
RECOMMENDATIONS FOR THE REFORM of Ghana's Inshore Exclusion Zone (IEZ) reserved for small-scale fishing activities

Issue Brief

Introduction

Ghana's marine fisheries sector plays a critical role in livelihoods, food security and poverty alleviation. Small-scale fisheries provide livelihoods for around 2.5-3 million people¹ in Ghana, with 186 coastal villages reliant on marine fisheries as their primary source of income². The small-scale fishery comprises over 14,700 canoes³ and 107,500 fishermen⁴, employing over 80% of fishers in the country⁵.

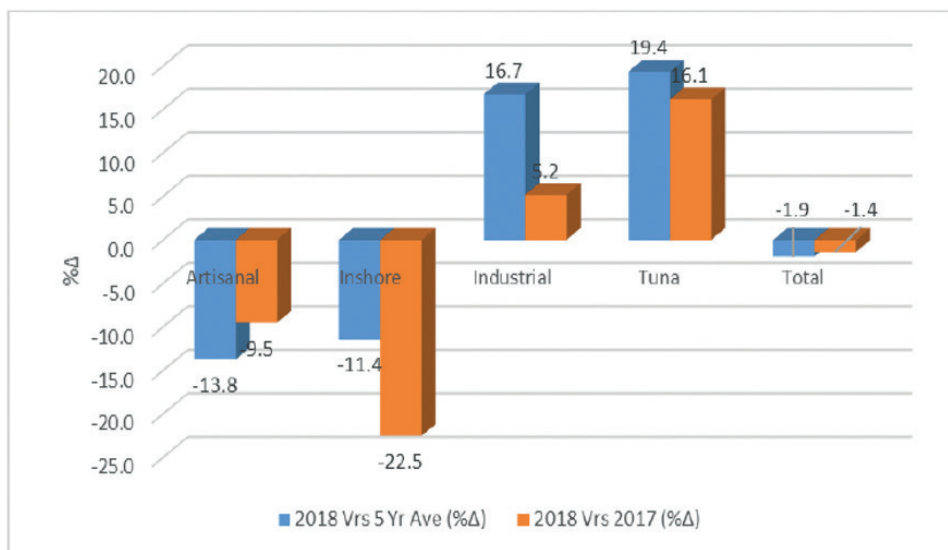
However, Ghana's small-scale fisheries are in steep decline. Landings declined from 298,249 metric tonnes in 1996 to 179,721 metric tonnes in 2016, despite an increase in the number of canoes from 8,626 in 1996 to 11,583 in 2016⁶. In 2018, total artisanal landings declined by 13.8% as compared to the preceding five-year average (**Figure 1**)⁷. Landings of small pelagic species – the mainstay of the artisanal fishery – declined by around 80% between 1996 and 2016⁸, from 135,628 metric tonnes in 1996, to landings of 29,111 tonnes in 2016 (**Figure 2**).

There is evidence that declining trends in fisheries output are contributing to declining incomes and rising poverty levels in coastal communities⁹. Fishers are travelling further out to sea in search of fish¹⁰ – well beyond the six nautical mile/30 metre depth Inshore Exclusion Zone (IEZ) reserved for artisanal fishing¹¹ – yet are increasingly reporting fishing days with zero catch¹². Incomes of small-scale fishers declined by an estimated 40% between 2001 and 2011¹³, and by an estimated 46.6% in 2019 compared to the preceding five-year average (from US\$ 191.6 million to US\$ 102.4 million)¹⁴. Whereas historically Ghana's fisheries were able to sustain the nutritional needs of the population¹⁵, the country today imports more than half of the fish it consumes¹⁶.



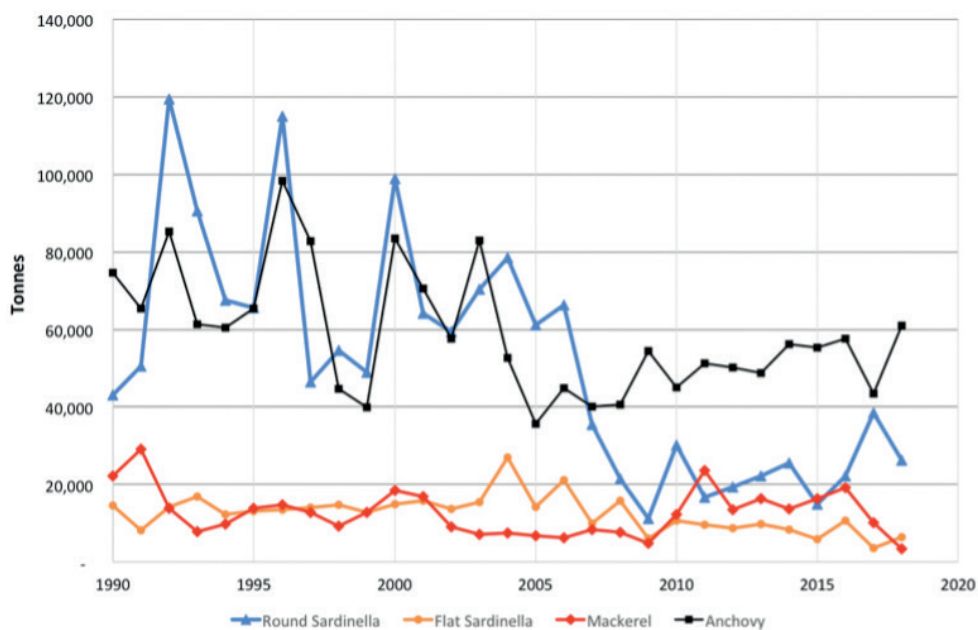
Artisanal fishers on a fishing expedition along the coast of Volta region of Ghana.

Figure 1: Percentage change of fish landings by marine fisheries sub-sector in Ghana



Source: Fisheries Commission (2019, unpublished)

Figure 2: Small pelagic landings by major species (1990-2018, metric tonnes)



Source: Scientific and Technical Working Group (STWG) (2019, unpublished)

There is an urgent need to improve the management of Ghana’s marine fisheries to reverse declines in landings and secure the livelihoods of small-scale fisherfolk. A collapse of the sector would have devastating consequences for coastal communities, pushing millions of Ghanaians into poverty.

The designation of fishing grounds for small-scale fishing activities is a measure that aims to protect local livelihoods through securing rights of use and access, while reducing conflicts between the small-scale and industrial fishing sectors. In Ghana, the 2002 Fisheries Act (625) delineates a zone close to shore reserved for small-scale fishers and specifies the permitted and prohibited activities in this zone¹⁷. However, since the Fisheries Act was adopted in 2002, Ghana’s fisheries sector has seen significant changes, both in terms of resource availability and the characteristics of fishing activities and fleets.

This paper sets out the case for an extension of the zone reserved for small-scale fishers in Ghana to protect local livelihoods, while ensuring clarity of application and that the zone remains spatially relevant to current patterns of fishing activity. The recommendations set out in this paper are informed by consultations with industry and government agencies, as well as data collected through a small-scale vessel monitoring programme implemented by the Environmental Justice Foundation (EJF) in collaboration with US-based vessel monitoring specialists, Pelagic Data Systems. The paper provides an overview of the present legislation relating to the IEZ in Ghana, before looking at the issues with the current boundary, and presenting recommendations for its revision, with supporting evidence.

Current legislation on the IEZ

Ghana's 2002 Fisheries Act (625) designates the area of water between the coastline and the 30-metre isobath or the six nautical mile offshore limit, whichever is farther, as the Inshore Exclusion Zone (IEZ) reserved for small-scale fishers¹⁸. The Act provides that the zone shall be used exclusively by small semi-industrial vessels, canoes and recreational vessels¹⁹.

The following activities are prohibited in the zone:

- the use of large semi-industrial vessels or industrial fishing vessels²⁰;
- the use of canoe support vessels to fish²¹; and
- the use of towing (i.e., trawling) gear²².

The Board of the Fisheries Commission may, however, permit large semi-industrial vessels to enter the zone for the capture of cephalopods at periods it considers appropriate²³. The Director of the Fisheries Commission may also, on written guidelines from the Board, exempt in writing a fishing vessel from the prohibition against the use of canoe support vessels and towing gear to fish within the zone²⁴.

Under Section 88A of the 2002 Act, as inserted by the 2014 Fisheries (Amendment) Act (880), fishing within a closed area or beyond a closed depth, is associated with a minimum fine of US\$1 million, or a minimum of US\$2 million and suspension or revocation of the vessel's licence in the event of a repeat contravention²⁵.

Issues with the current delineation of the IEZ

The current delineation of the IEZ has given rise to a number of challenges, including difficulties in effectively enforcing the boundary and related regulations, and the occurrence of conflicts between the industrial, semi-industrial and artisanal (canoe) fleets. Several of these issues are discussed below.

(a) Lack of clarity as to the precise location of the boundary

The Ghanaian legal framework is relatively unique in its delineation of the IEZ, combining a measure of depth and distance from shore. Generally, coastal states use an offshore limit in nautical miles, without providing an isobath equivalent. In Ghana, the result is a highly uneven IEZ boundary, which stretches to around 10-12 nautical miles offshore in some areas of the Central Region, but closer to six nautical miles in the Western and Volta Regions (**Figure 3**). This has created challenges in enforcing the IEZ, there being no official, harmonised map of the boundary in use by government, civil society and industry.

While artisanal fishers use depth to orientate their fishing operations at sea, and therefore prefer to work with the 30-metre isobath²⁶, the uneven nature of the IEZ boundary has resulted in confusion as to whether activities are within or outside of this zone. Artisanal fishers may fish in areas of shallow water (< 30 metres) beyond the IEZ boundary yet believe themselves to be within this zone where they have priority (**Figure 4**). They may encounter industrial trawlers within these areas, which they consider to be fishing illegally, and may come into conflict resulting in the destruction of fishing gear or even canoes. Indeed, EJF has received reports from fishers alleging illegal incursions by trawlers into prohibited zones, which were actually well beyond the IEZ boundary²⁷.

Meanwhile, the absence of an official IEZ boundary map may preclude the prosecution of industrial vessels for fishing within the IEZ, where the precise location of the boundary is in question.

Figure 3: Location of the IEZ boundary when the two limits (six nautical miles and 30 metre bathymetry) are combined

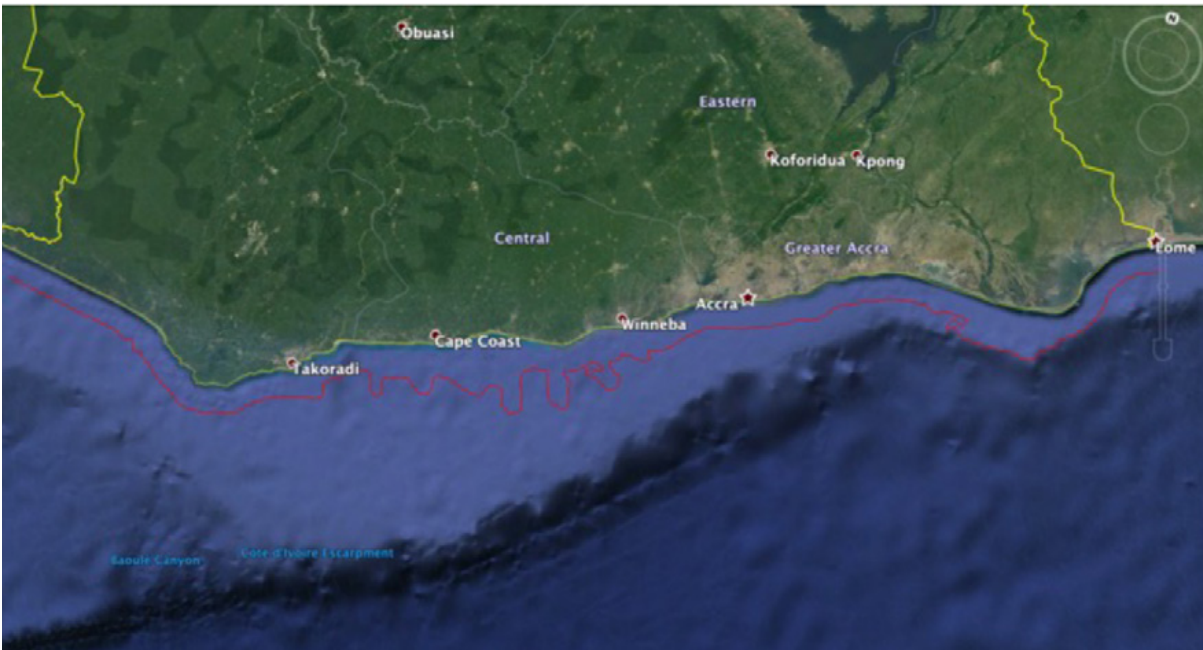
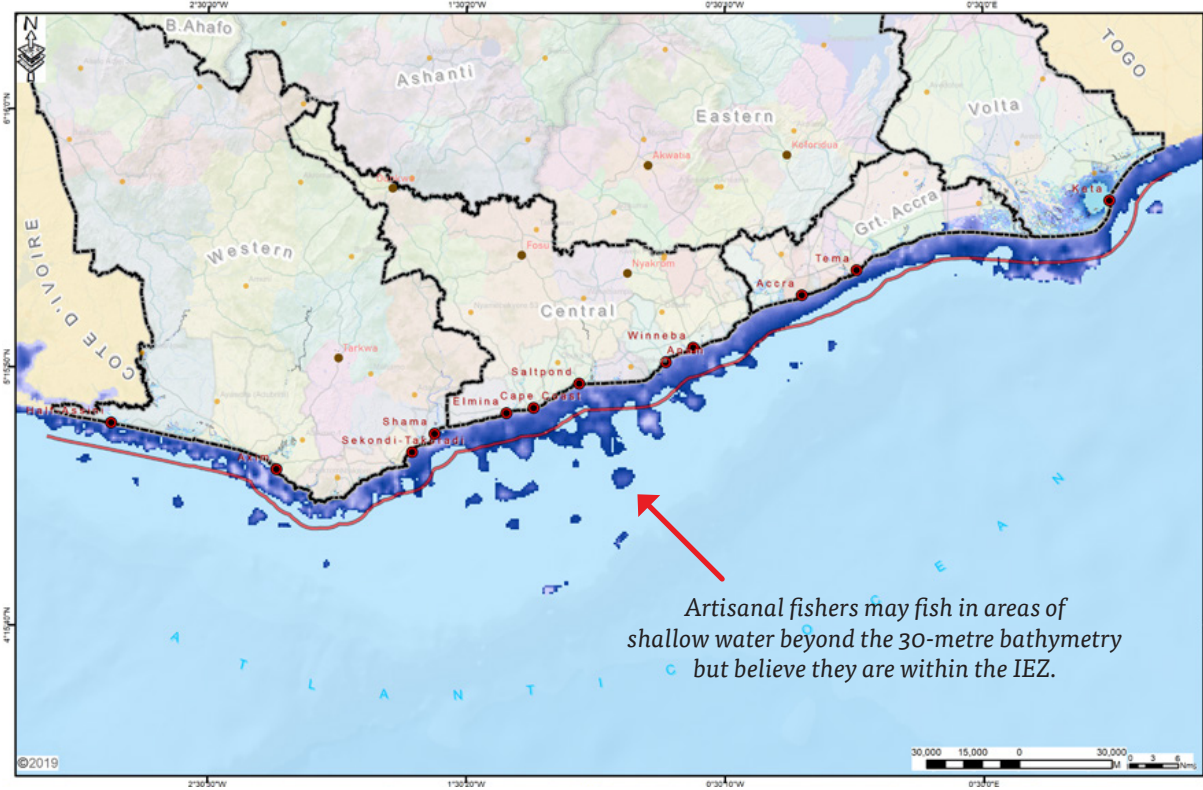


Figure 4: Location of six nautical mile boundary (red line) and areas of 30 metres depth or less (blue shaded areas) within Ghanaian waters



(b) Confusion surrounding permitted activities within the IEZ

According to Section 81 of the 2002 Fisheries Act, it is prohibited for any fishing vessel to use a towing (i.e., trawling) gear with the 30-metre zone. However, canoe fishers regularly observe semi-industrial (inshore) vessels using trawling gear within the IEZ, often at less than one nautical mile from shore. EJF has received numerous reports of such activities towards the east of the Central Region (see **Figure 5**), with canoe fishers reporting destruction of their set nets by semi-industrial vessels trawling close to shore. This is consistent with the findings of a small-scale vessel tracking programme implemented by EJF and Pelagic Data Systems, which recorded 86.9% of semi-industrial (trawling) fishing effort to have taken place within the IEZ during the period October 2019 to December 2020 (**Figure 6**).

The prevalence of trawling activities within the IEZ is indicative of a need to clarify the legal status of these activities. For example, an exemption could permit small-scale semi-industrial vessels to use trawling gear in demarcated areas, following a scientific assessment of the fisheries and ecosystem impacts and in line with the precautionary approach. In considering these provisions, there is a need to protect the rights of canoe fishers using submerged stationary fishing gear, while balancing the livelihood impacts on operators of small-scale semi-industrial vessels, for whom trawling in inshore areas represents a major portion of their fishing activities (**Figure 6**). Any decision taken to grant an exemption or enforce the prohibition against these activities would need to be made in consultation with affected users of the resource.

Figure 5: Image of a semi-industrial vessel captured by a local fisher on 21 June 2019 in the waters off Senya Beraku with trawling net deployed. The vessel was fishing at around 0.56 nautical miles from shore.



Figure 6: Fishing effort by semi-industrial (inshore) vessels using trawling gear between 1 October 2019 and 30 December 2020. Yellow zone indicates the IEZ boundary.



Source: Pelagic Data Systems

Note:

Under the pilot vessel monitoring programme, tracking devices were installed on 21 canoes and 4 semi-industrial (inshore) vessels. All semi-industrial vessels installed with tracking devices were fishing with bottom trawl gear.

A further concern relates to the authorization of tuna pole and line vessels to fish for bait within the IEZ, which appears to lack a clear legal basis. These vessels are authorised, through their fishing licences, to target small pelagic species, primarily anchovies, using purse seine gear within waters shallower than 30 metres depth²⁸. Such activities are prohibited by Section 81(3) of the 2002 Fisheries Act, and do not fall within any of the exemption situations outlined above.

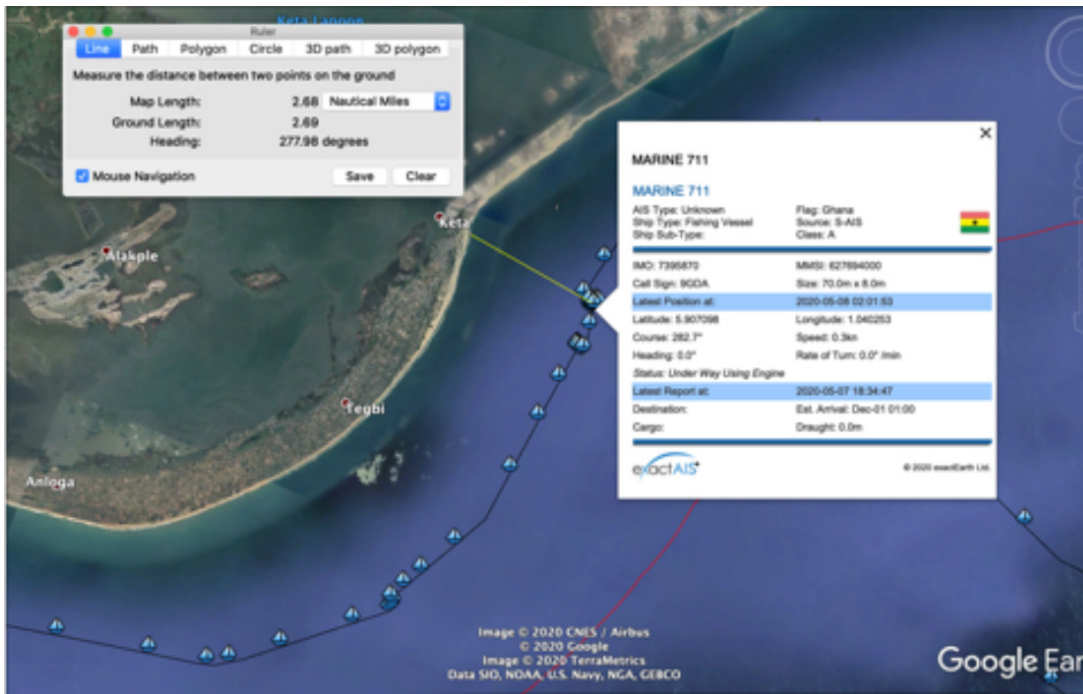
Tuna pole and line vessels are regularly observed on AIS operating within the IEZ, in the Central Region, around Gomoa Fetteh and Saltpond, and in the Volta Region, around Keta (see **Figures 7 and 8** for examples). These activities have caused some confusion among local fishers, who have reported the activities as illegal or have mistaken tuna vessels for industrial trawlers illegally targeting demersal stocks within the IEZ. A key concern has been the use of light by pole and line vessels to attract bait fish²⁹, a practice which is prohibited in all fisheries sectors³⁰.

Confusion around activities that are permitted within the IEZ erodes trust between fishing communities and the regulator and hinders efforts at promoting voluntary compliance by artisanal fishers at the landing beaches³¹.

Figure 7: Sea Plus 87 on 8 May 2020 (red line indicates IEZ boundary)



Figure 8: Marine 711 on 8 May 2020 (red line indicates IEZ boundary)



(c) Interactions between industrial trawlers and artisanal fishers at sea



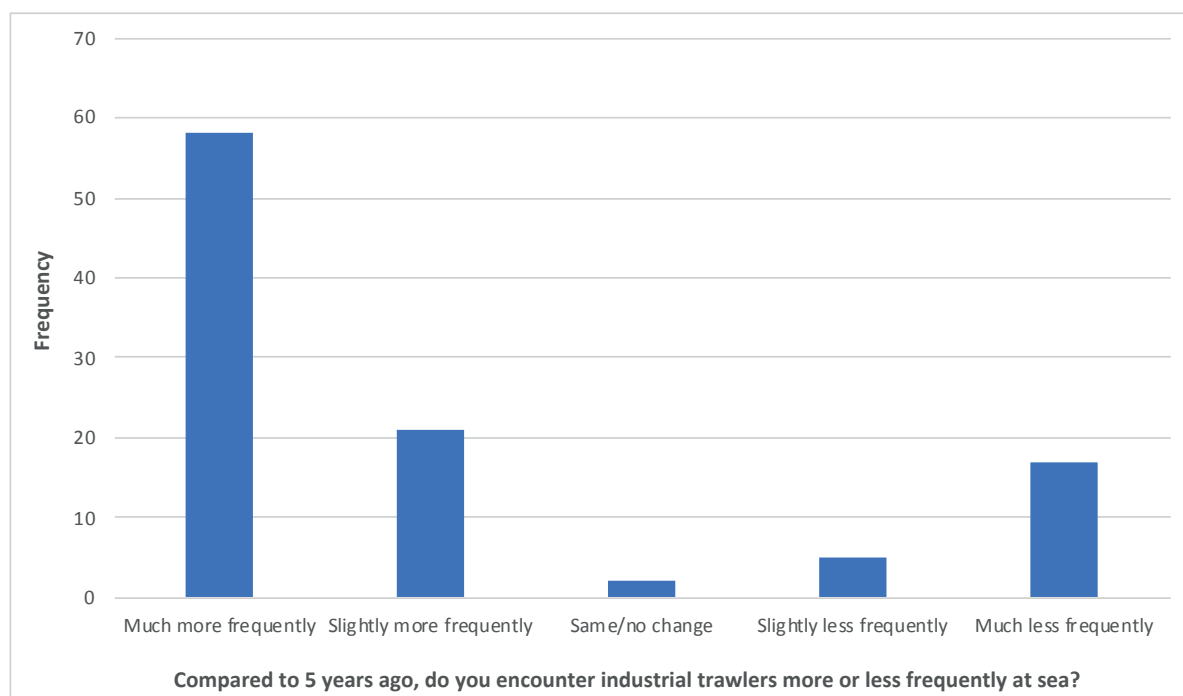
An industrial trawler fishing off the coast of Cape Coast in Ghana's Central Region in December 2019. The vessel was observed with its nets allegedly deployed within the Inshore Exclusion Zone (IEZ) reserved for artisanal fishers. The image was captured by artisanal fishers using a geotagged camera provided by EJF.

The findings of a recent study by EJF, which surveyed 107 fishers from five fishing communities in the Central Region of Ghana, suggest that artisanal fishers are interacting increasingly with industrial trawlers during their fishing expeditions³². The majority of fishers (73.8%) reported increased encounters (i.e., sightings, interactions or conflicts) with industrial trawlers compared to five years previously (**Figure 9**)³³. 92.5% of fishers had encountered industrial trawlers in their fishing grounds during the preceding 12-month period, with 81.3% of fishers reporting multiple encounters of this nature³⁴.

70.1% of fishers reported that industrial trawlers had damaged their fishing gear over the preceding 12-month period, with some fishers reporting threats and abuse when trying to approach trawlers fishing within the IEZ. In just 14.0% of cases were fishers able to obtain compensation for damaged fishing gear, which was in all cases insufficient to cover the full cost of the damage suffered³⁵.

These reports are consistent with the findings of a baseline study carried out for the EU-funded Far Dwuma Nkodo project implemented by EJF and Hen Mpoano. Over 80% of canoe fishers in the survey reported sightings of industrial trawl vessels during their expeditions, with an average of ten incidents of net destruction per canoe in 2016³⁶. The study found that around 5% of destroyed net cases are reported to the Fisheries Commission, and even fewer cases (around 1% of the total) resulted in compensation for losses incurred³⁷.

Figure 9: Fisher perceptions of the frequency of encounters with industrial trawlers compared to five years previously



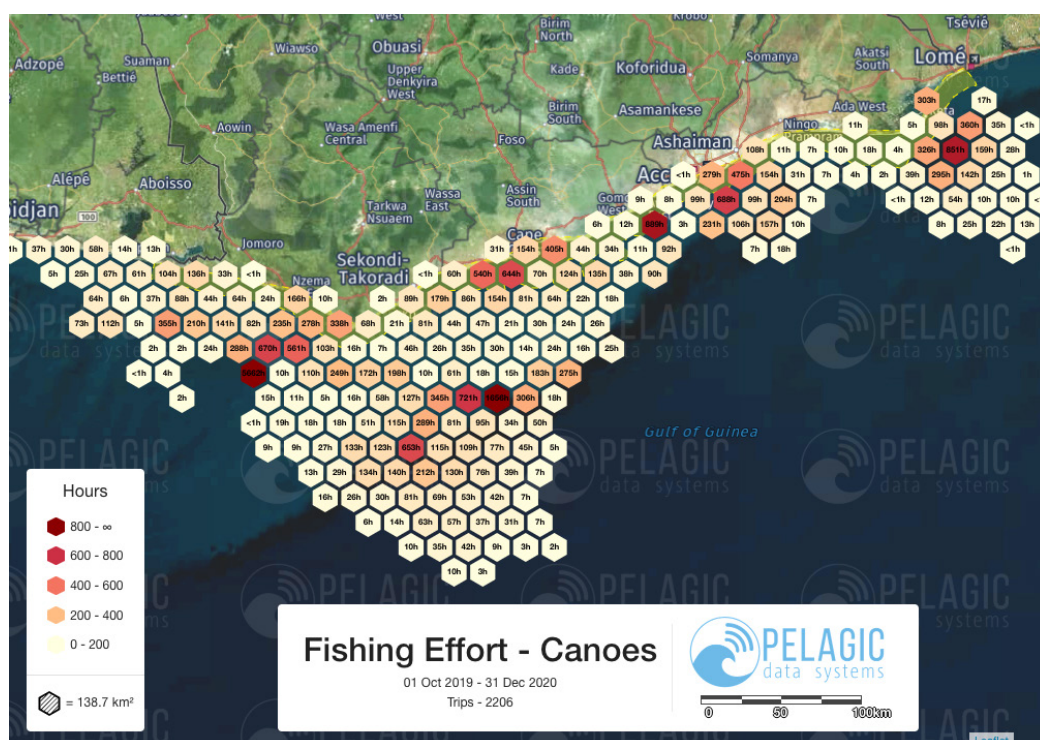
Increased encounters between small-scale fishers and industrial trawlers may be indicative of increased illegal incursions into IEZ. A desk-based review of Automated Identification System (AIS) data and reports from fishers on potential or confirmed incursions by industrial trawlers into the IEZ identified 30 such events during the period 2017 to date, involving 18 individual vessels, equating to around 24% of licensed trawlers during this period (**Appendix 1**). The actual number of incursions may be higher, as vessels may go dark (switch of their AIS transmission) to avoid detection when engaging in illicit behaviours³⁸. Indeed, at least two further cases of IEZ incursions were settled out of court during this period, according to data from the Fisheries Commission³⁹.

Reports of IEZ incursions from fishers should, however, be considered with caution as a lack of clarity regarding the IEZ boundary has created confusion among fishers and led to erroneous reports of trawlers operating within the IEZ (see under **point (a)** above and **Figure 4**)⁴⁰. Fishers are also travelling further out to sea in search of fish as resources become increasingly scarce. This means that encounters between small-scale fishers and industrial trawlers may increasingly take place beyond the limit of the IEZ.

Indeed, more than one-third of fishers (35.5%) in the recent EJJ study reported fishing at or beyond the 30-metre depth limit⁴¹. This is consistent with data from the small-scale vessel monitoring programme, which found that 81.5% of canoe fishing effort (canoes fishing with set nets and hook and line gears) took place beyond the IEZ boundary during the period October 2019 to December 2020, in some cases at significant distances from shore⁴² (**Figure 10**). The baseline report for Far Dwuma Nkodo project similarly found that canoe fishermen in the Central Region now venture out to fishing grounds at average depths of 26.6 fathoms or 48.7 metres, with fishermen in six communities reporting travelling to depths of over 100 fathoms or 183 metres⁴³.

The trend towards longer expeditions to distant fishing grounds has implications for the basic safety and well-being of fishers⁴⁴. Canoes are generally not equipped for longer fishing expeditions, with no area for sleeping and limited capacity to carry food and water supplies for the crew. They also rarely (if ever) carry safety at sea equipment such as life jackets, flares, first aid kits, transponders or radio devices, making workers particularly vulnerable to loss of life in the case of accident or stranding at sea⁴⁵. Such trends highlight the importance of not only improving basic safety on board artisanal canoes but delineating adequate areas as the sole preserve of small-scale fishers to reduce the risk of accidents/collisions with industrial fishing vessels.

Figure 10: Fishing effort recorded from tracking devices on 21 canoes (set net and hook and line gears) during the period October 2019 to December 2020



Source: Pelagic Data Systems

Note:

Under the pilot vessel monitoring programme, tracking devices were installed on 21 canoes and 4 semi-industrial (inshore) vessels. All canoes installed with tracking devices were fishing with set nets and hook and line gears.

Consultations on the reform of the IEZ boundary

Under the Far Dwuma Nkodo project, EJF and Hen Mpoano produced a series of IEZ boundary scenarios, to inform discussions with industry and the regulators concerning the extension of the IEZ in the context of the reform of the 2002 Fisheries Act (**Appendix 2**). These boundary scenarios have been used in broad consultations with fishers in the Central Region, as well as with a cross section of stakeholders, including the national fisher associations, academia and the Fisheries Commission.

The key outcomes of the consultations may be summarized as follows:

- During consultations on the revision of the 2002 Fisheries Act organised by EJF and Hen Mpoano in March and April 2018, canoe fishers and boat owners in the Central Region called for an extension of the IEZ boundary to 60 metres depth to reflect the current pattern of fishing activities of the artisanal fleet. A total of ten consultation sessions were held covering 15 communities across all nine coastal districts on the Central Region. Overall, 464 fishers, processors and traders were engaged in the consultations, of which 273 were fishers, including crew and canoe owners, and 191 were fish processors and traders. In May 2018, the Chief fishermen and Konkohemaa from all 45 coastal communities across the Central Region convened in Cape Coast to validate the results of the local level consultations. At the meeting, participants debated the key points of consensus that emerged from the local level consultations, and agreed on a ten-point communiqué encompassing these points⁴⁶.
- The communiqué was presented to the Ministry of Fisheries and Aquaculture Development in June 2018 as representing the general position of the artisanal fishing industry in the Central Region and signed by the leadership of the Ghana National Canoe Fishermen Council and the National Association of Fish Processors and Traders in the Central Region⁴⁷.

- In April 2019, a meeting was held with high-level officials of the Fisheries Commission and scientists to discuss the options and prospects for reforming the IEZ as part of the revision of the fisheries law framework. This meeting was attended by staff of the Fisheries Commission (Fisheries Scientific Survey Division, Marine Fisheries Management Division, Monitoring, Control and Surveillance Division), the head of the Fisheries Enforcement Unit, members of the Fisheries Commission board, scientists from the University of Cape Coast and staff of the University of Ghana – Monitoring for Environment and Security in Africa (MESA) project. There was a general consensus in support of an extension of the IEZ boundary to 50 metres depth and 12 nautical miles by distance, whichever is further.
- The various IEZ boundary scenarios were further presented to the National Fisheries Association of Ghana (NAFAG) council members in August 2019. Again, there was a general consensus for an extension of the IEZ boundary in the context of the reform of the fisheries law framework. The NAFAG council agreed to undertake further stakeholder engagements to discuss the potential IEZ extension.

Conclusions and recommendations

The data presented above highlight a clear imperative to extend the zone reserved for small-scale fishers in Ghana to protect local livelihoods, fisher safety and welfare, while ensuring fishing zones can be effectively enforced, are well-understood and respected by all fleets, and are spatially relevant to current patterns of fishing activity.

As patterns of fishing activity have shifted over time, it is necessary to ensure the IEZ aligns with the key fishing grounds of the artisanal fleet and protects the tenure rights of artisanal fishers to ensure their livelihoods are sustained. This is in line with international best practice set out in the Code of Conduct for Responsible Fisheries, which provides that states should protect the rights of small-scale fishers to a secure and just livelihood⁴⁸, as well as the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the context of National Food Security and Poverty Elimination (**SSF Guidelines**), which call on states to adopt measures to facilitate equitable access and the granting of preferential access to fishery resources for small-scale fishing communities⁴⁹.

In addition to clarifying and extending the IEZ boundary, there is a need to clearly define the activities that are permitted in the zone, as well as any procedures to grant exemptions, for example, for gears or vessels which are ordinarily prohibited within the zone. In accordance with the SSF Guidelines, procedures for the authorisation of activities within the IEZ should be based on the principles of transparency and participatory decision-making, involving mandatory consultation of small-scale fisherfolk associations and the publication of details of authorisations granted.

Key recommendations to the Ministry for Fisheries and Aquaculture Development for the reform of the IEZ boundary, in the context of the ongoing revision of the fisheries law framework, are set out below.

1. Extend in law the IEZ reserved for small-scale fishers to reflect the current pattern of fishing activities by the artisanal and semi-industrial fleets.
2. Ensure the IEZ boundary is clearly defined and can be enforced.
3. Publish a map of the precise location of the IEZ boundary as a schedule to the future fisheries act and ensure this is followed by all resource users.
4. Ensure that the prohibition against foreign fishing vessels and industrial fishing vessels fishing inside the IEZ is maintained and effectively enforced.
5. Conduct a scientific and livelihood impact assessment of trawling by small-scale semi-industrial vessels within the IEZ, with a view to clarifying the specific activities that are permitted by law and ensuring the resulting legal provisions are enforced. Ensure decisions are based on best available scientific data on the impact of activities on fisheries and marine ecosystems and are in line with the precautionary approach.
6. Provide for the mandatory and meaningful consultation of representatives of small-scale fisherfolk associations in any decisions to authorise fishing activities within the IEZ.
7. Require the Fisheries Commission to publish details of all authorisations granted to carry out fishing activities within the IEZ, stating the period of the authorization and permissible activities.
8. Provide widespread sensitization on the reformed IEZ boundary for all fleets fishing in Ghanaian waters, and particularly in semi-industrial and canoe fishing communities.

Appendix 1: Alleged incursions by industrial trawlers into the Ghanaian IEZ (2017-2021)

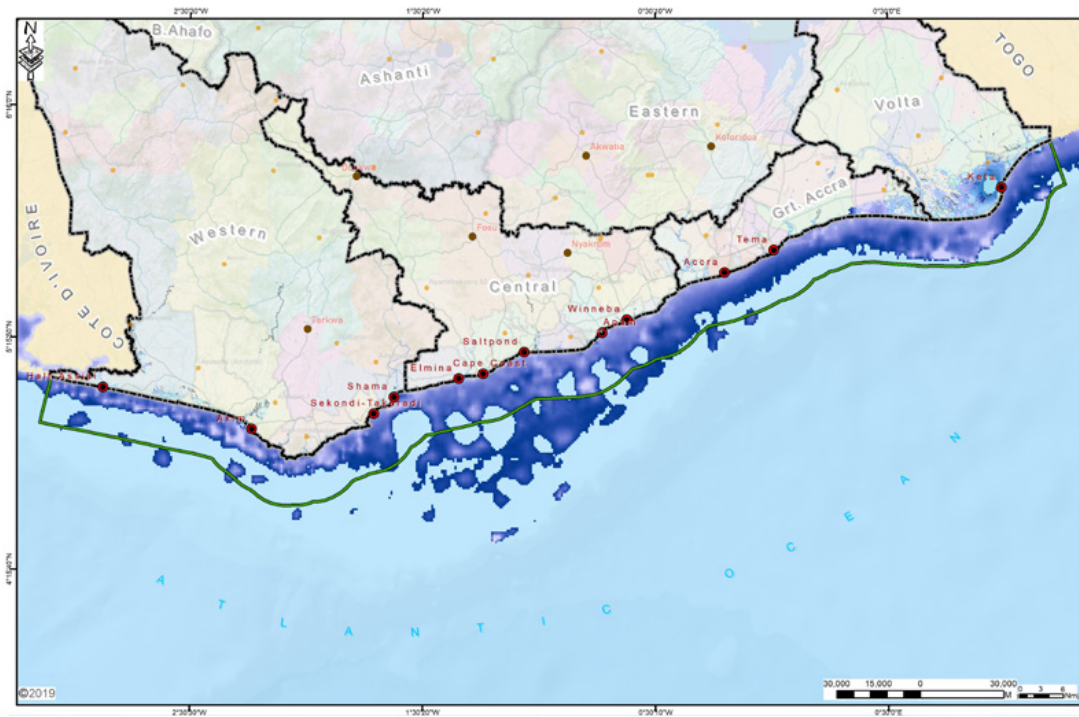
Year	Vessel	Status	Date of occurrence	Source	Outcome
2021	LONG XIANG 602	Suspected	27-28.4.21	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2021	LONG XIANG 606	Suspected	28.5.21	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2021	LONG XIANG 608	Suspected	11-12.6.21	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2021	LONG XIANG 609	Suspected	1-2.5.21	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2021	JIN HAI 606	Suspected	6.3.21	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2021	LU RONG YUAN YU 916	Suspected	6-7.3.21	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2021	LONG XIANG 609	Suspected	24.11.20	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2021	LONG XIANG 602	Suspected	22-24.11.20	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2021	JIN HAI 605	Suspected	2-9.11.20	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2020	LU RONG YUAN YU 930	Suspected	30.8.20-3.9.20	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2020	LU RONG YUAN YU 917	Suspected	31.8.20-2.9.20	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2020	LONG XIANG 606	Suspected	1-8.8.20	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2020	LONG XIANG 606	Suspected	11-17.7.20	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2020	JIN HAI 605	Suspected	28-31.5.20	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2020	MENG XIN 14	Suspected	9-23.4.20 & 14-15.7.20	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2020	LONG XIANG 606	Suspected	April-July 2020	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2020	LONG XIANG 606	Suspected	24-26.3.20	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.

2020	YUN HAI 607	Suspected	7.1.20	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2019	D-HANDS 2	Suspected	12.12.19	Fisher <i>in situ</i> report	Reported to Fisheries Commission. Outcome not reported.
2019	BOHYE	Suspected	12.12.19	Fisher <i>in situ</i> report	Reported to Fisheries Commission. Outcome not reported.
2019	TWIN PORT CITY 103	Suspected	12.12.19	Fisher <i>in situ</i> report	Reported to Fisheries Commission. Outcome not reported.
2019	YUN HAI 607	Suspected	18-20 and 26-27.06.19	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2019	TWIN PORT CITY 103	Suspected	14.03.19	Fisher/EJF <i>in situ</i> report	Reported to Fisheries Commission. Outcome not reported.
2019	TWIN PORT CITY 104	Suspected	14.03.19	Fisher/EJF <i>in situ</i> report	Reported to Fisheries Commission. Outcome not reported.
2019	SOMBO	Suspected	14.03.19	Fisher/EJF <i>in situ</i> report	Reported to Fisheries Commission. Outcome not reported.
2018	LU RONG YUAN YU 920	Suspected	08.06.18	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2018	LONG XIANG 606	Suspected	14.12.18	AIS (EJF)	Reported to Fisheries Commission. Outcome not reported.
2017	LONG XIANG 606	Confirmed	11.2017	AIS (EJF)	Reported to FC. Warning issued to operator.
2017	LU RONG YUAN YU 967	Confirmed	4-6.6.17	Fisheries Commission	Fine of GH¢ 48,000 imposed. GH¢ 6,000 paid by operator.
2017	LU RONG YUAN YU 920	Confirmed	4-6.6.17	Fisheries Commission	Fine of GH¢ 48,000 imposed. GH¢ 6,000 paid by operator.

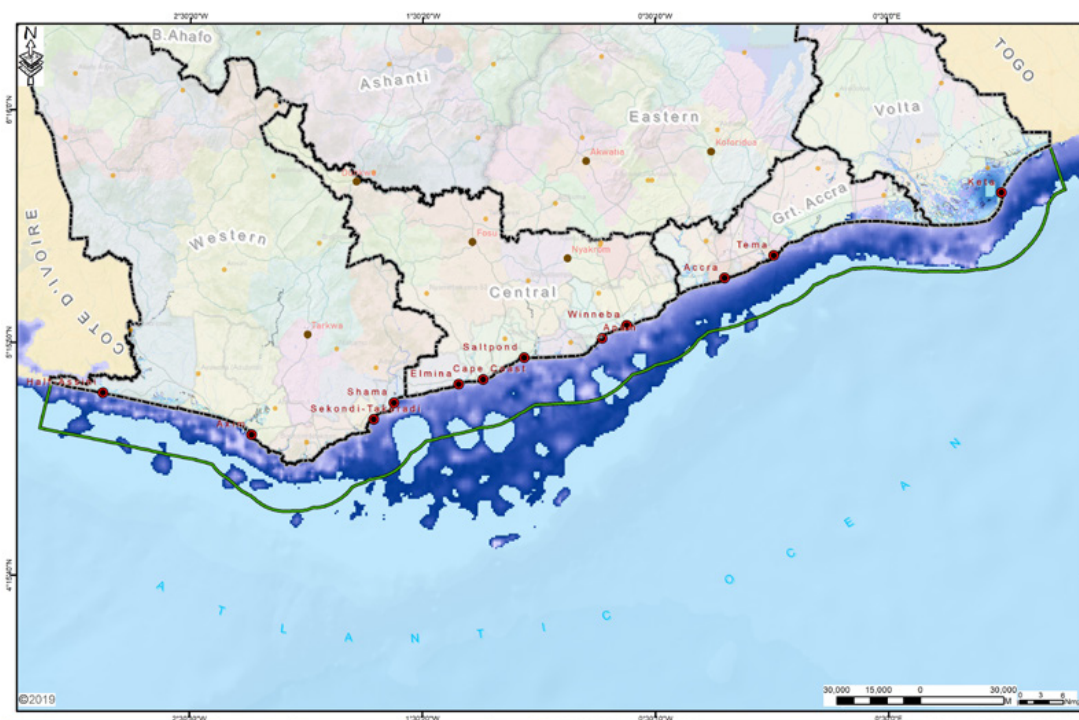
Appendix 2:

IEZ boundary scenario maps

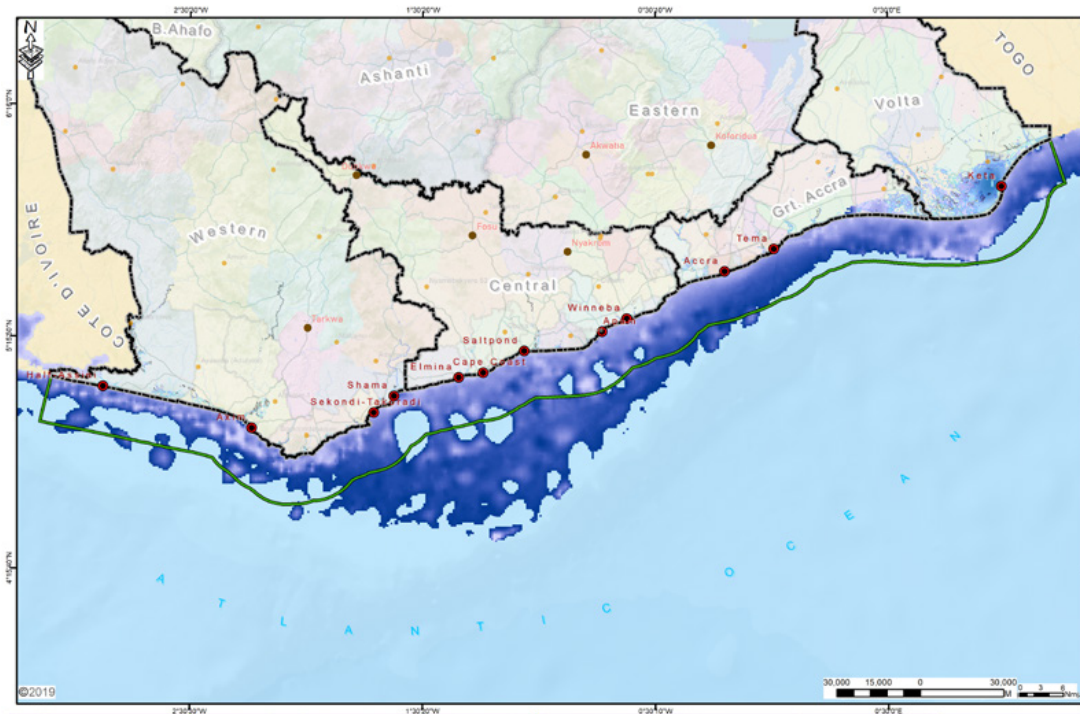
1. Map depicting areas of water below 45 metres depth (areas shaded in blue) and a distance of 12 nautical miles from the shoreline (green boundary)



2. Map depicting areas of water below 50 metres depth (areas shaded in blue) and a distance of 12 nautical miles from the shoreline (green boundary)



3. Map depicting areas of water below 60 metres depth (areas shaded in blue) and a distance of 12 nautical miles from the shoreline (green boundary)



- 1 Ghana Statistical Service (GSS) (2014), cited in Fisheries Commission (2018). *2018 Annual Report*. Ministry of Fisheries and Aquaculture Development. Unpublished; FAO (2016a). 'Fishery and aquaculture country profiles: the Republic of Ghana', *Food and Agriculture Organization of the United Nations*. Available at: <http://www.fao.org/fishery/facp/GHA/en>. Accessed 3.6.21
- 2 Dovlo, E., Amador, K., Nkrumah, B. et al. (2016). *Report on the 2016 Ghana Marine Canoe Frame Survey*. Fisheries Scientific Survey Division of the Fisheries Commission, Ministry of Fisheries and Aquaculture Development. August 2016.
- 3 Fisheries Commission (2020). *Fishing Vessel Registry System*. Unpublished.
- 4 Dovlo, E., Amador, K., Nkrumah, B. et al. (2016). *Report on the 2016 Ghana Marine Canoe Frame Survey*. Fisheries Scientific Survey Division of the Fisheries Commission, Ministry of Fisheries and Aquaculture Development. August 2016.
- 5 Republic of Ghana (2014). *National plan of action to prevent, deter, and eliminate illegal, unreported, and unregulated fishing*. Available from: ftp://ftp.fao.org/fi/DOCUMENT/IPOAS/national/Ghana/NPOA_IUU.pdf.
- 6 Official data on landings provided by the Fisheries Scientific Survey Division of the Fisheries Commission.
- 7 Fisheries Commission (2019). *Annual Report for 2018*. April 2019. Unpublished.
- 8 Landings of *S. aurita* and *S. maderensis* by all fleets (industrial, inshore and artisanal): FAO (2019). *Report of the FAO/CECAF Working Group on the Assessment of Small Pelagic Fish – Subgroup South*. Elmina, Ghana, 12-20 September 2018. *Rapport du Groupe de travail FAO/COPACE sur l'évaluation des petits poissons pélagiques – Sous-groupe Sud*. Elmina, Ghana, 12-20 septembre 2018. CECAF/ECAF Series / COPACE/PACE Série No. 19/81. Rome. <http://www.fao.org/3/ca5402b/ca5402b.pdf>
- 9 Fisheries Commission (2019). *Annual Report for 2018*. April 2019. Unpublished. See also: EJF (2021). *A human rights lens on the impacts of industrial illegal fishing and overfishing on the socio-economic rights of small-scale fishing communities in Ghana*.
- 10 EJF (2021). *A human rights lens on the impacts of industrial illegal fishing and overfishing on the socio-economic rights of small-scale fishing communities in Ghana*.
- 11 Defined as the area between the coast and a distance of six nautical miles from shore or the 30-metre depth limit, whichever is farther: Schedule referred to in Section 81(1) of the 2002 Fisheries Act (625).
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- 13 Fisheries and Aquaculture Sector Development Plan for 2011-2016
- 14 Akpalu, W. (unpublished). Based on data provided by the Fisheries Scientific Survey Division of the Fisheries Commission.
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- 16 United States Department of Agriculture (USDA) Foreign Agricultural Service (2019). *Fish and Seafood Report*. Global Agricultural Information Network (GAIN) report. <https://www.fas.usda.gov/data/ghana-fish-and-seafood-report>
- 17 Section 81(1) and Schedule to the 2002 Fisheries Act (625)
- 18 Ibid.
- 19 Section 81(2), 2002 Fisheries Act (625)
- 20 Section 81(3), 2002 Fisheries Act (625)
- 21 Section 81(4), 2002 Fisheries Act (625)
- 22 Section 81(5), 2002 Fisheries Act (625)
- 23 Section 81(6), 2002 Fisheries Act (625)
- 24 Section 81(7), 2002 Fisheries Act (625)
- 25 Section 88A(1)(c), 2002 Fisheries Act (625), as inserted by the 2014 Fisheries (Amendment) Act (880)
- 26 GNCFC and NAFPTA (2018). *Joint communiqué from the Ghana National Canoe Fishermen Council (GNCFC) and National Fish Processors and Traders Association (NAFPTA) – Priorities for small-scale fishers, processors and traders in the Central Region for the reform of the national fisheries law framework*. Dated 15.5.18. <https://ejfoundation.org/reports/joint-communiqué-from-the-ghana-national-canoe-fishermen-council-gncfc-and-national-fish-processors-and-traders-association-nafta>. Accessed 15.7.2021.
- 27 Since 2019, EJF has implemented a community surveillance project in Ghana, where small-scale fishers are trained to report on illegal activities they observe at sea, using geotagged cameras or a mobile app deployed by EJF. In 2020, fishers submitted 50 reports of potential IUU fishing activities, which were verified by EJF before onward submission of suspected illegalities to the Fisheries Commission. Over 150 fishers in Ghana are subscribed to the DASE mobile app, which is based on the Collect platform by Atlan, and was launched officially at the end of 2020.
- 28 Defaux V., Gascoigne J. and Huntington T. (2018). *Action plan for the preparation of an Eastern Atlantic - Ghana based - pole and line tuna Fishery Improvement Project (FIP)*. https://www.wwf.org.uk/sites/default/files/2019-03/GHA%20PL%20FIP%20detailed%20AP_n%20budget%20FINAL.pdf
- 29 Anon. (21.5.20), 'Light Fishing By Tuna Boats Against Ghanaian Law', *Daily Guide Network*. <https://dailyguidenetwork.com/light-fishing-by-tuna-boats-against-ghanaian-law/>. Accessed 15.7.21.
- 30 Section 11(1) of the 2010 Fisheries Regulations (L.I. 1968).
- 31 See, for example: Anon. (12.7.21), 'Foreign vessels defy Ghana's closed fishing season, storm Keta and Saltpond marine waters', [ghenvironment.org](https://ghenvironment.org/foreign-vessels-defy-Ghanas-closed-fishing-season-storm-Keta-and-Saltpond-marine-waters). <https://ghenvironment.org/foreign-vessels-defy-Ghanas-closed-fishing-season-storm-Keta-and-Saltpond-marine-waters>. Accessed 15.7.21.
- 32 EJF (2021). *A human rights lens on the impacts of industrial illegal fishing and overfishing on the socio-economic rights of small-scale fishing communities in Ghana*.
- 33 Ibid.
- 34 Ibid.
- 35 Ibid.
- 36 Ibid.
- 37 EJF and Hen Mpoano (2017). *Baseline study report: A project to ensure greater environmental sustainability and social equity in Ghana's fisheries sector through a reduction of illegal fishing and strengthened capacity to support legal, sustainable and co-managed fisheries*. Project funded by the European Union.
- 38 Malarky, L. and Lowell, B. (2018). *Avoiding detection: Global case studies of possible AIS avoidance*. Oceana.
- 39 Fisheries Commission (2021). *Annual Report for 2020*. Unpublished. The Fisheries Commission does not routinely publish data on sanctions for IUU fishing infringements.
- 40 EJF has been working with fishing communities in Ghana since 2019 to report geotagged photos of industrial vessels operating illegally in the IEZ. EJF has received multiple reports from communities of vessels purported to be fishing in the IEZ; however, upon further verification of vessel positions using image coordinates and AIS, vessels were found to be operating beyond the 30-metre depth boundary. As the IEZ boundary is not a straight line but varies depending on bathymetry of the seabed, this has served as an impediment to accurate IUU reporting and effective enforcement.
- 41 EJF (2021). *A human rights lens on the impacts of industrial illegal fishing and overfishing on the socio-economic rights of small-scale fishing communities in Ghana*.
- 42 Data collated from 21 canoes based at nine landing beaches in Ghana using Pelagic Data System tracking devices.
- 43 EJF and Hen Mpoano (2017). *Baseline study report: A project to ensure greater environmental sustainability and social equity in Ghana's fisheries sector through a reduction of illegal fishing and strengthened capacity to support legal, sustainable and co-managed fisheries*. Project funded by the European Union.
- 44 In a study published by EJF in August 2021, 10.3% of fishers reported fishing trips of 72 hours or more. See: EJF (2021). *A human rights lens on the impacts of industrial illegal fishing and overfishing on the socio-economic rights of small-scale fishing communities in Ghana*.
- 45 Mensah, M.A., Koranteng, K.A., Bortey, A. and Yeboah, D.A. (2006). *The state of world fisheries from a fish worker perspective: The Ghanaian situation*. International Collective in Support of Fishworkers.
- 46 GNCFC and NAFPTA (2018). *Joint communiqué from the Ghana National Canoe Fishermen Council (GNCFC) and National Fish Processors and Traders Association (NAFPTA) – Priorities for small-scale fishers, processors and traders in the Central Region for the reform of the national fisheries law framework*, dated 15.5.18. <https://ejfoundation.org/reports/joint-communiqué-from-the-ghana-national-canoe-fishermen-council-gncfc-and-national-fish-processors-and-traders-association-nafta>. Accessed 15.7.2021.
- 47 Ministry of Fisheries and Aquaculture Development (27.9.18), 'MOFAD meets with the Ghana National Canoe Fishermen Council'. <https://www.mofad.gov.gh/mofad-meets-with-the-ghana-national-canoe-fishermen-council/>. Accessed 15.7.21.
- 48 Art. 6.18 Code of Conduct for Responsible Fisheries.
- 49 Paras. 5.7 and 5.8 SSF Guidelines.