



FISHERY ASSESSMENT REPORT

IFFO GLOBAL STANDARD FOR RESPONSIBLE SUPPLY OF FISHMEAL AND FISH OIL



FISHERY:	Sandeel (<i>Ammodytes marinus</i>)
LOCATION:	North Sea (ICES Division IIIa & Subarea IV)
DATE OF REPORT:	17th July 2013
ASSESSOR:	Sam Peacock

Global Trust Certification Ltd, Quayside Business Centre, Dundalk, Co. Louth, Ireland Tel: 042 932 0912 Fax 042 938 6864

Issue No; 2; Issue Date; Nov 09

Report Ref: Danish Sandeel Re-approval 2013

CCM Code:

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1. Application Details and Summary of the Assessment Outcome			
Name:			
Foreningenfor Danmarks Fiskemel- og Fiskeolieindustri Association of Fishmeal and Fishoil Manufacturers in Denmark			
Address:			
Country: Denmark		Zip:	
Tel. No.		Fax. No.	
Email address:		Applicant Code	
Key Contact:		Title:	
Certification Body Details			
Name of Certification Body: Global Trust Certification			
Assessor Name:	Peer Reviewer:	Assessment Days:	Initial/Surveillance/Re-certification:
Sam Peacock	Mike Platt	10	Re-certification
Assessment Period	May - July 2013		
Scope Details			
1. Scope of Assessment:		IFFO Responsible Sourcing standard	
2. Fishery		Sandeel (<i>Ammodytes marinus</i>)	
3. Fishery Location		North Sea (ICES Division IIIa & Subarea IV)	
4. Fishery Method		Bottom trawl	
Outcome of Assessment			
5. Overall Fishery Compliance Rating		Medium/High	
6. Sub Components of Low Compliance		SA 1-3: None SA 4-7: A3, B1	
7. Information deficiency		None	
8. Peer Review Evaluation		Agree to reapprove areas SA 1 -3 only, but increased surveillance will be required to ensure that the TAC agreed does comply with the ICES scientific advice in future years	
9. Recommendation		Approve fishery in Sandeel Areas 1-3 only, on the condition described below	

2. Quality of Information
Good – primarily government and ICES websites and reports.

3. Compliance Level Achieved
SA 1-3: Medium/High SA 4-7: Medium/Low
CONDITION Recommendation
<p>Approve fishery in Sandeel Areas 1-3 only, on the following recommended condition:</p> <ul style="list-style-type: none"> The Association of Fishmeal and Fish oil Manufacturers in Denmark should engage with fishery managers and scientists to encourage the development of research programs and improve the scientific understanding of the seven sandeel stocks, particularly those in Areas 1 – 3, and provide direct assistance wherever possible.

4. Guidance for On-site Assessment
Based on High Compliance Findings
<ul style="list-style-type: none"> Ensure that fishers record the Sandeel Area in which fish are caught, to allow processors to distinguish between approved and non-approved fish.
Based on Medium Compliance Findings
Key Stakeholders of the Fishery

5. Assessment Determination
<p>The management of sandeel in ICES Division IIIa and Subarea IV is based on robust legal and administrative management frameworks, backed up by competent control and enforcement agencies and sanctions for violations. As with most EU commercial fisheries, a scientific basis for management measures is provided by ICES and factors strongly in the management approach. This is best illustrated by the recent move to manage sandeel as seven distinct stocks, where previously a single TAC had been set for the entire region.</p> <p>However, the fishery has been awarded a number of medium compliance ratings. Firstly, there is no agreed international management plan, and the Norwegian component of the fishery is managed with different objectives to the EU component. Secondly, the level of fishery dependent and independent data available varies considerably between Areas, with significant room for improvement in two of the most commercially significant stocks – although this is likely to improve as the data collection framework adapts to the need to assess seven individual stocks. These research gaps also contribute towards the uncertainties which have meant the fishery also achieved a medium compliance in the precautionary approach section. Finally, although quotas in each of the seven Areas have generally been in line with the scientific advice, the target quota was exceeded in all three of the main Sandeel Areas in 2012. The mitigating circumstances described in section D1 explain the decision to award a medium compliance rating here.</p> <p>It should also be noted that due to the limited scientific understanding and lack of reference points for the stocks in Sandeel Areas 4-7, the assessment team does not recommend that sandeel from these Areas be approved against the IFFO RS scheme at this time. This approval recommended by this assessment applies only to Sandeel Areas 1-3.</p>
HIGH COMPLIANCE
A1, A2, B2, D2, D3, E1, E2
MEDIUM COMPLIANCE
A3, B1, C1, D1

Background

Sandeel are small eel-like fish which inhabit sandy areas of seabed. They are an abundant and important component of food webs in the North Atlantic. Of the five species of sandeels inhabiting the North Sea, the lesser sandeel, (*Ammodytes marinus*) is the most abundant and comprises over 90% of sandeel fishery catches. Sandeel mature between age one and three. They spawn a single batch of eggs in December - January, several months after ceasing to feed. The eggs are deposited on the seabed. The larvae hatch after several weeks, usually in February-March, and drift in the currents for one to three months, after which they settle on the sandy seabed.

Sandeel are fished industrially in ICES Sub Area IV and ICES Division IIIa, principally by Denmark and Norway. The fishery developed in the 1970s and landings rapidly increased to over 1 million tonnes

in 1988. Landings remained high until 2002 but have decreased considerably in recent years. In 2011 an area-based management approach was adopted, dividing the fishery into seven independent stocks where previously it was managed as a single unit. Of these seven Sandeel Areas, Areas 1 and 3 have provided the bulk of the catch since their introduction. All seven Areas are under European jurisdiction, with the exception of the part of SA3 which falls within the Norwegian EEZ.

Under clauses where there is variation between the management approaches of Sandeel Areas, this assessment considers each Area separately. The assessment determination above describes which SAs are recommended for approval against the IFFO RS standard.

SUMMARY OF LEVEL OF COMPLIANCE					
	The Management Framework and Procedures	Stock assessment procedures and management advice	Precautionary approach	Management measures	Implementation
legal and administrative basis	High Compliance	Low Compliance	Low Compliance	Low Compliance	Low Compliance
Fisheries management should be concerned with the whole stock unit	High Compliance	Low Compliance	Low Compliance	Low Compliance	Low Compliance
Management actions should be scientifically based	Medium Compliance	Low Compliance	Low Compliance	Low Compliance	Low Compliance
Research in support of fisheries conservation and management should exist	Low Compliance	Medium Compliance	Low Compliance	Low Compliance	Low Compliance
Best scientific evidence available should be taken into account when designing conservation and management measures	Low Compliance	High Compliance	Low Compliance	Low Compliance	Low Compliance
The precautionary approach is applied in the formulation of management plans	Low Compliance	Low Compliance	Medium Compliance	Low Compliance	Low Compliance
The level of fishing permitted should be set according to management advice given by research organisations	Low Compliance	Low Compliance	Low Compliance	Medium Compliance	Low Compliance
Where excess fishing capacity exist, mechanisms should be in established to reduced capacity	Low Compliance	Low Compliance	Low Compliance	High Compliance	Low Compliance
Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment	Low Compliance	Low Compliance	Low Compliance	High Compliance	Low Compliance
A management system for fisheries control and enforcement should be established	Low Compliance	Low Compliance	Low Compliance	Low Compliance	High Compliance
A framework for sanctions of violation of laws and regulations should be efficiently exists	Low Compliance	Low Compliance	Low Compliance	Low Compliance	High Compliance

KEY: Low Compliance Medium Compliance High Compliance:

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6. Rationale of the Assessment Outcome

a. The Management Framework and Procedure

LEVEL OF COMPLIANCE	a.i. The management of the fishery must include a legal and administrative basis for the implementation of measures and controls to support the conservation of the fishery.	References	Rating
LOW	<p>Determination: There are robust legal and administrative frameworks in place at the EU and Danish levels. The upcoming CFP reform may result in a substantially altered management process in future assessments.</p> <p>Europe:</p> <p>Denmark is a Member State of the European Union, and therefore in Community waters implements the Common Fisheries Policy (CFP). In force since 1983, the CFP aims to reconcile resource conservation with the preservation of income and jobs in coastal zones that offer few alternatives in terms of production or employment. It therefore covers not just resources but also markets and structures.</p> <p>With regard to resource management, the CFP regulations comprise:</p> <ul style="list-style-type: none"> • A traditional management tool based on TACs and quotas; • Technical measures relating to gear or catch; • Effort-related management, based on vessel engine power and the number of days at sea. <p>The CFP also provides for the introduction of measures to rebuild, over a period of several years, stocks that are threatened in terms of sustainable harvesting, and for recourse to effort-related management rules to supplement TACs and quotas.</p> <p>Substantial changes have been proposed for the CFP, potentially including a ban on discards; an increased focus</p>	1-7	HIGH
MEDIUM			
HIGH			

	<p>on a Maximum Sustainable Yield (MSY) based approach; more widespread regionalisation as a method of improving management of internationally-fished and widespread stocks; more explicit recognition of the social dimension of fishery management; and Transferable Fishing Concessions (TFCs). These key proposals along with other aspects of CFP reform are being discussed and voted upon in the European parliament, and changes are likely to begin to come into force in 2013/14.</p> <p>Denmark:</p> <p>The responsible authority for monitoring and enforcing EU and national conservation policies is the Danish Directorate of Fisheries, which is a part of the Ministry of Food, Agriculture and Fisheries, under the 1999 Fisheries Act. The Directorate carries out inspection at sea and landings, as well as verification of EU marketing standards. The Ministry also works for Danish fisheries and aquaculture through</p> <ul style="list-style-type: none"> • Regulation and inspections of the fishing industry • Support for research in fisheries and aquaculture production • Support for the development of fisheries, the fish industry, fishery harbours and aquaculture • Fish management and fishing license arrangements for recreational fisheries <p>The primary provider of scientific information and advice at the national level within Denmark is the National Institute of Aquatic Resources at the Technical University of Denmark (DTU Aqua). DTU Aqua’s stated mission is to conduct research, provide advice, educate at university level and contribute to innovation in sustainable exploitation and management of aquatic resources. DTU Aqua directly advises the Danish Ministry of Food, Agriculture and Fisheries and other public authorities.</p> <p>International science</p> <p>Science-based fishery management advice at the international level is provided by the International Council for the Exploration of the Sea (ICES). ICES is a network of more than 1,600 scientists from 200 institutes linked by an intergovernmental agreement (the ICES Convention) to add value to national research efforts. Scientists working through ICES gather information about the marine ecosystem. Besides filling gaps in existing knowledge, this</p>	
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	<p>information is developed into unbiased, non-political fishery management advice. The 20 member countries that fund and support ICES use this advice to help them manage the North Atlantic Ocean and adjacent seas.</p> <p>ICES provides annual stock assessment and management advice in relation to the North Sea sandeel fishery.</p>		
	<p>a.ii. Fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account fishery removals and the biology of the species</p>	References	Rating
LOW	<p>Determination: The Sandeel management units in the North Sea were recently rapidly adapted to reflect the scientific advice. Although discards and bycatch are not factored into assessments, they are thought by ICES to be negligible. The assessment team considers a score of high compliance to be appropriate.</p> <p>Prior to 2010, sandeel in the North Sea was assessed and managed as three stock units. In the 2010 advice, ICES recommended the use of seven distinct stock units, referred to as Sandeel Areas (SA), in order to better reflect the stock structure and to reduce the potential for localised stock depletion. For the 2011 and 2012 seasons, an initial single TAC was set for the entire IIa, IIIa and IV region. This was updated to reflect the ICES advice published in February and March respectively, with an amendment to the relevant European Council Regulation introducing additional catch limits within each of the seven Sandeel Areas. This pattern was repeated in 2013, although in this year the preliminary TAC was set at 0t in anticipation of the ICES advice. The 2013 quotas were all set largely in line with the ICES advice, factoring in the Norwegian TAC; quotas are covered in more detail in section D1.</p> <p>Although there is no direct international co-operation on sandeel quota setting, in recent years the EU TAC has been set with the Norwegian quota, which is set independently of ICES advice, in mind. In 2013, the EU TAC in the relevant Area, SA3 (SA5 does not currently support a fishery), was set at a level ensuring that even if the entire Norwegian TAC were filled, total landings in SA 3 would remain below the level advised by ICES.</p> <p>The level of data available during the assessment of each SA varies considerably, with some stocks considered data deficient whilst fairly robust data are available for others. ICES states that sandeel fisheries have a low bycatch for other species, including other TAC species. Discards and bycatch are not included in the assessment</p>		HIGH
MEDIU M			
HIGH			

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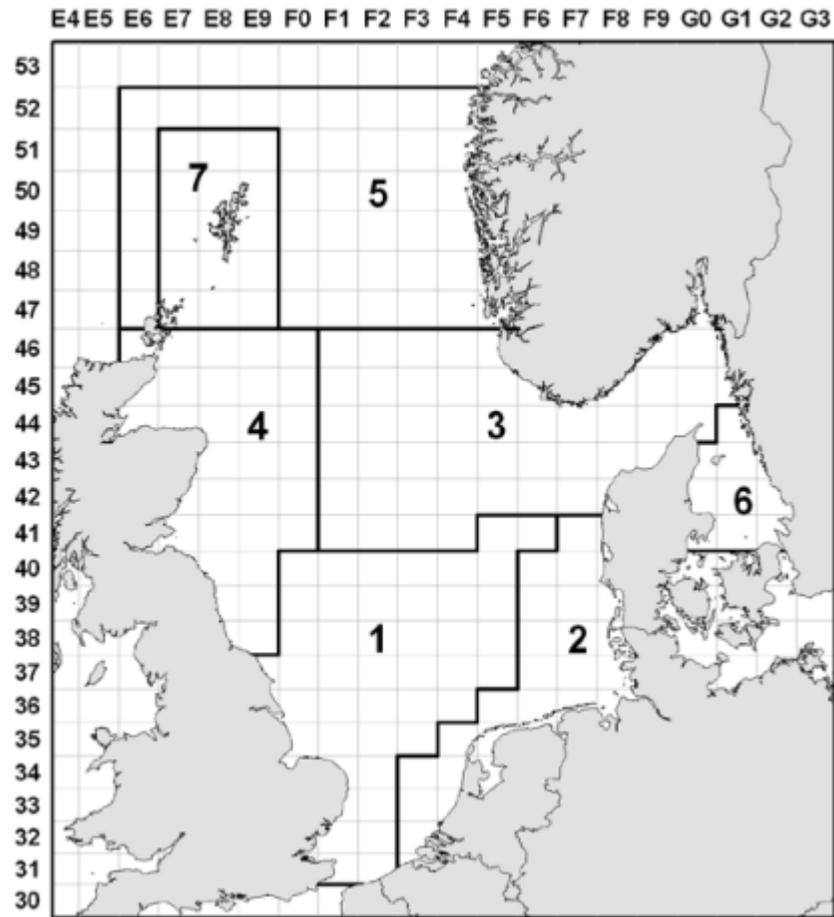
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for any of the Areas, although discards are thought by ICES to be negligible.



Map of the seven Sandeel Areas currently used for the assessment and management of sandeel in the North Sea. From the ICES advice, February 2013.

	a.iii .Management actions should be based on long-term conservation objectives	References	Rating
LOW	<p>Determination: Although there is no management plan in place for sandeel stocks outside the Norwegian EEZ, reference points have been defined for sandeel in SA1-3 and act as the objectives around which the ICES advice is based. ICES has recommended the development of a long-term international management plan for the sandeel stocks. Due to the lack of defined reference points in the other Areas, the assessment team considers them to score low compliance.</p> <p>There are no stock-specific long-term management plans in place for sandeel in any of the Sandeel Areas, nor collectively throughout the North Sea, although Norway has implemented an experimental area-based management plan in the Norwegian EEZ for several years. For the stocks in SA1-3, i.e. those supporting significant fisheries in recent years, reference points have been defined based on both the MSY ($B_{\text{escapement}}$) and Precautionary (B_{lim}, B_{pa}) approaches. These reference points are used by ICES as a basis for quota recommendations, and as such represent proxy management objectives. Specifically, in the 2012 and 2013 advice the quota recommendations were based on the MSY approach, with the objective of maintaining stock biomass above $B_{\text{escapement}}$ after the fishery has taken place. For short-lived species such as sandeel, the ICES interpretation of the MSY approach uses B_{pa} as an estimate for $B_{\text{escapement}}$. The reference points for sandeel in SA1-3 are provided in the tables below.</p> <p>The most recent ICES assessment for the main EU sandeel area, SA1 (2013, R15), indicates that an F of 0.599 would produce a TAC that is consistent with the present MSY B_{trigger} at B_{pa} (215,000 tonnes). Taking the historical F and stock development into account ICES do not recommend an F-value above 0.6 in any future management plan for the stock. Similarly, in SA2 ICES recommend a long-term F-value should be below 0.4-0.5. The most recent advice does not make a recommendation for maximum F-value in SA3.</p> <p>There are no established reference points for the stocks in SA4-7. ICES advice for these stocks has previously been based on the precautionary approach, but in 2013 for the first time the advice was based on the ICES approach to data-limited stocks.</p>		MEDIUM (SA 1-3)
MEDIUM			LOW (SA 4-7)
HIGH			

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	<i>Type</i>	<i>Value</i>	<i>Technical basis</i>
MSY Approach	MSY B _{escapement}	215 000 t	= B _{pa}
	F _{MSY}	Not defined.	
Precautionary Approach	B _{lim}	160 000 t	Median SSB in the years (2000–2006) of lowest SSB and no impaired recruitment (ICES, 2010).
	B _{pa}	215 000 t	$B_{pa} = B_{lim} * \exp^{(\sigma * 1.645)}$, with $\sigma = 0.18$ estimated from assessment uncertainty in the terminal year (ICES, 2010).
	F _{lim}	Not defined.	
	F _{pa}	Not defined.	

(unchanged since: 2010)

Reference points for sandeel in SA1. From the ICES advice, Feb 2013 (R14)

	<i>Type</i>	<i>Value</i>	<i>Technical basis</i>
MSY Approach	MSY B _{escapement}	100 000 t	= B _{pa}
	F _{MSY}	Not defined.	
Precautionary Approach	B _{lim}	70 000 t	Median SSB in the years (2000–2006) of lowest SSB and no impaired recruitment (ICES, 2010).
	B _{pa}	100 000 t	$B_{pa} = B_{lim} * \exp^{(\sigma * 1.645)}$, with $\sigma = 0.23$ estimated from assessment uncertainty in the terminal year (ICES, 2010).
	F _{lim}	Not defined.	
	F _{pa}	Not defined.	

(unchanged since: 2010)

Reference points for sandeel in SA2. From the ICES advice, Feb 2013 (R14)

		<i>Type</i>	<i>Value</i>	<i>Technical basis</i>	
	MSY Approach	MSY $B_{\text{escapement}}$	195 000 t	= B_{pa}	
		F_{MSY}	Not defined.		
	Precautionary Approach	B_{lim}	100 000 t	The highest SSB (in 2001) in the period (2001–2007) with the lowest SSB and low recruitment (ICES, 2010).	
		B_{pa}	195 000 t	$B_{\text{pa}} = B_{\text{lim}} * \exp^{(\sigma * 1.645)}$, with $\sigma = 0.40$ estimated from assessment uncertainty in the terminal year (ICES, 2010).	
		F_{lim}	Not defined.		
F_{pa}		Not defined.			
<p>(unchanged since: 2010)</p> <p>Reference points for sandeel in SA3. From the ICES advice, Feb 2013 (R14)</p>					

b. Stock Assessment Procedures and Management Advice

LEVEL OF COMPLIANCE	bi. Research in support of fisheries conservation and management should exist.	References	Rating
LOW	<p><i>Determination: The level of research conducted and data available varies between Sandeel Areas; however the three most important stocks (SA1-3) are comparatively well-understood. Due to the significant scope for improvement in the scientific understanding of the stocks, in particular the concerns expressed by ICES in relation to SA2 & SA3, the assessment team considers a rating of medium compliance to be appropriate. Sandeel Areas 4-7 are considered by ICES to be data deficient, and the assessment team considers them to score low compliance.</i></p> <p>Although ICES produces annual management advice for all seven Sandeel Areas, the amount of data available to inform the advice varies considerably between Areas. The three Areas subject to significant commercial</p>		MEDIUM
MEDIUM			(SA 1-3)
HIGH			LOW (SA 4-7)

	<p>fishing in recent years (SA1-3) are the best understood, although there is significant uncertainty in some components of the stock assessment. The remaining four Areas are poorly understood and classified as data-limited stocks.</p> <p><i>Sandeel Area 1</i></p> <p>Data available for the assessment of sandeel in SA1 include total catch per year, weight-at-age, CPUE, and the results of an annual December dredge survey conducted since 2004. The assessment is a seasonal age-based analytical assessment, and ICES states in the most recent advice that <i>“The quality of the assessment is considered to be fairly good. The assessment relies heavily on the assumption that the fisheries selection pattern has remained the same since 1999 and that the commercial fishery supplies sufficient sampling information on older age groups (which are not caught representatively in the dredge survey). If a change in the fishing pattern occurred, this would make the current advice less accurate.”</i></p> <p><i>Sandeel Area 2</i></p> <p>The SA2 assessment is currently based primarily on the results of the SA1 dredge survey and total SA2 landings. A dredge survey has been conducted in SA2 since 2010 and ICES states that the quality of the assessment is likely to improve substantially once this time series is long enough to include in the process. ICES states that at present the assessment is <i>“of medium quality”</i>.</p> <p><i>Sandeel Area 3</i></p> <p>The ICES SA3 assessment is based primarily on an annual January dredge survey which only covers the southern part of the Area. ICES considers the quality of the assessment in SA3 to be somewhat less than in SA1, stating, <i>“There have been substantial differences in management in the past five years between the EU and Norwegian EEZs, potentially changing the selection pattern of the overall fishery (because age distributions seem to differ between the two EEZs). This raises questions regarding the reliability of a common assessment, as the current assessment relies heavily on the assumption of a constant selection pattern and on the commercial fishery supplying sufficient sampling information on the older age groups.”</i></p>	
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	<p>An additional quantity of uncertainty was introduced in the 2012 assessment (for the 2013 fishing season) by the extremely high survey catch rates at a single position in the southwestern corner of the dredge survey area. This led to increased estimates of recruitment and therefore increased quota recommendation in the ICES assessment, particularly compared to the IMR advice. However, ICES considers the survey results reliable enough to provide catch advice.</p> <p><i>Sandeel Areas 4-7</i></p> <p>Sandeel in SA4-7 are poorly understood, with only fishery-dependent data available for stock assessors. However, in recent years none of these Areas has supported a substantial commercial fishery, and SA5 and SA7 have been closed since 2004.</p>		
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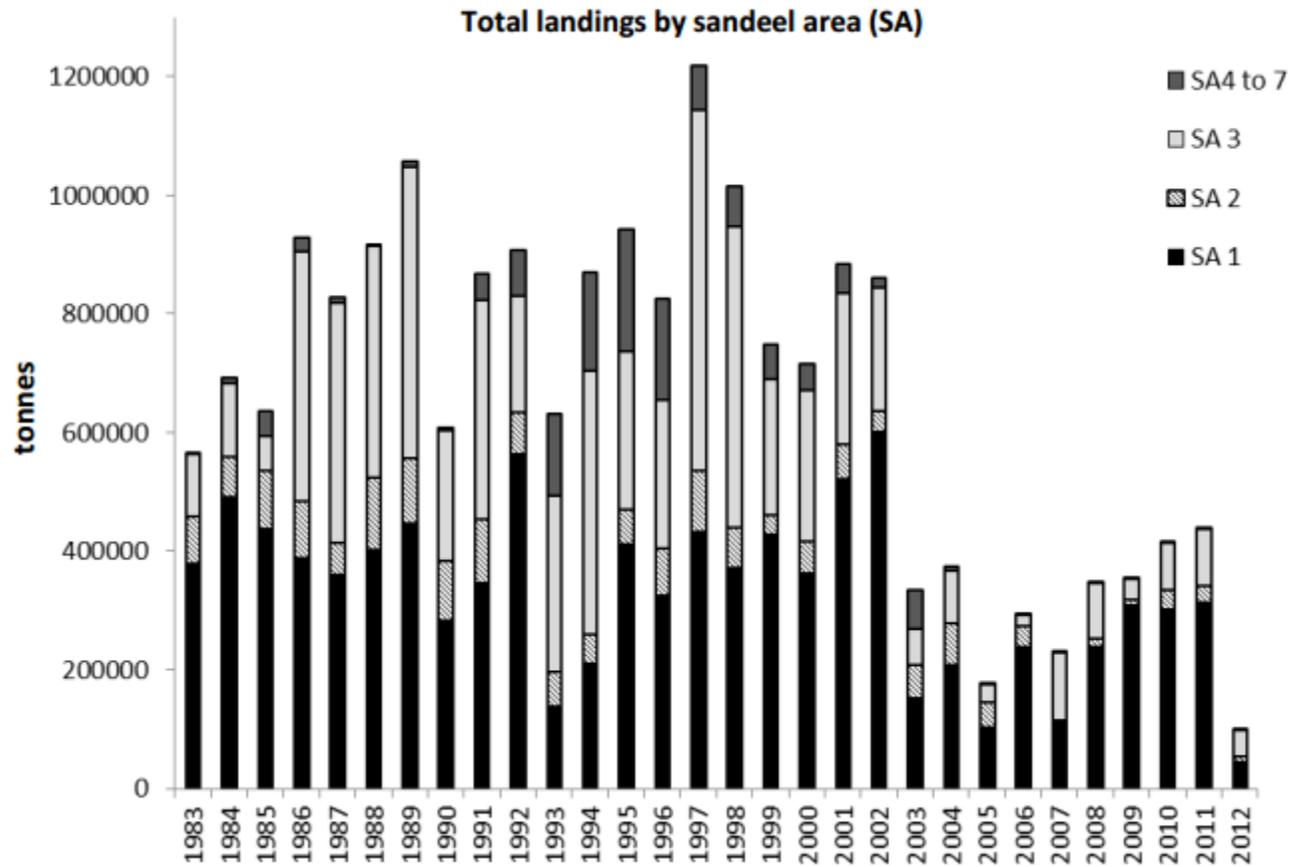
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Annual landings in Sandeel Areas 1-7, 1983-2012. From the ICES advice, 2013 (R14).

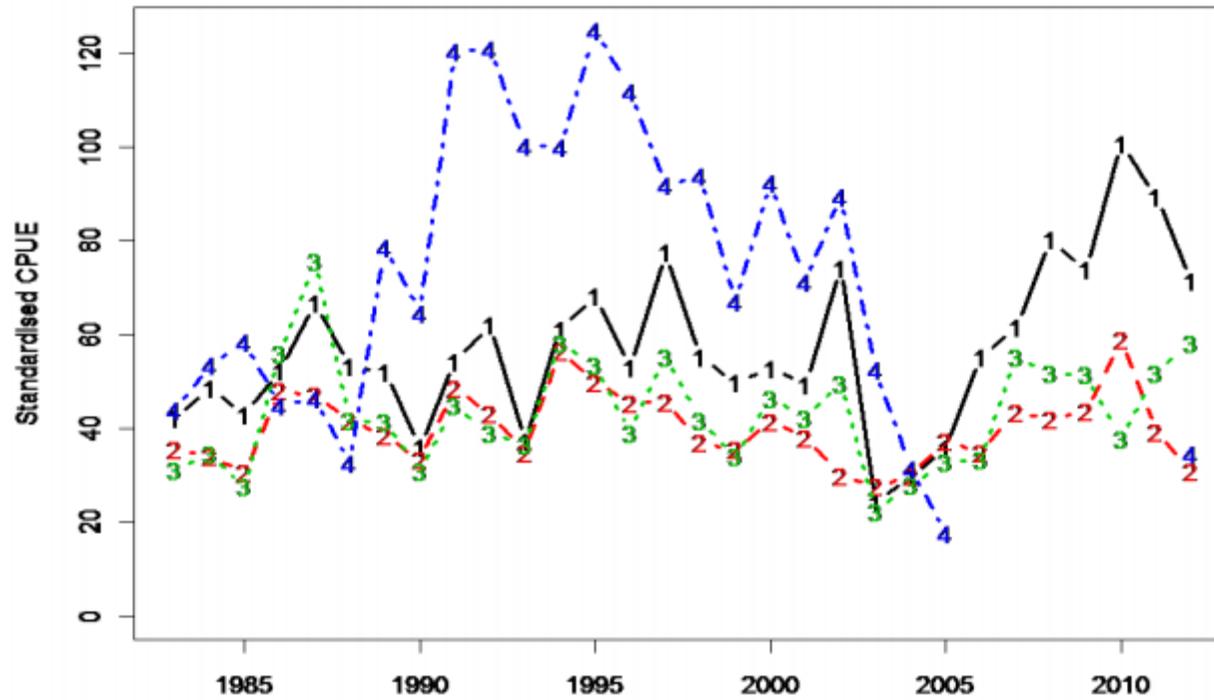
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Catch (tonnes) per day fishing for a standardized 200 GT vessel in SAs 1–4. Figure labels correspond to SA numbers. From the ICES advice, 2013 (R14).

LEVEL OF COMPLIANCE	b.ii Best scientific evidence available should be taken into account when designing conservation and management measures	References	Rating
LOW	<p><i>Determination: There is no evidence that scientific advice has been ignored, and the recent recommendation that sandeel be managed as seven separate stocks was rapidly adopted. As the ICES research and advice forms the primary basis for the management of the stocks, the assessment team considers a high compliance rating appropriate.</i></p> <p>Management of North Sea Sandeel generally follows the advice of ICES (in EU waters) and/or the IMR (in Norwegian waters), both in the setting of annual quotas (see section D1), the closing of local fisheries in cases where stocks are found to be over-exploited, and the implementation of new management systems. This is exemplified in the recent change in advice from a single stock to a multi-sub-stock approach. Within months of the new advice format, an EU Regulation amendment was passed setting TACs for the seven Sandeel Areas individually. In addition, areas have been subject to temporal or regional closure as a direct result of scientific advice.</p>		HIGH
MEDIUM			
HIGH			

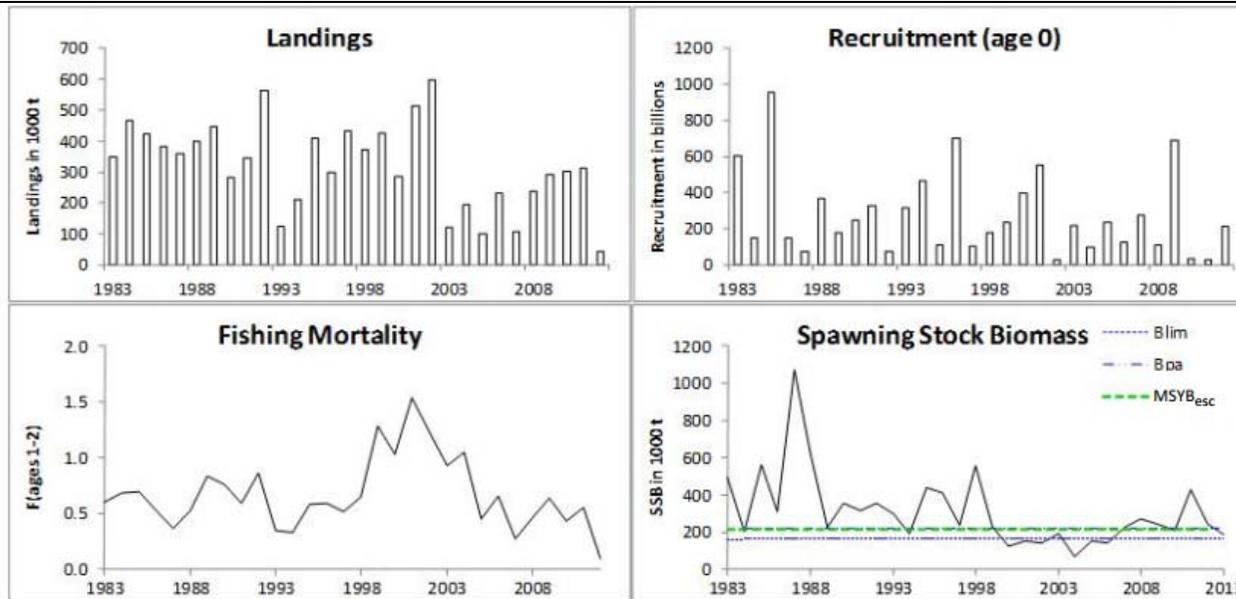
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Sandeel in SA1 stock assessment summary. From the ICES advice, 2013 (R14)

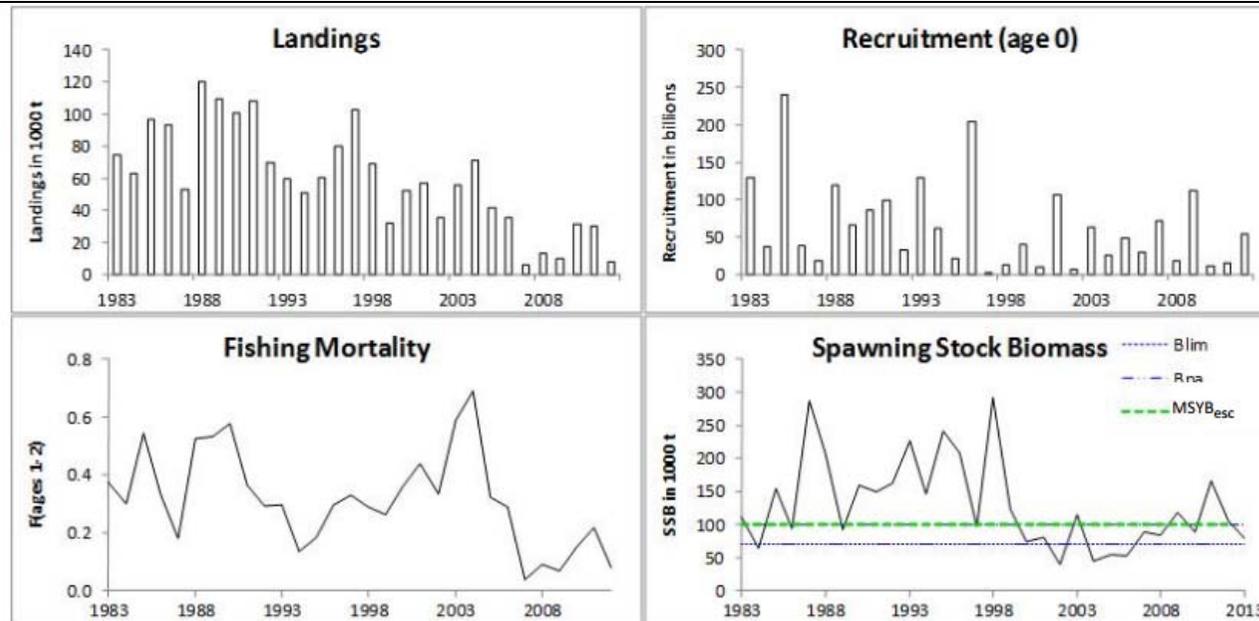
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Sandeel in SA2 stock assessment summary. From the ICES advice, 2013 (R14)

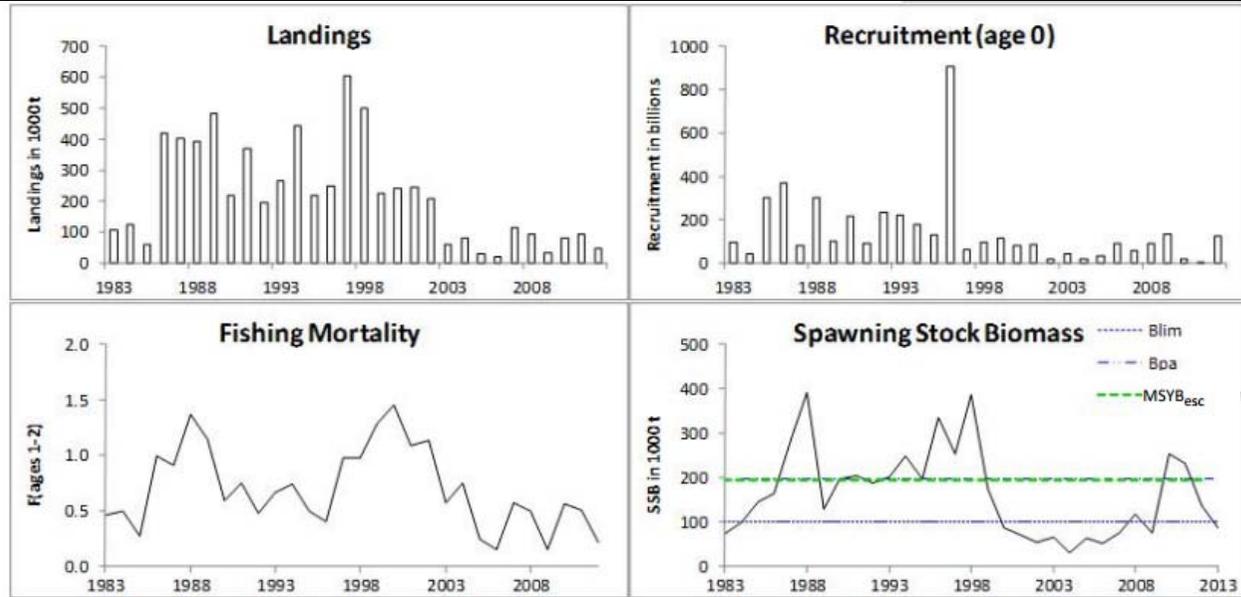
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Sandeel in SA3 stock assessment summary. From the ICES advice, 2013 (R14)

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c. The Precautionary Approach

LEVEL OF COMPLIANCE	c.i The precautionary approach is applied in the formulation of management plans.	References	Rating
LOW	<p><i>Determination: The EU Common Fisheries Policy is based on the precautionary approach, regional sandeel fisheries have been closed to comply with the approach, and ICES consider the new advice format to be a major improvement in terms of uncertainty. However, there are still several important sources of uncertainty which prevent this fishery obtaining a ‘high’ rating.</i></p> <p>The EU Common Fisheries Policy, which is the principal management framework for the EU sandeel fishery, is based on the precautionary approach to managing fish stocks. In 2002 this policy was further strengthened through the introduction of a precautionary approach to protect and conserve living aquatic resources, and to minimise the impact of fishing activities on marine eco-systems.</p> <p>Sandeel is an important prey species for many marine predators such as seabirds and fish. There have been concerns of the magnitude of the fishery and its potential impact on the North Sea marine ecosystem. Though multi-species analyses have shown that over the scale of the North Sea the predators do not suffer from a lack of food, this was not found to be the case in locally concentrated harvesting which may cause regional and temporary depletions of food for predators. This, amongst other factors, led to the new region-based management approach.</p> <p>Temporal and regional closures have been implemented as a direct result of precautionary scientific advice. Since 2004 the fishery in the Norwegian EEZ has been restricted to April 1 to June 23. Since 2005 Danish vessels have not been allowed to fish sandeel before 31st of March. Since 2008 the entire fishery in the EU controlled zone opens on April 1st and closes after August 1st. Advice on the precautionary management of the stock has closed areas in the Norwegian EEZ and in Scotland’s Firth of Forth.</p> <p>While the new sub-stock based approach is considered by ICES to be a major improvement on the previous</p>		MEDIUM
MEDIUM			
HIGH			

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		<p>analysis, uncertainty within the new assessment and forecast framework continues to be derived from the following sources:</p> <ul style="list-style-type: none"> • Use of common, time-invariant natural mortality values over all areas. • Assumption of correspondence between commercial effort and fishing mortality. • Observations of effort are only available from the Danish fishery (which also has the largest catches). • Age and length sampling uncertainty (as with any stock). • Assumption that the maturity pattern in the forecast year is the long term average 		
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d. Management Measures

LEVEL OF COMPLIANCE	d.i The level of fishing permitted should be set according to management advice given by research organisations.	References	Rating
LOW	<p><i>Determination: In recent years, the EU sandeel quotas have been set in line with ICES advice. Total landings exceeded the ICES advice in all of three main Sandeel Areas in 2012, for a different reason in each Area as detailed below. However, the mitigating factors lead the assessment team to consider a rating of medium compliance to be appropriate.</i></p> <p><i>Sandeel Area 1</i></p> <p>The majority of sandeel landed by the EU, historically but particularly in recent years, has been from the stock in SA1. Since ICES began providing advice on an area-by-area basis there have been two complete annual cycles of quota-setting, in 2011 and 2012. In the 2011 season, the EU TAC, which had previously been set as a single quota for sandeel across all Areas, was subdivided and generally followed the ICES advice (the EU TAC for SA3 was set at 10,000t rather than 0t to facilitate a monitoring program). The EU TAC for SA1 was set at 320,000t, as recommended.</p> <p>In December 2011 a single provisional TAC of 200,000t was set for sandeel in IIa, IIIa and IV, albeit with a special condition that it should all be fished in SA1. The March 2012 ICES advice recommended a maximum quota of 23,000t in SA1. In April the EU reduced the total sandeel TAC for 2012 to 38,420t, and further sub-divided this by Sandeel Area leading to a TAC in SA1 of 23,000t, in line with the ICES advice. However, on top of this an additional 22,803t was carried over for quantities withheld in 2011 (R18), making the final TAC for sandeel across the entire region 61,223t. The final landings in SA1 for 2012 were 44,713t. Although this is almost double the initial advice, the 2013 ICES quota recommendation was substantially higher, indicating that these extra landings did not appear to have a significant deleterious effect.</p> <p>In the 2013 season, the sandeel TAC was provisionally set at 0t, then updated to reflect the ICES advice. The total</p>	14,15,16	MEDIUM
MEDIUM			
HIGH			

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sandeel TAC in SA1 for 2013 is exactly as recommended, 224,544t. The table below summarises the advice and quotas in recent years for SA1.

Summary of advice, TAC and landings in SA1 in 2011-13. Adapted from the ICES advice (R14&15)

Year	ICES advice	Final EU TAC	Final landings
2011	320,000t	320,000t	312,378t
2012	23,000t	23,000t + 'withheld' quota from 2011	44,713t
2013	224,544t	224,544t	N/A

Sandeel Area 2

Quotas for the sandeel in SA2 have been consistently set in line with the ICES advice, although in 2012 the final landings were somewhat higher than the TAC. The following table summarises the advice, TACs and landings for SA2.

Summary of advice, TAC and landings in SA2 in 2011-13. Adapted from the ICES advice (R14&15)

Year	ICES advice	Final EU TAC	Final landings
2011	34,000t	34,000t	29,916t
2012	5,000t	5,000t + 'withheld' quota from 2011	8,048t
2013	17,544t	17,544t	N/A

Sandeel Area 3

Management of sandeel in SA3 is made more complex by the lack of internationally-agreed management plan despite the stock occupying both EU and Norwegian waters. In recent years, the scientific advice published by

Norway’s Institute of Marine Research (IMR) has differed in both objectives and recommendations from the ICES advice for the same periods. Norway and the EU have set quotas independently, leading to landings considerably above the ICES advice (though not above the IMR advice) in both 2011 and 2012. However, the assessment team is content that the Norwegian advice, which derives from an experimental area-based management plan, has an equally robust scientific basis. Additionally, the EU TAC has been set broadly in line with the ICES advice, and in 2013 was set to ensure that the combined Norway and EU quota totalled less than the ICES maximum. The following table summarises the advice, TACs and landings in SA3.

The ICES quota recommendation is based on a combination of SSB and recruitment estimates. A quota of 78,331t was recommended for 2013 despite the SSB estimate falling below B_{lim} due to the high estimated recruitment.

Summary of advice, TAC and landings in SA3 in 2011-13. Note that the IMR advice and Norway TAC are for the Norwegian section of SA3 only. Adapted from the ICES advice (R14&15)

Year	ICES advice	IMR advice	EU TAC	Norway TAC	Total landings
2011	0t	90,000t	10,000	90,000t	94,714t
2012	5,000t	42,000t	5,000t + ‘withheld’ quota from 2011	42,000t	45,734t
2013	78,331t	20,000t	40,000t	20,000t	N/A

Sandeel Areas 4-7

Sandeel Areas 4-7 have generally not supported any commercial fishery in recent years, with the exception of some limited landings in SA4 and SA6. Quotas since 2011 have been set in line with the ICES advice. The total landings from all four Areas in 2012 was 2,761t.

Year	Sandeel Area 1	Sandeel Area 2	Sandeel Area 3	Sandeel Area 4	Sandeel Area 5	Sandeel Area 6	Sandeel Area 7	EC zone TAC	NOR zone TAC	ICES landings
2005 ¹	-	-	-	-	-	No advice	No advice	661	10 ²	177
2006 ¹	-	-	-	-	-	No advice	No advice	300	0	293
2007 ¹	-	-	-	-	-	No advice	No advice	173	51	230
2008 ¹	-	-	-	-	-	No advice	No advice	375	128	348
2009 ¹	-	-	-	-	-	No advice	No advice	377	0	353
2010	-	-	-	-	-	No advice	No advice	377	50	414
2011	< 320	< 34	0	5-10	No increase in effort unless there is evidence that this is sustainable.			354	90	438
2012	< 23	< 5	< 5	< 5	No increase in catches unless there is evidence that this is sustainable.			61	42	101 ³
2013	< 224.544	< 17.544	< 78.331	< 2.041	0	< 0.219	0	0 ³	20	

Weights in thousand tonnes.
¹ Advice for Subarea IV excluding the Shetland area.
² TAC set for EC fisheries 10 kt, seasonal effort limitations set for Norwegian fisheries.
³ Preliminary.

Sandeel advice by Sandeel Area, total EU and Norwegian TACs, and total landings for 2005-2013. From the ICES advice, 2013 (R14)

LEVEL OF COMPLIANCE	d.ii Where excess fishing capacity exist, mechanisms should be in established to reduced capacity to allow for the recovery of the stock to sustainable levels.	References	Rating
LOW	Determination: Annual quotas limit the total amount of fishing effort applied to the stock each year. In the EU (and therefore Denmark) there is a well-established mechanism for restricting and reducing capacity across all fisheries.	12,13	HIGH
MEDIUM			
HIGH			

	<p>capacity management system is the rule that capacity leaving the fleet with public aid cannot be replaced. Such capacity, expressed both in tonnage and power, is subtracted directly from the maximum fleet capacity of each Member State. Capacity reductions supported with public aid are therefore permanent.</p> <p>In 2007 a new quota regulation for the Danish vessels was implemented and realized from 2008 onwards. The regulation gives quotas to the vessel, but these can be traded or sold. A large number of small vessels have been taken out of the fishery and their quotas sold to larger vessels. Today the Danish fleet is therefore dominated by large vessels.</p>		
LEVEL OF COMPLIANCE	d.iii Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment.	References	Rating
LOW	<p><i>Determination: Sandeel is particularly important as a prey species, a fact which has been factored into the management of the species and is part of the reason for the new multiple Sandeel Area-based management approach. In general it is the opinion of the assessment team that where the fishery has potential impacts on non-target species or the environment, adequate measures are taken by managers to minimise risk.</i></p> <p>Non-target species</p> <p>The levels of bycatch in the sandeel fishery are considered to be very low, including species for which a TAC is set; the effects of the sandeel fishery on species that are also commercially targeted are considered considerably less significant than the effects of directed fishing.</p> <p>Ecosystems</p> <p>Sandeel is considered a very important prey species for a variety of predators, including fish, marine mammals and seabirds. In general, fishing on sandeel aggregations at a distance less than 100 km from seabird colonies has been found to affect some surface feeding bird species, especially black-legged kittiwake and sandwich tern.</p> <p>In the light of studies linking low sandeel availability to poor breeding success of kittiwake, all commercial fishing</p>		HIGH
MEDIUM			
HIGH			

	<p>in the Firth of Forth area has been prohibited since 2000, except for a short-term fishery in May and June of each year for stock monitoring purposes. In a more general sense, the transition to management of sandeel as seven separate stocks can be seen as an important step towards reducing the likelihood of local over-exploitation and depletion, which in turn reduced the potential for ecosystem impacts of the fishery on seabird colonies and other less-mobile predator species.</p> <p>PET species</p> <p>A 2004 ICES working group report (R17) found the level of PET species bycatch in the sandeel fishery to be minimal. ICES notes that while local depletion of sandeel may be problematic for some seabird colonies, the indirect impacts of the fishery on more mobile marine mammals and fish are likely to be less severe. An amending regulation in 2012 made it illegal for EU vessels to fish for or transport basking shark, white shark, porbeagle, angel shark, common skate, or guitarfishes. Where caught accidentally these species are to be returned unharmed.</p> <p>Physical Environment</p> <p>Bottom trawling in general can have impact on benthic communities and habitats and this has been shown to have occurred in the southern parts of the North Sea in the past. The type of trawl used in the sandeel fishery is very light in construction compared to other demersal trawl gears and its impact on the seabed is thought to be minimal as no chains or rubber discs are used. Additionally, the benthic ecology of sandeel habitat – clean, sandy bottom – typically includes no hard corals, and fauna can generally re-colonise areas quickly.</p>	
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e. Implementation

LEVEL OF COMPLIANCE	e.i There should be a framework for sanctions of violation of Laws and regulations.	References	Rating
LOW	<i>Determination: As an EU member state, Denmark has a framework for sanctions in place which is based on EU guidance.</i>	9, 11	HIGH
MEDIUM	To ensure that fishing rules are applied in the same way in all member countries, and to harmonise the way infringements are sanctioned, the EU has established a list of serious infringements of the rules of the common fisheries policy. EU countries must include in their legislation effective, proportionate and dissuasive sanctions, and ensure that the rules are respected.		
HIGH	<p>As from 1 January 2012, EU countries should have introduced a point system for serious infringements. Under the scheme, national authorities will:</p> <ul style="list-style-type: none"> • assess alleged infringements involving vessels registered under its flag, using standard EU definitions • impose a pre-set number of penalty points on vessels involved in serious infringements (points are recorded in the national registry of fisheries offences) • suspend the vessel’s licence for 2, 4, 8 or 12 months when a pre-set number of points have been accumulated in a 3-year period. <p>Points are attributed to the fishing licence that is linked to a vessel, so they will stay with the vessel even when it is sold on to a new owner. Monitoring the number of cases detected and the nature and the level of the sanctions imposed is a key part of the Commission's task of ensuring a level playing field for all EU fishers. 2008 Council Regulation (EC) No 1005/2008 established a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing. Through EU Fishery Policy and Regulations, Member States must apply effective, proportionate and dissuasive sanctions against natural or legal</p>		

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	<p>persons engaged in IUU activities. A maximum sanction of at least five times the value of the fishery products obtained is provided for with regard to the committing of the said infringement.</p> <p>In the event of a repeated infringement within a five-year period, the Member States shall impose a maximum sanction of at least eight times the value of the fishery products obtained by committing the serious infringement.</p> <p>Infringements of CFP rules are dealt with by the Member State concerned, and the Danish Directorate of Fisheries is the competent authority with responsibility of enforcement of sanctions and penalties with respect to the prosecution of fishery rules.</p>		
LEVEL OF COMPLIANCE	e.ii A management system for fisheries control and enforcement should be established.	References	Rating
LOW	<p><i>Determination: In order to comply with the requirements of the CFP, Denmark has in place a robust management system for fisheries control and enforcement.</i></p> <p>Fisheries rules and control systems for EU member states are agreed upon at EU level, but implemented by the individual states through their national authorities and inspectors.</p> <p><i>Control systems</i></p> <p>To ensure that the rules of the CFP are followed in practice, the policy also includes a control system with the necessary tools to enforce them. This system is designed to:</p> <ul style="list-style-type: none"> • ensure that only the allowed quantities of fish are caught • collect the necessary data for managing fishing opportunities • clarify the roles of EU countries and the Commission • ensure the rules are applied to all fishers in the same way, with harmonised sanctions across the EU 	8-10	HIGH
MEDIUM			
HIGH			

	<ul style="list-style-type: none"> ensure that fisheries products can be traced back and checked throughout the supply chain, from net to plate <p>The system is laid down in the Control Regulation, available at reference 23, which entered into force on 1 January 2010 and which thoroughly modernised the EU's approach to fisheries control.</p> <p><i>Implementation</i></p> <p>The Danish Directorate of Fisheries, part of the Ministry of Food, Agriculture and Fisheries, was established in its present form in 1995 and is the competent authority with responsibility of enforcement of the CFP and fishery management measures in Danish waters. The Directorate examines vessels at sea and in port, and considers both fishery management requirements (such as gear restrictions and quotas) and hygiene requirements. This is achieved by examining papers, licenses and logbooks, a physical inspection of fishing gear (mesh size, sorting panels and the like), and catch composition.</p> <p>The Danish fishing control system applies EU access regulations in combination with regulations of the total fleet capacity measured by tonnage and engine power. Vessels must be registered and authorised through individual licensing. Legal instruments are brought into force through Ministerial Orders and largely reflect EU Regulations within the CFP framework.</p>	
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