

**INDEPENDENT STUDY TO IDENTIFY DIFFERENT OPTIONS IN
SUPPORT OF AN IMPROVED FUNCTIONING OF CECAF:
DISCUSSION DRAFT**

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EXECUTIVE SUMMARY

This is a draft discussion document deriving from an independent study to identify different options in support of an improved functioning of CECAF including a cost-benefit analysis ('C.B.A.'). Its focus is on the financial and capacity-building dimensions, since all indications are that CECAF is performing irreplaceable regional research functions, though with limited capacity and finance. CECAF is tasked with promoting the sustainable utilization of the living marine resources within its area of competence by the proper management and development of the fisheries and fishing operations.

The analysis and conclusions reached here have been on the basis of research into CECAF member-country data, investigations/experience of analogous situations elsewhere, and key informant interviews and discussions, including with senior fisheries officials in the FAO head office in Rome and the EC and EU's DG MARE in Brussels; and with representatives of COMHAFAT, SRFC and CECAF itself, inter alia via visits to Ghana, Senegal and Togo amongst other African countries.

In global terms, Africa generally only has about five percent of global fish production and consumption, despite having much greater share of the world's population and surrounding ocean areas. As such, Africa and its' surrounding oceans is a very large area of *de facto* fish exports. However, in West Africa in particular fish consumption is rising fast, and there are actual and looming future disputes relating to fishing rights, accompanied by poor regional fisheries research.

Although the majority of CECAF members are West African countries, West Africa itself has variable but generally weak governmental interests in fishing; and the CECAF area is fished by number of other countries whose governments and consumers – at least potentially - have greater interests in the sustainability of the fish stocks of the Eastern Central Atlantic. Given limited capacity in West Africa and a lack of critical mass to generate an associated momentum, it is likely that the clearly required CECAF enhancements will need to be initiated through bodies representing other user nations, likely co-ordinating with ECOWAS on the regional front. Without this, a collective dilemma will persist.

Critical mass – or the minimum scale and quality necessary to make the requisite impacts - is not possible to achieve within the current and projected financial constraints. Norway has already assisted CECAF with its EAF Nansen programme, but the responsibility and fiscal capacity for funding enhancements lies with major fish-consuming nations. In the short-term further scope exists for 'kick-start' CECAF's upgrading for example through the EU, with a short-term CECAF budget enhancement of one million Euro per annum, in partnership with ECOWAS. A critical path for negotiating this short-term augmentation is outlined, perhaps being conceptualised along the lines of the EUs so-called learning regions (but now outside the EU).

Although there are lessons to be learned from regions like the Western Central Atlantic, and Cost Benefit Analyses done there, the principles of organisational change need to be recognised, and these vary by region. Possible inter-country rivalry in West Africa needs to be avoided.

In the medium to longer term however a more sustainable and inclusive funding formula needs to be found for bodies like CECAF, if only in the interests of globally sustainable wild capture fisheries.

Calculations are thus penultimately developed, assuming the need for research capacity in West Africa on a scale similar to that already established for more successful fisheries regions around Africa. Capacity building is the main priority, and this requires funds, good management and time. It is likely that if such a longer term, more inclusive funding formula for CECAF was adopted, membership of CECAF would need to change, including for example China. Certain African members may also need to play more prominent roles in the medium-term future, although in the short-term ECOWAS is probably the most appropriate African partner for initial CECAF augmentation. Short term budget enhancements of one million Euros per annum and longer-term targets of fifteen US million dollars per annum are discussed and unpacked as a basis for review and policy debate.

In many ways, especially given its geographical diffusion, CECAF stands or fall by its functioning as a network. Capacity enhancement priorities there include strengthening key links in that network, including supporting the Chairpersons of Scientific Sub-committees of CECAF with technical and secretarial assistance, etc. In addition, since so much of the key data required is local in nature, there is a need to assist research institutions in especially the West African member states with capacity development in: basic computing, basic fisheries statistics, fishery data collection, data analysis and report writing and reporting. In addition, resources should be committed to efforts at international standardisation. Most member states are using different research methodologies, consequently, it is not easy to pool data from countries and use a single analysis methodology. Further aspects requiring assistance include methods in the application/analysis of data to fisheries management, and enhancement of management systems.

Ultimately the Eastern Central Atlantic is too large and too important in global fisheries terms to be left severely under-capacitated and isolated from the support of much more capacitated fishing nations.

1. Background and Objectives

The Food and Agriculture Organisation of the United Nations has requested us to conduct an independent study to identify different options in support of an improved functioning of CECAF including a cost-benefit analysis. The principal perspectives that are being brought to bear in this regard, are those of development economics and organisational change in fisheries bodies.

This report summarises the main results as a basis for discussion both with CECAF and its most likely organisation-enhancing partners. The analysis and conclusions reached here have been on the basis of research into CECAF member-country data, investigations/experience of analogous situations elsewhere, and key informant interviews and discussions, especially with senior fisheries officials in the FAO head office in Rome and the EC and EU's DG MARE in Brussels; and with representatives of COMHAFAT, SRFC and CECAF itself, inter alia via visits to Ghana, Senegal and Togo amongst other African countries.

Our primary focus as per our Terms of Reference has been on future options for CECAF, especially in the light of the background of financial and capacity constraint concerns expressed in previous CECAF Meetings, CECAF publications and our feedback from African fisheries officials and the CECAF Secretariat.

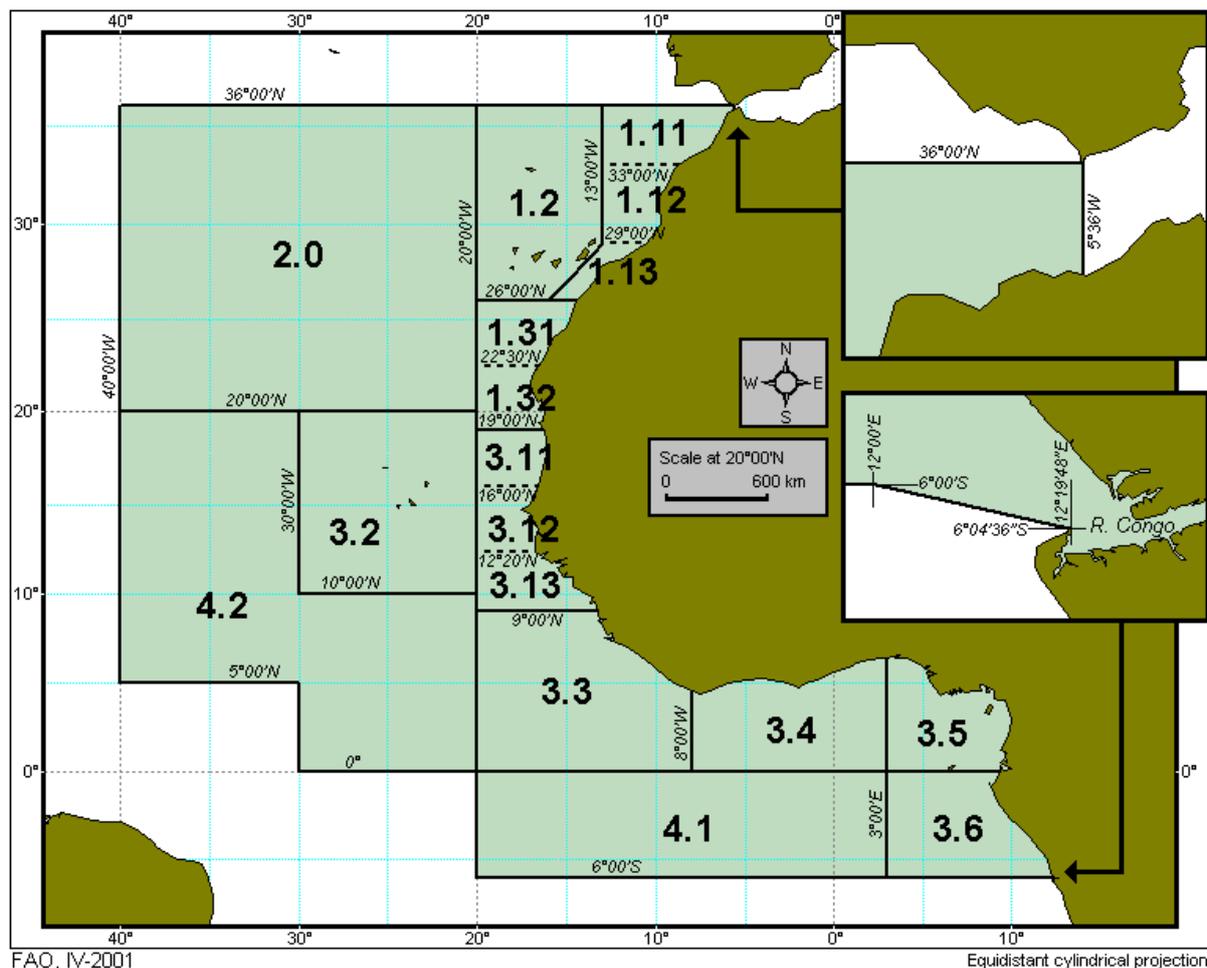
CECAF is tasked with promoting the sustainable utilization of the living marine resources within its area of competence by the proper management and development of the fisheries and fishing operations. However, as work done on fisheries governance for both FAO and the African Union's Inter-African Bureau for Animal Resources (IBAR), amongst others, has shown, there are serious challenges of effective fisheries management throughout the ocean areas adjacent to Africa, and not least those components facing onto the Eastern Central Atlantic area (figure 1, overleaf). Amongst these are challenges of information and regulation relating to irregular and unreported fishing, the balance needed between near-shore and deep-sea harvesting, and the sustainability of the ecosystems that nurture both.

Part of the CECAF future challenges relate to the relative lack of resources and of state capacity in the West of Africa, given other pressing environmental and developmental priorities of most of those countries. In addition, as was noted in the report to the 20-22 April 2016 Dakar meeting of CECAF, (hereafter referred to as the *2016 Meeting Note*¹) there are a number of other regionally-oriented fisheries organisations with overlapping concerns to those of CECAF, with either more localised interests (such as SRFC), and/or with wider West/North African interests (such as COMHAFAT) but with possibly less interest in the Eastern Central Atlantic as a whole. Our understanding, however, is that these are not intrinsically problematic overlaps, and that augmentation of CECAF can occur independently without harming the relationships between sub-regional bodies and CECAF. Indeed, there should be spill-over benefits for them.

¹ Document title: *Directions for improved functioning of CECAF, and collaboration with other regional and sub-regional organizations*

The key issues evident to us relate to inter-continental bloc relationships (e.g. EU/ECOWAS). The Eastern Central Atlantic makes coastal contact almost exclusively with West African nations. Given that many non-African countries are fishing in the wider Eastern Central Atlantic waters, whilst African countries are a majority of members on CECAF, they are not necessarily the main beneficiaries of fishing in the Eastern Central Atlantic. (The FAO lists the members of CECAF as being: Angola, Benin, Cameroon, Cabo Verde, Dem. Rep. of the Congo, Congo, Côte d'Ivoire, Cuba, Equatorial Guinea, European Union, France, Gabon, Gambia, Ghana, Greece, Guinea, Guinea-Bissau, Italy, Japan, Republic of Korea, Liberia, Mauritania, Morocco, Netherlands, Nigeria, Norway, Poland, Romania, Sao Tome and Principe, Senegal, Sierra Leone, Spain, Togo, and United States of America).

Figure1: Map of Northwest Africa-Eastern Central Atlantic (FAO Fishing area 34), and subdivisions



It is in this context that a cost/benefit analysis of CECAF's various future strategic options was commissioned by its main sponsor, the FAO. The report to the 20-22 April 2016 Dakar meeting of CECAF (*2016 Meeting Note*) diagnosed that issues related to capacity constraints (human and financial) were central. It provided some broad recommendations as to how some of these issues can be addressed, although these were largely qualitative and referred to a spectrum of options rather than one preferred option.

The study team have already had discussions and communications with the European Commission Fisheries leadership, with DG MARE of the European Union; and worked with FOA staff in Accra,

Dakar and had detailed discussions with FAO fisheries staff Rome. In addition, face-to-face meetings have been held in Africa with representatives of COMHAFAT, CEECAF itself and SRFC. Also, email and telephonic correspondence has been made with a range of development economics and fisheries experts in Africa.

Based upon this, our basic analysis of CEECAF is that:

- (i) It is comparatively strong in the West African context in terms of fisheries-related research and scientific endeavours; yet that
- (ii) In a broader African and more global context, it is not as strong in such research and scientific capacities as it *should* be in relation to the actual and potential economic fisheries' economic importance of West Africa in the first instance, and the Northwest Africa-Eastern Central Atlantic oceans in the second; and that
- (iii) Whilst it may have perceived West African 'competitors/overlaps' in terms of regional fisheries bodies, the others tend to have less inclusive membership and different substantive emphases from CEECAF whose comparative advantage is as in (i) above; and
- (iv) Therefore our operating hypothesis is that:
With financial and organisational enhancements, the economic costs of a revised CEECAF should be much less than its benefits.

2. Key C.B.A. Issues Informing an Initial Strategic Perspective on CECAF

As we suggested in an earlier report to CECAF, there are some key economic empirical and conceptual issues concerning fisheries and fisheries management that require initial consideration in relation to a CECAF Cost-Benefit-Analysis and related options. The more important of these are:

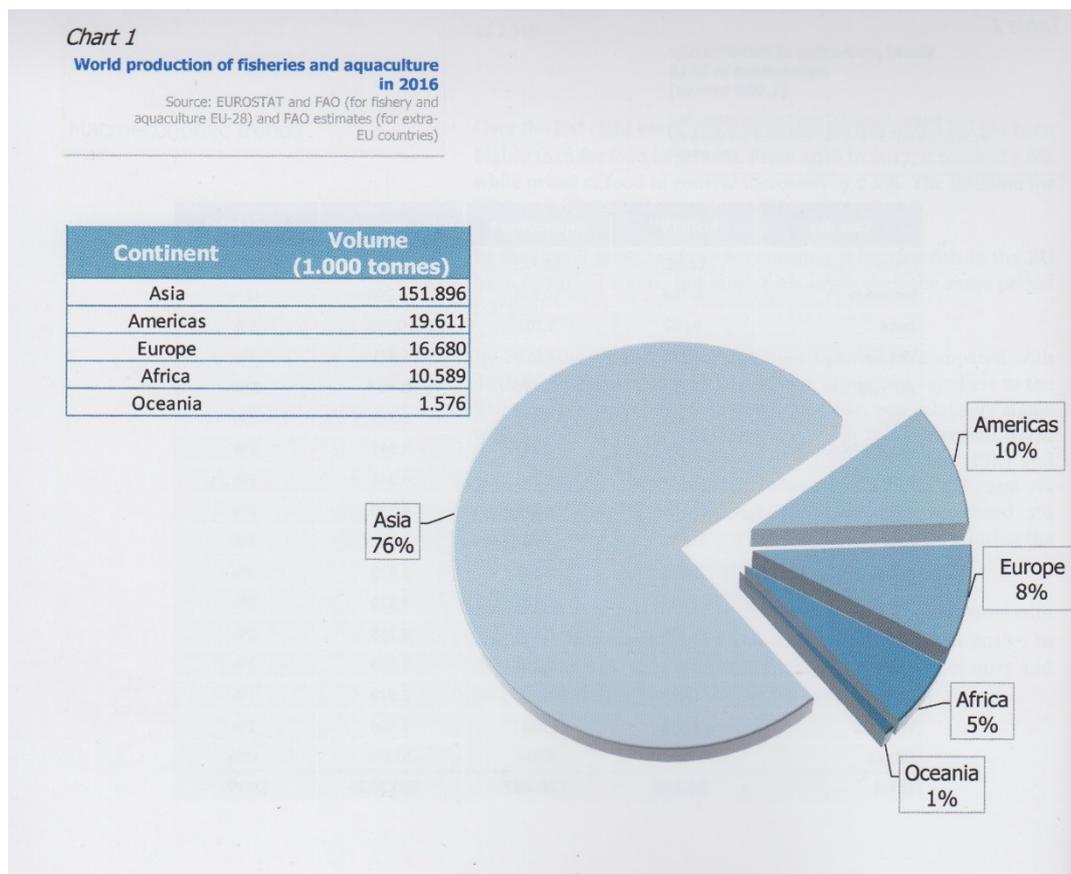
2.1 Scale of Fisheries: First, in terms of scale, African fish production more generally needs to be situated within global perspective in order to gauge its relative economic magnitude. As can be determined from figure 2 below, globally African fishing is comparatively small, especially when considering the size of the African continent and its associated oceans which (geographically) are several times those of Europe; or more comparable to those of the America's as a whole; or larger than Asia as a whole. Comparatively, agriculture for example is currently relatively more important than fishing to the average African, than it is say to the average Spaniard or Chinese. This is not to diminish the economic potential of fisheries in Africa, but partly to explain its historical neglect to date by African governments.

2.2 Resources and Benefits Distribution: Given that the consumption of fish on a per capita basis is higher in Europe and especially parts of Asia than it is in Africa, it is not difficult to deduce that there will almost inevitably be significant exports from the oceans surrounding Africa to other parts of the world. Some of this is regular and reported, and some not². Therefore, within the current state of knowledge it is understandable that a growing amount of (admittedly often anecdotal) evidence is pointing towards what – from an African perspective, at least, – appears to be long distance plundering of 'African natural resources'³. Whilst CECAF's members do include most countries fishing in the N.W.A.-E.C.A. oceans region, some major users are not represented (e.g. China). The perceived legitimacy of CECAF may be related to these points.

² One estimate we are familiar with suggests that a quarter of all fishing off west Africa is unreported; and that by far the largest/most intense area of global fishing by Chinese long-distance fleets is off the West African coasts (<https://africacenter.org/publication/criminality-africa-fishing-industry-threat-human-security/>)

³ We recognise that there may be legal/scientific differences with perceptions here, but for the moment we are dealing with perceptions and perceived legitimacy. Legitimacy, in turn, is often one foundation of successful organisational development.

Figure 2: African fishing production share in global context



Source: European Union/EUMOFA, *The EU Fish Market, 2018 Edition*, Luxembourg, doi:10.2771/986199

2.3 *Variability in Economic Stakes*: The above-mentioned empirical and conceptual economic factors relating to a C.B.A. and organisational options are complicated by variable economic stakes in fishing within West Africa. The proportional extent of direct interest (or 'stake') in fisheries near to or within West Africa generally, or in the N.W.A.-E.C.A. oceans region as a whole, varies strongly from country to country, and overall is quite low. As the FAO/NEPAD publication *The Value of African Fisheries*¹ points out, fisheries of all kinds only account for some 1% of GDP on average in Africa; although in proportional terms fishing is relatively more important in West Africa – especially artisanal fishing. However, within West Africa itself there are substantial variations, with Sierra Leone and Mauritania for example being more economically dependent upon fishing than say Guinea (see for example table 1 below). Thus, within West Africa itself, challenges pertaining to fisheries management are more or less meaningful to different governments. The proposition therefore that CECAF should rely more on member-state contributions is one that only a few West African (and other CECAF member) states are likely to warm to.

To some extent this is of course true of regional fisheries bodies (RFBs) throughout the world. However, unlike in at least two of the more successful African RFB cases, there is

as yet in West Africa no obvious ‘lead country’ with both the aggregate economic muscle and tax base, and the level of stake in fisheries, to have encouraged it to take the lead. Unlike either Morocco or South Africa for example, each of which have willingly and ably led RFBs or their equivalents at least in a *de facto* sense, there is no West African equivalent. Nigeria, which in terms of economic dominance is the West African economic equivalent of Morocco or South Africa in their respective regions, does not have the level of stake in fisheries of either of those equivalents.

Table 1: Indicators of Variability of the Economic Importance of Fishing in a Sample of West African Countries

Country	Number of people employed	Contribution to GDP (%)	Government revenue (US\$ million yr ⁻¹)	Contribution to government revenue (%)
Cape Verde	8800	1-2	0.9	N/A
Gambia	3100	2.4-12	N/A	7
Guinea	30000	1.3	4.3	2.5
Guinea Bissau	15000	7-10	12.7	40
Mauritania	30422	5.2	109.1	27
Senegal	125354	4.9	1.8	N/A
Sierra Leone	250000	9.4	6.2	N/A

Source: R. Katikiro and E.D. Macusi Impact of Climate Change on West African Fisheries and its Implications on Food Production, [Journal of Environmental Science and Management](https://doi.org/10.1080/15230431.2012.734016) 15(2):83-95 · December 2012, www.researchgate.net/figure/employment-fishery-contribution-to-gdp-and-government-revenues-for-selected-west_tbl1_234016250.

In consequence, there is what resource economists call a ‘collective dilemma’⁴ about regional fisheries governance in West Africa, more evident than elsewhere.

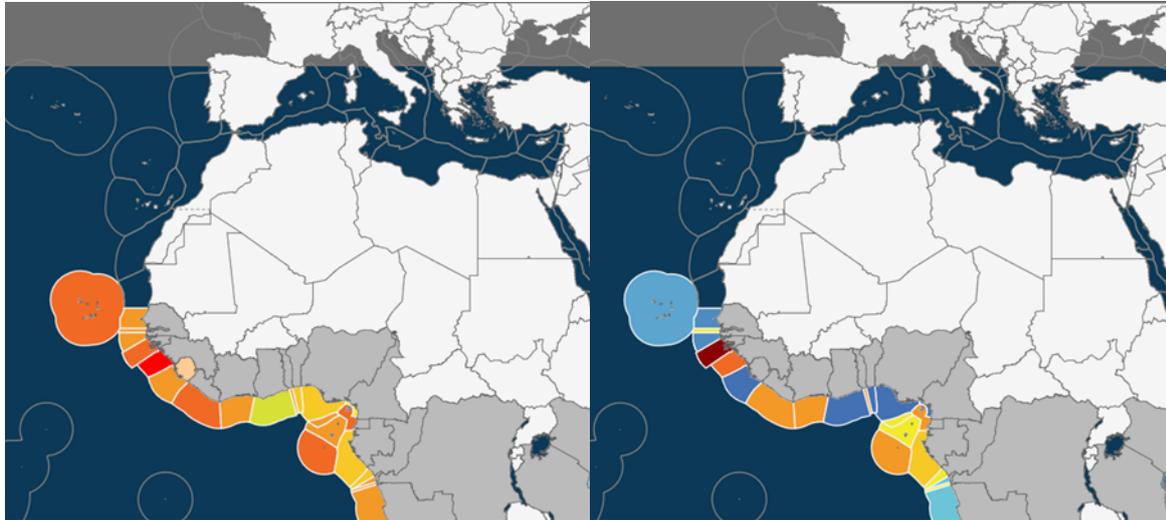
2.4 *The Growth of a Collective Dilemma and of Public Perceptions of Illegitimacy*: Following from the last point, our initial investigations suggested that there appeared to be amongst CECAF members (not the only West African ones) a classic so-called collective dilemma, as defined in economic terms. That is, CECAF members may have common interests in maintaining healthy fisheries, but imprecise property rights specifications and associated rights and responsibilities preclude rational, collective problem-solving actions. This is complicated by real and perceived geo-political cleavages. For example: What most West African states seemingly have in common with each other are concerns at ‘foreign fishing’ either within their territorial waters or nearby; and, related to this, declining fish stocks and fisheries health (although actually the research shows Western African shares of fishing have risen faster within the exclusive economic zones than foreign fishing)..

This is also a view we have noticed reflected by several international fisheries NGOs. The maps below (figure 3) taken from one NGO source are possibly exemplary of popular impressions in this

⁴ The concept of a collective dilemma about resources such as oceans-based fishing has been elaborated in several places, at a more generic managerial level for example by Gary Miller in his book *Managerial Dilemmas*, Cambridge University Press, 1992; and with more specific reference to environmental management by contributions to the journal *Environmental Economics*.

regard and provide a popularised sense of an association between poor fisheries health and poor (high) foreign fisheries levels offshore.

Figure 3: Fisheries Health Levels (left map) vs. Foreign Fishing levels (the closer to red or orange on the spectrum on both maps, the more problematic)



Source: <https://stableseas.org/issue-areas/fisheries#2>

Despite reservations that could arise about the science behind such generalisations, it is interesting to compare this pattern to several other African regions where, by comparison, reported fisheries health levels are much better and foreign fishing levels much lower. One example is in the SADC region of southern Africa, where SADC itself and at least one of its members' *de facto* fisheries management capacity built up over many decades (given the fairly high economic stakes in fishing there) have resulted in better outcomes⁵. Another example would be in East Africa and the Indian Ocean Islands, where external/international interventions have recently assisted in redressing collective dilemmas of fisheries management. (The facts that Regional Economic Communities have played key roles here will be picked up on later).

It was possibly with this type of analogy in mind in the West African context that the EU for example recently decided to support ECOWAS in respect of capacity development in dealing with IUU, and in this regard it is reported to be supporting not only ECOWAS but RFBs in West Africa other than CECAF⁶. (The question thus arises as to whether there could be an analogous solution in the research

⁵ <https://fish-i-africa.org/southern-african-development-community-promotes-regional-mcs-approach/>

⁶ This web reference to recent EU collaboration with ECOWAS around fisheries notes that: "The contribution of fisheries to the economic development of West Africa is sub-optimal and the current management of fisheries threatens food security, means of subsistence and marine biodiversity. Climate change is likely to exacerbate this situation. Key problems and issues to be addressed include poor management of fish stocks, the importance of IUU fishing, and lack of coordination and cooperation among regional institutions and national competent authorities.

The PESCAO Programme aims at improving regional fisheries governance in Western Africa through better coordination of national fisheries policies. First it will support the Economic Community of West African States (ECOWAS) in developing a framework for regional fisheries priorities and facilitating cooperation with sub-regional organizations and development partners. Second it will build on the capacities of competent national and regional monitoring, control and surveillance authorities to deter IUU fishing. This will be done by setting up a partnership with the Sub-Regional Fisheries Commission (SRFC), the Fisheries Committee for the West

and information fields in West Africa in particular with CECAF. It is these research and information fields in our investigations to date – and also CECAF’s own self-concept⁷ - that CECAF emerges having a regional comparative advantage.

Consequently, the associated C.B.A. and options analysis will need to focus more specifically on the economic costs and benefits of enhanced research and information management in fisheries management in both West Africa and the N.W.A.-E.C.A. oceans regions, and possible CECAF roles and funding models in this regard.

Central Gulf of Guinea (FCWC) and the European Fisheries Control Agency (EFCA). Third, it will support the coordinated approaches for shared fisheries management”. Interestingly, neither research nor CECAF are mentioned here, whereas in the opinions of several expert commentators, as well as the authors of this report, this is the comparative strength of CECAF in the West African RFB context.

⁷ In terms of self-concept, the Minutes of the 2016 twenty first Meeting of CECAF state in its Summary and at the outset that: “ Within its advisory role, CECAF has, throughout its history, carried out assessments of the fisheries and the fished stocks in its area of competence, leading to recommendations for management measures to be implemented by its members, with the purpose of promoting the sustainable utilization of the living marine resources in conformity with its Terms of Reference”.

3. Economic Forces and the Nature of CECAF as an Organisation

The economic and ecological significances of the Eastern Central Atlantic are complex. However, to simplify the economic dimensions: Whilst in livelihoods terms, the coastal areas of West Africa are where the greatest importance of sustainable fisheries exists on a per capita basis; in wider fisheries value-chain and ecological services terms, most of the fisheries value derives from either the High Seas or the outer regions of the Exclusive Economic Zones of several West African States. This being the case, countries that are key stakeholders are also those where there is most of the consumption of fish derived from the Eastern Central Atlantic – namely Europe, Africa, Asia⁸ and America approximately in that order⁹.

In our first Interim Report on this assignment, we reported on a number of research findings and consultations with key stakeholders, including with fisheries representatives of the EU. In Brussels we got the reaction that they were willing to consider further support to CECAF, but that it was important here to first gauge reactions from FAO Head Office. FAO Rome therefore was identified as the next pre-requisite place of consultations. We have subsequently benefited from meetings in Rome with many FAO senior fisheries officials there, including the Director of Fisheries. All of them have been very supportive of this assignment, and they have supplied large amounts of additional information and reports to help orientate our work. Amongst there more important of insights derived there were those on the nature of CECAF as an organisation.

In understanding the nature of CECAF as an organization, a distinction needs to be made between its formal and functional characteristics. Formally, in terms of legal definition, membership, mandate, etc., CECAF is an organization which is part of the United Nation's Food and Agriculture Organization, with a regionally derived¹⁰ Commission of thirty-four country members at its policy-making helm. However, this formal character of CECAF in practice only fully asserts itself for a few days every two years via Plenary Sessions, despite somewhat more frequent activities via Working Groups.

Functionally, in terms of what it actually does on a day-to-day basis, and to whom CECAF practically matters to more frequently, the Secretariat and a small staff based in Accra supported by regional and other fisheries specialists at FAO Headquarters and elsewhere, lie at the organizational core. However, there are a number of other organizations that also support and/or intersect with CECAF on a fairly frequent basis including the Norwegian EAF-NANSEN program¹¹, and sub-regional fisheries bodies like COREP, COMHAFAT and the Sub-regional Fisheries Commission based in Dakar.

⁸ Asia is of course the global leader in terms of fish consumption, but most of its fishing is done in the Pacific and Indian oceans.

⁹ The state of knowledge of which countries are actually consuming fish caught in the Eastern Central Atlantic is incomplete, and indeed its enhancement should be one important future research priority for CECAF.

¹⁰ We say regionally-derived in that the thirty four members appear to be those whom would have been regarded as having significant fishing interest in the Eastern Central Atlantic when CECAF was first formed, including nineteen West African members.

¹¹ The NANSEN program includes the research/monitoring outputs of a fisheries research vessel the EAF NANSEN whose work has focused around Africa in co-operation with FAO and several African states for some time now.

As previously stated, the key activities that describe the day-to-day CECAF activities and inter-organizational interactions are research activities which focus upon policy-sensitive parameters of sustainable fisheries.

The formal definition of CECAF is of course important, and the question for example of whether it should remain an Article VI organization of the FAO or should become an Article XIV allowing for an independent budget remains a critical one. This point however needs to be separated from whether CECAF evolves into an RFMO, which is why we have been drawn into a review of the WEFAFC Cost-Benefit Analysis case discussed below.

4. Cost-benefit Analysis and Precedents: The WECAFC Case

It is possible that our assignment likely owes at least part of its origins – or at least will likely be judged by some in relation to – parallel Cost-Benefit work done a few years ago for WECAFC. This point was made to us in our initial meeting with the EU but became much clearer to us on meeting senior FAO fisheries staff in Rome, and after reading the work of Dr. Kjartan Hoydal which was commissioned by WECAFC¹² some three years ago. In some respects, it could be anticipated that our own report models itself on the Hoydal report, although as we argue below there are a number of reasons to suggest that this would be inappropriate

In particular, the line of analysis offered by Hoydal was that there would be substantial economic benefits of transforming WEFAFC into a Regional Fisheries Management organization, or RFMO. He did financial calculations of the likely costs of an RFMO in the WECAFC area in comparison to imputed benefits, and on this basis recommended WEFAFC's transformation into an RFMO. The underlying assumption here was that the key problem related to declining fishing catches, and that this was a direct consequence of inadequate regulatory enforcement on the seas.

Despite detailed economic argument and evidence, the envisaged transformation of WEFAFC into an RFMO did not actually materialize. Our information is that this was partly because his analysis was insufficiently strategic. It tended to be innocent of regional political dynamics within the Caribbean and the spinoff implications for the UN more generally. Our assessment is that aspects of such problematic intra-regional dynamics could also emerge in the West African case, especially if institutional transformation is linked to country-by-country consultations within West Africa, or sub-regional fishery body consultations that are done in advance of regional economic community alignments and agreements.

Moreover, the consensus of opinion that we found amongst senior fisheries officials in Rome and other commentators was that, in the CECAF case, the realistic prospects for a transformation an RFMO are likely weaker still, not only because of politics but because of the current organizational foundations being too weak. Consequently, the main priorities ought to be those of upgrading CECAF's existing research and monitoring competencies.

This is still a very important rationale for an assignment such as the present one, and is not a departure from our Terms of Reference which do not refer to an RFMO but rather to the current organizational context of CECAF and possibilities for enhancements. Hence the EU interest for example in upgrading CECAF's existing functions as reported in our First Interim report could be built around, and our interactions at FAO head Office suggest not only an openness to an enhanced EU role, but also to other possible larger donors

¹² *FINDINGS OF THE INDEPENDENT COST-BENEFIT ASSESSMENT OF THE OPTIONS FOR STRATEGIC RE-ORIENTATION OF WECAFC*, by Dr. Kjartan Hoydal, WECAFC/FAO, Bridgetown, Barbados, 2016, 125 p. (FAO Fisheries and Aquaculture Circular. No. 1117).

5. Assigning Initial Responsibilities for Regional Fisheries Research

If it is agreed that contemplating the transformation of CECAF into a RFMO would be a step too far, the focus must then fall on its existing functions. It is clear from our analysis of outputs that its research capabilities are its strongest, but several commentators¹³ and our own experience suggests that its administrative and budgetary capacities in support of these outputs are current key weaknesses. In addition, data collection is considered by participants/members as the main weak link in respect of overall analytical capabilities.¹⁴

The derivative policy questions then become (i) who should shoulder the responsibilities for remedying such weaknesses, and (ii) in accordance with what formulae? It is here that we suggest that a second departure is necessary from the Hoydal approach, and that is to *shift the concept of responsibility for research and capacity enhancements from fish production (more precisely harvesting) to consumption and fiscal capacity*. (Notice this is a different argument to the funding of an RFMO, which is what Hoydal was focused on).

There are two main reasons for saying that fisheries research should be funded by fish consumers, and/or their representatives with sufficient fiscal capacity:

First, there is a conceptual issue pertaining to responsibility: Whilst there was of course merit to Hoydal's harvesting-centred analysis in terms of his anticipation of a possible RFMO (after all such an organisation would be impacting most directly on fishing companies), once the anticipated organisational focus falls elsewhere, the logic for the 'incidence of taxation' likewise shifts. In the same way that governments use taxes on the consumption of petroleum products for example to fund research into collective concerns pertaining to air pollution or climate change, so the legitimacy for taxation for research into oceans and fisheries should presumably fall mainly on fish consumers. (Notice in both cases the wider public bears the possible costs of possible of public health or sustainability considerations deriving from faulty systems).

The second is a practical consideration: Even though some might wish it to be otherwise, country or even company level taxation for sustainability research on the oceans and fisheries of the Eastern Central Atlantic is unlikely to be practically linked to those doing the harvesting. This is partly because a large component of the problem at present is that we are unsure of who is actually doing the fishing here, and in what quantities. On the other hand, data on fish consumption levels are more reliable and less disputed, and data on the fiscal capacities of major fisheries-oriented countries is also available and fairly accurate.

¹³ According to CECAF's Seventh Session of the Scientific Subcommittee held in Tenerife, Spain, 14-16 October 2015, (henceforth Seventh Session) para. 85 "The most critical problems encountered are typically insufficient management and scientific capacity, the need to engage stakeholders more effectively, and conflicts between the long term goals of sustainability and short-term social and economic needs".

¹⁴ According to the CECAF Seventh Session, para. 67,"it was noted that improved data and access to existing data, is generally a priority over the development and application of more statistically advanced modelling approaches".

In a very approximate way of course, the current funding of CECAF by FAO as an arm of the UN mirrors a consumption/fiscal capacity-oriented perspective on responsibility, because country contributions to the UN budget are mainly a reflection of GNP, and the consumption of fish is also roughly proportional to this measure. Arguably therefore, a motivation to increase UN/FAO funding alone to CECAF could be motivated in this way.

However, there a number of problems with this proposition. First, consumption of fish in general, and fish derived from the Eastern Central Atlantic particular, are only very roughly correlated with international GNP variations and, even less so, to contributions to UN budgets¹⁵. Second, for a variety of complex reasons related to competing demands made of international organisations, one of the 'knowns' of this assignment is that, if anything the capacity of FAO to enhance CECAF funding is likely diminishing.

These are the conclusions that lead us to search for alternative sources of finance.

¹⁵ First, the taste for fish is not simple a function of GNP per capita – the Portuguese for example eat more fish on a per capita basis than the Germans; and second contributions UN budget are heavily discounted for poorer nations below what GNP alone would suggest.

6. Role of Partnerships

The analysis above raises the question of whether consumption and/or fiscal capacity -aligned *partnerships* might not be the most logical way forward. Already the FAO is partnering with a number of other organisations in enhancing regional fisheries research enhancement, in the CECAF region case most notably with the government of Norway and the EAF-Nansen Programme.¹⁶ More broadly, at least conceptually, the legitimacy of partnership approaches to sustainability research is also being increasingly endorsed by international non-governmental organisations. To choose but one example, the World Wildlife Fund's 2015 publication *Value of the Oceans* concludes with just a few recommendations, the last of which is to: "Share knowledge more effectively and drive institutional collaboration".

As with most forms of successful institutional collaboration, these seldom emerge – at least initially - out of idealised economic formulae, but rather out of a co-incident of practical considerations which vary across places and times. This usually entails willing partners 'finding each other', and taking initial steps that could include others along a journey towards broadly agreed ends. These partners – especially in their earlier phases of their evolution/convergence - may be relatively unique, and not easily replicable elsewhere, because at least the human/political elements to regions of CECAF's scale are unique.

This is despite the fact that in terms of fisheries sustainability considerations, there may be very similar dynamics at work – for example within the South Eastern Atlantic, or the West Central Atlantic. Hence organisational change lessons from say SEAFO or from WECAFC may be of some interest to CECAF, but would almost certainly fail if simplistically transposed onto the political particularities of CECAF and its constituents.

7.1 Learning region partnerships

Having said this, if CECAF remains conceived essentially in research and capacity development terms, there are common features in organisational evolutions towards what many have termed 'learning regions'¹⁷ – a term that may well be appropriate for conceptualising the alternative future trajectories for CECAF. Traditionally, the learning region concept has been applied to geographical territories somewhat smaller than that of CECAF, but given that CECAF focuses on a single dimension of sustainable economic development (fisheries) and is not multi-sectoral in scope, the aggregate level of complexity in the dynamics of change are likely to be fairly similar.

These common features of organisational change towards enhanced learning regions are:

- Relatively diminished roles for the state and state bureaucracies in directing regional dynamics (partly due to lack of capacity and/or interest)

¹⁶ The EAF Nansen programme refers to one in which a Norwegian research ship gathers data relevant to fisheries management and shares it with bodies like CECAF.

¹⁷ The learning region concept is one that has been used and developed a good deal by the EU in respect of development collaboration across national borders. See for example A Langendijk and J Cornford, Regional institutions and knowledge – tracking new forms of regional development policy, *Geoforum*, 31, 209-218.

- Convergence of multiple interest groups with common concerns about the trajectories of sustainable development within a given geographical area, and their active and material contributions towards regional economic development
- The common recognition amongst such participating interest groups that innovation, knowledge and learning enhancements focused on the region of concern are vital to the economic future of the region.

According to Asheim's 2011 review¹⁸, one of the more widely accepted summaries of learning region dynamics is that "learning regions should be looked upon as a strategy for formulation of long term partnership-based development strategies initiating learning based processes of innovation and change". A key conclusion he reaches on the reasons for success in such strategies deserves highlighting here:

"The cognitive distance of key actors in the broadly and narrowly defined innovation systems should not be too wide, and the connectivity within and between the systems high"¹⁹.

7.2 Regional economic communities as core elements of learning region partnerships

The relevance of the last point above for our assignment – as learned from other contexts - is that especially in initially assembling developmental partnerships for a CECAF learning region, it is important that particularly the initial potential partners (i) easily understand each other and (ii) have *modus operandi* that can easily interconnect; otherwise the amount of work required in putting the partnership together will often outweigh the initial willingness to collaborate.

If we are correct that, say, CECAF, FAO and the EU – as initial starting points – are currently at a stage of pre-feasibility for operationalising a possible CECAF learning region, then the above mentioned conclusions direct us to the most obvious organisational change starting points, as outlined with reference to figure 4 below.

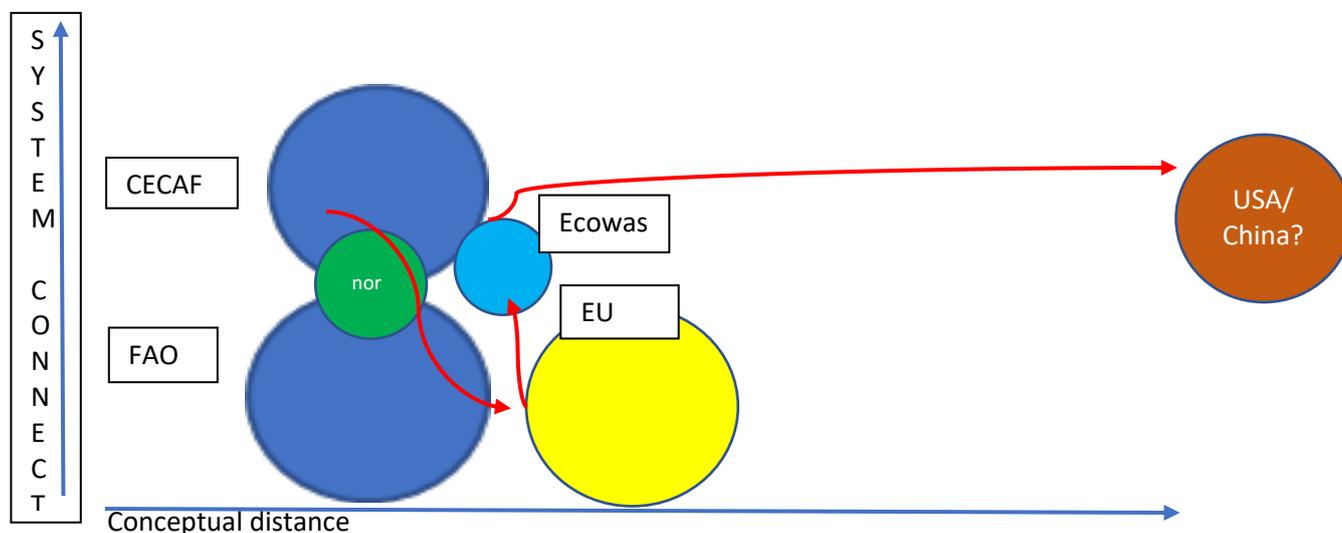
In the figure 4 model:

- System connectivity between CECAF and FOA appear as quite close but not perfect, and similarly in respect to conceptual distance.
- In the case of their respective relationships with the EU these distances are likely somewhat wider, although slightly more so in the case of CECAF/EU than FAO/EU.
- A regional economic community like ECOWAS, in turn, would likely be closer on system connectivity to CECAF, but its potential scale of partnership contribution is likely smaller as reflected by the relative size of its circle (see discussion on contribution scale projections later)

¹⁸ B. Asheim, 'The Changing Role of Learning Regions in the Globalising Knowledge Economy: A Theoretical Re-examination', *Regional Studies*, 2011

¹⁹ Asheim, 2011, *op cit*.

Figure 4: Main Likely Partners in CECAF's Initial Augmentation and Critical Pathway for its Negotiation



- Other potential/actual smaller partners like Norway government and EAF-Nansen Programme are closer still to both CECAF and FAO, whereas the conceptual distances and systems connectivity of other potential larger partners like the USA are projected as somewhat more distant.

Of course, the exact positioning and sizes of the circles in the conceptual diagram above are open to debate, and they should indeed be adjusted in the future in the light of more extensive consultation. However, and this a crucial process point, the critical pathway for moving from initial willing partners outwards should involve minimal friction and maximum potential for gathering weight and momentum.

Our understanding of the most practical possible path is superimposed upon on figure 4 above. Here we assume starting within CECAF, filtering hypotheses from that consultation (and modifying them where necessary) via the EAF Nansen Programme and FAO Head Office, then testing detailed funding appetite within the EU and securing add-on support from ECOWAS before proceeding to more 'outlying' major potential partners, like China, the USA and/or World Bank.

Moreover, it should be added here that navigation of this possible pathway would need to be accompanied by (indeed preferably preceded by) a realistic Needs Analysis in respect of capacity and research enhancements and opportunities for the realisation of efficiencies within the CECAF office/s. Indeed, this should probably be the start of the critical path superimposed on figure 4 above. After all, those who might be requested to assist with extra funding for CECAF would have every right to ask what extra value might be coming out of CECAF in response. Some preliminary observations of the present authors in this regard are offered in our penultimate section.

7. Cost-benefit Analysis and the Value of Research and Innovation

Because of incomplete fishing data amongst other considerations, the monetary value of fisheries within the CECAF region cannot be precisely known, but in order of magnitude terms is likely to be measured in Billions of Euros²⁰. CECAF reports indicate the total catch in its area peaked in 2010²¹. Research indications are that aspects of the ecosystem is threatened²², and that the associated large value of the catch is diminishing and will continue to slightly diminish in the future, in part due to unsustainable current and projected fishing practices. Estimating the extent of the likely declines is however notoriously hazardous, and this was for example one reason why the legal division of FAO expressed its discomfort at the Hoydal Cost-Benefit Analysis in respect of the Western Central Atlantic.²³

This is something the present report will therefore avoid, except to say that the cost to fisheries of a 'do nothing' scenario would likely be measurable in at least tens of millions Euros.²⁴ Moreover, as a further qualification to any potential exaggeration, it is important to concede that fishing practices in the East Central Atlantic will not change on their own simply because of enhanced research and innovation by CECAF; yet it would also be incorrect to argue that the added value of enhanced CECAF contributions to research cannot in principle be valued.

In relation to the last-mentioned point, the EU's empirical assessments of the value of research show returns varying between 20-50% on outlay, measured in terms of the derived enhanced revenues²⁵, although it is acknowledged that these enhanced returns usually only materialise in the medium-to-longer term²⁶. The impact of research 'seeps' into production and consumption systems, but there is no doubt that once it seeps it affects behaviours – especially consumer behaviours²⁷.

Notice also on this point (of a CECAF role in research) that we have been careful to use the phrase 'contributions to'. This is because in an age of globalised knowledge systems it is becoming increasingly easy to do fisheries research, or at least to analyse fisheries information, within more centralised, large scale systems (such as those existing at FAO Head Office, or at the EU for example).

²⁰ This is because the median value per tonne of catch is circa. Two thousand euros (<https://data.gov.ie/dataset/average-fish-price-euro-per-tonne-by-fish-species-and-year>), whereas the total estimated catch is circa. Four million tonnes = circa. Eight Billion Euros.

²¹ According to the CECAF Seventh Session para. 91 "Total capture production in the CECAF area has been decreasing after the maximum reached in 2010 at 4.5 million tonnes".

²² Polidoro BA, Ralph GM, Strongin K, et al. The status of marine biodiversity in the Eastern Central Atlantic (West and Central Africa). *Aquatic Conserv: Mar Freshw Ecosyst.* 2017;00:1-14.

²³ Footnote 1 to Hoydal, op cit.

²⁴ Our reason for saying this is that even a one percent decline would be equivalent to eighty million Euros if we follow evidence in our notes above.

²⁵ These revenues need to be precisely specified, of course, because they would be only those revenues likely to be enhanced via the research

²⁶ L Georgihou, *Value of Research*, European Commission, Brussels, 2015.

²⁷ There are several illustrations of this in other areas of sustainability research and practice, e.g. pertaining to climate change. Prior to researchers demonstrating how certain practices were impacting upon climate change, it would have been difficult to hike taxes on fuels and to modify consumer behaviours. It is of course still difficult now, but convincing research was the initial precondition required.

The larger-scaled systems' limitations here however relate largely to local data collection, without which good quality analysis becomes spurious.

The added value that can most realistically come out of a regional body like CECAF therefore would be that information or data which is very difficult to gather or monitor remotely. In particular, details pertaining to smaller-scale coastal and artisanal fisheries in West African states is something that CECAF for example has distinct comparative advantages in (at least potentially). Whilst this information on coastal and artisanal fishing communities still relates only to a minority share of the overall fish catch within the CECAF area of responsibility, it is a share that is rising²⁸.

Moreover, the 'political capital' associated with coastal and artisanal fisheries is very substantial, as is evidenced for example by growing international media coverage of public disputes over the perceived illegitimacy of near-shore fishing in parts of West Africa by some international fishing operators²⁹. This also needs to be factored into a Cost-benefit Analysis for CECAF.

In the Cost-benefit Analysis graph below (figure 5) we illustrate what the order of magnitude of a 20% return (the lowest side of Georghiou estimates cited earlier) is likely to be over a few decades. This is assuming the primary research impacts are on the stabilization of currently declining revenues from Eastern Central Atlantic fisheries. Conservatively assuming, as per footnotes 26 and 29 that this rate of decline is 1% p.a., or 80 million Euro per annum of catch; and that 20% of this loss could be saved due to enhanced regional research and its consequent seepage into a variety of impacts as discussed earlier; then for an annual contribution of a million Euro per annum, the impact return (grey line in graph) is close to that of the cost of investment (blue line in graph) but slightly behind it, because of our conservative assumptions up to this point.

To this grey line in figure 5 however we need to add – and again probably conservatively - possible savings in terms of political capital resulting from better information bases. The term political capital³⁰ here is potentially important within a Cost-benefit Analysis of CECAF future options for a number of reasons, but most notably because it is a credit that can in principle be valued/quantified insofar as it can be traded for otherwise costly required interventions (see footnotes 34, 35, 36).

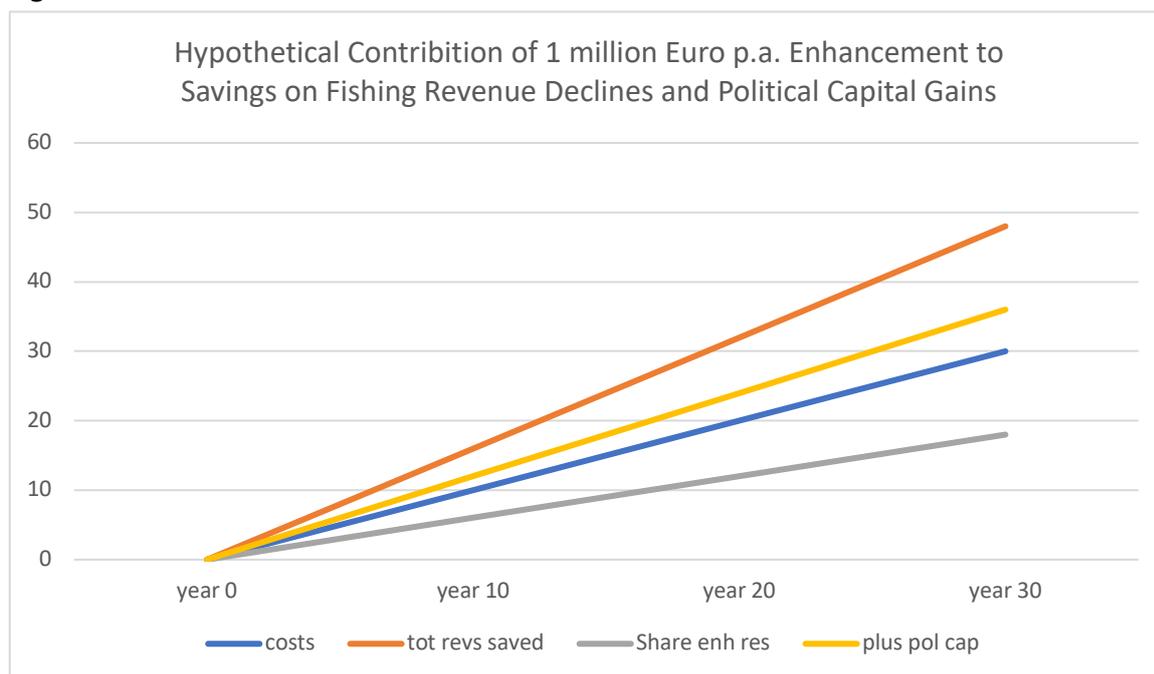
²⁸ Not all West African catch is artisanal, but much of it is smaller scale entrepreneurial. According to the CECAF Seventh Session, para. 92 "The share of catches by Distant Water Fishing Nations (DWFNs) on total capture production has been falling from 57.5 percent in 1977 to 16.7 percent in 2013. This implies that coastal countries have been progressively exploiting themselves the fishery resources in their Exclusive Economic Zone (EEZ) rather than selling licenses through fisheries agreements with DWFNs."

²⁹ See for example the BBC programme: <https://www.bbc.com/news/av/world-africa-47698314/is-china-s-fishing-fleet-taking-all-of-west-africa-s-fish>

³⁰ One definition is that: 'Political capital refers to the goodwill, trust and influence that politicians earn or build up with the public through the pursuit of policies that people like or respect'. Source:

<https://marketbusinessnews.com/financial-glossary/political-capital-definition-meaning/>

Figure 5



Illustratively in relation to the possible opportunity costs of not realising political capital, the legitimate sale of fishing rights by West African member states to responsible international fishing fleets could come under review if the growing controversies between fishing countries referred to earlier escalate. These are conflicts which can be mitigated through better information; and the consequences of not mitigating them would be negative both for the governments issuing priced fishing rights, and for the countries paying for them³¹. Another case might be the possible need to spend a lot more on policing and litigating in respect of conflicts of interests in of fishing in the CEEAF area, because weak information bases make it difficult to prove the legal bases for the required changed behaviours.

The general point from an investment analysis perspective however is that, even under the most prudent of assumptions, a million Euro per annum additional expenditure on CEEAF (blue line in figure 5 graph) , if it was properly targeted and managed, should be more than offset by associated savings (yellow line on graph).

³¹ This is a classic instance of the so-called benefits of trade – the responsible fishing company is able to efficiently make use of the resources and get them to the best end-user markets at low cost, and is willing to pay the host country a fee for this; whereas the host country lacks the tools to achieve the same and indeed it would be inefficient to do so; so it would rather have the cash to pay for other aspects of its needs/priorities.

8. Responsibilities to Pay for the Initial Investment and Associated Practical Considerations

A case could be made now to divide responsibilities for paying for the abovementioned investment at country level (at least those countries who are members of CECAF). The likely administrative costs of such a complex revenue collection strategy amongst countries with very small if any fisheries budgets however, are likely to exceed the benefits. This is quite apart from delays over likely political fallouts over precise definitions especially within West Africa, which are likely to erode most of the potential gains.

For this reason, and especially since we are dealing with comparatively small amounts of money for the blocs concerned, we suggest reverting to the regional bloc approach as referred to in figure 4. At an elemental level, we might therefore calculate the responsibilities for regional bloc contributions according to the elemental formula:

$$C = f(\text{aveFC} \cdot P)$$

Where C is contribution,

f is the functional relation (e.g. linear, etc)

aveFC is average fish consumption

P = population

In this case, for a rudimentary linear functional relationship, the ratio of EU to ECOWAS contributions would be 1: 0.43³².

If it was argued that, as is commonly the case with taxation systems, this ratio should be modified according to abilities to pay (i.e. comparative incomes) the above formulation might be modified in relation to gross national (or more precisely, regional bloc) product per capita.

The two main blocs of concern here, it will be recalled, are the EU and ECOWAS, at least as starting points. The GNP per capita of ECOWAS is approximately 8.8 times lower than that of the EU, which would mean changing the abovementioned ratio to 1: 0.0488.

In round numbers terms, what this would mean is that for any envisaged one million Euro augmentation of the CECAF budget, the EU should contribute 950 000 Euros and ECOWAS 50 000 Euros.

However, a number of qualifications need to be made to this simplified formulation:

- First, it is likely that the per capita consumption of specifically East Central Atlantic origin fish in EU is lower than for West Africa; and
- Second, we have not yet factored in other major countries/blocs outside of the EU and ECOWAS who are consuming fish whose origin is in the Eastern Central Atlantic (however see section 9 to follow).

³² EU average fish consumption is 24 kg/capita/annum. Population is 513 million and GNP per capita is 38000 USD p.a.; ECOWAS= 15 kg/capita/annum, 350 million people and 4300 USD GNP/capita.

Statistics on both these dimensions are currently imprecise, and one justifiable purpose of any initial funds augmentation to CECAF, we would recommend, is a project dedicated to providing greater precision and inclusiveness on just these points. Thus, after say a three-year commitment by EU and ECOWAS to fund initial augmentation, there would be a review of the augmented funding formula based upon CECAF research that clarified the rationale for more inclusive and legitimate funding ratios than the initial simplified formulation suggested above. There may also be a need to review initially anticipated scales of augmentation, since our research indicates that whilst a million Euros p.a. would be sufficient as an intermediate step, targets should be higher at a later point.³³

³³ Our inferences here are mainly from FAO oceans regions 47 and 51 and from SADC region fisheries bodies, where reported Fisheries Health levels are higher. This is partly a function of superior fisheries research by bodies funded at levels above a million Euros per annum.

9. Pointers Towards More Refined Formulae

We can already set future CECAF research on more inclusive future funding in motion here, by suggesting a number of possible parameters according to which augmented regional fisheries research ought to be funded, not only for CECAF but similar bodies elsewhere in the world.

After all, CECAF is not the only FAO ocean region where the main countries adjacent to that region have limited fisheries budgets, let alone fisheries research budgets. Our research reveals that no West African country spends more than twenty million US dollars on its total fisheries budget. Nigeria and Ghana are the biggest, although we have found that determining the size of their contributions to the component of fisheries research is very difficult, probably because they are so small. Moreover, fisheries research in most other West African countries appears to be entirely reliant on ad hoc donations. This is clearly not in the interests of fisheries sustainability, not only in the CECAF area, but other comparable areas world-wide.

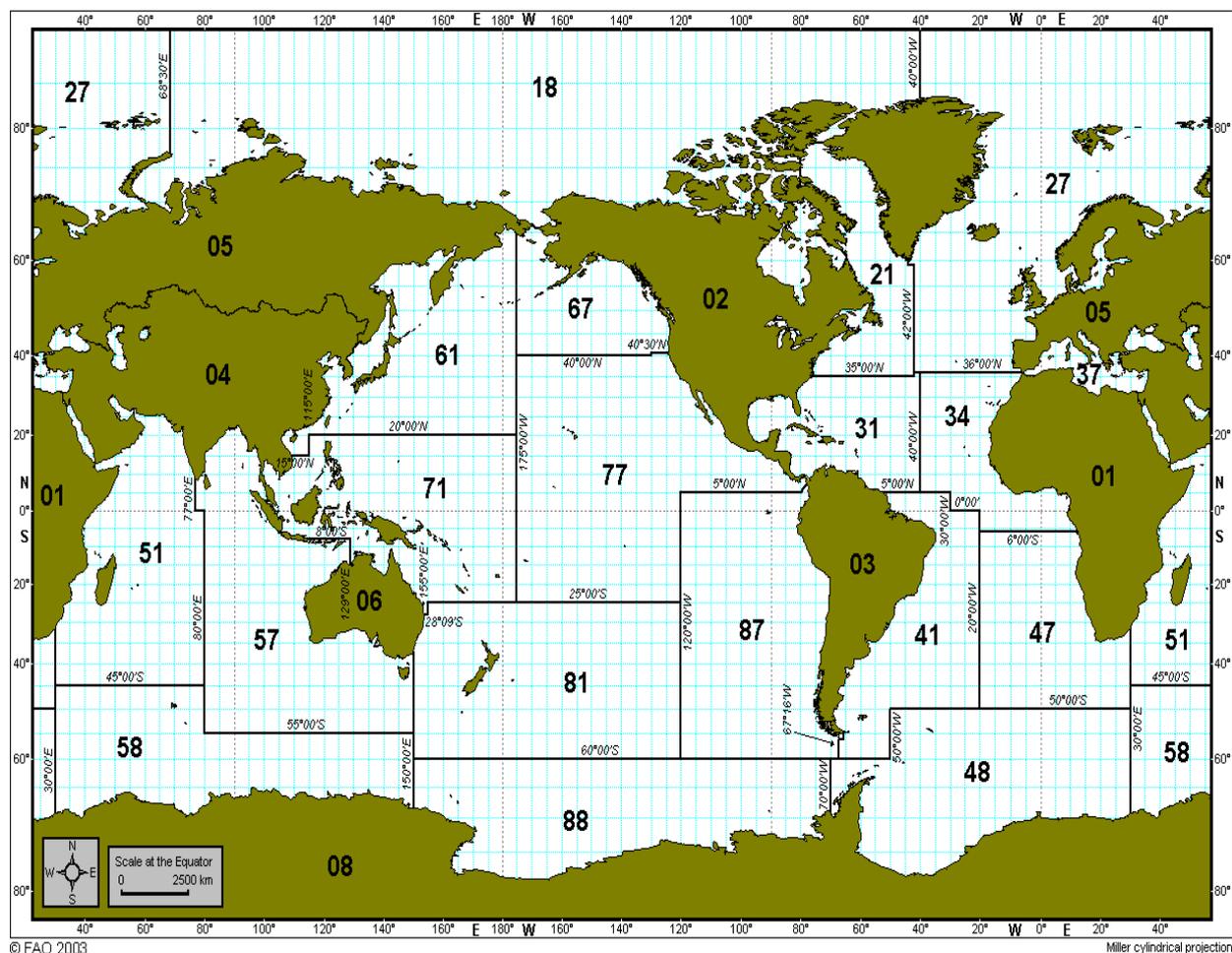
There are two important reasons why fisheries research cannot rely simply upon adjacent country funding if it is to lead to globally sustainable wild capture fishing. First, it is widely understood that the fisheries ecosystems of the major oceans, whilst they have subsystems for smaller species, are interdependent at a global scale for larger species. Moreover, apart from this, there are of course a number of other ecosystem linkages for example between the Eastern Central Atlantic and other oceans regions. This makes international contributions towards ocean sustainability generally an important priority for international organisations like the UN, of which FAO forms a part.

The diminishing ability of FAO to fund such bodies as CECAF therefore deserves tackling in its own right, perhaps via a campaign to enhance major fishing and fish-consuming country contributions to global fisheries research (preferably channelled via FAO). As such, CECAF could be argued to be just one of about a dozen cases of similar bodies world-wide which are deserving of greater multi-national support.

Figure 6 below shows these ocean regions, many of which experience similar (though not identical) challenges to CECAF. For purposes of the present report, especially since it is a report to the FAO, we would not want to propose an amendment to medium to longer-term adjustments to a CECAF funding formulae that is not in principle transferable to similar bodies, including by the projected contributions being within the budget capacities of the countries which are called upon to fund them.

Augmented funding and capacity building for regional fisheries commissions needs to be attracted in realistic amounts in terms of formulae which are likely to have as high a degree of legitimacy as is possible amongst the nations concerned.

Figure 6: FAO Ocean Regions



This leads us to a proposal on a medium to longer term funding augmentation initiative for CECAF, to be tested and further developed once our already proposed EU/ECOWAS initiative hopefully commences:

- (i) Based upon calculations from the FAO ocean regions referred to in figure 6 above, the Eastern Central Atlantic (region 34) comprises about two percent of these total oceans; thus, arguably³⁴, some fraction of two percent of the major fish producing and consuming country fisheries budgets (which are in any case increasingly committed to researching sustainability matters) could – in-principle - be set aside for enhancing CECAF fisheries research. However;
- (ii) Independent nation-states are likely to argue that it is the responsibility of nations closest to ocean sub-regions to fund sustainability research relating to such regions.

³⁴ Actually, because the Eastern Central Atlantic is one of the more productive fishing regions, its surface area could be argued to understate its importance.

The counter-argument, of course, is the interdependence of oceans and fish consumption globally. A funding formula balance therefore should perhaps be struck between proximity, and the scale of fisheries activities and/or consumption by countries world-wide. In terms of such a balance, at least two-thirds of a country's fisheries budget could legitimately be spent exclusively on the region/s closest to them, but some remainder allocated to the rest of the oceans, in decreasing proportions to those further away. Thus;

- (iii) In the case of CECAF, most of (the very limited) fisheries research budgets should/could be committed by countries whose coastlines are contiguous with the Eastern Central Atlantic; declining to one tenth of one percent of overall fisheries budgets for those major fisheries budget countries much further away (e.g. China, Japan). Hence, we would suggest that fisheries budgets of major fishing nations could form a starting point for enhanced funding of CECAF and also serve as a model for the funding of other regionally based fisheries research.

The table below shows the fisheries budgets for countries with overall fisheries budgets known to be³⁵ greater than USD 30 million p.a., and then imputes – for the sake of discussion - their possible contributions to CECAF, based upon fiscal capacity and distance from the Eastern Central Atlantic³⁶.

China 5000 million USD p.a.³⁷. (possible CECAF contribution at 0.1% = 5 million USD p.a.)
 Denmark 50 million USD p.a. (possible CECAF contribution at 0.5% = 0.25 million USD p.a.)
 France 200 million USD p.a. (possible CECAF contribution at 0,5% = 1 million USD p.a.)
 Germany 50 million USD p.a. (possible CECAF contribution at 0,5% 0,25 million USD p.a.)
 Greece 40 million USD p.a. (possible CECAF contribution at 0,3% 0,12 million USD p.a.)
 Ireland 35 million USD p.a. (possible CECAF contribution at 0,5% 0,175 million USD p.a.)
 Italy 160 million USD p.a. ((possible CECAF contribution at 0,5% 0,8 million USD p.a.)
 Japan 1700 million USD p.a. (possible CECAF contribution at 0.1% = 1.7 million USD p.a.)
 Korea 350 million USD p.a. (possible CECAF contribution at 0,1% 0,35 million USD p.a.)
 Mexico 140 million USD p.a. (possible CECAF contribution at 0,3% 0,42 million USD p.a.)
 Morocco 100 million USD p.a.³⁸ (CECAF contribution of 1%= 1 million USD p.a.)
 Netherlands 30 million USD p.a. (possible CECAF contribution at 0,5% 0,15 million USD p.a.)
 Norway 200 million USD p.a. (possible CECAF contribution at 0,3% 0,6 million USD p.a.)
 Portugal 40 million USD p.a. (possible CECAF contribution at 0,5% 0,2 million USD p.a.)
 Russia 220 million USD p.a.³⁹ (CECAF contribution at 0.2% = 0.44 million USD p.a.)
 South Africa 35 million USD p.a.⁴⁰ (CECAF contribution at 0.5% = 0.175 million USD p.a.)

³⁵ This list may be incomplete, and needs further refinement.

³⁶ Being adjacent to the East Central Atlantic as in Morocco would qualify for one percent of fisheries budget to CECAF declining incrementally to places greatest distances away (like China) at 0.1%.

³⁷ This figure and all others to follow (except those of Morocco, South Africa, Russia and United Kingdom) are taken from the 2018 OECD report, OECD Review of Fisheries 2017 - General Survey of Fisheries Policies, JT03425435.

³⁸ Calculated from <http://www.invest.gov.ma/?Id=66&lang=en&RefCat=6&Ref=149>

³⁹ Calculated from [https://gain.fas.usda.gov/Recent GAIN Publications/Agricultural budget 2015_Moscow](https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Agricultural%20budget%202015_Moscow)

⁴⁰ Source <http://www.treasury.gov.za/documents/national%20budget/2018/enebooklets/Vote%2024%20Agriculture%20Forestry%20and%20Fisheries.pdf>

Spain 300 million USD p.a. (possible CECAF contribution at 0,5% = 1.5 million USD p.a.)
Sweden 60 million USD p.a. (possible CECAF contribution at 0.3% = 0.18 million USD p.a.)
Turkey 80 million USD p.a. (CECAF contribution at 0.3% = 0.24 million USD p.a.)
United Kingdom 60 million USD p.a.⁴¹ (CECAF contribution at 0.5% 0.3 million USD p.a.)
USA 1800 USD p.a. (CECAF contribution at 0.3%= 0.54 USD million p.a.)

The total annual funds realised by such a formula would be somewhat over 15 million USD p.a. which in comparative terms would be about a third of South Africa's annual fisheries budget (about a third of which is spent on research and information management). Given that analogy, similar levels of research and information quality management could then be realised, in time and with good management also giving rise similar regional Fisheries Health quality.

Morocco has an even larger fisheries budget than South Africa and of course it is closer to CECAF and is a CECAF member, and in terms of the above formulation it could become a senior partner funding CECAF along with China, France and Spain. Collective co-management by these countries of the budget and operations of a future CECAF may need to be contemplated given such projected contributions.

It is recognised of course first that the precise details of such projected contributions/management will require further refinement and calibration (and indeed policy debate); and, second, that some of the largest projected contributions in the formulation above are expected to come from countries not currently represented in CECAF (like China), but under such a scenario CECAF membership could and likely should change. Current CECAF membership reflects a time when the oceans and fishing within them were less global than they are now. Many of the current and projected future fisheries conflicts in the CECAF area could likely be obviated if both membership and funding was modernised.

⁴¹ Calculated from https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/op-united-kingdom-fact-sheet_en.pdf and subtracting EU contribution

10. Building Capacity

Because an ocean area of the scale of the Eastern Central Atlantic is global in its research and fisheries management implications, we have adopted a global perspective in this report. Having said this, as we have already explained CECAF's resource enhancement needs are more specifically West African. A key question in this aspect is 'what are the most important priority areas for future intervention?' A specialist field report drawing upon extensive West African knowledge and expertise regard has been prepared, and its main conclusions are as follows:

10.1 *Strengthening science capacity of CECAF*

10.1.1 *Research facilities*

In order to support the Scientific Sub-Committees with practical implementation of the FAO Code of Conduct for Responsible Fisheries, which provides principles and standards applicable to the conservation, management and development of all fisheries, FAO put in place the 'ecosystem approach to fisheries' (EAF). In the CECAF region as Africa as a whole, FAO has been providing support for implementation EAF mainly through the EAF-Nansen Project. Therefore, since 2007, the EAF-Nansen Project has been assisting CECAF countries to undertake activities towards the implementation of EAF. The various activities are carried out, some of these in partnership with CECAF and the sub-regional fishery bodies (COREP, FCWC, and SRFC) as well as the LME projects in the area (BCC, CCLME, and GCLME). Some of these activities include acquisition of knowledge on marine ecosystems through fisheries and ecosystem surveys carried out with the research vessel *Dr Fridtjof Nansen*. Other activities/actions provided are the regional multidisciplinary workshops and training on various aspects of research and management, national and sub-regional projects to prepare fisheries management plans, and putting in place a process that allows the review and tracking of EAF. While Nansen has integrated scientists from the CECAF member states, in Senegal joint research activities have been undertaken with the *Senegal R/V Itaf Deme*. In the past the Senegalese research vessel has carried out the intercalibration exercise with the R/V Dr Fridtjof Nansen.

10.2 *Capacity building*

During the interviews, it was clear that urgent actions are needed in order to improve the capacity of CECAF member states. The following are some of the areas:

10.2.1 *Research capacity*

Research institutions in the member states need capacity development in the following areas:

- (i) basic computing,
- (ii) basic fisheries statistics,
- (iii) fishery data collection,
- (iv) data analysis and
- (v) report writing and reporting

It was clear from the interviews (and CECAF technical reports) that most member states are using different research methodologies, consequently, it is not easy to pool data from countries and use a

single analysis methodology (Chairman of the Science Sub-Committee, Mr Koussi Sedzero, pers comm).

- (vi) Therefore, it will be important for CECAF to conduct training on methodology for implementing catch assessment and frame survey,
- (vii) Data storing;
- (viii) development of associated manuals;
- (ix) identification and evaluation stocks; and
- (x) development of fisheries management plans, especially for shared stocks.

Research vessels from a number of nations have conducted acoustic surveys in the region in the past (Morocco, Mauritania, Senegal, Russia and Norway) (FAO 2016; FAO 2018; FAO 2018b; FAO 2019); but in recent years, these surveys have only been conducted by Morocco.

- (xi) Therefore, it is important for FAO to mobilise all the current non-African members of CECAF (e.g. Russia) and ensure that they continue to stock assessment surveys, as well as biological sampling aboard the EU fleet operating in the CECAF region.
- (xii) It is important for CECAF to relaunching coordinated regional surveys to estimate abundance throughout the species' distribution, undertaking recruitment surveys along the species' range, strengthening of age reading and validation methods, continuation of size frequency analysis, and more comprehensive fishing effort series and biosampling programs (FAO 2019). (https://www.fishsource.org/fisheries_pages/1823)

10.2.1 Management capacity

- a) During the interviews it was apparent that most national universities in the region do not offer specialised fisheries management courses at Bachelor degree level. This means that most fisheries officers come from either agricultural, engineering or veterinary backgrounds, and later go for specialised courses at Master's degree levels. Therefore, it will be important for FAO and partners to work with some of the universities in the region (e.g. University of Anta Diop in Dakar; University of Ghana and University of Douala, to mention but a few) to design and implement a fisheries management course at a Bachelor's degree level.
- b) CECAF should strengthen its collaboration with FCWC, COREP and SRFC in order to provide links to the management recommendations of CECAF, as well as support countries to apprise themselves of the recommendations and reflect these in relevant national fisheries management plans.
- c) The Sub-Regional Fisheries Commission (Commission Sous-Régionale des Pêches, CSRP) that includes Cape Verde, Gambia, Guinea, Guinea Bissau, Mauritania, Senegal and Sierra Leone has led efforts to assess and manage the small pelagic stocks in the region jointly with Morocco. An advisory committee for the small pelagic was created under the CSRP; and a project was in place to characterize, monitor and develop a strategic plan for the mentioned fisheries and resources. However, the degree to which these efforts have progressed is unclear. Therefore, it will be important for CECAF to draw lessons from SRFC for the management of transboundary small pelagic stocks in the rest of CECAF.
- d) CECAF and other RFBs together with ECOWAS/ECCAS should press managers to implement a recovery strategy for other target species in this multi-species fishery to ensure that all such species are at least above biologically-based limit reference points (or proxies for the point

of recruitment impairment), especially for Cunene horse mackerel, Atlantic horse mackerel, and round sardinella.

10.2.2 Capacity of Chairs of SSC

It is critical for CECAF to ensure that Chairs of SSC are empowered to be “**CECAF Champions**” at national and regional levels. They should be provided with technical and financial support to ensure that they can advocate for CECAF at all levels and be able to influence the process of preparation of Fisheries Management Plans in the member states. The Chairs should also act as “**Friends of the Secretariat**”. In this case, they should support the Secretary of CECAF during intersessional periods to ensure that there is constant communication between the Secretariat and member states as well as other stakeholders, especially Non-State Actors and Artisanal Fisheries Associations.

11. Conclusions

The abovementioned proposals, especially from sections 6 -10, are intended for comment by CECAF prior to finalising this report. There is no doubt that the costs of CECAF's augmentation would exceed its benefits, especially when the value of the Eastern Central Atlantic is viewed in global perspective, yet recognition is also given to the need to improve local data inputs required especially from West African sources for protecting that wider ocean area.

Not only CECAF, but other equivalent bodies throughout the world, should be part of global fisheries responsibilities, proportional to the relative consumption of fish products world-wide, and also in proportion to national fisheries budgets.

All of our evidence and consultations suggest that it is not the legal or institutional form of CECAF that is the challenge, but its resourcing, and capacity development in the priority areas identified. We have therefore focused on these aspects of organisational development as a basis for discussion within CECAF itself.
