assemble the data analyzed in this paper, as well as to produce the figures and statistics provided herein.

Below, we succinctly explain the steps followed to clean, complete, and match these two datasets, so as to obtain the data that formed the basis of the present analyses (simplified in Fig. 2).

#### 2.1. Dataset 1: EMFF beneficiaries

The European Maritime and Fisheries Fund (EMFF) is the structural and investment fund that aimed to support the implementation and promotion of the objectives of the Common fisheries policy over the 2014–2020 period. As mandated by Regulation 508/2014 [27], all countries had to publish their list of EMFF beneficiaries every six months on a single, dedicated website/platform, including the names of these beneficiaries (only legal entities and natural persons) as well as Community fleet register (CFR) vessel identification numbers (when operations were linked to fishing vessels). We downloaded France’s latest list of beneficiaries (6 December 2020 update) on its dedicated website.
A series of modifications was then performed in order to simplify and prepare these data for our analysis (Fig. 1, see scripts in linked repository for details; [26]). In particular, CFRs were harmonized so as to be matched with the EU fleet register (see next section). It is to be noted that out of the 3730 operations listed in this file and retained for the analysis, 802 corresponded to the COVID fund, out of which CFRs were not available for 222 (i.e. 27.7% of the records; or 31.9% of the total amount). In order to reduce this number of incomplete records and thus strengthen our analysis, a manual complementation of the CFRs was done, based on the names of the beneficiaries (also available in the linked repository for perusal, along with comments and sources where applicable). This allowed us to reduce the number of unknown CFRs to 157 (i.e. 19.6% of the records, and only 10.0% of the amount).

2.2. Dataset 2: European fleet register

We downloaded the European fleet register (referred throughout as ‘the Register’; [29]) on 13 January 2021. It contains all historical records relating to fishing vessels flagged in each EU Member States: every time that a vessel’s characteristics changed (e.g. calling port, tonnage, power, fishing gear etc.), a new record was created and made available in the Register. We extracted the data pertaining to the French fleet. As per the EMFF data, a series of modifications was then performed in order to simplify and prepare these data for our analysis (Fig. 1, see scripts in linked repository for details; [26]). In particular, we categorized:

i) Fishing gears as broader categories (e.g. ‘bottom trawls & dredges’, ‘pots & traps’ etc.) as well as either ‘passive’ (or ‘static’, i.e. deployed in a given space and subsequently left for a certain amount of time, the animals being caught through their own interaction with the gear) or ‘active’ (or ‘mobile/towed’, i.e. engine-propelled and dragged, towed or moved along the seabed or across the water column, with the animals being caught through the motion of the gear);
ii) Each event as either ‘last event’ (TRUE) or ‘older event’ (FALSE);
iii) Each event as ‘overlapping’ (TRUE) or not (FALSE) with the period covered by the COVID fund, i.e. 12 March 2020 through 31 May 2020;
iv) Each vessel’s length as one of five categories: ‘<10 m’, ‘10–12 m’, ‘12–25 m’, ‘25–40 m’, and ‘>40 m’, the rationale being that both 10 and 12 m breaks were referred to in the French COVID-fund decree, while the 25 m and 40 m break correspond to other administrative breaks [30,31]; and
v) Based on this categorization of the vessels’ length — which is based on political/management classes rather than statistical classes — we also created tonnage and power classes with similar numbers of vessels in each of them. These two variables form the basis of the European measurement of the ‘fishing fleet capacity’ [32], i.e. “the ability of a fleet to catch fish” [33].

Overall, 54,584 unique records were set aside. Among these, 6,257 corresponded to the fleet that was active during the COVID fund.

2.3. Combination of both datasets

Once these two datasets ready, we matched them to one another so that EMFF-funded operations were linked, where applicable, to an actual vessel and its main characteristics (i.e. fishing gear, length, tonnage, and power). For the purpose of this research, we only focused on the COVID fund for this process, which was done incrementally: First, CFRs from the EMFF data were matched to those events from the Register categorized as ‘last event’ and overlapping with the COVID fund (i.e. ‘TRUE’; step 1). Then, for the remaining records, CFRs were matched to ‘Older event’ records still overlapping with the COVID fund (step 2); then to any records not overlapping with the COVID fund (step 3). At this stage, we were able to re-assign three correct CFRs thanks to

3. Results

Our analysis led to three major results, which we develop below: i) a few industrial companies benefited from a large portion of the subsidies that were allocated; ii) most subsidies were allocated to larger vessels operating higher-impact fishing gears; and iii) larger vessels received, proportionately to their length (but not tonnage or power), more subsidies than smaller vessels.

3.1. The major groups’ jackpot

We identified that thirteen companies and groups (e.g. cooperatives) received 32.8% of all allocated subsidies. Among these companies/groups, seven accounted for 28.5% of all subsidies (Fig. 3):

- Armement Porcher, with 1,446,384 EUR for 16 subsidized vessels operating bottom otter trawls (from 22.8 to 25 m);
- Armement Bigouden, with 831,156 EUR for 11 subsidized vessels operating bottom otter trawls, and otter twin trawls (from 22.5 to 25 m);

![Fig. 3. Amounts of subsidies received by the thirteen companies/groups identified (only the top-7 companies are labeled for readability), compared to the rest of the beneficiaries (grey area on top).]

Amount of subsidy (million EUR)
3.2. Most subsidies benefited larger vessels and higher-impact fishing methods

Further to this main finding, the analyzed data show an imbalance between the actual French fleet in terms of length class or fishing gear, and the allocation of subsidies. As summarized in Table 1, active gears accounted for 65.5% (376 records) and 82.5% (12.2 million EUR) of subsidies, in number and value, respectively, although they only account for 22.1% of the French fleet (in terms of number of vessels). On their own, bottom trawls & dredges accounted for 56.5% of the subsidies (324 files), and captured 67.8% of their amount. In contrast, passive gears only accounted for 34.3% (197 records) and 17.5% (2.6 million EUR) of subsidies, in number and value, respectively, although they account for 77.8% of the French fleet.

In line with these results for passive vs. active gears, vessels smaller than 10 m only accounted for 18.3% (105 records) and 5.4% (0.8 million EUR) of the subsidies, in number and value, respectively, although they account for 71.4% of the French fleet. In contrast, the few largest vessels received substantial subsidies: the three vessels belonging to the 25 m class captured 70.5% of the COVID fund. The remaining funds, i.e. 20.7%, were allocated to either vessels smaller than 12 m but operating ‘active’ gears (i.e. 11.5% of the fleet), or to vessels larger than 12 m but operating ‘passive’ gears (i.e. 3.4% of the fleet).

From Table 1, we derived an indicator that we called ‘deviation’ — plotted in Fig. 4 — to quantify by how much a fleet segment was under- or over-subsidized compared to its prevalence in the fleet. This ‘deviation’ was calculated as:

\[
\text{deviation} = \left( \frac{\text{Proportion of subsidies received by segment } x} {\text{Proportion of segment } x \text{ in overall fleet}} \right) - 1
\]

For instance, if a given segment accounted for 10% of the fleet (in number of vessels) but received no subsidies, its deviation would be –100%. In contrast, if another segment represented 10% of the fleet but received 50% of subsidies, its deviation would be 400%.

On top of the trends evidenced in Table 1, Fig. 4 thus highlights that negative deviations, i.e. under-subsidized segments compared to the fleet, only occurred for the passive gear and <10 m segments, while the other segments only showed positive deviations, i.e. they were over-subsidized compared to their occurrence in the fleet. In particular, the most subsidized segment in terms of gear — i.e. bottom trawls & dredges — showed deviations of 232.6% and 299.6% in number of files and value, respectively (panels A and C). Similarly, the most subsidized segment in terms of length — i.e. the 12–25 m segment — showed deviation of 317.5% and 514.3% in number of files and value, respectively (panels B and D).

Although Fig. 4 only shows the subsidization of each segment (number of files processed and total amount) compared to its prevalence in the fleet in terms of number of vessels, the same observations — albeit with less intensity — can be made in terms of length, tonnage, and power: the ‘passive gears’ and ‘<10 m’ segments remain consistently under-subsidized, in contrast with the ‘bottom trawls & dredges’ and ‘12–25 m’ segments (see Sections 3.2.4–6 of the RMarkdown document).

3.3. Larger vessels proportionately received more subsidies

Finally, as one could expect, the amount of subsidy received by vessels significantly increased with their length (Fig. 5A, B). In that respect, the smallest subsidy (914 EUR) was allocated to a 6.53 m vessel. In contrast, the largest subsidy (272,425 EUR) was allocated to the largest vessel concerned, with a length of 89.4 m. Outliers excluded (Fig. 5B, C), vessels of the ‘<10 m’ class received a median subsidy of 6,150 EUR, while vessels between 12 and 25 m received 29,394 EUR and vessels between 25 and 40 m received 46,823 EUR (Fig. 5B).

However, this increase was not regular, as Fig. 5C shows that the amount of subsidy received per meter also increased with the length of the vessels: while the smallest vessels below 10 m received a median of 731 EUR per meter, the 12–25 m and 25–40 m classes received significantly more, with 1,720 and 1,408 EUR per meter, respectively (Fig. 5C).

With regards to tonnage and power, these trends are only half-confirmed (but see Section 4.3 ‘Side note on future research opportunities’), with higher subsidies for vessels with higher tonnage and power, but not per unit of tonnage (decreasing) and power (stable; see Sections 3.3.4 and 5 of the RMarkdown document).

4. Discussion

These results show a clear imbalance in the allocation of public subsidies provided to French fishers in the context of the COVID-19 crisis, to the benefit of large companies/groups operating larger vessels, and higher-impact fishing gears. We show that a few organized actors have managed to capture the larger part of the subsidies under...
scrutiny, while the vast majority of French fishers did not (or unsuccessfully) apply. These results are in line with global fisheries subsidies trends described in the literature, which show a distortion in the allocation of subsidies towards large-scale, high-impact fisheries (e.g. [4, 5]). Based on these results, we suggest that these a priori ‘ambiguous’ temporary cessation subsidies can, a posteriori, be classified as ‘harmful’. We note that such ‘ambiguous’ subsidies are still understudied and poorly understood [35], although they were shown to be generally ‘harmful’ in the European context [36,37], as evidenced here as well.

It could be argued that the allocation key designed by the French government was successful in supporting those who needed subsidies the most, e.g., if larger vessels had a higher need to apply for funds because of, for instance, their inability to observe the safety measures recommended by health authorities or lack of market opportunities. However, we argue the contrary: although the abovementioned reasons may be true to a certain extent, we maintain our a priori claim made in April 2020 that this distorted allocation mostly results from a legal framework that advantaged larger structures.

4.1. A legal framework that advantaged larger structures

When the compensation scheme designed by the French administration was implemented in April 2020, we posited that it would structurally favor the larger, more organized structures for several reasons [24]. Most notably, as synthetized in Fig. 1, vessels larger than 12 m were not limited by a ceiling and could claim subsidies based on their real turnover, while smaller vessels could only pretend to a lump sum based on an unjustified reference turnover if a certain threshold was not reached (30% of real turnover otherwise). Besides advantaging the largest vessels, we argue that this allocation key also created inequity among the smallest vessels given that, e.g., a vessel fishing in the Atlantic Ocean and generating an annual turnover of e.g. 50,000 EUR would be compensated on a 80,147 EUR basis (winning scenario), whereas a comparable vessel generating a turnover of 150,000 EUR would also be compensated on the same basis (losing scenario). Despite a thorough examination of legal texts, we were unable to identify the administration’s rationale behind these different and seemingly random treatments. Furthermore, we question the economic reality of the thresholds needed to be reached for the smallest vessels in order to claim 30% of their real turnover.

The ‘first-arrived, first-served’ basis also mechanically favored those with human and financial means to apply for subsidies — i.e. larger companies —, given that small-scale fishers are most often not assisted by accountants and lawyers. To date, small-scale fishers also remain marginally organized in trade unions or syndicates in France (e.g., the Plateforme française de la petite pêche artisanale) — and more generally in Europe (e.g., the Low Impact Fishers of Europe) or elsewhere in the world — providing them with little political clout compared to industrial representatives such as Europêche or the European Association of Fish Producer Organizations (EAPO; noteworthy, these two organizations have regularly called for COVID funds and additional aids since the start of the sanitary crisis [38–40], unlike small-scale fishers). Not only small-scale fishers are not as organized as industrial fishers, but they also increasingly feel betrayed by their official representatives and the administration [41]. For instance, the Comité national des pêches maritimes et des élevages marins (CNPMEM), i.e. the official representative of

![Allocation of subsidies by gear (left panels) and length class (right panels), in number of files (top panels) and value (million EUR; bottom panels). The fill color scale corresponds to the deviation (indicated for each bar in percent) of a given class in terms of subsidies it received, from its actual prevalence in the fleet. Negative values — i.e. classes that received a smaller share of subsidies than the share of the French fleet they account for — are indicated in blue shades, and positive values in red shades.](image-url)
all French fishers, appears to have requested limited financial support for small-scale fishers as part of the negotiations on the future European fisheries fund [42].

Furthermore, we also speculate that there might be an ‘efficiency factor’ to account for, whereby the administration tends to process larger subsidies first and therefore increase their ‘ratio of allocated subsidy per unit of time spent’.

As a result of this framework, we advance that the burden of applying for subsidies indeed discouraged small-scale fishers from applying. In fact, only 2.4% of the <10 m class received subsidies although this class represents 71.4% of the national fleet (Table 1), but, we do not know if any small-scale fishers unsuccessfully applied (data that could support this point are not available, i.e. the list of beneficiaries only includes those of Saint-Guénolé and Guilvinec. These two are largely supplied by Armement La Houle and Armement Bigouden, respectively [46], i.e. the second and third ‘major groups’ identified in Fig. 3. In contrast, Agde’s fish auction, which was largely supplied by small-scale fishers, appears to have limited its losses thanks to a higher supply by small-scale fishers, although they have also developed direct sales in parallel [47].

4.2. A higher resilience for smaller structures

As highlighted above, the under-subsidization of the smaller-scale/ lower-impact segments could be the result of administrative complexity, but also the result of their lack of means to successfully apply, e.g. due to difficulties to prove that they remained docked for at least 15 days overall and three consecutive days as mandated by the decree [23]. In that regard, larger vessels were able to easily justify their lack of activity by using a Vessel Monitoring System (VMS), which is only mandatory for vessels larger than 12 m [43]. On the contrary, smaller-scale fishers without VMS but willing to claim subsidies had to submit, every Monday by noon, an intangible activity notice specifying the position of their vessels for the following seven days [44]. We argue that this induced a burdensome inelasticity for many small-scale fishers, especially in a time of volatile markets, and believe this requirement was the most difficult to overcome, given that the others were quite standard (i.e. providing certificates and other administrative documents re. taxes, social security etc.).

Besides these possible administrative justifications, we also suggest that small-scale fishers may have applied so little because three potential elements: i) their low cash flow may have forced them to go fishing despite the sanitary crisis, so as to generate a certain income vs. a hypothetical subsidy; ii) many of them may have preferred developing direct sale to consumers and therefore increased their margin, making them less likely to request financial aid; and iii) small-scale fishers generally do not seem to rely on subsidies. The latter point strongly emerged as part of informal discussions we had with small-scale fishers; a point that is further strengthened by the fact that COVID-related temporary cessation payments appear to have been requested at political level by industrial fishers only [38–40].

Anecdotal evidence also supports this hypothesis of small-scale fishers’ higher resilience. For instance, the French fisheries minister announced in January 2021 that additional aids would be unlocked in the wake of COVID 19 for several fish auctions in Brittany [45], including those of Saint-Guénolé and Guilvinec. These two are largely supplied by Armement La Houle and Armement Bigouden, respectively [46], i.e. the second and third ‘major groups’ identified in Fig. 3. In contrast, Agde’s fish auction, which was largely supplied by small-scale fishers, appears to have limited its losses thanks to a higher supply by small-scale fishers, although they have also developed direct sales in parallel [47].

4.3. Side note on future research opportunities

In Section 3.3, we highlighted that contradicting trends were observed for the amount of subsidies received per unit of tonnage and power. However, these results should be balanced by the fact that both tonnage and power may not be optimal indicators for the following reasons:

i) As shown in the linked repository [see Section 3.3.6 of the RMarkdown document; 26], the distribution of the ‘tonnage’ variable is extremely right-skewed, rendering it irrelevant in the context of the present analyses;

ii) It also appears that 28.3% of vessels had a tonnage or power class that differed by +/- 1 or +/- 2 compared to their length class [see Section 3.3.6 of the RMarkdown document; 26], making it difficult to use these first two variables to compare the allocation of subsidies among the fleet in a consistent manner;

iii) At any rate, ‘tonnage’ is an ill-defined indicator based on the total volume of all enclosed spaces of a vessel, that has long been criticized by various actors such as the FAO [48] or industry representatives [49], for not representing the fishing capacity in a meaningful way. This criticism also applies to ‘power’ [49];

iv) Finally, ‘power’ is known to be a poorly recorded variable in Europe, as a report published by the European Commission in

Fig. 5. A) Subsidy received per vessel as a function of vessel length (smallest and largest subsidies circled in black), including for outliers (cross symbols; excluded from panels B and C); and focus excluding outliers on the amount of B) subsidy received per vessel as a function of vessel length, and C) subsidy excluded from panels B and C); and focus excluding outliers on the amount of B) and largest subsidies circled in black), including for outliers (cross symbols; the ‘40 m’ class only consisted in outliers) and as a means of providing additional information.

As we showed that seven companies/groups received — for 53 vessels, i.e. 0.8% of the French fleet — 28.5% of all subsidies, our results reinforce the conclusion that the French decree governing the allocation of the COVID fund made available through CRII and CRII+ was tailored for large companies. In fact, the decree indicated that there could be, for each company, as many applications as vessels, and we therefore suggest that more structured, larger companies had the administrative means at their disposal to batch-submit applications and thus capture substantial subsidies with little effort.
2020 stated that “the measured engine power exceeded the certified engine power during 51% of the verifications” [50].

As a result, these trends may be biased by the inherent weaknesses that these two variables bear, and we suggest that other variables such as the number of crew members or the landed value could also have been used to assess the allocation of subsidies to the French fleet. However, these indicators are, to our knowledge, not readily available, or without enough granularity, or out of date. For future research, proxies for these other variables could be developed. At any rate, there is a historical debate on how to define fishing effort/capacity, as it is difficult to use single indicators such as tonnage or power, e.g., depending on the fishing gear that is used (see, e.g., [33]). Overall, we believe that using the simplistic ‘number of vessels’ and ‘length’ — as we did here — can be viewed as regular and legitimate to assess fishing capacity. We also note that updated data will soon be available (i.e. mandatory publication every six months; see Section 2.1.), which will be helpful in corroborating or contradicting the trends highlighted here, and potentially in expanding the scope of this analysis to all subsidies.

5. Conclusion

The COVID-19 outbreak has led to a historic crisis that forced governments across the planet to stop many economic activities — especially those deemed ‘non-essential’ — in order to stop the virus from spreading. Although the pandemic was seen as “an opportunity to revive the ocean and start building a sustainable ocean economy” [21] and to “reshape our economy to make it more resilient and sustainable [by] putting together the biggest package worldwide that links investments for recovery to the sustainable development spirit” [13], our study demonstrates that the subsidies under scrutiny — COVID aids for temporary cessations — have chiefly benefited large companies operating larger scale, higher impact fishing gears [51-53], while practices that are hailed for their lower impact (e.g. [53-56]) were marginalized, utterly ignoring the overarching principles of the CFP [11] and the ambitions targets set by the SDGs [14].

Although it could be argued that vessels with the highest impact remaining docked while those with the lowest impacts continuing to fish during the sanitary crisis was positive and “may [have] provide[d] marine environments the much-needed breathing space for them to start to recover” [21], we argue that this is may only be true in the short term. Mirroring other sectors such as that of aviation or agriculture, we argue that subsidizing high-impact sectors for stopping their activity will only contribute to securing them in the medium to long term.

At the opposite of what France appears to have done with its allocation of the COVID fund, and as supported by a growing body of literature (e.g. [35,57-60]), we argue that public investments must realign with ecological imperatives in order to face the coming century’s challenges, i.e. public subsidies should stop funding high-impact practices and instead help rebuilding ecosystems and strengthening the ocean’s resilience.

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CRediT authorship contribution statement

VLB, LB and FLM designed the research, VLB, LB and FLM performed the research, FLM analyzed the data, VLB, LB and FLM wrote the paper.

Conflicts of interest

None.

References

[1] M. Milazzo, Subsidies in world fisheries: a re-examination, World Bank Technical Paper, Fisheries Series, The World Bank, Washington, DC (USA), 1998 p. ix–46. Available at: https://documents.worldbank.org/en/publication/documents-reports/publication/detailedstructure/133031468776403491/subsidies-in-world-fisheries-a-re-examination.

[2] U.R. Sumaila, D. Pauly, All fishing nations must unite to cut subsidies, Nature 450 (7172) (2007) 945, https://doi.org/10.1038/450945a.

[3] U.R. Sumaila, S. Villasante, F. Le Manach, Fisheries subsidies wreck ecosystems, don’t bring them back, Nature 571 (2019) 36, https://doi.org/10.1038/s41586-019-1054-0.

[4] U.R. Sumaila, N. Ebrahim, A. Schuhbauer, D. Skerritt, Y. Li, H.S. Kim, T.G. Mallory, V.W.L. Lam, D. Pauly, Updated estimates and analysis of global fisheries subsidies, Mar. Policy 109 (2019), 103695, https://doi.org/10.1016/j.marpol.2019.103695.

[5] A. Schuhbauer, D. Skerritt, F. Le Manach, N. Ebrahim, U.R. Sumaila, The global fisheries subsidies divide between small- and large-scale fisheries, Front. Mar. Sci. 7 (2020), https://doi.org/10.3389/fmars.2020.592014.

[6] FAO, The State of World Fisheries and Aquaculture 2020 — Sustainability in Action, Food and Agriculture Organization of the United Nations, Rome (Italy), 2020, p. 244. Available at: http://www.fao.org/documents/card/en/c/ca9229en.

[7] R. Hillborn, R.O. Amorocho, C.M. Anderson, J.K. Baum, T.A. Branch, C. Costello, C.L. de Moor, A. Faraj, D. Hively, O.P. Jensen, H. Kuresta, L.R. Little, F. Mace, T. McClanahan, M.C. Mcclunhy, C. Misto, G.C. Osio, A.M. Parma, M. Pons, S. Segurado, C.S. Szuwalski, J.R. Ye, Effective fisheries management instrumental in improving fish stock status, Proc. Natl. Acad. Sci. USA 117 (4) (2020) 2218–2224, https://doi.org/10.1073/pnas.1909751116.

[8] European Environment Agency, Marine Messages II — Navigating the Course Towards Clean, Healthy and Productive Seas Through Implementation of an Ecosystem-Based Approach, EEA Report — No 17/2019, European Environment Agency (EEA), Copenhagen (Denmark), 2019, p. 77. Available at: https://www.eea.europa.eu/publications/marine-messages-2/flr.

[9] STECF, Scientific, Technical and Economic Committee for Fisheries — 66th plenary meeting report (PLEN-21-01), in: C. Ulrich, H. Doerner (Eds.) Scientific, Technical and Economic Committee for Fisheries (STECF), Ipsra (Italy), 2021, p. 239. Available at: https://publications.jrc.ec.europa.eu/repository/handle/JRC124902.

[10] Council of the EU, Council Regulation (EC) No 2369/2002 of 20 December 2002 Amending Regulation (EC) No 2792/1999 Laying Down the Detailed Rules and Arrangements Regarding Community Structural Assistance in the Fisheries Sector, Off. J. Eur. Commun. L338 (2002) 49-56. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32002L0338.

[11] European Parliament, Council of the EU, Regulation (EU) No 1380/2013 of the European Parliament and of the Council 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulation (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC, Off. J. Eur. Union L354 (2013) 22–61. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R1380.

[12] D.J. Skerritt, R. Arthur, N. Ebrahim, V. Le Brenne, F. Le Manach, A. Schuhbauer, S. Villasante, U.R. Sumaila, A 20-year retrospective on the provision of fisheries subsidies in the European Union, ICES J. Mar. Sci. 77 (2020) 2741–2752, https://doi.org/10.1093/icesjms/fsaa142.

[13] European Commission, Speech by President von der Leyen at the UN High-Level Event on Financing for Development in the Era of COVID-19 and Beyond, 2020. Available at: https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_20200822.

[14] United Nations, Sustainable Development Goal 14 — Conserve and Sustainably Use the Oceans, Seas and Marine Resources for Sustainable Development, United Nations, New York, NY (USA), 2015. Available at: https://sustainabledevelopment.un.org/sdg14.

[15] N. Carvalho, J. Guillen, A. Calvo Santos, The Impact of COVID-19 on the EU-27 Fishing Fleet — EUR 30497 EN, JRC122999, JRC Technical Report, Joint Research Centre (JRC), Ipsra (Italy), 2020, p. 29. Available at: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC122999/impact_covid_fisheries_en02final_onl ine.pdf.

[16] Anon, GLOBEFISH — Information and Analysis on World Fish Trade — 18 May 2020, Food and Agriculture Organization of the United Nations (FAO), Rome (Italy), 2020. Available at: http://www.fao.org/in-action/globefish/covid-19/ne ws/it/en/.

[17] European Commission, Coronavirus Response Investment Initiative, European Commission, Brussels (Belgium), 2020, p. 3. Available at: https://ec.europa.eu/region/policy-en/information/publications/factsheets/2020/coronavirus-response-investment-initiative.

[18] European Commission, Questions and Answers on the Coronavirus Response Investment Initiative Plus: New Actions to Mobilise Essential Investments and Resources, European Commission, Brussels (Belgium), 2020, p. 7. Available at: http://ec.europa.eu/commission/presscorner/detail/en/qanda_20_574.

[19] European Commission, Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 1379/2013 and Regulation (EU) No
