

THE PAN-AFRICAN FISHERIES
AND AQUACULTURE POLICY FRAMEWORK
AND REFORM STRATEGY:
WEALTH-BASED FISHERIES MANAGEMENT

MANAGING FISHERIES FOR
SUSTAINABLE INCOME AND WEALTH





Executive Summary



Every couple of years or so, the Food and Agriculture Organization (FAO) of the United Nations publishes the State of World Fisheries and Aquaculture (SOFIA). An important part of these reports is to give an overview of the current situation on marine capture fish stocks. In 1974, 50% of the world's fish stocks were fully exploited and only 10% overexploited; in 2005, the picture was 52% and 25%, fully and over-exploited, respectively. The recent report of 2009 states that 57% were fully exploited and 30% overexploited.



The FAO definition is purely in terms of physical fish stock size; however, in economic terms, the situation is worse than the percentages are showing because it is the most valuable fish stocks that are overexploited.



This situation has arisen because not much effort has been focused on policy on fish resource wealth. Paradoxically, it is because fish resources are valuable when they are overexploited, and the more valuable they are, the more quickly they will be overexploited. In other words, fishing effort has been pushed beyond the point of Maximum Sustainable Yield (MSY); and hence, the stocks are declining.



But if fishing effort were to be reduced to Maximum Economic Yield (MEY), then the fishery sector could make a much greater contribution, because in addition to some value-added generated, there would be a new amount – the resource rent – which would be a pure addition to value-added; also referred to as wealth.



A wealth focus in fisheries policy is essential for two reasons. First, it is the resource wealth which drives the overexploitation of the fishery; second, the resource wealth is clearly a very large potential component of value added and GDP in the future.

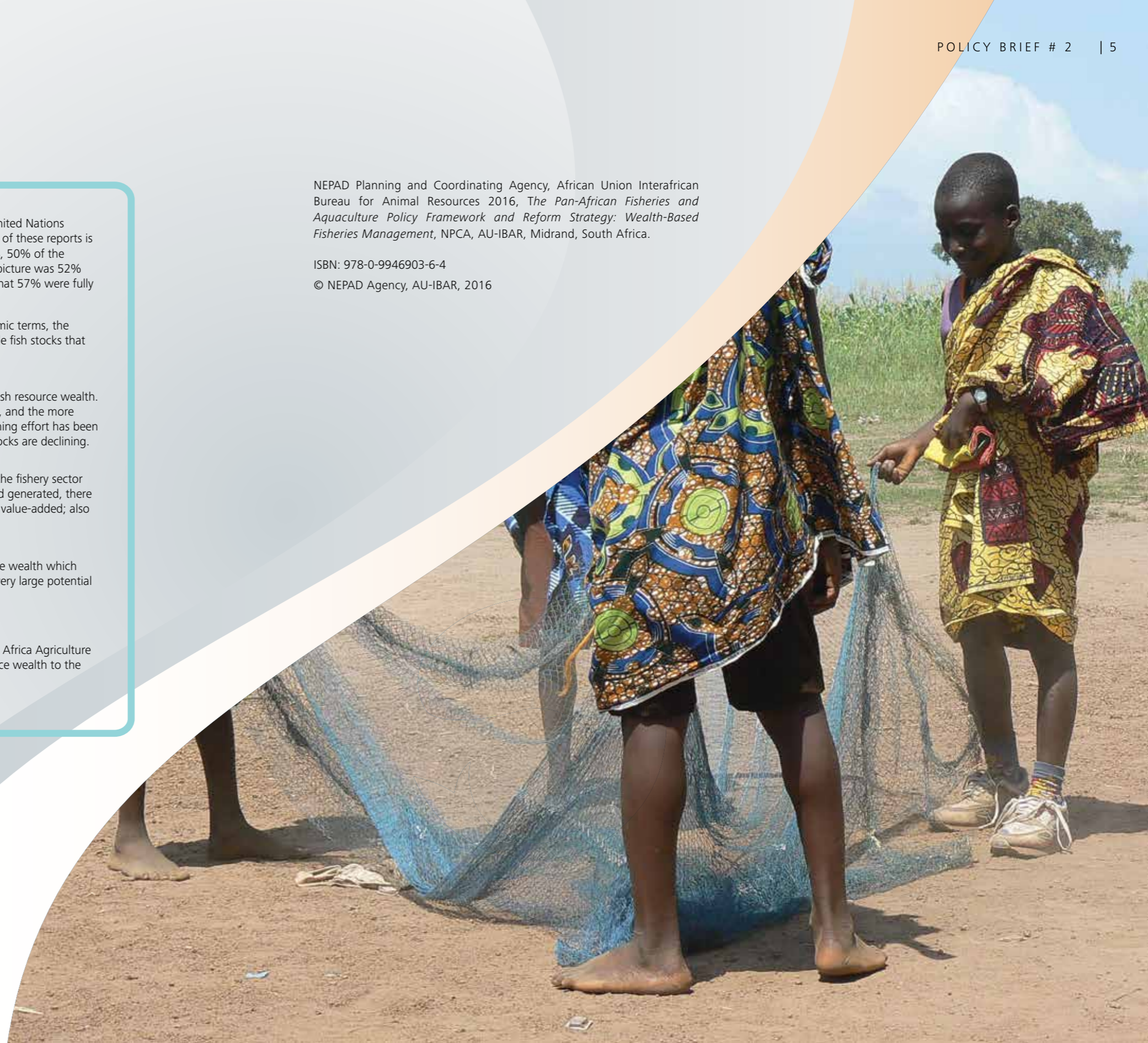


If therefore countries wish to achieve the 6% growth target in the Comprehensive Africa Agriculture Development Programme (CAADP), they have little option but to move fish resource wealth to the centre of the policy debate.

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Introduction

Every couple of years or so, the FAO publishes the State of World Fisheries and Aquaculture (SOFIA). An important part of these reports is to give an overview of the situation on marine capture fish stocks. Using a model similar to Figure 1, the FAO categorises fish stocks into over-exploited, fully-exploited and not-fully-exploited (the titles of these categories have changed over the years but not the categories themselves).

The state of world fish resources

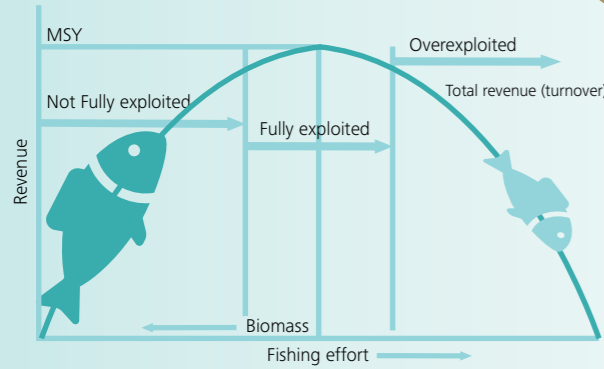


Figure 1

In one of the earliest SOFIA reports, if not the first, 'n 1974, the categorisation was as shown in Table 1.

Year	Not fully-exploited	Fully exploited	Overexploited
1974	40%	50%	10%

Table 1

Faced with this kind of result, the world as a whole entered into a period of immense institutional change in fisheries, in particular the United Nations Convention on the Law of the Sea (UNCLOS). Although this did not officially enter into force in 1994, many of the key fisheries aspects were widely anticipated, in particular the move to 200-mile limits which occurred generally in the late 1970s and early 1980s.

The expectation was that taking fish resources out of international jurisdiction and putting them under national jurisdiction would improve

matters as they existed in 1974. Unfortunately, this expectation was not realised; at least not quickly and a series of other international instruments were developed and commitments made. These included Agenda 21 (Rio 1992), the FAO Code of Conduct for Responsible Fisheries (1995) and the UN Fish Stocks Agreement (adopted in 1995 entered into force 2001). And, of course, individual nation states were not passive. Much expenditure was undertaken, in particular, on stock assessment and monitoring, control and surveillance (MCS). But sadly it was all to little avail. As shown in Table 2, by 2005, notwithstanding all this effort, the situation of world fish stocks had become markedly worse.

Year	Not fully exploited	Fully exploited	Overexploited
1974	40%	50%	10%
2005	23%	52%	25%

Table 2

Moreover, in 2002, the world committed itself at the World Summit for Sustainable Development (WSSD) to restore fish stocks. In fact, fishing was one of the few sectors to have quite specific targets. States agreed to: "Maintain or restore stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015". Broadly speaking this would require reducing the right-hand, overexploited, column to zero%.

How has the world been doing? Table 3 shows the evolution of fish stocks in recent years.

Year	Not fully-exploited	Fully exploited	Overexploited
1974	40%	50%	10%
2005	23%	52%	25%
2007	20%	52%	28%
2008	15%	53%	32%
2009	13%	57%	30%

Table 3

It is clear that progress has not been good and there seems little hope that the WSSD goals will be met. In fact, it is almost certain that the situation in 2015 will remain worse than in 1974.

It should also be noted that the FAO definition is purely in terms of physical fish stock size. In economic terms, the situation is worse than shown in Table 3 because it is the most valuable fish stocks that are overexploited first.

How has this situation arisen and what should be done about it? Of course, many explanations are put forward. The most common tend to argue that it is because not enough is known about the resources or the exploitation activity, and/or that there has been insufficient investment in fish patrol vessels and other elements of monitoring, control and surveillance, and/or that fisheries ministers and ministries have shown insufficient political will. The result is a frequent demand to spend more on research, more on data collection, more on MCS, and so on.

But is it really just a question of doing the same things better? Or is the real need to do things differently?

The basic economics of a fishery

Over the past 50 or 60 years, fisheries economists have developed what seems to be a very robust qualitative analysis of why fish resources are overexploited. It is robust because it applies to a huge range of circumstances and countries; even if there is always a need to consider the local situation.

This analysis suggests that the need is indeed to do things differently, focussing policy on fish resource wealth. Paradoxically, it is because fish resources are valuable when they are overexploited, and the more valuable they are, the more quickly they will be overexploited.

This section outlines the basic issues. There are of course many subtleties and issues to be addressed. The interested reader is encouraged to look at the now very abundant literature beginning with a textbook such as Anderson (1986).

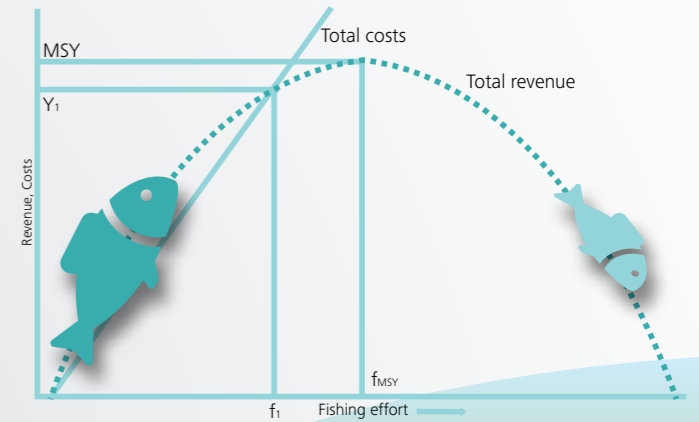


Figure 2

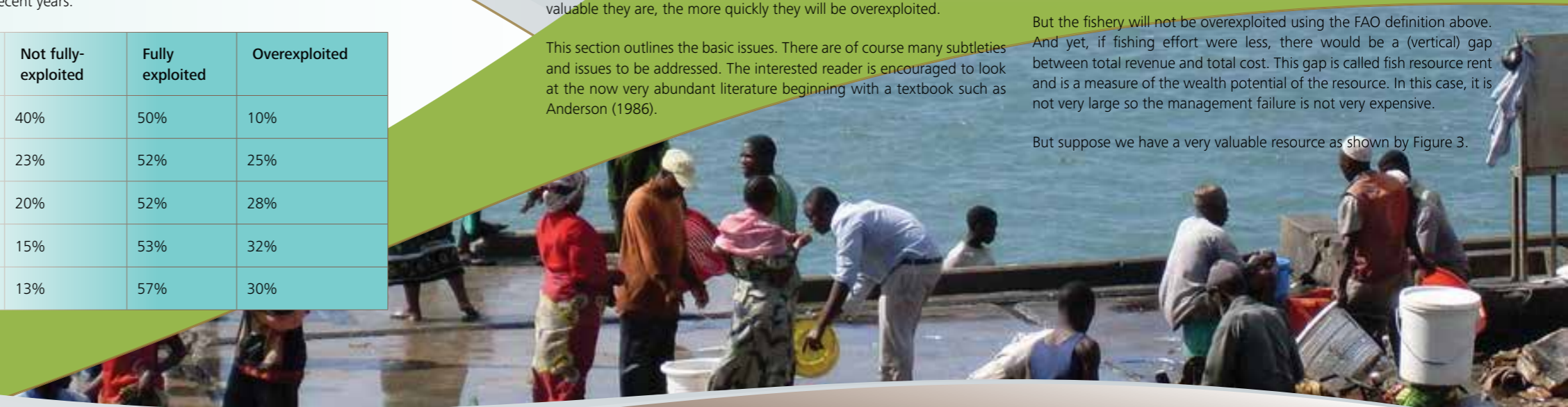
As it is exploited, a fish resource produces fish. These are sold and produce revenue. The amount of revenue depends on the quantity sold and their price. In figure 3, as fishing effort increases, also the amount caught increases up to a certain point the maximum sustainable yield (MSY), but if fishing effort is pushed beyond this point, the amount begins to decline (because the fish stock decreases in size).

The amount of fishing effort and hence the catch will depend on the cost of producing fishing effort. In Figure 2, it is assumed that each unit of fishing effort costs the same to produce so costs increase in a straight line.

In the example here, the cost of fishing is quite high compared to revenues so it will not be worthwhile for fishers to fish too much. Fishing effort will expand to the point f_1 where total revenue equals total cost.

But the fishery will not be overexploited using the FAO definition above. And yet, if fishing effort were less, there would be a (vertical) gap between total revenue and total cost. This gap is called fish resource rent and is a measure of the wealth potential of the resource. In this case, it is not very large so the management failure is not very expensive.

But suppose we have a very valuable resource as shown by Figure 3.



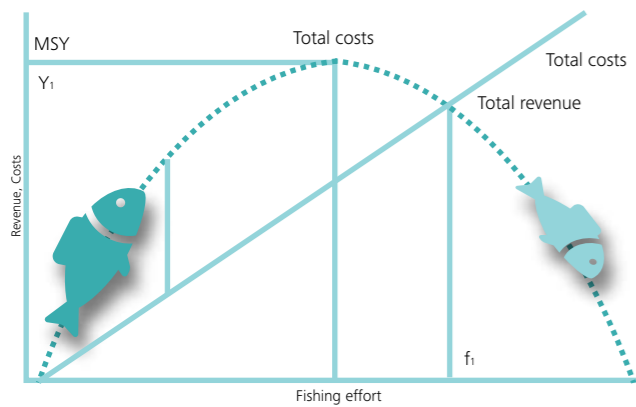


Figure 3

Now the gap becomes quite large. And if nothing is done the fishery is pushed well beyond the MSY level and becomes overexploited in FAO terms.

So overexploitation is linked to the potential value or wealth of the fishery. But how and why does this happen?

The costs of fishing and the link to GDP

To answer this question, it is necessary to have some understanding of how fishing costs are constructed. Actually most people will be familiar with these costs but maybe this discussion presents them in a slightly different way.

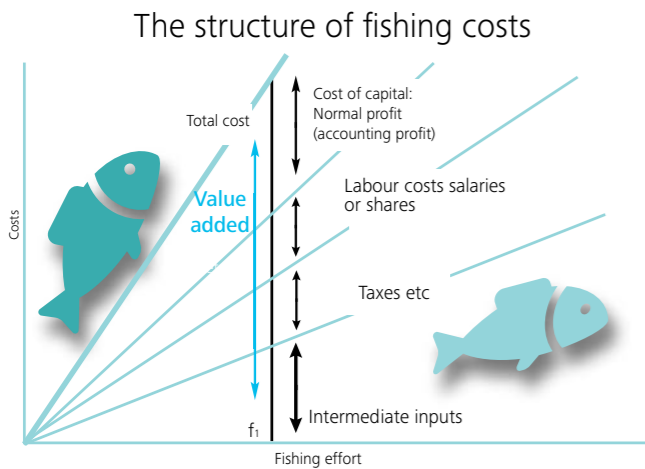


Figure 4

To begin with, for most fisheries, in order to go fishing it will be necessary to have a vessel, an engine, some fishing gear as well as fuel and a host of other inputs. These costs are grouped together as the bottom line in Fig 4 (intermediate inputs).

Second, fishers have to pay, one way or another, salaries to any crew employed. Third, they have to pay a variety of taxes etc. And finally they have to make a return themselves to make it worth fishing. This return is called normal profit. If fishers do not earn at least this amount, then they will seek to leave fishing and do something else.

Of all these costs, only intermediate costs represent real costs to society in that resources are actually used up in the act of fishing. All the other costs, which certainly are costs to the fishing companies, are only transfers from a social point of view.

And it is these transfers that are added together to calculate the contribution that the fishery makes to Gross Domestic Product (GDP), its value-added.

Looking back at Figure 3 (and Figure 2), it is clear that for effort levels less than f_1 , companies or fishers will earn more than normal profits. It is this extra that encourages new fishing effort to enter the fishery.

At f_1 then, the fishers will earn some profits (normal profit), the fishery will produce some value-added and hence make some contribution to GDP but there will be no resource wealth generated.

Value added and GDP

But if fishing effort were to be reduced, then the fishery could make a much greater contribution.

Need for effective management (ie institutional arrangements)

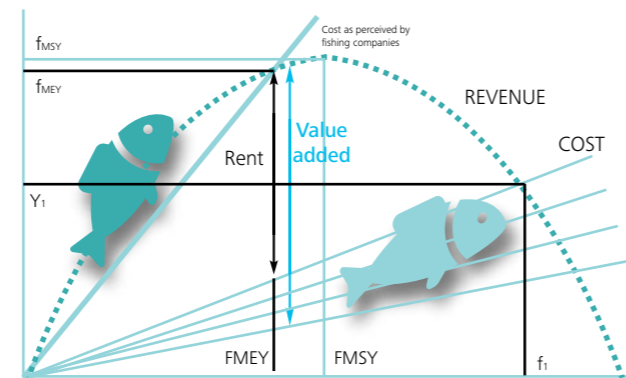


Figure 5

As shown in Figure 5, if fishing effort were reduced (sustainably) to F_{MEY} the maximum economic yield, then there would still be some value-added generated as before (i.e. the salaries, taxes and normal profit elements of the cost line). But in addition there would be a new amount – the resource rent – which would be a pure addition to value-added.

It is obvious that total value-added at F_{MEY} is very much greater than at F_1 . So the fishery has the potential to make a much more significant contribution to GDP than is currently the case.

Importance of a wealth focus

A wealth focus in fisheries policy is essential for two reasons.

First, it is the resource wealth which drives the overexploitation of the fishery. If countries wish therefore to meet their WSSD and other international commitments, they have no option but to consider how to deal with fish resource wealth in the form of resource rents.

Second, the resource wealth is clearly a very large potential component of value added and GDP in the future. If therefore countries wish to achieve the 6% growth target in CAADP, they have little option but to move fish resource wealth to the centre of the policy debate.

Therefore, African fisheries have enormous potential to generate wealth. Recent studies estimated the landed value of marine capture fisheries at USD 10.6 billion and inland fisheries at USD 6.2 billion (Policy Brief #5: The Benefits of Fish Resources Exploitation). For the purpose of wealth estimation, a conservative approach is adopted; therefore, only half of the inland fisheries (USD 3.1 billion) are assumed to be similar to marine fisheries and could produce rents in similar way, if managed well.

Wilen (2005) pointed out that fisheries reform (in particular towards secure rights) would change fish resource exploitation patterns in ways that will both increase revenue and decrease costs. Both of these impacts need to be considered in estimates of potential sustainable wealth that can be generated. Therefore, best estimate of increase, based on studies of a number of fisheries, was 35%. However, given the price estimates recorded by FAO and the NEPAD Planning and Coordinating Agency (NPCA) (2014), a more conservative figure of 20% is being suggested. This would increase expected landed values from USD 13.7 million (USD 10.6 billion plus USD 3.1 billion) to USD16.4 billion (plus of course the USD3.1 billion from inland fisheries that we assumed is not contributing to wealth).

Empirical experience around the world suggests that in well-managed fisheries, once reforms have been completed, resource rents are between 30% and 60% of landed value. Therefore, applying these percentages to the enhanced landed value would suggest that potential African fish wealth in terms of resource rent would be in the ranges of USD 4.9 billion and USD 9.8 billion. If we capitalise these values at 9% discount rate, the estimated capital value of African fish-resources would be between USD 54 billion and USD 110 billion. In other words, if African fish-resources were money, we would need to put between USD 4.9 and USD 9.8 billion in the bank in order to earn USD 54-110 billion at an annual interest of 9%. Therefore, Africa is sitting on a very valuable resource that is far from generating its true potential economic value.

How to get there from here?

The diagrams presented above help to explain the problem but not the solution because they show only the start and end points. They do not show the journey.

A key point is that in order to get from here to there, it will be essential to invest in the fish stock. As shown by the FAO data above, past misfocused policies have resulted in a very serious decline in fish stocks, especially the most valuable ones. In order for these stocks to fulfil their potential, they have to be re-built.

The time necessary to re-build the stocks will depend on the species concerned. For short-lived species, such as shrimps and cephalopods, it may be possible to turn the situation around quite quickly. For longer-lived species, it may take many years, or decades in some cases.

This problem can be addressed in a standard investment appraisal framework.

Sustaining the gains

In order to ensure that any gains made are sustainable, it is necessary to design management systems and instruments that will give fishers the incentive NOT to increase fishing effort back to the starting point (f_1 in the diagrams above).

This is easier said than done, however, and the analysis of the incentives created by management measures and instruments must be a key part of fisheries policy development.



One key lesson that has emerged is for the need for the fishers to have secure use rights. However, such rights can take many different forms.

Sharing the gains

Assuming that an exploitation regime can be put into place that will generate the potential wealth on a sustainable basis, there is a need to address also the sharing of gains between stakeholders, especially the Government and the private sector. Again, different countries have taken different positions.

Measuring the gains

To get an idea of what it is worth investing to realise the gains, it is important for countries to generate some estimates of what is at stake.

Worldwide it is estimated that fish resources are capable of generating annual net wealth of over US\$80 billion. At an interest rate of 8%, to earn \$80 billion per annum on an interest-bearing account in a bank would require a deposit of \$1 trillion.

To say the least, fish resources represent very valuable natural assets

Conclusion

Wealth-based fisheries management (WBFM) insists that fish resource wealth must be placed at the heart of fisheries policy first and foremost because it is the key to achieving other policy goals sustainably. Despite the best efforts of many Governments around the world, the state of the world's fish stocks continues to worsen. According to WBFM the reason for this is that resource wealth undermines the policy, especially if other parts of policy attempt to increase such wealth, for instance trade policy. States cannot therefore simply ignore resource wealth in developing fisheries policy.

More than this however WBFM points out that this wealth represents a

great opportunity for those States blessed with abundant fish resources. Of course, it is a policy decision whether or not to seek to generate this wealth. However, the current failure to do so seems to be by default rather than as the result of a rational policy decision-making process.

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