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Institutional challenges for policy-making and fisheries advice to move to a full EAFM approach within the current governance structures for marine policies



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ABSTRACT

The European Union is aiming to implement an Ecosystem Approach for the management of all human activities in the marine environment, hereunder the fisheries sector. Since the last reform of the Common Fisheries Policy in 2013, several analyses have highlighted the barriers and challenges to this aim. Despite the claim that much of the framework to support the implementation of an EAFM in Europe is in place, the findings point out to deterrent features within the governance system. Beyond the overall policy framework, this paper explores the implementation of the multiannual multispecies management plans as one of the real moves towards Ecosystem Approach to Fisheries Management. This is carried out on the basis of two case studies that address the design of multiannual multispecies management plans for the Baltic Sea and for the Atlantic Pelagic fisheries. The analyses strengthen with empirical evidences our understanding of the challenges ahead including, among others, an institutional gap between fisheries and environmental policy frameworks resulting in a limited integration of broader environmental concerns in one of the proposed plan and the standoff between decision-makers that delays the adoption and use of proposed management plans and creates frustration for the involved agencies.

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1. Introduction

The European Union (EU) aims at implementing an Ecosystem Approach (EA) to the management of all human activities in the marine environment, hereunder the fisheries sector. The intention to apply an EA to fisheries management (EAFM) was first mentioned explicitly in the 2002 reform of the Common Fisheries Policy (CFP) [1].¹ The recently reformed CFP defines EAFM as

“an integrated approach to managing fisheries within

ecologically meaningful boundaries which seeks to manage the use of natural resources, taking account of fishing and other human activities, while preserving both the biological wealth and the biological processes necessary to safeguard the composition, structure and functioning of the habitats of the ecosystem affected, by taking into account the knowledge and uncertainties regarding biotic, abiotic and human components of ecosystems”. [2, art. 4 par 9]

Achieving the desired ecological, social and economic objectives of an EA in the European maritime sector will require time, considerable resources, and extensive intergovernmental cooperation [3]. Challenging worldwide, the complex implementation of an EA is exacerbated by the EU features: i) the unique legal order of the EU as a supranational entity [3,4]; ii) the formulation and implementation of maritime policies takes place at different governmental levels [5]; iii) competencies for different policies with an EA have been assigned to different levels of government, where the fisheries policy is the only policy in the marine domain where the Treaty assigns exclusive competence to the EU while

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¹ The Regulation uses the term *ecosystem-based approach to fisheries management*. In this paper the term EAFM will be used.

other policies in the marine domain including the environmental policy are Member State (MS) competence [6 art. 11 and 191–193]; iv) the lack of coordination between – and sometimes within – the MSs, the EU and international initiatives [5]. Moreover, coordinating the different Directorate Generals and the different Councils of Ministers in order to harmonize the different sets of EU policies remains a challenge [7]; and v) EA places new demands on a wide range of organisations, including the Regional Sea Conventions (RSC), national marine scientific agencies, and other national bodies responsible for environmental protection and for offshore licencing [3].

Fisheries stakeholders are trying to adapt to policy requirements of moving towards EAFM, in which the impacts of fishing activities on the marine ecosystem are reduced. In addition to environmental conservation, however, EAFM involves a broadened scope of sustainability in fisheries, including a stronger emphasis on societal and economic aspects.

Current assessments of the process reflect the tensions generated by the EAFM in the EU, which defines new arenas, new tools, new players and new trade-offs in the marine policies:

- EU's decision making process remains centralized despite the formation of the Advisory Councils (ACs) [8]. Stakeholders involvement lacks clarity about the width and depth of participation [9,10] where the ability of ACs to provide stakeholder knowledge into a compatible and connected format under the EAFM approach is uncertain.
- Absence of institutional structures to promote cooperation and coordination at a policy level [10]. The emergence of the new MS regional groups, emphasised by the regionalisation approach of the recent CFP reform, has done little to facilitate the effective coordination with other marine/maritime policies required by an EAFM [11] which calls for clarifying regional cooperation [9].
- It has also been emphasised that most of the effort invested in the policy process is concerned with traditional fisheries management tools, such as establishing annual Total Allowable Catches (TACs), securing compliance with catch quotas, minimum landing size, by-catch limits and closed areas [12].
- Furthermore, it has been identified the absence of a clear guidance on how to combine the Marine Strategy Framework Directive (MSFD) and CFP and their associated governance systems [10].

Regardless of all its limitations, the institutional interplay of EU fisheries management (*sensu* who decides what within the EU institutions) is expected to remain unchanged for the coming decade, consistent with the EU strategy of moving towards EAFM in an incremental process [13]. Hence, advances on implementing an EAFM cannot be based on establishing new decision-making processes, but must focus on innovations in the management tools and the engagement of stakeholders.

Advances towards the implementation of the EAFM in the EU can be found in several dimensions, among which are: habitat protection (Natura2000), development of legal administrative frameworks, integration of core EAFM principles in fisheries management and financial funding available to address socio-economic concerns [10]. Within the specific CFP context, the ongoing development of multiannual multispecies plans (MA-MulSPs) has been defined as potential carriers of the first steps towards EAFM in Europe [13]. The 2013 CFP presented multiannual plans as the main tool to preserve marine biological resources and to achieve the sustainability objectives [14], and has encouraged that the scope of such plans extends to cover as many species as possible within a given ecosystem region [2]. Accordingly, this paper aims to provide an overview of the current institutional

challenges for EU to move towards EAFM with basis in two ongoing cases, the development of MA-MulSPs, for the Baltic and for Atlantic pelagic fisheries. By analysing the process and modes of cooperation in support of MA-MulSPs in these cases, this paper sheds light on the possibilities and constraints for moving towards EAFM within the current governance system in Europe.

This article includes the following four sections. Section 2 describes methodology and motivates and presents the selected case studies. Section 3 presents a non-exhaustive compilation of the institutional challenges presented in existing literature to operationalizing EAFM in the EU. Section 4 briefly describes the process of developing MA-MulSPs in the two cases, with a focus on encountered institutional challenges. Section 5 offers a discussion of these challenges, describes both observed progress and experiences, and identifies opportunities for facilitating EAFM in the EU.

2. Methods

Two cases of developing MA-MulSPs were selected, examined and compared to provide empirical insights on how the move towards EAFM is unfolding in the EU. The cases were selected to provide a contrast with regard to the stage of development of the MA-MulSPs. Featuring an adopted Commission proposal, the Baltic MA-MulSP was selected as a perceived frontrunner for the MA-MulSPs as well as for the management of the marine environment in general. In turn, the development of a MA-MulSP for Atlantic pelagic fisheries was selected as a case where the MA-MulSP is still under development, and as will be outlined shortly, comprises particular challenges. At the time of writing this article, no draft MA-MulSP for pelagic fisheries was available.

The case studies focused on the roles of, and interactions between DG Mare, the providers of stakeholders advice (the ACs), and the regional groups of MS involved in the MA-MulSP initiative in question such as the BALTIFISH for the Baltic Sea and Scheveningen group for the North Sea. Empirical information for the case studies was collected through ten key-informant interviews, observations of meetings and available documents. In addition, a literature review was conducted to establish the context of EAFM in the EU, with an emphasis on identifying institutional challenges and opportunities. Ten interviews with actors involved in the development of MA-MulSPs were conducted between October 2015 and January 2016 (Table 1). In addition, an interview was conducted with an expert in stakeholder involvement in European fisheries management. Observation studies were conducted for events with high relevance for EAFM in the EU.

It is important to note that several of the actors consist of participants from very heterogeneous interest groups and interviewing one or two members does not give a full picture of their work, position and internal dynamics. However, we have been carefully aware of the internal heterogeneity in our analysis. Further, for the development of the case studies, available documents, meeting minutes, letters, policy documents, among others were collected in addition to peer reviewed articles.

3. Challenges in the EU system to operationalize the EAFM

Existing literature documents challenges to operationalize the EAFM in the EU system. Such challenges can be divided into three groups: 1) What is needed to operationalize the principles of an EAFM; 2) how has the EU system presently operationalised EAFM, and 3) which challenges has been detected in the EU system to implement EAFM. Fig. 1 below provides a graphic presentation of these three layers and their interrelatedness.

Table 1
Overview of primary information sources.

Agencies			Interviews Baltic case	Interviews Pelagic Case
Key in- formants interviews	Commission	DG Mare	1	2
	Regional MS group	BALTFISH Scheveningen group	1 -	- 2
	AC	Baltic AC Pelagic AC	1 -	- 3
Events	Commission	DG Mare STECF ICES EFARO	Event and topic Round table discussion	Dates January 2015
	Scientific experts in fisheries and ecosystem modelling and fisheries governance (4 af- filiated with the MareFrame project and 1 external)		Focus Group Meeting: In- novative Knowledge Frameworks for EAFM	June 2015

3.1. How to make principles of EAFM operational?

Some of the basic principles of an EAFM refer to humans as an integral part of the ecosystem [14,15]; having an adaptive management to deal with the complexity of the ecosystems [14,15]; and moving away from viewing resources as individual components to be separately managed to managing resources as being managed as interrelated parts of a system [9]. Means by which some of these principles can be operationalized have been identified elsewhere. For instance, wider and deeper stakeholder involvement in fisheries can be made by giving resource users a

strengthened sense of ownership [14] allowing to address the long-term consequences of today’s decisions [9] and to move to long-term sustainability goals [8]. EAFM requires a capacity to address and balance a number of conflicting objectives in a transparent and legitimate manner [16,17]. Such objectives may include ecological sustainability of stocks and ecosystems, economic viability of the fishing industry, and social viability and fairness for local communities [15,18,19]. The aim to reduce negative human impacts for ecosystem structural functioning and other essential ecosystem services [15] involves a reduction of impacts of fisheries [20] as well as of other anthropogenic pressures on marine ecosystems [18]. The former is addressed by aiming for a sustainable exploitation of fisheries resources; considering the existing relationships within all ecosystem components (from single species management to multispecies management to inclusion of protection of non-target ecosystem components in management); and understanding the performance of fisheries relative to reference points [14]. Management measures should be coherent across a range of resources and be deployed at appropriate scales [21]. Complete ecosystem knowledge will never be available, but should not postpone an orientation towards EAFM, which must always be pursued on the basis of the best available knowledge [15]. The inner layer of Fig. 1 identifies needs with regard to making the basic principles of EAFM operational.

3.2. The approach in EU legislation to make EAFM operational

The EU identified ways to pursue the principles of an EAFM, mainly through the objectives and measures of the MSFD and CFP [9,14,22]. For example, the principle of *managing at appropriate scales* has been operationalized by working at the level of the regional seas (MSFD Directive 2008/56/EC) and by regionalisation approach of the reformed CFP [2]. As an attempt to give *resource users more sense of ownership* the ACs were established by the

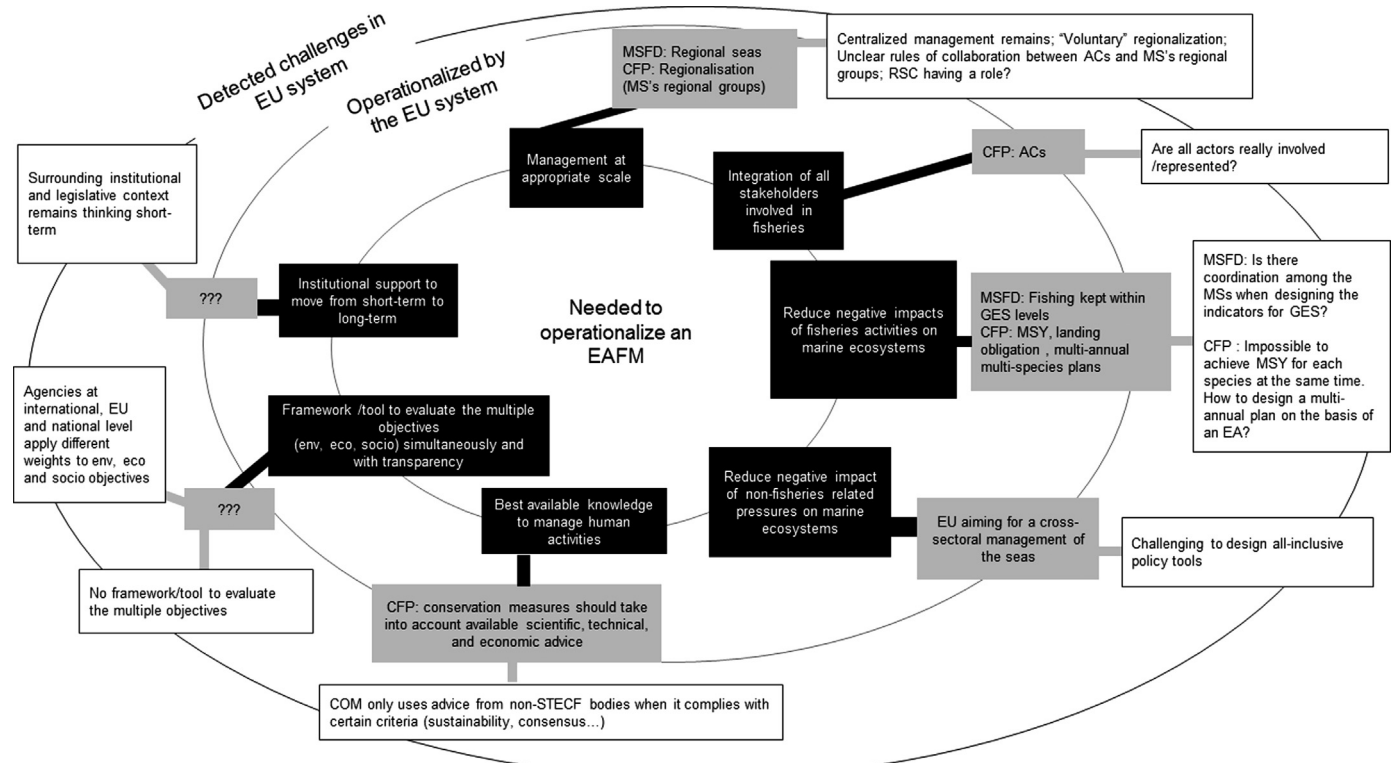


Fig. 1. Three layers representing the means to operationalize the principles of an EAFM (inner layer); the way EU has operationalized the EAFM (middle layer); and the detected challenges in relation to implementing EAFM in the EU (outer layer).

previous CFP [1], congregating fisheries stakeholders in a single forum. The aim to reduce all human impacts that could negatively affect structural functioning of the ecosystem and its maintenance of essential ecosystem services has been addressed by i) *reducing the impact of fisheries activities* and ii) *by reducing the impact of other pressures on the marine ecosystem*. The impacts of fisheries are mainly addressed by the CFP [2], with the overarching goal of achieving a sustainable exploitation of fisheries. The CFP establishes that fisheries resources should be at or above levels that can produce Maximum Sustainable Yield (MSY); that unwanted catches should be avoided and reduced (landing obligation); and that stocks should be managed by means of multiannual plans, including multiple stocks where possible. In addition, the MSFD requires that the collective pressures of fishing resources should be kept within levels compatible with the achievement of Good Environmental Status (GES). Other impacts than fishers (shipping, agriculture, tourism, oil and gas production, sand and gravel extraction, offshore wind energy, coastal development, laying of submarine pipelines and cables) are managed through a cross-sectoral approach [23]. Finally, the principle of managing *human activities under the best available knowledge* has been put into practice as the 2013 CFP [2] requires that conservation measures should take into account available scientific, technical and economic advice from ICES, the STECF, ACs, MSs and other advisory bodies. The medium layer of Fig. 1 refers to how the EU has made the EAFM operational.

3.3. Detected challenges in the EU system to implement EAFM

Despite some progress, it remains unclear how the EU will render some principles of EAFM operational. For example, *addressing the long-term consequences of today's decisions* requires actors to move from short-term to long-term sustainability goals [8]. However, short-term thinking still dominates the institutional and legislative context as high short-term transition costs discourage decisions makers from making decisions that favour long term sustainability [8,16,24]. Another principle not clearly addressed is that of *balancing the conflicting objectives of ecological sustainability, economic viability and social viability*. This balancing would require a framework for evaluating options and trade-offs, simultaneously and with transparency [16,17], and such a framework does not appear to be available; also, costs and benefits of specific options on the various dimensions of sustainability are simply not described in a systematic format [8]. The balancing would also require some guidance from policy objectives, and actors find themselves in a crossroad between agencies at international and national level, each having applied different weights to the necessary trade-offs among environmental, social and economic objectives [20], or the weights and priorities may be shifting continuously [25]. At EU level, asymmetries between the MSFD and the CFP have been identified that complicate actors' intentions to implement an EAFM [10]. Van Hoof [9] discussed how, according to the CFP, fishing is allowed so long as its impact on the ecosystem is limited, and according to the MSFD, "fishing is allowed so long as it contributes to ecosystem health" [9 pp. 23]. However, this last point could better be phrased as MSFD allows fishing so long as its activities are within boundaries compatible with the achievement of GES.

Several impediments for progressing towards an EAFM in the EU have been documented. Although recent regionalisation approaches in the EU seek to achieve *management at appropriate scale*, critical observers argue that management remains highly centralized [14,26], that regionalisation is being done on a "voluntary" basis [11,27], and that there are unfair and unclear rules of collaboration between the ACs and the recently formed regional MS groups [27]. Although RSCs have been given new demands

related to implementation of EA at regional level [3,28], this has involved several challenges [3,7,9,24,29] and the extent to which these forums are being used is unclear. Regarding the *integration of fisheries stakeholders* by means of the ACs, linked to the principle of resource users gaining more sense of ownership, it is questioned whether, how and to what extent actors are being involved and/or represented [30]. The reformed CFP appears to have strengthened the advisory position of the ACs: their advice shall be taken into account, requiring detailed reasons for adopting measures that diverge from it [2, art. 44]; but even when they represents consensus and comply with certain sustainability criteria, neither the Commission, nor the MS, are obliged to follow the recommendations of the ACs [27].

The MSFD states that collective pressure of human activities (fishing) should be kept within GES levels. However, indicators and measures for GES are being designed by each MS and there are indications of a lack of coordination between the MS bordering the same regional sea [4,31]. Ultimately, this may rise the question whether fishers must comply with different sets of regulations when fishing in different territorial waters. Further, while fisheries are required to be at MSY levels, single species MSYs cannot be simultaneously achieved for all fisheries. This is acknowledged by the scientific community and fisheries managers, which make efforts to adapt the MSY concept to an EAFM [14]. Academic debates on the ecosystem benefits and drawbacks of highly selective fishing [14] have relevance for the landing obligation and its aim of avoiding and reducing unwanted catches. Concerning the *reduction of negative impact of non-fisheries related activities*, the pursuance of cross-sectoral management of the seas [23], involves the challenging task of designing and implementing policy tools to ensure that all sectors responsible for adverse impacts are included in an integrated approach [29,32,33]. The outer layer of Fig. 1 refers to the detected challenges in the EU system to implement EAFM.

4. The multiannual multispecies management plans for the Baltic Sea and the Atlantic pelagic fisheries

Multiannual plans (MAPs) were introduced in the 2002 CFP reform and firstly adopted in 2004. The 2013 CFP integrates the multispecies approach, perceived as a first step towards EAFM in the EU real policy context [13].

MAPs provide a framework for sustainable exploitation of the stocks defining management objectives and safeguarding mechanisms for unforeseen developments within clear timeframes. The plans shall contain conservation measures to restore and maintain fish stocks above levels capable of producing MSY where MSY exploitation rates shall be achieved no later than 2020 for all stocks [2]. Some fisheries actors consider implementing MSY a significant contribution to the EAFM since the sustainability concept of MSY brings exploitation of resources within ecosystem boundaries in regards to fish stocks [34]. Other fisheries actors also consider MA-MulSPs the tool of choice to apply EAFM within the few possibilities provided by the 2013 CFP [35].

In the case of mixed fisheries, or where the dynamics of stocks relate to one another, the plans shall cover fisheries exploiting several stocks in a relevant geographical area [2]. Knowledge about the interactions between fish stocks, fisheries and marine ecosystems should be taken into account [2] considering both the technical (stocks being fished together) and biological (such as fish eating fish or fish competing for the same food) interactions. Finally, the MAP should be adopted in consultation with ACs, as well as with operators in the fishing industry, scientists, and other stakeholders having an interest in fisheries management [2] conforming the scientific, technical and economic advice.

The EU selected the Baltic Sea fisheries as a sort of testing bench for the MA-MulSP, with other proposals being under discussion with stakeholders (North Sea demersal mixed-fisheries plan and a western-waters demersal mixed fisheries plan), or in consideration (Atlantic pelagic fisheries).

In the following section, we describe the process towards a MA-MulSP for Baltic and for Atlantic pelagic fisheries, respectively, which will subsequently provide a basis for discussing opportunities and constraints relevant for EUs ambition to move towards EAFM.

4.1. The Baltic multiannual multispecies management plan

As the first of its kind, a MA-MulSP has been developed and formalized as a Commission proposal for the three species which account for about 90% of the commercial catches in the Baltic sea [46], namely cod (*Gadus morhua*), herring (*Clupea harengus*) and sprat (*Sprattus sprattus*) [47]. The proposed plan has been presented by the Environment, Maritime Affairs and Fisheries Commissioner Karmenu Vella as a blue print for other MA-MulSPs:

“This plan is not only very important for the Baltic region and the countries that are directly concerned, but it will also be a positive precedent for other management plans to be adopted in the future” [48].

The MA-MulSP aspires to bring the management of fish stocks in accordance with the requirements of the CFP and to contribute to the envisaged regionalisation ideas [49].

The idea of creating a MA-MulSP stemmed from discussions and research invested in preparing a basis for a MAP for pelagic fisheries in the Baltic. In 2007, a management plan for the Baltic cod was adopted [50] and the intention was to proceed with a separate plan for the pelagic fisheries in this region. However, following the impact studies related to the prospective plan for the pelagic fisheries [51] and based on an ICES assessment of the performance of the cod plan, a decision was made to change towards a common plan for the three main commercial marine species of the Baltic Sea. It is important to manage these species together because they are strongly linked through predator-prey interactions, although these dynamics are also shaped through environmental forcing conditions [47,52–58]. The decision to develop a three species plan was made in consultation with representatives of the MSs and stakeholders at a Baltic Sea Fisheries Forum (BALTFISH)² meeting and was motivated by the anticipated 2013 CFP reform that would favour plans covering multiple stocks. The decision was later formalised when the Council of Ministers encouraged the Commission to propose such a plan [59].

The primary objective of the Baltic MA-MulSP is to establish an approach for sustainable management of cod, herring and sprat requiring that the stocks are harvested at levels that can produce MSY. The focus of the plan is to establish target fishing mortality ranges and conservation reference points (minimum SSB limits) and it includes some provisions in relation to the implementation of the landing obligation with respect to specific gears as well as other measures. The plan allows concerned MS to submit joint recommendations on technical measures, hence opening for implementation of specific management measures on a regional basis. The proposal allows for the adoption of delegated acts by the Commission on certain technical measures, and introduces a review clause, stating that its impact on the stocks and fisheries concerned should be evaluated every 6 years.

The process of developing the Baltic MA-MulSP involved a number of agencies, notably DG MARE, the Scientific Technical and

Economic Committee for Fisheries (STECF), ICES, BALTFISH, and the Baltic Sea AC (BSAC). The development of the plan, including the consultation process, followed the DG MARE procedure for development and evaluation of long-term management plans. As an interviewed Commission official pointed out:

“[The] Commission [had] a leading role in the process. [The] Commission has to propose legislation based on scientific advice, consultation, but the proposal is [the] Commission’s” [60].

The consultation process centred on the BSAC as well as the fisheries administrations in the respective MSs through BALTFISH. The STECF provided scientific advice with regard to scoping, modelling, evaluating alternative MAPs and their potential impacts [68,69]. Fig. 2 summarizes the main milestones in the process.

The decision to go for a multispecies plan required a set of new rounds with science and stakeholders. This included a new round of STECF meetings, now with a scoping of multiannual management plans; an ICES workshop on integrated multispecies advice for Baltic fisheries; and a meeting of the STECF expert working group to provide an impact assessment of candidate approaches. Members of the BSAC participated in all these meetings, which were open to stakeholders [49,68,69].

The STECF working group did not find that there was a sufficient scientific basis for identifying and evaluating Harvest Control Rules (HCR), which has been a central element in single species management plans in the EU. Moreover, the Lisbon Treaty gave the EP a formal role in CFP decisions while reiterating that fishing opportunities are determined by the Council. HCR in management plans were seen to limit the scope of Council decisions regarding fishing opportunities [49]. Instead, the STECF working group provided an evaluation of a set of F-ranges to represent target exploitation rates of the key stocks. The STECF explained that:

“[T]he lower limits of these ranges correspond to the single species MSY values. In turn, “the upper limits of the F target range are rather uncertain and depend heavily on assumptions of growth and predation” [69].

The multispecies approach based on target F-ranges was later included as a corner stone in the adopted Commission proposal [47]. The impact assessment that accompanied the proposal presented two alternatives in addition to a status quo scenario, each comprising different sets of MSY related F targets for the main Baltic stocks of cod, sprat and herring. The first alternative involved lower F-targets, which were noted to be closer to single species values. The second alternative involved slightly higher F’s, noted to be “more consistent with a multispecies approach”. The former was seen to involve less risk and less catch variability and was clearly preferred by stakeholders and MS. However, it was stated that the options should be considered as initial approaches to a management plan and be adapted later in light of improved scientific knowledge [49]. In view of that, the proposal for the MA-MulSP presented to decision makers included an updated set of target F-ranges, provided by ICES on a request from the Commission [70]. These F-ranges replaced the set of target Fmsy values that represented the preferred option identified in the impact assessment.

Following the general agreement reached by the Council in April 2015 and a plenary vote of the EP, the trilogue negotiations started between the Commission, and the EP, but at the time of writing of this article a compromise has not been reached. The main disagreement concerns the use of the F-ranges for the cod, herring and sprat stocks. While the Commission’s proposal identified these ranges as “targets”, the EP insists that they have to represent upper exploitation limits.

The EP proposed a range of other amendments, some of which seem to reflect a slightly stronger commitment to EAFM and to

² BALTFISH [67] is a forum for regional cooperation about fisheries management for the eight EU MS in the Baltic area.

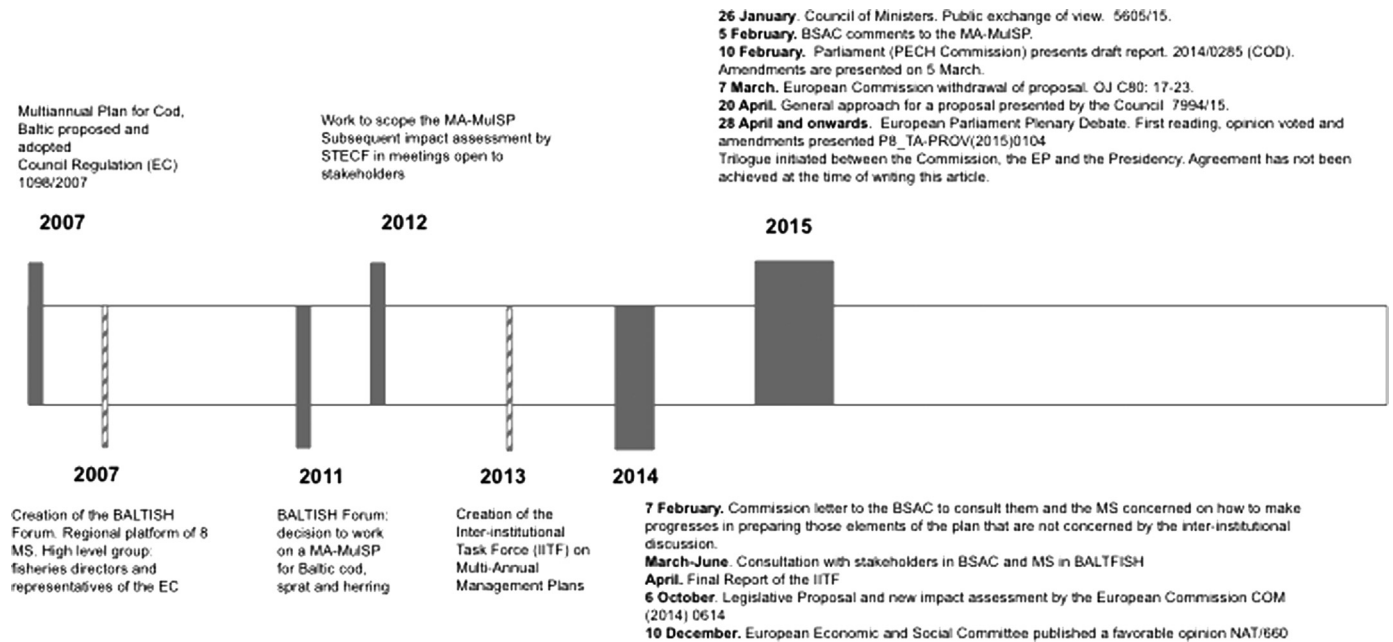


Fig. 2. Multiannual plan for Baltic fisheries. Summary of key milestones.

consider certain ecosystem aspects in the management plan, for instance with specific reference to the MFS and related descriptors of GES [48]. At the time of writing, no agreement has been reached on the Baltic MA-MulSP.

4.1.1. Identified institutional challenges

The MA-MulSP for Baltic fisheries has been identified as a potential role model, and therefore the development and decision-making process relating to the plan holds important lessons with regard to potentials and constraints of moving towards EAFM in an EU context. In the following section, we identify three main institutional challenges associated with this case in terms of participatory processes, management approaches and power conflicts.

4.1.1.1. Regional cooperation - behind closed doors?

BALTIFISH is a group for regional cooperation between EU MS around the Baltic, which has been established by the MS. It has no formal role in the CFP as the Lisbon Treaty leaves no competence or other formal role for such regional MS bodies beyond the competence of the individual MSs. Nevertheless, such groups of MSs can serve as an agency in the regionalisation approach defined in the reformed CFP by submitting joint recommendations to the Commission, which in turn may adopt them as delegated acts.

BALTIFISH operates at two different levels: The High Level Group (HLG) is comprised of the fisheries directors the 8 EU MS as well as European Commission representatives. In turn, the Forum is a broader arena as it consists of representatives of the BSAC, NGOs and inter-governmental institutions such as ICES and HELCOM. As noted by Hegland et al., [27], the Forum works as a discussion arena, while major decisions tend to be made within the HLG. A memorandum of understanding of BALTIFISH states that ACs can be invited to the HLG when required, but this only happens to a limited extent at present [27]. This is the reason why an interviewed researcher, who has worked extensively with stakeholder involvement, observed that the regional MS groups seem to represent a reversal of previous trends towards increasing stakeholder engagement rather than facilitating stakeholder involvement:

“For stakeholder organisations to be linked with the regional policy process has become very, very difficult. I think it also

applies to the Baltic group, the link between national policy makers and stakeholder organisations has been weak. It is difficult to trace the decision-making process: there are no minutes available publicly, there are no talks, except for the occasional invitation for someone from an AC to go a meeting. So it is very much a closed process so far.” [71].

Excluding stakeholders from a potentially important regionalised policy arena that can be activated through an adopted MAP (i.e. delegated acts responding to joint recommendations by MSs) will likely undermine the legitimacy of this regional process. This has been a grievance for some members of the AC who feel that true regional management should not be taking place behind closed doors at MS level [62]. A similar view of discontent with the closed-door practice has been expressed in joint statements by three environmental organisations with interest in Baltic fisheries [63,64].

A Commission official noted the importance of involving stakeholders very early in the process because they can be a valuable asset and come up with many good ideas, especially if they feel listened to. However, the Commission is unwilling to interfere (and has no legal basis for interfering) in the stakeholder involvement through the regional MS groups, which is regarded as a MS responsibility [60].

It is thus an important institutional challenge to an EAFM that there is little formalised competence at the scale most relevant to an EAFM – namely the regional marine ecosystem – and that the regional cooperation set up by MS to address this does not include formal mechanisms for transparency and stakeholder involvement. As MS regional groups have no legal basis, they are also not bound by any legal requirements for transparency and consultation. The prospects of pursuing EAFM will depend on effective stakeholder involvement on a regional basis, and it must be avoided that these bodies become black boxes.

4.1.1.2. Institutional gap between fisheries and environmental concerns

The institutional gap between fisheries and environmental concerns has been previously mentioned in literature, where the foundation for EAFM is provided in the objectives and measures of the MSFD and CFP [9,14,22], yet, there are asymmetries between

these policies that hamper the advances in the EAFM in Europe [10]. Institutional asymmetries are, for example, in terms of competence (EC retaining exclusive jurisdiction over fisheries; MS retaining jurisdiction over nature conservation within their territory) and decision making process (fisheries management as a centralised process; environmental management as bottom-up based national proposals coordinated at a subsequent step) [10].

This institutional gap is also evidenced in the Baltic MA-MulSPs. The plan only relates to commercial fish stocks and it does not seem to represent a move towards integration of broader environmental concerns, for example GES descriptors of the MSFD such as indicators of the presence of large fish, seafloor and food web integrity, even though at least some indicators of this kind have been identified for the Baltic Sea context [61].

This perspective is consistent with the view of a Commission official involved in the planning process, who observed that environmental MFSD aspects were not included because their implementation is the responsibility of MS, cooperating through HELCOM, and that the Commission would not want to duplicate this work [60].

The decision not to include a broad range of MFSD indicators in the plan is arguably a pragmatic solution that demonstrates also the necessity of having a plan in place rather than going through a cumbersome process to achieve a more comprehensive plan. This point was also raised by another of the interviewed members of the Commission who highlighted that the urgency to put a proposal on the table meant that the plan was less comprehensive [34].

Nevertheless, as the interviewed member of the Commission also observed “...the plan also has to be seen in connection with the technical measures proposal” [34]. Such measures will be part of a new Commission proposal that aims to cover the whole of the EU waters, broken down by sea basin. The content of the plans is then to be complemented by (technical) ecosystemic measures that further facilitate the implementation of an EAFM. In this sense, the Baltic plan is open for the introduction of ecosystemic measures beyond the fisheries management measures included in it, for example, further protection of harbour porpoises, regulations of the use of certain gears, or temporary closure of certain areas to protect certain species or habitats [34].

However, ideally, the plan should have included the wider ecosystem considerations instead of making reference to addressing them through another instrument, an issue that still reflects the dichotomy environment vs. fisheries.

The institutional gap between fisheries and environmental policies in the EU and in MS has thus proven to be an important impediment to integration of environmental considerations into MA-MulSPs and thus to an implementation of an EAFM through such plans.

4.1.1.3. The standoff between co-legislators

Since the Lisbon Treaty introduced co-decision, there has been a long-running stand-off between the EP and the Council over who should have precedence over fisheries management decisions. The Lisbon Treaty includes one exception from co-decision, as the decisions regarding fishing opportunities remain a Council decision. Therefore MA-MulSP must be decided through co-decision, but annual quotas within the MA-MulSP are left to Council to decide. As a consequence, there are opposite interests in the EP and in the Council regarding how prescriptive management plans should be. In relation to the MA-MulSP, the main issue is the interpretation of F-ranges in relation to MSY. An interviewed member of the BSAC expressed frustration with the delay:

[The proposal]...has gone into the travelling circus of EU parliamentarians who also are empowered to come with their

amendments to the Commission proposal... Until the stand-off between the EP and Council is resolved, we're not going anywhere. It is still single species management, although ICES advice takes consideration of ecosystem impacts. How many years do we have to wait? [62].

Similarly, some fishermen have voiced their frustrations about the prolonged decision making process in a recent public hearing on the MA-MulSPs [65].

In turn, an interviewed member of BALTFISH observed:

“The main focus is certainly on what we can do in a regionalized process when the management plan is adopted. Of course BALTFISH can start working on future joint recommendations, in particular with respect to new technical measures, but common positions cannot be submitted to the Commission before the plan is adopted” [66].

The interview reflected concerns regarding the absence of a new management plan. The roles of regional groups in developing the MAP proposal were considered to be limited compared to the roles they are expected to play when formulating common positions to be transposed into Commission legislation in terms of Delegated Acts. The decision-making standoff represents a strong impediment for making progress towards an EAFM because it limits the potential to address fisheries management and ecosystem issues through regional cooperation.

4.2. Multiannual multispecies management plan for Atlantic pelagic fisheries

The Commission's communication about fishing opportunities for 2016 under the CFP [36] states “A MAP for the Atlantic pelagic fisheries is under consideration” (p. 3). According to a member of the Pelagic AC (PelAC), with the text, the Commission wanted to manifest its aspiration to have such a plan available at some point, but that there is nothing concrete on the table yet [37].

Nevertheless, some of the actors aim to be at the forefront in relation to the development of this plan. Drafting a MA-MulSP is understood by some members of the PelAC as the first step to operationalize EAFM in the Atlantic pelagic fisheries; in fact, an Ecosystem Focus Group (EFG) was set up in February 2015 [38]. Members of the PelAC have also stated that “we have relevant knowledge and we are affected by this [plan]” [37].

Regarding the Scheveningen group, the impression of most of the involved persons is that the results of the negotiation between the European Parliament (EP) and the Council about the Baltic plan will be crucial, as it will create legal precedence for any further work on a MAP for the North Sea area [39]. Most of the attention of the Scheveningen group has been concentrated until now on drafting joint recommendations for discard plans (pelagic and demersal stocks) and the so-called Omnibus Regulation – a regulation to amend the technical measures and control regulations to implement the landing obligation. Very little time has been dedicated to the topic of MAPs [39].

The Commission, at the moment, has no concrete plans for a MA-MulSP for shared Atlantic pelagic species [34,40] as it will be explained later on.

4.2.1. Identified institutional challenges

Despite the fact that MA-MulSP for Atlantic pelagic fisheries is not among the mid-term plans of the Commission, some of the potential actors that might be involved in the development of the plan, in specific the PelAC is already working on this direction. The situation raises particular challenges in terms of processes, new equilibria and knowledge gaps.

4.2.1.1. EU is not the sole manager of pelagic stocks

Drafting MA-MulSPs for the Atlantic pelagic fisheries is a complex task compared to other stocks in EU waters due to the wide distribution of stocks in the North East Atlantic. Most pelagic stocks in the Atlantic and the North Sea are exploited by both EU MSs and non-EU fleets. In the North Sea agreements have to be made between the EU and Norway. For more widely distributed stocks such as mackerel, blue whiting, and Atlanto-Scandian herring management is a collaboration between the EU and the Coastal States outside the EU: Denmark (representing the Faroe Islands and Greenland in this regard), Iceland, Norway and the Russian Federation in the North East Atlantic Fisheries Commission or through agreements between coastal states including the EU. These shared stocks are jointly managed by means of multi-annual management plans. There is a process of permanent consultation and decision making, but in recent years negotiations have been especially difficult. Interviewed actors agreed on the fact that introducing an ecosystemic dimension into this discussion, which has mainly been focused on fishery issues, could complicate matters even further [34,40–43].

In addition, one of the interviewed members of the Scheveningen group identifies it as a political challenge to convince third countries of the need of a multiannual multispecies approach [43]. The EU Commission, on behalf of the EU already raised a couple of times with one of the Coastal States the idea of having a mixed fisheries plan for the North Sea demersal fisheries, but until now, they are very reluctant to the idea [43]. The situation is defined as understandable since they are not used to the concept and have a more directed fisheries with only little mix components.

“if you propose such a thing, just for the sake of having an EA or something, it will not work in itself unless you are able to demonstrate it does have economic benefits already on the short term” [43].

The development of a MA-MulSP for shared pelagic species of the Atlantic is –partly due to the reasons just presented, not among the mid-term plans of the Commission:

“We have said that somewhere in the future we will analyse what the added value of such a EU multiannual plan should be” [34].

It is an institutional challenge to an EAFM in the Atlantic context that the involved actors consider the introduction of ecosystemic dimensions as an aspect that could complicate even further the negotiations of the shared stocks with non-EU countries.

4.2.1.2. Reaching consensus on advice

PelAC members foresee a challenge in reaching consensus internally on how to provide advice on MA-MulSPs:

“We are asked to provide advice, but have to also decide what the advice is to be on. It is a whole scope of issues. This makes it more difficult as there is a whole new set of decisions that need to be taken [and] find consensus on what to advise on, and not only on how to advise” [35].

One of the PelAC members expects that there will be disagreements, not only between eNGO and fisheries representatives, but also internally among fishers, about how to define the aim of the advice:

“People would have potentially opposing views on how we should manage it, so I think it will be more challenging without a doubt” [41].

Another PelAC member emphasised that it will be difficult, for a group of people with very different background – fisheries, natural science, marine biologist, to think what needs to be taken into account, given all the different levels of EAFM and the requirements that arise from the MSFD [35].

At the time of writing this article, there have been no clear specifications on what the MA-MulSP for pelagic fisheries should include. Despite this lack of guidelines and the internal challenges, the PelAC aim to be prepared to be involved in the drafting of the MA-MulSP once the Commission decides to move in this direction. PelAC does not want to be left out of the process of drafting MA-MulSPs and is already considering how to deal with the increased complexity of the information required for drafting them.

Difficulties not only in reaching consensus on advice, but on what type of advice to provide, given the lack of clear specifications for what the MA-MulSP for pelagic fisheries should include, is considered also another institutional challenge to an EAFM in the Atlantic context.

4.2.1.3. Concerns among stakeholders about whether they will be involved early enough

Relations of the PelAC with the Commission have improved in recent years and the Commission is generally being supportive of PelAC [37]. Nevertheless, some PelAC members have doubts whether they will be involved early enough in the process of developing a MA-MulSP, and a few are speculating about whether the Commission is already working on the plan [37]. One PelAC member said:

“I think the important thing for us at this stage, and we’ve already communicated it to the Commission, is that we want to be there from the start of the process. That we are [...] embedded in the process so that we can help develop [the plan] it in the best possible way” [41].

PelAC wants to be proactive to ensure that they can have a say when decisions are taken. According to another PelAC member:

“we’re quite worried that other people might work on the plan, while we’re standing at the side line...From our experience, although this does not hold true all the time, if we come up with something first, then the chances that at least part of it gets taken up by others are relatively good” [37].

Another point relates to the collaboration between the ACs and the MSs regional groups. Some PelAC members are concerned about the exclusion of PelAC in the drafting process of joint recommendations developed by the MS Regional groups. PelAC, is eager to interact with the MSs regional groups to ensure their recommendations are included in the joint recommendation that the MSs will present to the Commission. However, the PelAC feels it has to start from zero building up its relationship and learning to gain the trust of these MS regional groups. This situation is similar to the experiences of the newly-created Pelagic RAC 10 years ago, when it started its interaction with the Commission [42]. Nevertheless, our interviews with PelAC members revealed that the PelAC has recently been invited to meetings at the North Western Waters and the Scheveningen group, and the attitude of these groups has been much more positive and open than in the past:

“It just takes some time to reach that equal footing again” [42].

The interviewed member of the Scheveningen group also added that it is not only the ACs which might feel left outside of the MS regional groups, but that might be the case of other stakeholders like the non-EU Coastal States. The situation is related to the price that has to be paid because of the hurry in which these

MS regional groups find themselves sometimes to deliver a consultation on time.

“It is true that the MS regional groups, because of the hurry they are in, to deliver timely jointly recommendations to the Commission, on the discard bans for instance, have kept a very strict regime of asking, through an official consultation process, advice from the other bodies that should be consulted, rather than have a dialogue between the parties, and try to find practical solutions around the table, and that’s not optimal” [43].

Prospects of pursuing EAFM depend on an effective stakeholder involvement on a regional basis. It must be avoided then that short deadlines and the novelty of the interaction between regional actors will limit their formalised competence at the regional marine ecosystem scale.

4.2.1.4. Political choices between exploitation of predator-prey stocks

The PelAC EFG is currently, by the end of 2015, learning how to deal with multiple species interactions. Although pelagic fisheries is usually a relatively *clean* fisheries, by-catch still sometimes occurs, for example in the mixing of mackerel and horse mackerel at certain times of the year in certain areas. Another aspect is the hypothesis around the issue of large stocks of one species leading to decline of other stocks. The discussions so far regarding a future MA-MulSP has related to those aspects.

Presenting specific measures in the MA-MulSPs will require scientific data and analysis beyond what presently is available. As one of the interviewed PelAC members stated:

“It is difficult if you only have observations and you want to avoid correlation biology” [37].

Scientific data supporting the need for decisions is stated as crucial when dealing with the different interests:

“I can foresee that what we’ll really need is to up the game in terms of the scientific data input, so that we really have a much clearer understanding on how the particular stocks are doing” [41].

The lack of scientific clarity and the potential for speculations regarding such interactions are therefore in themselves important impediments for an inclusion of multispecies interactions in discussions regarding a MA-MulSP. Such multispecies interactions would, if proven, quantified and integrated into management plans, have extensive economic implications for the fisheries exploiting these stocks.

The Commission services underline the challenges of moving into multispecies plans given the limited conclusive research on inter-species and multispecies relations. The Commission would like to manage fisheries by means of multispecies plans once this is feasible [34].

However, difficulties are not only related to scientific aspects – issues which could be considered more of a conceptual or cognitive challenge rather than an institutional one, but also to the fact that sometimes decisions in terms of what is given priority in the ecosystem are linked to political choices [13,34]. By introducing biological interactions in the management plans, the actors involved will necessarily be put in a situation where political choices will have to be made between the exploitation of different stocks and thus between fisheries.

For example, it is known that commercially significant pelagic species in the North Atlantic (including herring, sand eel and sprat) constitute important prey species for piscivorous predators, which includes demersal species [44,45]. However, if predator and

prey dynamics and food competition are considered explicitly, this is bound to raise interest conflicts between and within demersal and pelagic fisheries, which subsequently must be resolved in a manner that is considered transparent and legitimate by the involved parties. For single stock management there are agreements in place about the distribution between countries of shares within the TAC for each stock. Such agreements do not exist when it comes to prioritisation between exploitation of different stocks. The existing institutions for fisheries policy do therefore initially not have mechanisms in place to deal with such conflicts of interest, being this an important institutional challenge to an EAFM.

5. Discussion: the way forward

Much of the structure to support the implementation of an EAFM in Europe is in place. However, stakeholders are facing institutional mismatches which hamper their efforts to advance in this matter. This article has provided an overview of the current institutional challenges for policy makers and fisheries advice to progress towards EAFM. The point of departure was the framework identifying the challenges involved for implementing EAFM. This framework was applied to the two case studies on the development of MA-MulSPs for the Baltic and Atlantic pelagic fisheries. These cases were chosen because MA-MulSPs are considered an essential tool to apply EAFM within the possibilities given by the reformed CFP.

The analysis has identified several key institutional challenges for both case studies, summarized in Table 2 and which are relevant for the forthcoming MA-MulSP in all EU sea basins.

Although the Baltic MA-MulSP has not been adopted by the legislators yet, the present proposal for a MA-MulSP for the Baltic represents a significant step in the direction of EAFM in three ways.

- a) It is a prototype to be used by other regional waters. The Baltic MA-MulSP is perceived as the “blueprint” for all future plans [39], and even a “test case” on whether adopting such plans is possible under co-decision [34].
- b) MA-MulSP – even if they include species interactions – are not a full EAFM in themselves as they do not by definition go beyond fisheries impacts on fisheries resources. However, it is the first management plan that brings together the three species which are known to have predator-prey relationships. Even though these interactions have been studied and evaluated by ICES for a number of years, there is still substantial work to be done on the interspecies linkages and connection for all relevant seas. This is consistent with the perspective that it is not necessary to have full ecosystem knowledge in order to start implementing an EAFM [15,17]. In practice, the extent to which predator-prey interactions are actually taken into account in the MA-MulSP primarily depends on how Fmsy-ranges are determined and used as guidance for annual TAC decisions, but these may be revised in light of an improved scientific understanding of these interactions.
- c) The development of the Baltic plan shows that it is possible for the relevant actors to cooperate and produce a common-agreed proposal, where all the participants involved want to see it implemented. This indicates a new path towards collaborative fisheries management. EAFM does not only represent a broader management perspective to include more environmental concerns than commercial fisheries, but is seen to require and build upon good governance principles and foster transparent stakeholder involvement.

Although the plan represents a significant step towards EAFM, it is also a limited one. MAPs are considered a tool to bring

Table 2
The analysis has identified several key institutional challenges for both case studies, summarized in Table 2 and which are relevant for the forthcoming MA-MulSP in all EU sea basins.

	Pelagic MA-MulSP	Baltic MA-MulSP
Decision-making processes	Management of shared stocks with non-EU countries. Ecosystem approach seen as a possible burden in the negotiation process Difficulties in reaching consensus on advice, and on what type of advice to provide, given the lack of clear specifications for the content of the plan Difficulties when it comes to prioritisation between exploitation of different stocks (decisions in terms of what is given priority in the ecosystem linked to political choices; existing institutions for fisheries policy do not have mechanisms in place to deal with conflicts of interest)	Limited relevance Not addressed Not addressed
Participatory processes	Participatory processes may limit stakeholders involvement in the early stages of drafting the plan	Regional cooperation set up by MS does not include formal mechanisms for transparency and stakeholder involvement (as the MS regional groups have no legal basis, they are not bound by legal requirement for transparency and consultation)
Institutional gap	Not addressed	institutional gap between fisheries and environmental aspects resulting in a limited integration of broader environmental concerns in the plan
Institutional interactions	Not addressed	A stand-off between the co-legislators that have the legal authority to approve the proposed Baltic plan, implying that all the actors are on stand-by while awaiting the adaptation of the plan

fisheries and environmental measures together [34]. Ideally, the plan should have included wider ecosystem considerations than those associated with key commercial fish stocks, instead of making reference to possibility of addressing the former through upcoming technical proposals. This point was also raised by one of the interviewed members of the Commission who highlighted that the urgency to put a proposal on the table meant that the plan was less comprehensive [34].

Having one MA-MulSP for the Atlantic pelagic stocks seems overambitious and difficult to envisage in the current situation [34]. Discussions with the Coastal States about fishery issues have been difficult in recent years. Matters are expected to complicate even further if ecosystemic issues are added into the negotiations. Nevertheless, an interviewed PelAC member suggested a focus on the stocks of mackerel, blue whiting and Atlanto-Scandian herring if a MA-MulSP is to be developed, given the importance of these three stocks for the EU industry and for the PelAC [42]. A possible way forward could be to take certain elements from the different management strategies agreed with the partners, and translate these elements into a plan for the EU. However, it is still early days to speak of a process and obviously it would need to be explored first with the other Coastal States how this process could take place [34]. In the meantime, the PelAC is investigating interactions and evaluating how EAFM can be further developed in relation to pelagic fisheries. The interviewed PelAC member concludes by saying that small steps need to be taken:

“this is what we have to do, we cannot from now until tomorrow implement the EA, we just have to take these [process] in kind of small steps” [42].

Another aspect is that the proposed approach to a MA-MulSP for North Sea demersal species has been criticised for not considering the predator-prey linkages with pelagic species: “*creation of separate management plans for the demersal and – presumably – pelagic fisheries in this area does not make sense*” [45]. Although Holt [45] raised this concern in relation to the proposed approach for the North Sea demersal MA-MulSP, his observations clearly also has relevance for a separate plan for pelagic species in the same area.

If neither predator-prey dynamics, nor environmental drivers, are substantially addressed in the MS-MulSP for pelagic species in the North Sea, it might not be substantially functionally different from a set of separate single species plans. Hence, although the

existence of such a plan would represent significant progress in other respects, it may not appear to represent an advance towards EAFM.

The findings of the case studies clearly demonstrate several institutional challenges at various levels and amongst players. Although some of these interactions would seem to be more political than institutional challenges –as they involve either power struggles or normative disputes, the point is that these struggles and disputes to a high degree are a product of how the interaction between the Commission, MS Regional groups and AC is institutionalised, and therefore we maintain that these are institutional challenges as this is the core of the problem.

1. Interaction between ACs and MS regional groups, where the regionalisation process has led to *closure of doors* from the MS regional groups towards the ACs; short deadlines and the novelty of the interaction among those actors are the reasons stated for this strategy. The future developments will confirm to what extent this is temporal.
2. Interaction between MS regional groups and the Commission. Although MS appreciate regionalisation, they are experiencing challenges in applying it.
3. Interaction between ACs and the Commission, and this relates particularly to the Pelagic AC, where the AC requires guidelines for the development of a MA-MulSP for the pelagic stocks. This would help address the uncertainty involved in providing EAFM advice.
4. Interaction between Regional Sea Conventions and all of the other groups (Commission, ACs, MS regional groups). These conventions are considered a sector independent from fisheries.
5. Interaction between the Commission, the EP and the Council, where the Commission is, at the time of writing, awaiting a decision on the Baltic plan before proceeding with others. The slow negotiations for the Baltic plan makes it inopportune for the Commission to table another proposal for other waters since it could hinder negotiations. This is because the Commission could be seen to have taken a certain position, rather than facilitating an agreement between the legislators [34].
6. Interaction between the EAFM and the polity realm of resource allocation: an inclusion of biological interactions between different fish stocks is bound to lead to a need to make priority decisions between different stocks and thus between different

fisheries. While distributions of fishing opportunities within one stock are in place for most stocks, there are no such agreements or processes in place regarding distribution between stocks.

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References

- [1] Council Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy. in: Official Journal of the European Union; 2002, L 358, p. 59–80.
- [2] Regulation (EU) No. 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy in: Official Journal of the European Union; 2013, L 354, p. 22–61.
- [3] R. Long, Legal aspects of ecosystem-based marine management in Europe, in: A. Chircop, M. McConnell, S. Coffen-Smout (Eds.), *Ocean yearbook*, S.I.: Brill Academic Publishers, 2012, pp. 417–484.
- [4] L. van Hoof, J. van Leeuwen, J. van Tatenhove, All at sea; regionalisation and integration of marine policy in Europe, *Marit Stud* 11 (9) (2012) 1–14.
- [5] J. van Tatenhove, How to turn the tide: developing legitimate marine governance arrangements at the level of the regional seas, *Ocean Coast Manag* 71 (2013) 296–304.
- [6] Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union in: Official Journal of the European Union; 2012, C 326, p. 0001–0390.
- [7] J. van Leeuwen, J. Raakjær, L. van Hoof, J. van Tatenhove, R. Long, K. Ounanian, Implementing the Marine Strategy Framework Directive: a policy perspective on regulatory, institutional and stakeholder impediments to effective implementation, *Mar Policy* 50 (Part B) (2014) 325–330.
- [8] S. Jennings, J. Rice, Towards an ecosystem approach to fisheries in Europe: a perspective on existing progress and future directions, *Fish Fish* 12 (2011) 125–137.
- [9] L. van Hoof, Fisheries management, the ecosystem approach, regionalisation and the elephants in the room, *Mar Policy* 60 (2015) 20–26.
- [10] P. Ramírez-Monsalve, et al., Ecosystem Approach to Fisheries Management (EAFM) in the EU – Current science-policy-society interfaces and emerging requirements, *Mar Policy* 66 (2016) 83–92.
- [11] S. Eliassen, T. Hegland, J. Raakjær, Decentralising: the implementation of regionalisation and co-management under the post-2013 Common Fisheries Policy, *Mar Policy* 62 (2015) 224–232.
- [12] D. Symes, E. Hoefnagel, Fisheries policy, research and the social sciences in Europe: challenges for the 21st century, *Mar. Policy* 34 (2010) 268–275.
- [13] C MareFrame. Round Table Discussion: EAFM in the CFP, Brussels; January 2015 [Interview].
- [14] R. Pallezo, R. Curtin, Confronting the implementation of marine ecosystem-based management within the Common Fisheries Policy reform, *Ocean Coast Manag* 117 (2015) 43–51.
- [15] FAO. EAF-Net. What is EAF. Rome. Updated 27 May 2011. Available at: (<http://www.fao.org/fishery/eaf-net/about/what-is-eaf/en>); 2011.
- [16] J. Bellido, M. Begoña, M. Grazia, X. Valeiras, G. Pierce, Fishery discards and bycatch: solutions for an ecosystem approach to fisheries management? *Hydrobiologia* 670 (2011) 317–333.
- [17] W. Patrick, J. Link, Myths that continue to impede progress in ecosystem-based fisheries management, *Fisheries* 40 (4) (2015) 155–160.
- [18] Garcia S, et al. The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook. FAO fisheries technical paper, no. 443, FAO; 2003.
- [19] D. Gascuel, et al., Fishing impact and environmental status in European seas: a diagnosis from stock assessments and ecosystem indicators, *Fish Fish* (2014) 1–25.
- [20] J. Rice, Managing fisheries well: delivering the promises of an ecosystem approach, *Fish Fish* 12 (2011) 209–231.
- [21] R. Curtin, R. Pallezo, Understanding marine ecosystem based management: a literature review, *Mar Policy* 34 (2010) 821–830.
- [22] Farmer A, et al. EU policy brief: the ecosystem approach in marine management, EU FP7 KNOWSEAS Project; 2012.
- [23] COM(2008)187. Communication from the Commission to the Council and the European Parliament. The role of the CFP in implementing an ecosystem approach to marine management. COM(2008)187 final, Brussels.
- [24] L.C. Freire-Gibb, R. Koss, P. Margonski, N. Papadopolou, Governance strengths and weaknesses to implement the marine strategy framework directive in European waters, *Mar Policy* 44 (2014) 172–178.
- [25] F. Berkes, Implementing ecosystem-based management: evolution or revolution, *Fish Fish* 13 (2012) 465–476.
- [26] F. Säwe, J. Hultman, From moral to markets: the rhetoric of responsibility and resource management in European Union fisheries policy, *Soc Nat Resour* 27 (5) (2014) 507–520.
- [27] T. Hegland, J. Raakjær, J. van Tatenhove, Implementing ecosystem-based marine management as a process of regionalisation: some lessons from the Baltic Sea, *Ocean Coast Manag* 117 (2015) 14–22.
- [28] J. van Tatenhove, J. Raakjær, J. van Leeuwen, L. van Hoof, Regional cooperation for European seas: governance models in support of the implementation of the MSFD, *Mar Policy* 50 (Part B) (2014) 364–372.
- [29] M. Salomon, M. Dross, Challenges in cross-sectoral marine protection in Europe, *Mar Policy* 42 (2013) 142–149.
- [30] Linke S, Jentoft S. Forthcoming. Ideals, realities and paradoxes of stakeholder participation in EU fisheries governance.
- [31] Peute T, MSFD, Natura 2000 & pelagic fisheries. Analysis of the impact of the MSFD & Natura 2000 on pelagic fisheries, Pelagic Advisory Council (personal communication with Secretariat); 2015.
- [32] S. Princen, Venue shifts and policy change in EU fisheries policy, *Mar Policy* 34 (2010) 36–41.
- [33] L. van Hoof, A. Hendriksen, H. Bloomfield, Sometimes you cannot make it on your own; drivers and scenarios for regional cooperation in implementing the EU Marine Strategy Framework Directive, *Mar Policy* 50 (2014) 339–346.
- [34] Commission (2), Interview member DG MARE; December 11, 2015 [Interview].
- [35] NGO PelAC (2). Interview member eNGO; November 27, 2015 [Interview].
- [36] COM(2015)239 final, Communication from the Commission to the European Parliament and the Council. Consultation on the fishing opportunities for 2016 under the Common Fisheries Policy. Brussels.
- [37] PelAC (1a). Interview member Pelagic AC; September 23, 2015 [Interview].
- [38] PelAC Ecosystem Focus Group. Ecosystem Focus Group, Report October 2015. Available at (http://www.pelagic-ac.org/media/pdf/20151005_Ecosystem%20FC%20report.pdf); 2015.
- [39] Scheveningen group (2), Interview member Scheveningen group; January 06, 2015 [Interview].
- [40] Commission (3), Interview member DG MARE; December 11, 2015 [Interview].
- [41] PelAC (3). Interview member Pelagic AC; December 01, 2015 [Interview].
- [42] PelAC (1b). Interview member Pelagic AC; December 17, 2015 [Interview].
- [43] Scheveningen group (1), Interview member Scheveningen group; January 05, 2016 [Interview].
- [44] G. Engelhard, M. Peck, A. Rindorf, S. Smout, M. van Deurs, K. Raab, K. Andersen, S. Garthe, R. Lauerburg, F. Scott, T. Brunel, G. Aarts, T. van Kooten, M. Dickey-Collas, Forage fish, their fisheries, and their predators: who drives whom? *ICES J Mar Sci* 71 (1) (2014) 90–104.
- [45] Holt S. North Sea, Holt Demersal Fisheries Management Consultation – EU By Sidney J. Holt DSc. Available at: (http://ec.europa.eu/dgs/maritimeaffairs_fisheries/consultations/north-sea-multiannual/contributions/doc/holt_en.pdf); 1 May 2015.
- [46] HELCOM/ma. Basic facts. Available at (<http://www.helcom.fi/action-areas/fisheries/basic-facts/>); n.d.
- [47] COM(2014)0614final. European Commission. Proposal for a Regulation of The European Parliament and of the Council establishing a multiannual plan for the stocks of cod, herring and sprat in the Baltic Sea and the fisheries exploiting those stocks, Brussels.
- [48] European Parliament, Multiannual plan for the stocks of cod, herring and sprat in the Baltic Sea and the fisheries exploiting those stocks. Texts adopted. Available at: (<http://www.europarl.europa.eu/sides/getDoc.do?type=-TA&reference=P8-TA-2015-0104&format=XML&language=EN>); Provisional edition 28 April 2015.
- [49] SWD(2014)291final. Commission staff working document. Impact assessment. Accompanying document. Proposal for a Regulation of the European Parliament and of the Council establishing a multiannual plan for the stocks of cod, herring and sprat in the Baltic Sea and the fisher, Brussels; 6.10.2014.
- [50] Council Regulation (EC) No 1098/2007 of 18 September 2007 Establishing a multiannual plan for the cod stocks in the Baltic Sea and the fisheries exploiting those stocks in: Official Journal of the European Union; 2007, L 248, p. 1–10.
- [51] MRAG, Poseidon & IFM, Economic and social impacts of the proposed scenarios for a multiannual management plan for Baltic pelagic fisheries; 2009.
- [52] M. Casini, M. Cardinale, J. Hjelm, Inter-annual variation in herring *Clupea harengus* and sprat *Sprattus sprattus* condition in the central Baltic Sea: what gives the tune? *Oikos* 112 (2006) 639–651.
- [53] C. Harvey, et al., An ecosystem model of food web and fisheries interactions in the Baltic Sea, *ICES J Mar Sci* 60 (5) (2003) 939–950.
- [54] F. Köster, C. Möllmann, Trophodynamic control by clupeid predators on recruitment success in Baltic cod? *ICES J Mar Sci* 57 (2000) 310–323.

- [55] H. Gislason, Single and multispecies reference points for Baltic fish stocks, *ICES J Mar Sci* 56 (1999) 571–583.
- [56] F. Köster, C. Möllmann, S. Neuenfeldt, M. Vinther, M. St. John, J. Tomkiewicz, R. Voss, H. Hinrichsen, B. MacKenzie, G. Kraus, D. Schnack, Fish stock development in the central Baltic Sea (1974–1999) in relation to variability in the environment, *ICES Mar Sci Symp* 219 (2003) 294–306.
- [57] Rindorf A, et al. A framework for multispecies assessment and management. An ICES/NCM background document. Nordic Council of Ministers; 2013.
- [58] R. Voss, M. Quaas, J. Schmidt, J. Hoffmann, Regional trade-offs from multi-species maximum sustainable yield (MMSY) management options, *Mar Ecol Progress Ser* 498 (2014) 1–12.
- [59] EU Council, Council of the European Union. Interinstitutional File: 2011/0240 NLE. Brussels; 14 November 2011.
- [60] Commission (1). Interview member DG MARE; November 06, 2015 [Interview].
- [61] Oesterwind D, et al. Proportion of large fish in the community. HELCOM Core Indicator Report. (http://www.helcom.fi/Core%20Indicators/HELCOM-CoreIndicator-Proportion_of_large_fish_in_the_community.pdf); 2013.
- [62] AC Baltic (1). Interview member of Baltic AC; October 23, 2015 [Interview].
- [63] CCB, FISH and WWF, Coalition Clean Baltic, the Fisheries Secretariat, and WWF. Considerations for Priority area 9, project 4: 'Baltfish'. Available at: (<http://www.ccb.se/documents/CCBFISHWWFProposalsforBaltfishME.pdf>); 2010.
- [64] CCB, FISH and WWF. Coalition Clean Baltic, the Fisheries Secretariat, and WWF. Considerations for BALTIFISH FORUM 120126. Available at: (<http://www.fishsec.org/wp-content/uploads/2012/01/120202-CCB-FISH-WWF-BALTIFISH-input-FIN.pdf>); 2012.
- [65] Fisheries Secretariat. Parliamentary hearing on multispecies management plans. Available at: (<http://www.fishsec.org/2015/09/24/parliamentary-hearing-on-multispecies-management-plans/>); 2015.
- [66] Baltfish (1). Interview member of BALTIFISH; October 15, 2015 [Interview].
- [67] HELCOMb, BaltFish Forum. Available at: (<http://helcom.fi/action-areas/fisheries/management/baltfish>); n.d.
- [68] STECF. Scientific, Technical and Economic Committee for Fisheries (STECF) Scoping for Impact Assessments for Multiannual plans for Baltic Multispecies and cod in the Kattegat, North Sea, West of Scotland and Irish Sea. Edited by John Simmonds, Ernesto Jardim, Brussels; 2012a.
- [69] STECF: Scientific, Technical and Economic Committee for Fisheries (STECF) Multispecies management plans for the Baltic 2012, (STECF-12-06), Edited by John Simmonds, Ernesto Jardim, Brussels; 2012b.
- [70] ICESa, EU request on preliminary FMSY ranges for Baltic cod, herring and sprat stocks, technical services. Available at: (http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/Special%20Requests/EU_Fmsy_range_for_Baltic_cod_and_pelagic_stocks.pdf); 2014.
- [71] Researcher 1. Interview with expert in stakeholder involvement in the EU; November 04, 2015 [Interview].