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RAPID DESK-BASED ASSESSMENT ON THE FISHERIES SECTOR

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Background

The fisheries sector in Yemen is the third most important resource in the country after oil and water. It is a major source of livelihood currently to more than 100,000 fishermen (Statistical Central Scheme, MOPIC 2013). These fishermen, in turn, support perhaps half a million people or more. The fisheries sector in Yemen is a central part of the life of coastal communities along the Red Sea, the Gulf of Aden and the Arabian Sea. The coastal line of 2500km makes this sector primarily artisanal in nature hosting more than 23,000 traditional boats and 135 fisheries associations located in 10 coastal governorates in Yemen (MFW Report, 2013).

The annual catch, on average, is around 225,000 metric tonnes. About 70 – 65 % of this catch is from the Gulf of Aden and the Northern Arabian Sea including the very productive Soqatra archipelago, the rest is from the Red Sea. About 80 – 70 % of the landings are exported with little or no processing to Saudi Arabia by refrigerated trucks and to Oman, which is a destination for Yemeni fish and lobster. Products with some processing, such as Yellowfin Tuna loins, are exported to the Far East and the EU, along with whole frozen fish, lobsters and cuttlefish. For the most part, however, little or no value-added processing is undertaken. Export driven value- added processing of fish, and the opportunities for small and micro enterprises are a primary concern for support.

Additionally, good hygienic practices in harvesting, handling, manufacturing and transportation of fish and fish products, coupled with adequate refrigeration throughout the chain of custody, can preserve the quality of fish and ensure the safety of consumers from outbreaks of fish-borne illness. Systems of quality assurance such as HACCP have gained worldwide acceptance as cost effective and reliable. This system is based on risk identification and minimising such risks through the design and layout of the physical environment in which high standards of hygiene may be assured and by setting measurable standards and establishing a system to monitor them. These are the pre-requisites for the fisheries sector to make a substantial jump in its contribution to the economy of Yemen, yet much of this lack in the sector

A PRIMER OF VALUE CHAIN ANALYSIS (VCA)

Globalisation has brought profound changes in how goods and services are sourced, produced and marketed. Communications technology, labour costs, access to resources and marketing skill, to mention a few important factors, have made it possible to build and maintain production and distribution networks around the globe. These factors have created opportunities as well competitive pressures at all steps of procurement facilitating the selling and buying of goods and services across the globe.

This applies to all services and products including fisheries products. In Yemen, it is easy to find fish products in supermarkets and big groceries, even though limited in variety, such dried fish, dried cuttlefish etc. These samples might have originated in a different place than the selling place. For instance, the samples we purchase in Yemen may have been caught in Yemeni waters, exported as frozen block to another country (Thailand in this particular case), processed there and imported in bulk to Saudi Arabia, then packaged and re-sold in retail stores in Yemen as well as everywhere else in the Gulf Region. At each stage, value in the form of labour and other inputs (labour, materials and expertise) are added such that the final product is competitively priced increasing the choices facing the consumer.

A value chain analysis, (VCA), provides a systematic approach to gain an insight into the inter-connected stages involved the provision of products to consumers on the world market. The VCA approach provides a comprehensive view the interlocking stages of making a product available to a consumer, starting from procurement of raw material inputs, through production and processing and, finally, marketing and distribution. Furthermore, VCA provides logical points of intervention for enterprises of different sizes, and helps focus attention on differentiation allocation of responsibilities between the private and public domains.

In the context of the fisheries sector in the Yemen, as elsewhere, value chains may be practically thought of as clusters. These would be grouped around sequential functions, such as resource harvesting clusters, landing and handling clusters, transportation clusters, processing clusters, and marketing clusters. This paper summarizes the basic value chain in the fisheries sector in Yemen with the main aim of identifying opportunities in the value chain clusters and to propose interventions focusing on identifying products (or groups of product lines) that link small and micro enterprises to the domestic, regional and the global market for potential funding and support.

The overarching objective is to provide the means for poverty reduction in fishing communities along the coastline focusing on the coastal regions of the country. It will be necessary to comment on the sector as a whole, especially as much of the capital investment in the infrastructure that enables value chain clusters to operate are large public sector investments such as harbours, power grids, fresh water supplies, sanitation infrastructure etc. Such large infrastructure investments can be supported by the government, international donors, UN agencies working in the development sector and large national agencies supporting development efforts such as the Social Fund for Development (SFD) and its arms.

ANALYSIS

The analysis focuses on four main ‘clusters’. These include:

1. Production clusters: This includes fishermen, their equipment and skills such as boats – various types, gear, engine and other systems on board (e.g. GPS), ice and, of course, technical skills of fishermen.
2. Shore-based clusters: handling and transfer facilities, landing site infrastructure such as auction halls, fresh water supplies, cold stores, ice factories, solid waste disposal facilities, waste water treatment and the like. These clusters are the public sector investments that, unfortunately, are in poor state of repair and in urgent need of upgrading.
3. Processing clusters are the natural domain for small and micro enterprises to flourish. Currently, however, almost all the players in this cluster are of medium size or larger. We found one enterprise (shark drying and exporting facility) that may be classified as “small”, but then this enterprise was a subsidiary of a larger company.
4. Distribution and marketing clusters are a suited to the fishermen’s societies, or co-operatives. They have assisted only in limited ways in the past but, with proper tools, they can spearhead the export.

Key players in the value chain, typically global buyers, can exert control upstream on their suppliers by insisting on certain product specification. In the case of fish and fisheries products, quality and compliance with “global village” standards of hygiene is the foremost requirement. Suppliers who do not meet such product specifications are simply dropped from the “approved supplier” list. This is an example of value chains procuring products and services on the world markets. However, some production chains are “captive” in the sense that in return for supplying products to rigorous standards imposed by downstream “key player”, suppliers’ benefit, in return, from technical expertise and training provided by such key player to comply with the requisite standards. A well-known example of a captive chain in the Yemen fisheries context is trader at the Saudi border who is delivering his load to a Saudi counterpart. If he passes inspection, then he gets paid, often not for the current shipment, but for the one before. Thus, the trader on the other side ensures a supply of raw fish. However, there is a way to bypass this captive link that will be presented later.

Before analysing the first cluster (production or harvesting), it is imperative to discuss the resource base itself, namely the fish stocks and how they are managed. One might think of Yemen’s marine ecosystem as a provider of goods and services to Yemeni society. The Ministry of Fish Wealth (MFW) has the ultimate responsibility as a steward and a custodian of fisheries resources on behalf of Yemeni society.

- **As such, what are policy questions that the MFW has to address?**

The first has to be Long-term sustainability of fish resources. As a simplification (perhaps an oversimplification), one may think of the marine ecosystem as natural capital (stock) that produces an annual surplus not unlike a financial capital producing an annual flow of interest. As long as the annual catch does not exceed the surplus flow, the resource is sustainable in perpetuity, subject to annual variability and all sorts of other variables that are not the subject of this discourse. The challenge, then, is not exceed this finite annual “quota”. In this regard, perhaps the most far-reaching decision ever made in the Yemeni fisheries is the outright banning of trawlers. It is now recognised that trawling, especially bottom trawling, is a highly destructive form industrial fishing whose practice borders on the commission of ecological crimes.

The most advanced fisheries jurisdictions have imposed stiff penalties if a boat is shown in a court of law to have been trawling illegally. In New Zealand, for example, a guilty captain will lose his boat.

In the context of Yemen’s fisheries, banning trawlers has to be complemented by a credible system of Monitoring Control and Surveillance (MCS). Implemented *pari passu*, the paired measures of banning trawlers and vigorously enforcing such a ban, are the essential means that ensure long term sustainability of resources and are the foremost requirements if the sector is to increase its contribution to the welfare of Yemeni society.

The second policy question for the MFW is equitability in distribution of benefits to participants, fishermen, co-operatives, and society at large through the collection of royalty shares. The role of co-operatives in driving fish exports will be elaborated in a later section.

- **What are the constraints to long-term sustainability and equitability?**

The answer is a near total lack of a systematically organised fisheries management framework. This report is not the place to discuss the management of fisheries in Yemen. The lack of a formal fisheries management system constrains the participation of small and micro enterprises in innovative and creative ways that are also profitable. SMEPS was informed by the MFW office in Mukalla that a large, multi-year project, the Fifth Fisheries Project (Fish V) is about to be declared operational.

The typical chain observed summarises the most common features of Yemeni fisheries, based on SMEPS experience working with fishermen:

- A fisherman goes to sea with or without a hand-held GPS for 5 – 3 hours, uses bait and a hand line or a drop line, catches tuna and goes back to the beach landing site.

- The fish are auctioned at the landing site, put in fibreglass containers with ice and, typically, are trucked to Saudi Arabia.

With the exception of a handful of private companies that do some processing, the above is an accurate description of a typical fisherman and the fish he lands. Most of the catch, as noted earlier, is destined to Saudi Arabia and other gulf countries.

Cluster 1: Production Cluster - the fisherman and the boat

In a strict ecological sense, the fisherman may be considered as a predator that has evolved and adapted for survival in a particular ecosystem. His attitude may be summarised in a primal imperative: the more fish he catches the more successful he is in passing his genes to the next generation. He does not see himself as the first link to a value chain embedded in a regional or global network. He only sees fish equivalent to more resources and better survival.

Considerations such as quality being more important than quantity are totally foreign to him. Although made of fibreglass and powered by an outboard engine, the typical Yemeni boat is rather simple, differing only in those aspects from the dugout canoes powered by oars and sails. It still allows him to land his boat anywhere on the beach, close to where he lives instead of some high-maintenance landing facility. In the SMEPS value chain analysis study one academic interviewed at the university in Mukalla ventured to assert that the current boats have changed little from the days of Queen Balgees; he may have been exaggerating, but not by much.

There is little or no room to work on the boat. Sometimes the boat has a built-in box to take live bait (sardines typically). Rarely ice is taken to sea, there is no hold to keep the ice; it costs money and, perhaps most importantly, the fisherman gets the same price for his fish whether iced or not.

Cluster 2: The shore-based Cluster at the landing site

Upon returning from sea with his catch, the fisherman sees crowded and poorly organised landing sites in varying states of disrepair. These were built by a previous actor and were either poorly maintained or not at all. Handling facilities and procedures are, to say the least, not consistent with good hygienic practices (GHP).

Interventions at the landing sites such as those required to raise the quality to Global Village standards are highly capital-intensive interventions best suited for the public sector investments, assisted by multilateral donors. This is also the domain of the Ministry of Fish Wealth that has to be at the centre of

the process to move to such standards forward.

Development agencies such as SMEPS, SFD and PwP can partake in the design of such large projects and take on specific training tasks. However, if given property rights, co-operatives can take over the long-term maintenance of these facilities. A prerequisite, however, is that co-operatives have the technical, organisational and financial capacities to undertake long term maintenance. Again, the two important ingredients, Attitude and Aptitude are in questionable supply. In any case, if benefits from the fisheries sector are to increase to the level that they can (such as by producing higher quality fish) then these facilities are in bad need of being rebuilt. A point of leverage specifically on the Arabian sea coastline is the financial capacity of larger fishing associations specifically those plotted across Hadramout's shores.

Cluster 3: Processing clusters

There is ample room for small innovative enterprises to carve out niche markets in this cluster to produce and market fisheries products. However, rather than the current model of “product push” marketing, “market pull” is the modality that is proposed, one that has to be integrated and linked to a regional network of distribution and marketing, the next cluster.

SMEPS working to support SMEs can provide, through training workshops focused on small enterprises, the means to ameliorate both of these factors (Owned by SMEs). However, there is another factor, access to finance which can be activated by Micro Finance Institutions once there is demand. There is an opportunity to support the prominent fishery associations to establish small fish processing plants. Again, here, MFIs can play a crucial role in providing access to finance for these associations. However, the missing link to finance can be addressed through market assessments, and financial service product development for the sector as SMEPS has done in the youth and agricultural sectors in supporting MFIs access these markets.

Cluster 4: Distribution and marketing clusters

The current configuration of these clusters is largely of the “product push” variety exporting the bulk of the catch to the gulf countries, specifically the neighboring Saudi Arabia. There is much room for increasing the returns from the fish bounty if a “market pull” approach is adopted in the fisheries sector in Yemen. This approach was adopted by the so-called Brazilian model for small enterprises that are geographically isolated.

For a modest investment (about 1000\$) a solar-powered communication node may be set up with satellite links to the internet anywhere along the coast. These nodes are thus able to link producers (in

this case, Hadrami fishermen or their associations) to markets around the world, instead of being held in captive chain to specific gulf countries importers. The most likely candidate to take the lead in this regard is the MFW and the local fishermen's associations. Development agencies on the other hand, can play an important role in providing technical support and awareness on such innovations.

Fishermen everywhere will not change their behaviour, or adopt new fishing techniques or gear unless increased profits are unequivocally demonstrated. Though risk takers in their profession as predators, Yemeni fishermen are risk averse when it comes to financial outlays. They have to see with their own eyes that, first, a new technique works, and second, that it is more profitable than what they are already using. They will modify their attitude towards taking ice, bleeding and gutting fish at sea, for example, only if they get higher prices for their added effort and cost at the landing site. Otherwise, they will attempt to catch as much fish as they can haul using their minimal inputs and land it irrespective of the quality.

The fisherman/boat/gear cluster in the value chain is a logical entry point for SMEPS to affect change because the agency deals with micro enterprises. This is also relevant because extension services that used to be provided by the MFW have long been discontinued. The proposed project is an attempt to change the attitude and the aptitude one fisherman at a time.

However, chain clusters do not operate in isolation to the different chunks of the chain. Getting fish associations interlinked with markets is a necessary step to supporting a 'pull strategy' as seen with the case of New Zealand and its fish industry's association opening marketing offices in Europe. The Yemen Sea Food Exporters association has similar aspirations for the gulf market that could be supported by SMEPS.

Policy Concerns

- Maximise sustainable benefits to society from the fisheries sector.
- Provide a significant contribution to food security through reasonably priced fish in local markets.
- Provide employment opportunities in value-added processing of fish products for export.

Constraints

- Open access to every fisherman
- Investment in shore-based infrastructure
- Weak management and enforcement
- Absence of a sector-specific development policy

Effective intervention at the first two clusters

For the proposed interventions to make a difference, they require not a gradual change on the part of small-scale fishermen, but rather a quantum leap in their attitude towards quality and value as well as their aptitude and skill to function in this new paradigm. They will also need a totally new design and construction at landing facilities as well as the provision of the requisite supplies and services. For the purpose of this proposal investing in landing sites is likely to be limited, however, SMEPS can begin by working with fishing associations and local authorities to undertake on a cost share bases feasibility studies and design work.

Preparation and landing of the catch:

- Cleaning and gutting at sea (for Yellowfin Tuna). This requires that the boat has a deck and a proper working surface, a difficult proposition with the vast majority of the boats used, with the possible exception of the large (Abri) boats used in the Gulf of Aden and Socotra, especially for demersal. Here SMEPS ought support the introduction of modern boats piloting through several associations on a cost share approach. For market uptake of modern boats to kick-in, SMEPS working with the MFIs should develop relevant financial services.
- Ice (from clean and regularly tested water!), and plenty of it, must be taken on board. The boat must have enough room to take ice in the ratio of 1:1 because fish start rotting the moment, they stop flopping. This is due to enzymatic and chemical changes that not obvious but that, nevertheless, undermine quality of the fish. In recent years ice manufactures are appearing across the coast, but still not sufficient their expansion should be supported or new ice start-ups should be encouraged.
- Tanks of re-circulating ice-cold brine or slurry to quickly lower the temperature of fish (for whole demersal destined to displays at high-end supermarkets in the Gulf, as an example)
- Good Hygienic Practice (GHP) throughout the chain of custody from boat to consumer. All working surfaces on the boat and the equipment must be steam cleaned, disinfected and sanitised after each trip.

Effective intervention at cluster 3

Value-added processing of the catch: may be classified into the following three stages (listed below) of increasing complexity. The facilities required do not have to be large, but they must be well designed in terms of the product flow and must be compliant with Good Manufacturing Practices (GMP) and

Good Hygiene Practices (GHP). The investment required, however, is at the scope of medium and large enterprises. Small and micro enterprises can enter in this cluster as suppliers of subsidiary services.

Of the opportunities listed below, most are within the scope of the small and micro enterprise depending on the level of expertise and financial resources available. The three stages are the following:

- Primary stage: cutting, filleting, pickling, peeling, washing, chilling, packaging, heading and gutting.
- Secondary stage: brining, smoking, cooking, freezing, canning, deboning, breading, battering, vacuum and controlled packaging and the production of ready meals.
- Tertiary stage: branding and packaging products ready for consumption

Additionally, a recent market development (2018) is the introduction of fish farms inland. This has occurred through remittance investments and hired expertise from Egypt. This new initiative is proving successful with already small scale replication taking place but limited to wadi Hadramout. This small scale investment offers great investment returns for Yemen's northern highlands.

Effective intervention at cluster 4

SMEPS can help enterprises at this cluster by providing them with training to gain expertise to use the web and link them to regional and global customers (buyers for hotel chains, supermarket chains etc.). However, a stronger case may be made for co-operatives, especially if they are consolidated into regional groups, to enter the marketing and distribution of Yemeni fish products. To begin with, they command larger financial and organisational resources that are not available to small and micro enterprises. Co-operatives, alas, also lack the requisite attitude towards the notion of enterprise as well as the technical aptitude to run such an enterprise cost effectively and profitably. In addition, SMEPS should adopt the recommendations of the regional market study undertaken in 2010 for the Yemen Sea Food Exporters association in advancing the associations product and market development for the gulf markets particularly towards accessing supply chains of large regional airlines, and market presence through a regional hub preferably set-up in in Dubai.

Whatever fish products are contemplated, their production must be market driven. In other words, find out what is selling on the market and build the production lines to meet this demand in the most cost-effective means possible. This is pull marketing, meaning that the consumer demand dictates the range of products that must be supplied. The current style of marketing Yemeni fish is product push marketing where considerations of quality are marginal.