



Sultanate of Oman
Ministry of Agriculture and Fisheries Wealth

Fisheries and Aquaculture Vision 2040

Sustainable Management of the Fisheries Sector in Oman

World Bank Advisory Assignment



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LIST OF ABBREVIATIONS AND ACRONYMS

EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organization of the United Nations
FMU	Fisheries Management Unit
FPI	Fisheries Performance Indicators
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GoO	Government of Oman
IOTC	Indian Ocean Tuna Commission
KPI	Key Performance Indicator
MAFW	Ministry of Agriculture and Fisheries Wealth
MEY	Maximum Economic Yield
MSY	Maximum Sustainable Yield
NGO	Non-Governmental Organizations
OECD	Organization for Economic Cooperation and Development
OMR	Omani Rials
OPEC	Organization of Petroleum Exporting Countries
PSC	Program Steering Committee
SSR	Stock Status Report
SWOT	Strengths, Weakness, Opportunities, Threats
WB	World Bank

GLOSSARY

In the Fisheries and Aquaculture Vision 2040 (*Vision 2040*), where a word is used that has a common meaning as well as an alternative technical meaning in economics, the particular technical economic meaning is generally the one applicable. Below are examples:

Annuity

An annuity is income that recurs for a fixed term or indefinitely. The value of an annuity can be calculated as a fixed sum or capital value, once the size of the annuity, its term and the *discount rate* of the valuer are known. A renewable resource such as a fishery can be thought of as a capital asset capable of producing a perpetual annuity if well managed.

Discount Rate

Discount rate is a measure of the time preference for money. Most people have a positive discount rate meaning that if offered a sum of money in twelve months' time, they would accept a lesser amount to receive money today. Discount rates reflect the individual appetite of individuals for particular investments or for consumption opportunities that they are considering. People apply different discount rates to different investment opportunities depending upon their perceptions about the risk of those investments and their individual appetite for such risk.

GDP (Gross Domestic Product)

GDP is the monetary value of all of the goods and services produced by an economy (country) in a year. It is an aggregate measure of economic production that is used to indicate the size of an economy. The calculation of GDP is based upon the extensive collection of expenditure data from households, businesses and government in a way that attempts to avoid double counting of value by the application of internationally accepted rules. Exports add to GDP, imports subtract from GDP which also excludes income generated overseas by nationals of the country.

Margin

Margin is the difference between revenue and cost. Margin depends upon the particular unit of production being examined because for many businesses production costs per unit either fall (with economies of scale) or rise (as additional factors of production must be attracted away from competing uses). Similarly, the clearing price of goods tends to fall as quantity offered for sale increases. The crucial margin to examine is for the last unit produced by a business. If the margin is positive for this unit, a business should increase production, if negative it should reduce production in order to increase total profits.

Profit

In common use, the term ‘profit’ refers to accounting profit which is calculated before tax and prior to any return on equity invested in producing the taxable revenue. In contrast, economic profit is calculated after tax and after the deduction of an appropriate (*risk adjusted return*) on equity. Many businesses make accounting profits, relatively few make an economic profit or economic *rent*.

Rent

An economic rent is any return remaining after all costs, including a risk adjusted return on capital invested, have been paid. A sound investment has a zero economic rent. The presence of economic rents are a powerful market signal for business expansion. In an open access fishery where the right to catch fish is free, harvesting effort will expand until rents are zero and the value of a catching opportunity to a new entrant or at the margin of the fishery is also zero. At this point, the value of the fishery to its owner is zero and the level of effort exerted by harvesters is often unsustainable.

Risk Adjusted Return

Risk adjusted return is a calculation made by an investor about the level of payment expected for committing capital to a particular investment. Risk adjusted return has two conceptual components: so called ‘risk free rate’ (the interest rate available in the investment jurisdiction from a “blue chip” investment such as government bonds plus an appropriate risk factor (expressed as an interest rate) reflecting the perceived risk of the particular investment. This risk premium considers the likelihood and extent of income volatility and capital loss. The sum of the risk free rate plus risk premium indicates the required risk adjusted return by the investor.

Wealth

Wealth is the value of physical and intangible resources with which goods and services can be produced now or in the future. Wealth can therefore be equated with a sophisticated definition of capital. Capital (wealth) does not simply mean money but can include any resource that contributes to the production of goods or services on which people place value including environmental services or even psychic services. The value of capital is therefore defined by the value of goods and services it is capable of generating – not the other way round.

1. Executive Summary

- The goal of the *Vision 2040* is to create a profitable world class fisheries sector that is ecologically sustainable and a net contributor to the economy of Oman. *Vision 2040* builds upon the *Vision 2020* to stimulate private sector led growth in fisheries sector capital and employment.
- The current fisheries sector GDP estimate of 165 million OMR understates the value of the sector because it does not attribute processing marketing and logistical activity in fisheries value chains to the fisheries sector. An initial estimate of the value of the fisheries sector is 380 million OMR. Work is required to properly characterize and monitor the economic scale and importance of the sector.
- *Vision 2040* will generate improved net economic value from better governance of Oman’s domestic fisheries that reduces the risk of existing investment by ensuring environmental sustainability, providing new opportunities for private investment, stimulating innovations to make Omani value chains more efficient and to add value to fish products. Aquaculture and international development opportunities (i.e. development of large tuna interests) also exist and are the main potential sources of growth in fisheries product volumes. The potential for the Omani aquaculture sector in the next ten years has been estimated as being capable of annual production of 33,700 tonnes with an associated turnover of OMR71.5million, with this total rising to 220,000 tonnes (estimated value of OMR770 million) by 2040.
- Future planning will need to build on the hard investments made by the government (in ports, markets and fishing capacity) by focusing on critical soft investments in the form of institutions, capacities, and legal processes designed to support increased private sector-led development (investment in fisheries management).
- *Vision 2040* implementation will take time as it requires behavioral and institutional change.
- The priority for initial investment should be to build the fisheries knowledge and policy foundations for increased stakeholder engagement in the management of fisheries where the value is most at risk (domestic, regional, international fisheries). It is these fisheries that offer the greatest economic return from investment and thus should be developed first—the large international tuna fisheries, the regional kingfish fisheries and high value domestic fisheries (abalone and cuttlefish).
- Initial estimates of value at risk (rent that is not being captured under existing institutional arrangements) is in the order of 119 million OMR annually with a capital value of 2.4 billion OMR¹ (at a 5% discount rate over a 20 year return period, with zero inflation).

¹ Calculated with a discount rate of 5%. Higher discount rates will reduce this capital value.

2. Background

2.1. Country Context

1. The land area of the Sultanate of Oman, situated on the south east corner of the Arabian Peninsula, is 309,500 km² (Figure 1). The total coastline is 3,165 km, with a commercial fishing area of 350,000 km². According to data of the National Centre for Statistics and Information (2015), the population of the Sultanate is 4.30 million, including 1.92 million expatriates. Under the 45 year reign of His Majesty Sultan Qaboos bin Said al Said, Oman has achieved strong economic expansion. In 2014, GDP was OMR31.46 billion or OMR8,340 per capita (USD 21,700 per capita).² Today Oman is categorized as a ‘high income non OECD country’ by the World Bank (WB) with no net national debt. Over 50% of Oman’s GDP is from crude oil production and refining and natural gas or liquefied natural gas production. Agriculture and fishing account for around 2% of GDP. Oman is the largest oil producer in the Middle East that is not a member of the Organization of Petroleum Exporting Countries (OPEC), and has managed to defy historical projections of declining oil production that under-pinned previous plans and projections.



FIGURE 1: MAP OF OMAN

²<http://data.worldbank.org/country/oman>. OMR1.00 is worth USD 2.60

2.2. Sectoral and Institutional Context

2. Oman fish production is modest by world standards at 192,000 tonnes in 2012 (worth about OMR142 million). By 2014, this increased to 211,000 tonnes worth 166 million OMR million). Fish production has been somewhat volatile because of the natural productivity of small pelagic species that are an important component of Omani catch. The general trend has been for the quantity of catch to increase over time. In the period 2000 to 2014, total landings (including aquaculture) ranged from a low of 120,421 tonnes (2000) to 211,215 tonnes (2014).³ Aquaculture production makes its first appearance in these statistics in 2003, but annual aquaculture production has never exceeded 516 tonnes in the subsequent decade.

3. The major trend visible in capture fisheries is the expansion of the small scale inshore fishery and the elimination of an industrial fleet that recorded peak landings of 34,549 tonnes in 1997 and 25,702 tonnes as recently as 2009. In 2014, 98.3% of all landings were classified as coming from the artisanal sector. The year 2011 saw the emergence of a new fisheries sector (coastal vessels) but coastal fleet landings were only 2618 tonnes in 2014. In 2014 there were 21,616 fishing boat licenses, (mostly for fiberglass skiffs) and 45,635 fishing licenses excluding 3,155 abalone diving licenses⁴.

4. Although currently declared to be only 0.5% of GDP, the fisheries sector is recognized as potentially important to the future of Oman because well-managed fisheries can be an infinitely renewable resource unlike the currently dominant oil and gas sector. Recently, the Government of Oman (GoO) committed more than OMR500 million to the Omani fisheries sector, mainly for construction of ports and related facilities and businesses. The goal of these investments is to create an industry that can meet the demand of the local market, while boosting fish exports, with sustainable positive impact on the estimated 40,000 people whose livelihoods depend to some extent on fishing and other related activities.

5. The recent commitment of Government funding to develop the fisheries sector follows twenty years of substantial investment and subsidization of that sector. To date, government support has taken the form of subsidies for the harvesting sector (particularly the subsidization of skiffs, outboard motors and fishing gear for inshore fishers plus funding the construction of a network of fishing harbors and associated infrastructure such as markets and housing for fishers). The plan is to continue and expand these subsidies and the development of infrastructure. Proposals for expenditure under the 5 year plan commencing 2015 include:

³Fisheries Statistics Book 2014, Fisheries Statistics and Information Department, Ministry of Agriculture and Fisheries, page 12-13.

⁴ Ibid, page 11.

- Continuation of the Port and Landing Site construction program. Nineteen ports have been built with a further 11 yet to be developed
- The development of fish market infrastructure associated with ports and landing sites
- The construction of fisherman villages
- The proposed upgrading and modernization of the coastal fleet (intended to operate beyond 7 miles from shore)
- The introduction of a Vessel Monitoring System (VMS) for all coastal vessels
- Trials with the development of new fisheries and new fish products such as lantern fish, Indian oil sardine and the regional development of Al-Wusta projects
- Continued subsidization of the small scale (skiff) fleet
- The establishment of more Sunnat-al-Bahr (local council of the sea) under the new statutory framework and the extension of their role
- The construction and commissioning of a new fisheries research vessel
- The expansion of extension and training services

2.3. Social and Cultural Context

6. Although the fisheries sector is now a small part of the Oman economy, the long standing place of fishing in Omani life and Omani identity mean that changes to policies relating to fisheries are of intense general interest and are politically sensitive. The sense of attachment between Omanis and local fisheries is strong but the day to day reality of how that attachment actually occurs is changing quickly in ways that are not well understood by the general public. Although detailed data on employment is lacking, one clear fact is that fewer young Omanis wish to enter the traditional skiff sector as full time fishers. This is not surprising when remuneration for skiff crew can be as low as OMR 200 to 300 per month. While some may be prepared to engage in part time fishing, perhaps supporting family traditions, most have alternative employment options that promise a better lifestyle and remuneration than fishing. In no small part is this due to the fact that, within the reign of His Majesty the current Sultan, educational opportunity and standards in Oman have undergone spectacular improvement.

7. The pool of uneducated Omanis who traditionally provided the core of the small-scale inshore fishing sector has shrunk dramatically, and its continued decline can be expected. To date, efforts to preserve the attractiveness of traditional fishing have taken the form of subsidies and a significant degree of interaction between the Ministry of Agriculture and Fisheries Wealth (MAFW) and the fishing sector revolves around requests or demands from fishers for more assistance. Although generous, the fact that subsidy schemes have not kept pace with the perceived and claimed needs for assistance by this sector is an important explanation for the poor state of relations between the Ministry and fishers. When fishers are focused upon the government rather than the ocean for their income, the signs are poor for the economic sustainability of the sector as defined in terms of this strategy. It is clear that if fishing is to be an attractive employment option for future generations of young Omanis, the current structure and conditions in the fisheries sector will need to change.

8. The traditional small-scale fishing sector is caught between two powerful forces. On one side, the cost of Omani labor has risen in line with educational standards and the employment options that it creates. On the other side, there is downward pressure on fish prices and attempts to manage the local market to guarantee the availability of fish in Oman at less than international market price. The interaction of these forces is to squeeze the profitability of small scale fishing, so that it can only survive with the assistance of subsidies.

9. As in other countries, fish prices have risen in Oman in recent years reflecting strong international demand for seafood. Fish imports have remained minimal at about 8% of total production and while Oman remains a net exporter of fish, those exports have been controversial. There is a popular view “in the street” that exports deny local consumers volumes of premium species and the opportunity available to suppliers to export fish, forces local consumers to pay ‘international equivalent’ prices. This is indeed the way that export markets impact local markets generally, but in response to “complaints” about this economic reality, the GoO has banned the export of some species and is attempting to exercise more control over fish marketing to ensure that the local market has ‘first rights’ over fish landed in Oman.

10. At present many Omanis seem to want: (i) higher earnings for traditional fishers, and (ii) low fish prices in the market, however, it is not possible to deliver both in the long term. If the ‘low fish price’ objective prevails, it is inevitable in the longer term that increasing quantities of fish on the local market will have been caught by low cost expatriate labor. On the other hand, if the ‘better fisher livelihood’ objective prevails, then fishers will require the opportunity to maximize the value of their catch by selling at times and places that achieve best prices. This conundrum lies close to the heart of political debates about the future structure of the Oman fisheries sector. You can eat cheap fish, but it will not be caught by Omanis. You can eat fish caught by Omanis, but it will not be cheap (see **Annex 6** on *Vision 2040* Socio Economic Context).

2.4. Fisheries Reform and the Pace of Change

11. *Vision 2040* looks ahead twenty five years into a world populated by adults who are not yet born. It is an intergenerational vision that challenges us to state our assumptions about the needs and aspirations of future generations. To the extent that these assumptions envisage a different sector, it also challenges our assumptions about the nature, extent and pace of change that is actually achievable and politically sustainable in Oman. Politics is the art of the possible, or to quote Otto von Bismark, “*politics is the art of the possible, the art of the attainable – the art of the next best.*” In *Vision 2040*, we have consulted about what can be aspired to in 25 years’ time, but we do not presume to know what will be attained in 25 years’ time. We avoid the conceit of stating numerical goals for tonnes of fish harvested, numbers of jobs, revenues and costs for 2040. Rather in *Vision 2040*, we set out a framework and processes by which Omanis will determine these outcomes on a fishery by fishery or even community by community basis. This framework and those processes are described in *Vision 2040* as ‘stakeholder engagement’ or in its strongest form,

‘stakeholder management’. *Vision 2040* is not a plan driven from the center. It sets out an aspirational vision with goals that are qualitative, rather than quantitative and describes in general terms the five big steps required to realize that general vision. However, details of the management arrangements that actually eventuate will depend on following two aspects:

- the actual biological and economic characteristics of individual fisheries and the particular management problems facing them
- the actual aspirations, preferences and capabilities of the stakeholders in those individual fisheries

12. Together, these things will interact through the processes of stock status identification, risk assessment and stakeholder engagement, to derive the establishment and maintenance of a customized arrangement for the individual fishery that is consistent with the goals of *Vision 2040* in a way and at a pace that has the support of stakeholders.

2.5. Relationship to Other Sector Strategies

13. The overarching framework for development policy in Oman is the Long-Term Strategy 1995-2020, (known as *Vision 2020*), with its four pillars:

- i. Making Oman a diversified, dynamic, and globalizing economy
- ii. Creating well-developed human resources
- iii. Promoting an efficient and competitive private sector
- iv. Supporting sustainable development within a stable macroeconomic framework

14. To replace oil as the predominant and long-term source of economic growth, *Vision 2020* aimed to foster the emergence of natural gas production and downstream industry, along with rapid growth in other sectors such as construction, real estate, trade, fisheries and tourism.

15. *Vision 2020* proposed that the fisheries sector should account for 2% of GDP by 2020. At present, however, the fisheries sector contributes only 0.5% to GDP and there is little realistic prospect that the 2% goal will be achieved by 2020⁵. This outcome is a reflection of the ongoing strength of the oil sector, rather than a weakness of the fisheries sector. Within this strategic context, the World Bank was engaged to assist the GoO to explicitly link Oman’s extensive investment program in fisheries and aquaculture, to a revised long term vision to 2040. The four pillars of *Vision 2020* are maintained and underpin *Vision 2040*.

⁵ A fourfold increase from 0.5% to 2.0% by 2020 implies an increase in the contribution of the fisheries sector to Omani GDP of nearly OMR500 million per annum.

2.6. Aquaculture Plan

16. Although the scope of *Vision 2040* includes aquaculture, there has already been extensive orderly investigation, planning and resourcing of aquaculture development by the GoO. Substantial work on an aquaculture strategy commenced in 2007 when the GoO commissioned the Food and Agriculture Organization of the United Nations (FAO) to prepare an aquaculture development plan. This identified a number of potential opportunities, the most valuable of which was perceived to be shrimp farming. The FAO report laid the foundation for *The Aquaculture Strategy for Oman* (approved by the GoO in 2010). The sector was opened to commercial investors at the end of 2011 with the publication of the “*Investment Guidelines for Aquaculture Development in the Sultanate of Oman*”. There were initially 19 project proposals made in the first call, which has now increased to 23 for a wide range of aquaculture projects including: shrimp ponds; shrimp hatchery; marine fin fish cages and hatchery; recirculating aquaculture systems for marine fin fish and abalone, and longlines for seaweed culture.

17. The MAFW has also initiated the development of integrated aquaculture projects for increasing fish production and food security with agriculture smallholders. This sees the utilization of scarce fresh water resources being used for fish (tilapia) culture before the water is reused for normal irrigation of agricultural crops or hydroponics, increasing the income for farmers from the same water resource. Currently 10 farms have been constructed with MAFW assistance and there are applications in excess of 200.

18. Part of the aquaculture plan has seen the formation of a government-financed aquaculture investment company intended to act as a catalytic investor to stimulate aquaculture development. The company would invest in commercial aquaculture projects which demonstrate aquaculture potential in Oman to other investors and institutional funds, enabling additional future projects. The company (The Oman Aquaculture Development Company) has been established with a total funding of OMR30 million, and with Board representation from the sovereign wealth fund (Oman Investment Fund) and the MAFW. The vision for this company is for it to take the lead in new activities that, when proven, will be emulated or purchased by private investors.

19. At the same time, a ‘One Stop Shop’ for aquaculture has been established which acts as an advisory capacity for incoming investors as well as the contact point within MAFW for documentation and licenses. The first Operational Aquaculture Licenses under this regime were approved in December 2014, and associated investments are beginning to be made.⁶

20. Staff in the Directorate of Aquaculture Development within MAFW have recently completed the *Aquaculture Implementation Strategy 2015-2020*. A draft version was shared with the World Bank for information. This strategy contains five technical themes:

⁶ Directorate of Aquaculture Development, 2015, 36 pages.

- i. Commercial aquaculture and sites
- ii. Integrated SMEs & community projects
- iii. Monitoring
- iv. Fish health and extension services
- v. Research and development

21. Within each theme or work stream, all individual projects are identified with steps required to complete each project, target dates for each step, and key performance indicators. These projects indicate the considerable development momentum that has been generated since 2012. As an example, the plan identifies 23 commercial aquaculture projects in Oman at various stages of development, along with the many integrated aquaculture projects within the agriculture sector. Just one of these projects is producing product for sale in 2015, and six more are planned to commence production in 2016. The potential for the Omani aquaculture sector in the next ten years has been estimated as being capable of annual production of 33,700 tonnes with an associated turnover of OMR71.5million, with this total rising to 220,000 tonnes (estimated value of OMR770 million) by 2040.⁷

22. In the light of this recent policy work, legislative modernization and active investment, no specific aquaculture recommendations are made under *Vision 2040*. Rather, these initiatives are noted, and it is mentioned that their implementation should be monitored with a performance review of the aquaculture regime scheduled for 2025, by which time any practical issues (if any) with the Aquaculture Strategy for Oman or the Aquaculture Implementation Strategy will be observable. In the medium term, it is desirable that the institutional arrangements supporting aquaculture, enhancement of wild fisheries and management of wild fisheries should have consistent underlying principles and standards. Just as this is the case with matters such as food safety and quality assurance, it should also apply to issues such as the security of rights and tenure underpinning investment in the entire fisheries and aquaculture sector.

⁷ *Investment Guidelines for Aquaculture Development in the Sultanate of Oman*, Directorate of Aquaculture Development, 2015, page 15-16

3. Vision 2040

23. *Vision 2040* follows a fairly standard format for a strategic plan. First, it seeks to define a clear goal for the fisheries sector and to identify meaningful, associated, and measurable key performance indicators (KPIs) that will allow for an objective assessment of progress towards the goal. Second, it includes an Environmental Scan. This is a brief description of the context in which the plan is being implemented and seeks to identify the strengths of the Oman fisheries sector that need to be fostered and built upon, as well as the weaknesses that will need to be overcome if the goal is to be achieved. An effort is made to identify any particular opportunities that (if taken) may accelerate the achievement of the goal as well as any particular threats to the plan that are observable or foreseeable. Finally, the plan identifies an initial roadmap of actions required, the logical order of those actions, and priorities for implementation tasks in the period 2015 – 2020.

3.1. Goal

24. The goal of *Vision 2040* is to achieve a “***profitable world class fisheries sector that is ecologically sustainable and a net contributor to the economy of Oman***” by 2040. This vision is a short-hand description of a future fisheries and aquaculture sector (hereafter called the fisheries sector) that is developed and mature. ‘Developed’ and ‘mature’ in this sense does not mean static, but rather describes a self-sustaining and dynamic sector that is able to respond quickly and appropriately to new ecological or market information as it becomes available. By 2040, the fisheries sector will be making a net contribution to increasing the wealth of Oman, rather than being dependent upon that wealth, mainly through subsidies, for its development as is presently the case. Capital required for investment in the sector will be provided primarily by the private sector rather than the GoO. That private sector will be both bigger and more internationally competitive than at present, and will provide an attractive source of employment for future generations of educated Omanis who aspire to comfortable living standards.

25. A ‘world class fisheries sector’ is one that aligns the incentives within the private sector to pursue profit and wealth creation with the imperative to use fisheries resources sustainably. This alignment is achieved by the creation and protection of stakeholder rights in the sector, the value of which is a function of the expected price or value of future access or harvesting rights in fisheries. In other words, the annual income of stakeholders would be a function of the state of the fishery today but the wealth of stakeholders would be a function of the expected future state of the fishery over the next generation. That future state is, of course, strongly affected by the quality of management measures selected and implemented by stakeholders in the past and present.

3.2. Key Performance Indicators

26. The first task in selecting suitable Key Performance Indicators (KPIs) for *Vision 2040* is to ensure that the boundaries of the fisheries sector are clearly and appropriately defined⁸. The adoption of percentage of GDP as the main KPI in *Vision 2020* has the effect of defining the fisheries sector in the same manner in which it is treated for the purposes of GDP calculation in the national accounts of Oman. These statistics capture fish harvesting, however, fish processing or transportation activities are buried in the industrial, manufacturing and transportation sectors or components of GDP calculations. These sub-sectoral boundaries are of little significance to the calculation of aggregate GDP as they are largely conventions to prevent double counting. In fact, as a way of defining the fisheries sector, they are unhelpful or even misleading.

27. The fisheries sector should be defined so as to include the entire value chain: fisheries resource (harvesting opportunity), harvesting sector, processing, distribution and marketing sectors. In short, the fisheries sector is defined under *Vision 2040* as encompassing all economic activity linking the consumer to the ocean or the aquaculture farm as the case may be. On this basis, the value of the fisheries sector would be approximately OMR380 million in 2013⁹ as opposed to OMR165 million for the harvesting sector alone (which is around 0.5% of total Oman GDP in that year). This broader definition is important because it can indicate the presence of opportunities for the Oman fisheries sector to procure product from outside of the Oman Exclusive Economic Zone (EEZ) for value addition within Oman as well as opportunities to capture value in the marketing of Oman fish products in export markets. All such value adding activities that are under the control of Omani businesses should be attributed to the Oman fisheries sector, irrespective of their location.

28. The second task is to select a KPI or KPIs that best reflect performance against the goal. As the goal is expressed as a 'profitable' sector (making a net contribution to the wealth of Oman), the questions arise as to how and where to capture 'profit' data, which is quite difficult in a sector with a high level of private sector involvement. Note that 'profit' is being used in an economic sense, rather than as it is defined in accountancy or for tax purposes, and means a return over and above the opportunity cost of all inputs such as labor, capital, raw materials and services. In other words, 'profit' is being equated with the presence of economic rents. It is unlikely that we can ever accurately know the opportunity costs that should be deducted from revenues to calculate economic rent. These costs change constantly. We know that if rents are consistently negative, we can expect to observe the re-allocation of capital and also possibly skilled labor away from the sector. However, when rents are positive, incumbents generally do not advertise that fact unnecessarily.

⁸ This issue is discussed in Policy Note 2: Economic Key Performance Indicators for Vision 2040 (see **Annex 2**)

⁹ This estimate was the result of some initial economic analysis carried out by Toroa Strategy Limited in 2014, based upon the *Fisheries Statistics Book 2013*, and presented to the MAFW as *Policy Note 2*.

29. It is common to object that profit (as defined here) is too narrow an objective as it does not incorporate environmental sustainability, social or cultural values. This is a misunderstanding that relies upon excluding such less tangible goods and services from the definition of wealth or capital (see **Glossary**).

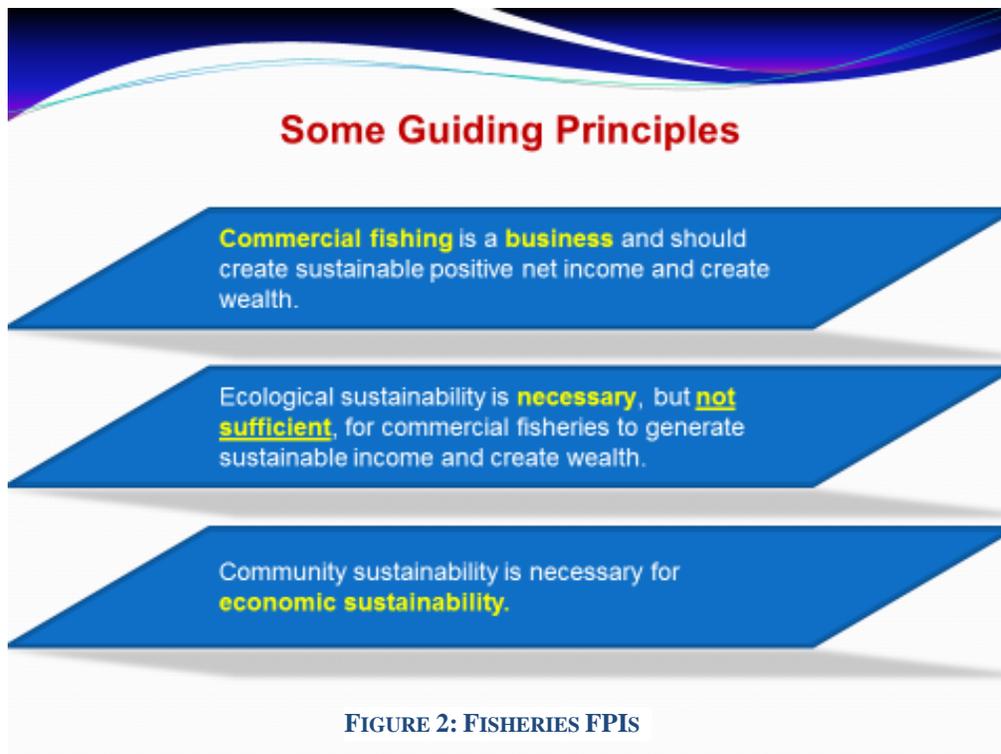
30. The World Bank has previously identified the correct relationship between profitability and wealth, ecological sustainability and sustainable communities. These guiding principles about the assessment of fisheries performance are applied in *Vision 2040*.¹⁰ Sustainability is hard wired into all of the five big steps comprising *Vision 2040*, and community sustainability is inextricably bound with stakeholder engagement and stakeholder management. With these in place, the crucial KPIs are therefore economic, namely employment and economic rent.

31. The only time when there is an objective measure of economic rents in fisheries is when there is a market for fisheries access (harvesting) rights. The price offered for access rights is based upon an estimate of revenues minus all costs. Positive trends in the market for access rights would suggest progress towards the goal of *Vision 2040*. The establishment of such a market is consistent with the third of the five big steps towards the realization of *Vision 2040* outlined in this plan. However, the implementation of the third step is some years away. In addition, not all fisheries rights underpinning future stakeholder based fisheries management arrangements will necessarily involve a market in private fisheries rights. Finally, even fisheries with secure tradable rights allocated to stakeholders may not have a vibrant market in these rights if they are generally utilized by their owners in the course of operating a harvesting business. In conclusion, the estimation of economic rents in fisheries through monitoring data from markets in fisheries access rights in Oman is presently a distant prospect.

32. In the meantime, priority should be given to a better profiling of fisheries sector revenues and the identification of current price points within the value chains of classes of fish products. It is a reasonable assumption that (on average) operators at a particular step between these price points recover (or expect to recover) all costs plus a risk-appropriate margin. Although we do not know what that margin target is, we have reasonable grounds for assuming that (in the absence of subsidies or special taxes) capital allocated to that step is being employed economically. As an interim framework, a risk assessment that indicates which fisheries have the greatest revenue at risk is also likely to be indicating which fisheries have most value at risk.

33. The second priority should be to improve the quality of employment data within the new and wider definition of the fisheries sector. Particular effort should be made to determine the extent of expatriate and part-time employment and how this changes over time.

¹⁰ Anderson J.L. and Chu J., *Progress on the Fisheries Performance Indicators (FPI)*, Presentation to the ALLFISH Partnership and ICFA, February 4, 2011, Rome Italy.



34. Finally, work has commenced on the, ‘*Policy Scenario Analysis*’ within the fisheries sector (see **Annex 5**). Findings from this initial work confirms that currently, there is insufficient biological, price and cost related data that is needed to carry out reliable bio-economic modeling of Oman’s fisheries. However, applying a simpler benchmarking approach to initial policy scenario analysis confirms that there is substantial scope for improvement in economic performance under *Vision 2040*. “A number of studies exist which enable a benchmark approach to be taken. The best study is Wilen (2005)¹¹, where Wilen observes that the generation of resource rents in well-managed fisheries comes from two sources. One source is the rationalization of the fishery as effort moves towards the maximum economic yield (MEY) level. Productivity increases and exploitation costs fall. Economic theory has concentrated very much on this source of rents. According to Wilen, the percentage observed in practice varies between 35% and 80% of landed value with an average around 60%. The Sunken Billions study undertaken jointly by the World Bank and FAO has a figure of 65%. Wilen points out however that in addition to this source of rents in many fisheries, as management improves, the first impact will be an increase in the quality and in the price of fish. This can occur for a number of reasons, some related to the new incentives faced by fishers and some related to the removal of constraints due to older management systems. He observes that this gain on the market side can be very important and his suggested average figure is a 35% increase in price.”¹²

¹¹ J Wilen (2005) “Property rights and the texture of rents in fisheries” In: D. Leal (editor) *Evolving property rights in marine fisheries* Rowman and Littlefield pp. 49-67

¹² *Policy Scenario Analysis, results from preliminary economic analysis*. 19 pages, page2.

35. These are also the two main opportunities available for improvement in Oman, and while the exact ratio between efficiency and quality gains may prove to be different to those observed on average by Wilen, they provide the best currently available set of assumptions for Oman and have been applied in the benchmarking approach to policy scenario analysis. The results from this approach suggest that “potential rents from Oman’s fish resources are between a minimum of OMR69 million and a maximum of OMR196 million per annum, with a mean value of OMR119 million. Capitalizing these rents at a discount rate of 5% would give a capital value for Oman’s fish resources of OMR1.4 billion for the minimum case and OMR3.9 billion for the maximum case, with a mean figure of OMR2.4 billion (over a 20 year return period, with zero inflation). (If the discount rate were doubled to 10%, then these capital values would all be halved). It is important to note that such rents would be a pure addition to the contribution made by the fisheries sector to Oman’s GDP.”¹³

3.3. Environmental Scan

36. In a series of stakeholder workshops held prior to the preparation of this plan, stakeholders were invited to identify the perceived strengths, weaknesses, opportunities and threats of, or to, the Omani fisheries sector. Findings are summarized in the, ‘*Fisheries Stakeholder Analysis: Synthesis of Results and Key Findings*’ (see **Annex 4**). This analysis of Strengths, Weaknesses, Opportunities and Threats (SWOT) reflected a grass-roots perspective that often focused on what was good for an individual fisher. Nevertheless, it is possible to generalize some of this feedback:

- Valuable fish stocks were often regarded as depleted but there are other stocks that are believed to be underutilized, particularly offshore
- Government support in the form of new harbors and subsidies was seen as a strength
- There was concern about increasing amount of foreign labor and capital in the sector

37. In addition, there are some issues that have emerged in the course of research and discussion outside of the workshops in the course of preparing the *Vision 2040 Approach Paper* (see **Annex 1**) and a draft of *Vision 2040*. These are briefly discussed below.

3.4. Differing Government Objectives

38. Some current fisheries sector goals and policies are contradictory. For example:

- The current overarching goal under *Vision 2020* is for the fisheries sector to comprise a larger proportion of GDP. At the same time, there are moves to restrict exports and to suppress the price of fish to local consumers by the regulatory direction of fish sales through designated central market facilities. Consumers complaining about the price of traditional premium species in short supply are not encouraged to switch to substitute species.

¹³ Ibid.

- There has been massive investment in harbor construction at the same time that industrial fishing has been restricted, then subsequently banned. The predominant fishing vessel type in Oman is currently an outboard motor powered skiff that is generally not dependent upon the new harbors in order to operate.

3.4.1. Inappropriate Current Indicator/Narrow Sectoral Definition

39. The pillars of *Vision 2020* are sound but the KPI for *Vision 2020* (that the fisheries sector would comprise 2% of Oman GDP by 2020) is inappropriate. First, it is a relative measure. Whether the fisheries sector reaches this goal is essentially a function of the performance of the energy sector. Although diversification of the Oman economy is an objective of *Vision 2020*, the performance (and growth) of the fisheries sector needs to be measured in its own terms. Second, the fisheries sector is perceived as the activity of fishing. While this underestimates the significance of the fisheries sector, this perspective also potentially undermines an appropriate perspective on policies for the sector. For instance, policies to maximize the size or revenues of the harvesting sector may be at the expense of investment and value creation elsewhere in the fisheries value chain.

3.4.2. Fisheries versus Fisheries Resources

40. Not all fisheries are an economic resource. The relevant question for both *Vision 2020* and *Vision 2040* is not whether there are fish in Oman that can be caught, but whether there are fish in Oman that can be caught profitably. There are undoubtedly fisheries in Oman (small pelagic species and lantern fish) where more fish could be removed without adverse impact on ecological sustainability. However, the business case for such removals is presently unproven. The economic potential of Oman's fish resources is smaller than the physical productive potential of its fisheries. This is true in all countries and, globally, fish exploitation is excessive because harvesters are frequently shielded from all of the environmental and economic costs of fishing by subsidies, weak fisheries management, and conservation frameworks.

41. Oman is therefore by no means unusual in its present combination of significant sector subsidies, and weak sector regulation. *Vision 2040* explicitly recognizes that both of these factors must be reversed if its goal is to be realized, but at a time and at a rate whereby the sector can cope with this necessary adjustment.

3.4.3. Central Planning versus Market Disciplines

42. *Vision 2020* provided a central role for Government in the development and modernization of the sector. The huge investment in Government funds for construction was based upon two assumptions:

- i. Harbor construction was the primary development requirement for the fisheries sector
- ii. The Government knew the ‘correct’ number and location of harbors plus their optimal design, including the design of associated infrastructure

43. The connection between these assumptions and the pillars of *Vision 2020* are unclear. It is also difficult to establish any increase in the size and value of the fisheries sector that can be attributed to this construction program, which also indicates a satisfactory rate of return on these historic investments. What is demonstrated by *Vision 2020* is that very careful detailed planning and analysis is required before a strategy is converted into investments, and that commitments to large Government infrastructure programs do not lend themselves to performance review prior to their completion and cannot be recalled if that review is unsatisfactory. This contrasts with most private investments which usually consider alternative course of action (Plan ‘B’) should below target returns eventuate at any time. The harbors infrastructure program initiated under *Vision 2020* may yet prove itself as valuable national asset, however *Vision 2040* suggests a move away from this approach to investment towards a paradigm with modest investment sizes, timeframes and risk profiles that are more amenable to financing by private capital.

44. Although *Vision 2020* had ‘Promoting an efficient and competitive private sector’ as one of its four pillars, the assumption appeared to be that this outcome would emerge ‘naturally’ once a different infrastructure base was established by Government. Experience now indicates that if this indeed was the assumption, then it requires a revision, and the active design and implementation of new private sector institutions for the fisheries sector will be a major and challenging aspect of the work required to realize *Vision 2040*.

3.4.4. Employment: Omani and Expatriate

45. Information about Omani employment in the fisheries sector is sketchy. In many cases, the number of licenses seem to be equated with the number of jobs even though it is known that many license holders are not full time fishers and some are not active fishers at all. Hence, current employment estimates of between 40,000 and 50,000 for the sector do not seem to relate to either full time employment or employment of Omanis. Furthermore, it is not always clear in current employment estimates how the limits of the sector are being defined: does it include aquaculture? Processing? Truckers? Retailers? It is observed that employment in the processing sector is predominantly provided to relatively low-paid expatriate workers who are also becoming more visible in the harvesting sector, including the skiff sector that was traditionally the domain of Omani citizens. Poor data on the numbers and earnings of fisheries sector participants in Oman provides an inadequate basis to assess the wider performance of *Vision 2020* and an uncertain baseline for *Vision 2040*.

46. In *Vision 2040*, references to future employment or jobs are generally references to full time positions that can support the job holder and their dependents in sufficient comfort to make

employment in the fisheries sector a desirable career for young Omanis who are in possession of a good education. The overarching employment goal is to create more opportunities of this kind within the fisheries sector (broadly defined). This does not mean that all fisheries positions must be full time or exclude expatriate workers. However, where a position held by an Omani is part time, the remuneration rate would equate to say, not less than OMR10,000 for a full time equivalent (FTE) position. Where the development of the fisheries sector requires the employment of expatriate labor (for example in a tuna canning plant in Duqm that was required to compete with similar plants around the world with low labor costs), then the creation of such jobs would be consistent with the objectives of *Vision 2040* to the extent that new associated employment for educated Omanis was also created as a consequence.

3.4.5. Private Sector Institutions

47. An ‘efficient and competitive private sector’ requires a sophisticated set of institutions (societal rules) to operate. These include secure private property rights and a complex mix of freedoms and responsibilities including: freedom to trade in fisheries goods and services, opportunities for new entrants to join the sector, responsibilities to comply with conservation measures, reporting requirements, and food safety. It also includes other regulatory measures designed to prevent stakeholders from imposing costs on society or the environment that are not fully reflected in the market price of fish products that would otherwise prevail. These responsibilities ensure that the fisheries sector in the future will be both efficient and competitive in that it is not only unsubsidized by the government, but is also imposing no negative externalities on the other citizens or sectors of Omani society.

48. These institutional arrangements have not been provided by *Vision 2020*. They must be part of the fabric of Omani society and require, not only the support of law, but a deeper level of acceptance of their legitimacy and appropriateness if they are to be stable and durable. The process for their development is therefore one that involves both high quality policy development capability and extensive stakeholder engagement. The capacity and processes for institutional reform of this kind in the fisheries sector are currently insufficiently strong for this challenge. The development of policy capability and frameworks for stakeholder engagement are therefore priorities for the *Vision 2040* work program.

3.4.6. Poor Baseline Information

49. There is no general agreement about the current status of Oman’s fisheries or the performance of the fisheries sector in Oman which extends from ocean to consumer. Such information that exists has been scattered between the libraries and data bases of different organizations. Good quality studies and papers exist, but these tend to have a narrow focus rather than an interest in the overall performance of the entire regime. A first step has been made to

address this issue under the World Bank engagement with the MAFW with the preparation of the, ‘*Fisheries Sector, An Information Audit Plus Bibliography*’ (see **Annex 3**).

50. Poor baseline information has a number of consequences. First, decisions are made without the input of existing relevant information because it resides outside of the decision making body. Second, there is a risk of investigative or analytical duplication and inefficiency. However, the third and largest consequence is the debilitating effect that the lack of agreed facts has on any discussion or debate. Opinions prevail because of the passion or position of their advocate, not because they are the best informed or grounded in reality.

3.4.7. Policy Capacity

51. The MAFW does not have a dedicated team of policy analysts or advisers. Individual senior managers have policy development and management skills, however, they are explicitly responsible for these activities. Understandably, most executive time and energy is devoted to the management and implementation of projects under the current five year plan as well as the ongoing management of general statutory responsibilities. Accordingly, MAFW currently has inadequate internal resources to drive well-founded reform of the Oman fisheries sector, including the adjustment of its own role in it.

3.4.8. Stakeholder Engagement

52. Significant steps were taken to increase the level of stakeholder engagement during the preparation of *Vision 2040*. Stakeholder meetings designed to map local stakeholder interactions in fisheries and to identify key weaknesses and opportunities were held throughout the seven coastal governorates of Oman. An additional workshop was conducted with the MAFW staff. *Vision 2040* has been informed by information collected from these workshops and also they have also provided valuable insights for a more comprehensive stakeholder engagement program going forward. As discussed in Policy Note 4 on, ‘*Institutional Arrangements for Stakeholder Involvement in Fisheries Management*’ (see **Annex 2**), the issue of stakeholder involvement is indeed a complex one. For example, the identity of relevant stakeholders, the nature of their engagement, and their rights and responsibilities are a function of the particular purpose of that engagement.

53. The relatively new role for Sunnat-al-Bahr that is focused upon improving the quality of fisheries regulations provides a useful initial step in increasing such engagement, and maintaining and improving this engagement will be important moving forward. The fisheries stakeholder analysis synthesis report (see **Annex 4**) also describes a different type of stakeholder engagement based around fisheries management units and identified groups of stakeholders who have formal and secure rights within a particular fisheries management unit. This type of engagement is both tighter in its definition of ‘stakeholder’ and carries more weighty stakeholder rights and

responsibilities than existing models of stakeholder engagement that are being tried in Oman presently. Stakeholder workshops and the Stakeholder Engagement Report identified 10 distinct classes of stakeholders. Each class has distinct interests, knowledge, rights and responsibilities and these differences must be appropriately recognized in the design and operation of each separate process of stakeholder engagement.

54. To be clear, the term ‘stakeholder’ in *Vision 2040* generally applies to Omani citizens who are actually engaged in the fishery sector in some capacity and, most importantly, have some form of explicit right that authorizes that engagement. For example, they hold a valid and current fishing license. Expatriate employees of such Omani stakeholders are not stakeholders, although there may be many occasions when stakeholders would be well advised to consult such persons about fisheries status or fisheries management issues with which they are familiar.

Oman – Classification of Key Stakeholders – Fisheries Sector*		
Category	Key stakeholders	Comment
Ministry for fisheries sector (and link to Citizens)	MAFW	Identified prominently by stakeholder analysis; recorded as ‘most powerful’ (Section 5.2., 5.7.); Responsible for sector, and link to other government ministries and citizens
Primary stakeholders	Fishermen	Identified prominently by stakeholder analysis; recorded as ‘most dependent’ on sector (Section 5.2., 5.7.)
Service providers	Traders, Fish factories, Repair workshops, Transporters	Identified as key stakeholders within the ‘Institutional Mapping’ analysis (Section 5.7.)
Government and regulators (and link to Citizens)	National Government, Municipal Council, Wali, Sunnat-Al-Bahr [and Citizens in turn]	Identified as key stakeholders within the ‘Institutional Mapping’ analysis (Section 5.7.); National government has overall responsibility for link to citizens
Political	<i>Shura</i> Council members (elected members of the lower house of the Council of Oman)	Identified in specific Governorate Workshops (e.g. Dhofar, Report No. 5 Stakeholder Analysis)
Government partners	Government agencies, Oman Development Bank	Identified as key stakeholders within the ‘Institutional Mapping’ analysis (Section 5.7.)
Local communities	Fishermen’s Associations	Identified as key stakeholders within the ‘Institutional Mapping’ analysis (Section 5.7.); Also discussed in SWOT Analysis (Section 5.5. and 5.6.); Also Section 5.8. on ‘Institutional Stakeholders’
Academic	University, Colleges	Identified as key stakeholders within the ‘Institutional Mapping’ analysis (Section 5.7.)

Media	Newspapers, TV, Internet-based media	Omitted from the identification of key stakeholders (Section 5.7.), but evidently engaged with sector (through regular reports on issues and news in Oman)
Industry and Trade Associations	[a future development option]	None at present in Oman, but may emerge in time, two Fishers' Associations are planned, and broader Associations may follow

Figure 3: Stakeholder Classes

***Please refer to the 'Fisheries Stakeholder Analysis: Synthesis of Results and Key Findings' report (Annex 4), for Section references**

4. Five Big Steps to Vision 2040 (25 Year Plan)

55. The goal of “*Vision 2040*” is to achieve a “*profitable world class fisheries sector that is ecologically sustainable and a net contributor to the economy of Oman*” by 2040. This requires policies and processes that encourage private interests to identify and capture the sustainable economic potential of fisheries and aquaculture in Oman over time. From this goal, it is possible to deduce the general steps that will need to be taken by Omani people to advance from the status quo, to achieve that vision over the next 25 years. Five big steps are required to be put in place with the delicate mix of key policies, organizational structures, systems and processes that are necessary to support the process of realization of the goal. Consistent with the pillars of *Vision 2020*, this approach is designed to be private sector led while ensuring that matters of wider public interest, such as ensuring ongoing resource sustainability, are protected.

56. Five meta steps are proposed to reach that Vision by 2040:

- i. defining the status of the fisheries resource to a level understood and accepted by all stakeholders
- ii. defining fisheries management units that will become the foundation of future management activities
- iii. agreeing and establishing effective stakeholder based management regimes around defined management units
- iv. developing sustainable management systems through stakeholder engaged management
- v. developing sustainable and profitable value chains

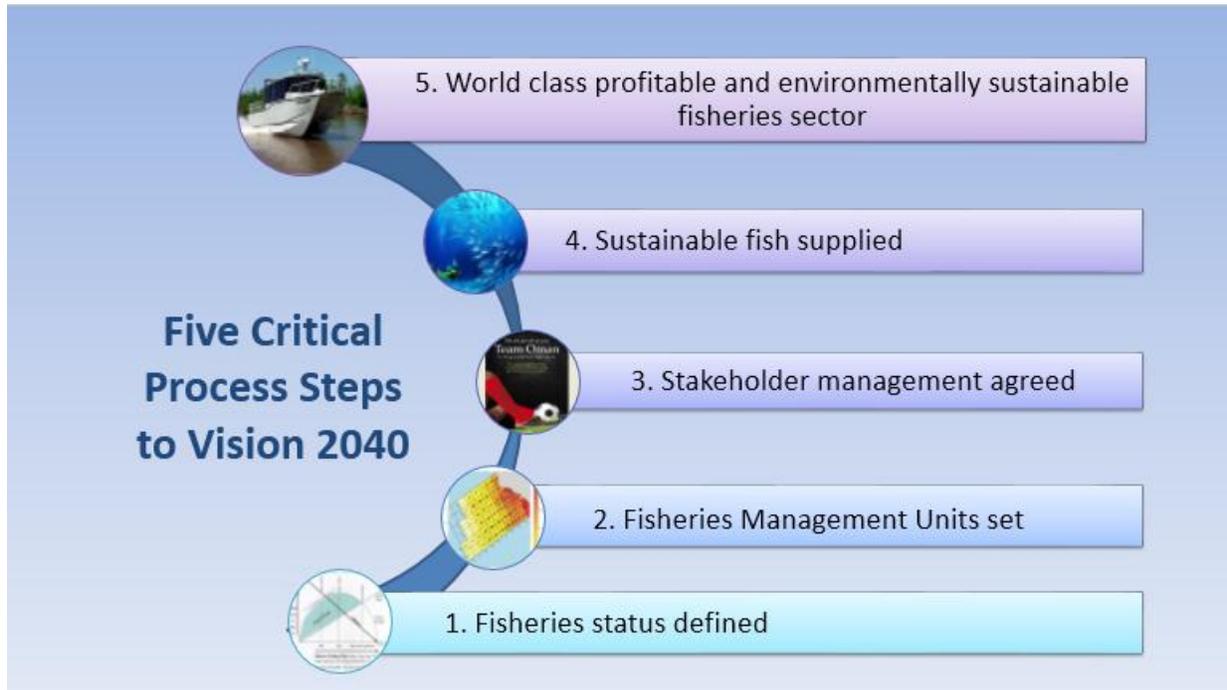


FIGURE 3: FIVE BIG STEPS

57. The five big steps can be derived by logic, once the content of the vision expressed in the phrase ‘world class profitable fisheries sector’ is properly understood.

- i. A world class profitable fisheries sector is economically sustainable with the internal capacity to detect and respond to opportunities and threats to the creation and preservation of wealth based upon the use of Oman’s fisheries resources. The free cash flow, employment and other benefits derived from these resources depend on the maintenance of a sustainable fish supply.
- ii. A sustainable fish supply requires the establishment and adept operation of fisheries management arrangements customized to the needs of each fishery. Such adept operation requires the close involvement and support of actual stakeholders with secure, clearly defined rights in the fishery and whose well-being is aligned with the achievement of a sustainable fish supply and a profitable fisheries sector generally.
- iii. Stakeholder management requires the identification of stakeholders, their individual and collective legal rights and responsibilities. In order to exercise collective rights and responsibilities for fisheries management, stakeholders will require an organizational framework that allows them to not only agree customized management measures but to ensure that those measures are then implemented and enforced within the fishery.
- iv. In order to establish customized fisheries management by stakeholders, fisheries management units have to be defined including the identification of stakeholders associated with each fisheries management unit.
- v. The basic information required to support such determinations must be generated, reviewed and agreed. That basic information includes the geographic boundaries of the FMU, the species included, the stakeholders and possibly other parameters such as fishing method. Priorities for collecting and refining this information have to be established as part of the process determining the status of fish stocks in Oman. High value and at-risk stocks require more thorough analysis of their status and progression through the five big steps above.

58. Note that the five big steps are a sequence. The order of the steps cannot be altered, steps cannot be deleted and there is minimal progress possible on a higher step until its lower predecessor has been properly completed. The implication of this is that all intensively managed fisheries must follow this general sequence. This does not mean that they must all follow the same timetable. Furthermore, not all fisheries will require this level of management urgently – some may never require it. There are species in Oman that can be safely maintained as open access fisheries at present, requiring no more than catch monitoring and a rudimentary analysis of value at risk. The general framework of risk analysis appropriate for all aspects of the *Vision 2040* work program is discussed in the ‘Risk Analysis’ section below.

4.1. Fisheries Status Defined

59. As explained above, the first major milestone starting point for *Vision 2040* is an agreement on the status of fisheries in Oman. As mentioned in the Environmental Scan, the definition of a fishery may require the subdivision of a species into separate stocks of different sizes and locations. Because the intention is for that definition to become an attribute of significant associated stakeholder rights and responsibilities, it is a task that must be approached with considerable care and with the best available information. In order for there to be agreement over the definition of FMU, there must be some underlying agreement about quantitative and qualitative attributes of each fishery. The formal record of this agreed fisheries description is a Stock Status Report (SSR).

60. The formalization of a suite of SSRs (see below) is the first big step in the critical path to *Vision 2040*. This description has several aspects including the biological condition and potential of fish stocks, the economic performance and potential of the fisheries sector, and the social, cultural and legal parameters that constrain the nature and extent of change possible in the short to medium term.

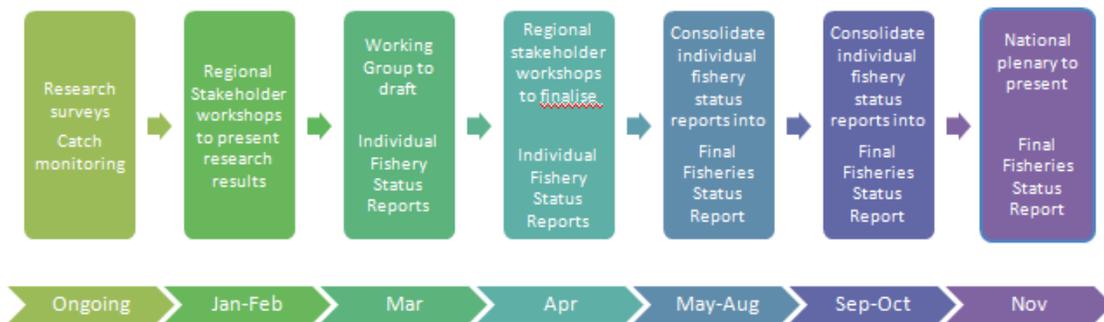


FIGURE 4: STOCK STATUS PROCESS

61. Achieving agreement between stakeholders about this baseline information is not an easy task. Individual perceptions about the significance of the same piece of information can vary widely and a significant effort will be required to achieve stakeholder consensus on the state of stocks and their economic performance, let alone agreement about trends and potential. The first draft SSRs were completed in May 2015.

4.2. Fisheries Management Units (FMU) Set

62. The first SSRs provide a necessary, but not sufficient, basis to set some FMUs. The term ‘fishery’ in a world class fisheries management regime describes a tightly defined entity. That definition can include natural and geographical parameters, technical attributes and human or social features. Generally, the definition of a FMU is a pragmatic definition that melds the practicalities of exploitation with the imperatives of ecology and resource conservation. FMUs

should be defined in a way so that economic spill-over effects or externalities are moderate. These effects are ubiquitous in the marine environment but a key objective of stakeholder management is to confront stakeholders (as far as practicable) with the costs – whether immediate or long term – of their actions so they seek ways of internalizing the trade-offs within the realm of fisheries management in a way most consistent with the maximization of value.

63. Oman is yet to define its FMUs in this sense. A fisheries management unit comprises both particular fish and particular people with particular rights and responsibilities. The nature and extent of those rights and responsibilities must be defined in law before an FMU can be ‘set’. This however does not mean that all fisheries rights would need be identical (although they will be based upon uniform principles), but the menu of attributes of those rights would need to exist along with the legal process by which they are conferred upon or allocated to particular stakeholders. The rights and responsibilities of stakeholders requires careful definition which will necessarily entail some redefinition of Government responsibilities and roles in fisheries management. The identification of stakeholders in this proper sense is in fact one of the most difficult tasks in fisheries management since it requires explicit or implicit decisions to be made about allocation.

4.3. Stakeholder Management Agreed

64. The identification of stakeholders in FMUs and their respective rights is not in itself sufficient to guarantee the agreement or implementation of high quality stakeholder management over fisheries. First, the status of ‘stakeholder’ must be of sufficient security and influence to carry powerful behavioral incentives. A fishery with defined and secure stakeholders is a closed fishery but it is still a ‘commons’. In order for stakeholders to act effectively in response to their collective incentives to conserve the fishery and maximize its value over time, they need to belong to an organizational structure with sufficient coercive power to govern the commons (their FMU).

65. The design of these frameworks for collective action by stakeholders is considered as cutting-edge fisheries management. This is why the implementation of such arrangements will truly propel the Oman fisheries sector to ‘world class’ status.

4.4. Sustainable Fish Supply

66. The stakeholder incentives required to motivate economically enlightened fisheries management are those that confront stakeholders with the long-term consequences (for good or for bad) of their management choices and instruments. The public interest of Oman is best served when the wealth represented by fisheries resources is maximized. That wealth is delivered as an annuity from a resource that is potentially infinitely renewable if managed wisely. The public interest is not served by conservation of resources that compromises the capture of available benefits and wealth. Neither is it served by the capture of available benefits and wealth that

compromise the conservation of resources and their capacity to deliver similar benefits to future generations of Omanis.

67. It is possible to reconcile these two imperatives through management that delivers a sustainable supply of fish to the Oman fisheries sector and to its customers. As a rough general rule however, maintaining fish stocks at a size capable of producing the Maximum Economic Yield (MEY) is consistent with this reconciliation. MEY is the theoretical stock size where the sustainable yield from that stock supports maximum net profits from the fishery. It takes into the account both the costs and the returns of fishing. It usually corresponds with a larger (and more resilient) stock size than the one producing the Maximum Sustainable Yield (MSY) from the stock. The larger stock size means that fish are easier (cheaper to catch) and this saving on every fish caught can outweigh the disadvantage of catching a slightly smaller number of fish.

4.5. World Class Profitable Fisheries Sector

68. Ecological sustainability is a key pre-requisite for a world class profitable fisheries sector. When harvest strategies of valuable Omani fisheries are based upon the target of preservation of fish stocks capable of delivering MEY, then there is the prospect that profits will be maximized. However, that prospect must be converted into reality on an everyday basis for the goal of *Vision 2040* to be achieved. The key to the conversion of potential into reality is a capacity to attract the highest quality private sector investment and expertise into the Oman fisheries sector.

69. *Vision 2040* describes a sector that is internationally competitive and containing the opportunities and incentives to pursue dynamic economic efficiency. At a distance of 25 years from this date, it is quite impossible to predict exactly the skills and technology that will be needed in 2040. However, a sector that is world class will identify those skills and technologies faster than its competitors.

5. Implementation Plan 2015 – 2020

70. There are four priorities for the plan to implement *Vision 2040* during the period 2015 – 2020. These are:

- i. Policy development
- ii. Stakeholder engagement to inform policy development
- iii. Step 1 and 2 of the 5 Big Steps to the Vision (fisheries status defined and pilot FMUs defined)
- iv. Legislation and compliance strengthening

71. These four priorities all form part of an associated MAFW pilot investment project scheduled to commence in 2016, targeting the abalone and cuttlefish fisheries. Although these fisheries are relatively small in size, the investment project provides an excellent opportunity for both stakeholders and government personnel to gain practical experience in the management of the issues and tasks that will arise in the course of a more widespread implementation of *Vision 2040*. An investment project targeting kingfish will be prepared and implemented in parallel, and work towards developing a tuna stakeholder agreement in the form of a public private partnership will be progressed (as outlined in the Implementation Plan of *Vision 2040*). The GoO has identified four primary criteria to the guide selection of priority fisheries for early inclusion in this process. These criteria are: (i) fisheries where value is most at risk; (ii) having a clear value proposition available from improved management; (iii) easily underpinned by a defined FMU with clear biological boundaries and associated stakeholders; and, (iv) good opportunities for linking value chain innovation and environmental risk with stakeholder-driven management. Collective action criteria from successful stakeholder based management examples in fisheries in Mexico were also considered in the selection. In addition, potential for scaling up of the pilot fisheries were also considered. Above criteria were also applied for selection of pilots in other World Bank fisheries projects such as in West Africa, Indonesia and India. Secondary factors in the selection process are based on an examination of the level of understanding of management opportunities amongst stakeholders and the associated structure and composition of communities of interest.

72. The implementation plan will be made effective through a series of business plans for the MAFW that progressively shift focus from *Vision 2020* projects and activities already underway, to *Vision 2040* projects and activities. The initial work of *Vision 2040* is necessarily focused strongly on setting the policy for implementation and establishing the legal and compliance regime to support this policy. These are both core government roles as they are necessarily in the domain of government as being responsible for setting policies and enforcer laws.

73. Work has commenced under two of the four above priorities. First, work is well advanced on the production of the first suite of SSRs for Oman’s fisheries. Second, five ‘discussion starter’ Policy Notes have been prepared and circulated. As seen below, these address only a small number of the policy issues brought into focus by *Vision 2040*. However, before new policies can be finalized, the policy development capacity within the MAFW requires strengthening, and

stakeholder consultation and engagement with the policy development process under *Vision 2040* needs to be formally established and integrated into that process.

74. The design of the appropriate compliance regime for *Vision 2040* is a subset of wider policy development. However, it is important that this is considered as a priority for the next five years. As it is a highly specialized field, Oman would benefit from expert technical support in that area.

75. Furthermore, the orderly implementation of a program to implement *Vision 2040* in its first five years (2015 to 2040) requires the development, agreement and implementation of a risk assessment framework that can shape priority setting both within the *Vision 2040* program and individual business plans. The development of this risk assessment framework is therefore the most urgent piece of policy analysis work that is required.

5.1. Risk Assessment Framework

76. A crucial difference between *Vision 2020* and *Vision 2040* is a planned move from a focus on the construction of infrastructure (hard investments) to a focus on the development of policies, institutions and management systems (soft investments). The objective is to create an investment environment for the private sector that is secure enough to encourage investment, but is also competitive enough to require the careful consideration of what investments are appropriate and to encourage the re-configuration of those investments if sectoral costs, prices or opportunities change. The challenge for the GoO is to determine the optimum order and content of these new ‘soft’ investments. In short, what are the priorities for the Implementation Plan for *Vision 2040*?

77. As explained above, there is a natural order to the ‘five big steps’, but this does not provide guidance on priorities at the level of each step. It is proposed that the wording of the goal of *Vision 2040* provides the key to prioritization, in particular the word ‘profitable’ as it is explained in paragraph 28 above. This suggests that the over-riding priority should be to undertake actions first that are most likely to make the greatest contribution to the achievement of improved profitability and value of the fisheries sector. In other words, the priority should be to capture ‘value at risk’. As value is calculated at the intersection between costs and benefits, value may be at risk either from not averting avoidable potential costs, not capturing available potential benefits, or a combination of both. Value may be at risk from the collapse of a fishery through excessive Omani effort (such as lobster) or through insufficient effort (as in the IOTC purse seine tuna fishery).

78. It is ‘value at risk’ that should determine which fisheries should be a priority for definition as an FMU, while other less valuable fisheries remain under status quo management or even remain open access fisheries. ‘Value at risk’ subjects all management outlay or investment proposals to the discipline of cost/benefit analysis where both costs and benefits are defined in a manner consistent with the goal of *Vision 2040*. This risk analysis therefore requires agreement and implementation of the *Vision 2040* KPIs. Policy Note 2 makes some tentative suggestions on this

topic but they have not been formally adopted by the MAFW. Agreed KPIs are a pre-requisite for the development of an Implementation Plan for *Vision 2040* and for future business planning within the MAFW.

5.2. MAFW Business Planning

79. The ‘five big steps’ imply that the functions of the MAFW will evolve between now and 2040 as the existing program of hard investments are completed and a sequential series of fisheries management actions (soft investments) are carried out. The immediate implications for MAFW following the adoption of *Vision 2040* are to incorporate resourcing for ongoing stock status reporting, policy analysis (especially the risk assessment policy) and the development of a compliance framework. Beyond these four initial priorities, *Vision 2040* indicates that the functions, structure and resourcing of MAFW will need to respond to two general aspects:

- i. How many fisheries are included at each of the five big steps
- ii. The prioritization accorded to particular tasks (investments) as a result of value at risk analysis

80. Particular information on (i) and (ii) will be crucial to the future process of business planning in MAFW. However, it is clear that the adoption of *Vision 2040* will also have some significant general implications for business planning, structure and resourcing of the MAFW if the goals of *Vision 2040* are to be realized in an efficient manner. The capacity of the Ministry to analyze and communicate policy will need to be strengthened, along with the capacity to collect and synthesize relevant fisheries data, consult with stakeholders, support the development of legislation and regulation, and ensure compliance with those laws and regulations.

5.3. Policy

81. As mentioned in the Environmental Scan, MAFW lacks a dedicated policy development capacity to support the implementation of *Vision 2040*. A small policy unit (of four to six personnel) that adheres to its own policy on prioritization according to value at risk would be capable of developing the policies above in the time needed provided two conditions are met. First, the policy unit should report to the highest level within the MAFW and to enjoy the support of senior management. Second, the caliber of personnel recruited to the policy unit would need to be the best available. Policy analysts need an ability to understand concepts and principles from economics, commerce, science and law as well as sufficient knowledge of history and politics to determine the adaptations that are required in an Omani context. The quality of policy is determined by analysis but the success of a policy is often determined by how it is communicated.

82. Policy issues to be faced by the MAFW immediately upon the adoption of *Vision 2040* include:

- i. The development and monitoring of agreed KPIs for *Vision 2040*
- ii. The development of an agreed framework for risk analysis and prioritization of tasks and investment (using the KPIs above)
- iii. Processes for business planning for the MAFW under *Vision 2040*
- iv. Agreement about the parameters to be used in determining the attributes of FMUs
- v. Rights and responsibilities of fishers including reporting requirements
- vi. Design of systems and processes to collect, store, analyze and disseminate fisheries data
- vii. A framework for the development of individual harvest strategies for Oman fisheries including the application of preferred reference points such as MEY or others as per objectives set by specific fishery
- viii. Preferred approach to fisheries compliance in Oman including sanctions and penalties
- ix. Rights and responsibilities of stakeholders in FMUs
- x. Principles and process for the allocation of rights in FMUs
- xi. Frameworks and legal structures for collective action by stakeholders in FMUs
- xii. Policies for subsidies and cost recovery (see discussion starter in Policy Note 3, **Annex 2**)
- xiii. Policies for the management and use of international and shared fisheries
- xiv. Policies relating to the regulation of trade in fisheries products in domestic and export markets

83. The quality of these policies and the extent to which they share common principles and goals are essential to the realization of *Vision 2040*. Policy analysis is not a one-off task but all policies need to be subject to monitoring with the aim of detecting whether the policy is delivering its stated intentions. The ongoing review of policy is frequently neglected. This denies the opportunity to benefit from practical experience or to fine tune policies in the light of changes to the wider commercial and natural environment of the fisheries sector.

5.4. Research

84. MAFW has a useful fisheries research capability but the connection between this capability and the day to day operation of the fisheries management regime in Oman needs to be strengthened under *Vision 2040*. This will require a substantial upgrade of research planning processes, which in turn is reliant upon a clear set of agreed fisheries development objectives and priorities. In addition, the development, and more importantly, the testing of policy requires relevant and agreed data. The Fisheries Stock Status Reports for 2015 will be an important milestone in the generation of this data. However, these Status Reports require annual updating. This is not to say that every aspect of each report must be reviewed annually, but that the Status Reports must become linked to a process of general review of the fisheries research program and priorities. This review would employ the principles and process of ‘value at risk’ analysis used elsewhere in the MAFW.

85. Unlike fisheries policy, fisheries research appears to have a reasonable level of resourcing in Oman. It is apparent is that *Vision 2040* will generate new priorities for research activity in the future that will require re-orientation of those resources so as to tie the research program much more tightly to contemporary fisheries management priorities. While this will ensure a relevance and value to research that will underpin the future status of researchers, there is little doubt that

fisheries research will need to become more oriented towards meeting the goals of *Vision 2040* and the needs of clients (people with fisheries management responsibilities) in the future.

5.5. Stakeholder Engagement in Policy Development

86. In addition to relevant and accurate data, stakeholder engagement can significantly contribute to the quality of policy and its success. Involving affected persons and organizations in policy development at ground level ensures that proposals are practical and have the understanding and support of those affected by them. This support has significant implications for the likely level of voluntary compliance and therefore the transaction costs of the policy, once it is implemented.

87. Early in the implementation program for *Vision 2040*, neither FMUs nor their associated stakeholders will have been identified. ‘Stakeholder’ in the context of this section therefore has a more general definition that would include the current consultation processes that are being developed with Sunnat-al-Bahr. It is suggested that (given the broader definition of the fisheries sector applied in *Vision 2040*) additional avenues of stakeholder engagement are necessary for future policy development. In particular, input is needed from processors and truckers. In the course of preparing this plan, it became apparent that relations between the MAFW and these sectors could be strengthened to the mutual advantage of both sides.

5.6. Legislation/Regulation

88. If policy is to alter anything in the real world, it must have status. As an overarching objective of developing policy is to provide a context for private sector investment that has high levels of certainty and security, the best and ultimate status for policy is for it to have legislative or regulatory sanction with State backed enforcement. The policy issues indicated above are therefore also components of a legislative agenda for the coming years in Oman. A partial devolution of fisheries management responsibility to right holders does not imply an absence of fisheries law, but a new legal framework that both empowers right holders to make rules and provides powers to discipline any right holders who choose to disregard those rules.

89. The absence of robust collective action frameworks for stakeholders explains many fisheries management failures where policy settings ostensibly encourage stakeholder engagement and will consequently need to be defined.

5.7. Compliance

90. Laws and regulations without enforcement are often disregarded. It is noted that there is little systematic effort to assess the level of compliance with fisheries management measures in Oman and enforcement effort is quite low. Compliance with rules is therefore variable. Where rules have the support of fishers or their communities, voluntary compliance appears to be high, especially where fishers assume that others are generally abiding by those rules. When confidence that this is the case erodes, a rapid slide towards general non-compliance can be expected.

91. Voluntary compliance is a worthy ideal. However, the history of Oman as in other countries shows that self-interest is not enough to protect valuable fisheries from over exploitation (lobster, abalone and kingfish). The objective of *Vision 2040* is to move more fisheries into the valuable category. To the extent that this occurs, compliance problems will expand and the level of enforcement required to prevent that value being expropriated by non-right holders or by right holders intent on taking more than their share, will need to rise. Accordingly, a review of the foreseeable compliance issues and enforcement capacity requirements of Oman arising from *Vision 2040* is necessary. Ideally, that review should cover organizational systems, structures, skills, training and resources, including initial MAFW compliance budget.

92. Sophisticated compliance systems make use of detailed data on catch and catch effort collected for wider fisheries monitoring and management purposes. Basic fisheries management systems and databases in Oman will require comprehensive re-design and modernization in order to support the roll out of the 5 big steps. This structural and systems design work should follow the policy work above that will define the key outputs and essential inputs of the *Vision 2040* fisheries management systems.

6. ANNEXES

1. *Vision 2040* Approach Paper
2. Policy Notes (5)
 - Policy Notes: Function and Scope
 - Economic Key Performance Indicators for *Vision 2040*
 - Suitable Framework for Subsidy Management and the Funding of Fisheries Management Costs
 - Institutional Arrangements for Stakeholder Involvement in Fisheries Management
 - Management and Utilization of International and Shared Fisheries
3. Information Audit Report and Bibliography
4. Fisheries Stakeholder Analysis: Synthesis of Results and Key Findings – with reference to a Future Stakeholder Engagement Strategy
5. Policy Scenario Analysis: Results from Preliminary Economic Analysis
6. *Vision 2040*: Socio Economic Context