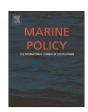
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The fisheries of Oman: A situation analysis

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ABSTRACT

This research paper presents a situation analysis of artisanal fishermen on the Batinah coast of Oman, conducted within the scope of a project that had a broader mandate on training needs assessment (TNA). The collection of data followed a structured survey approach where the questionnaires were administered to 1934 fishermen and were analyzed by a mixed method approach. The findings were triangulated-from information gained from the observations of fishermen and the discussions held with other stakeholders. The research found that the majority of fishermen on the Batinah coast were not appropriately educated and trained. Most of them followed irregular routines, earned little money from fishing, had low savings, faced financial constraints, and lacked knowhow of modern fishing techniques and post-harvest dealings. The fishermen's performance over several key variables revealed a need for a consolidated marine policy that takes into consideration a host of issues related to the governance of artisanal fisheries and its sustainability and contribution to the economic activities in Oman.

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1. Introduction

Located in the south-eastern corner of the Arabian Peninsula with a total area of 309,500 km², the Sultanate of Oman has a vast coastline of almost 3165 km [44] (Fig. 1). The coastline of Oman supports more than 150 species of fish and crustaceans [9]. Fishing has been a vital lifeline for its inhabitants from time immemorial. It is claimed that the fisheries sector is one of the major contributors to the "non-oil/gas generated income source" of Oman [84]. Taking this into account, the master plan "Economic Vision 2020" for Oman targets a growth rate of 5.6% for fisheries, and aims to equip the fishing industry with new fishing harbours, boats, research laboratories, private sector joint ventures, and a fleet of modern trawlers [2].

In its recent eighth five-year plan, the Government of Oman allocated 128 million Omani Rials¹ (OMR) for the establishment of modern auction houses, cold storages, refrigerated vehicles, and other supply chain and delivery mechanisms. This will ensure fish availability at affordable prices in the short term and the development of fisheries in the long term. To integrate backwards, the government devised strategies for increasing the production and

rationalization of stocks, management of the demand for fish, and for the establishment of a new directorate for regulating and developing the existing fish markets. This will connect them with the newly established central fish market in Al-Filaij in the wilayat of Barka [69,72].

Oman, currently, aims to increase its existing base of 21 fishing harbours and ports to 31 by 2020. The fishing harbours in the wilayats (districts) of Barka, Musan'aah and Liwa are being built to help fishermen to manage their lives well (Times of Oman, 2013). Fishing activities, currently, are confined to traditional and commercial sectors, the former restricted to the 20 nautical mile zone and the latter further [92]. The contribution of the fishing sector to Oman's gross domestic product (GDP) currently stands at only 0.5 percent. Nevertheless, the potential of the fish industry cannot be ignored. This paper uses the terms "traditional", "artisanal" "coastal" and "small-scale" interchangeably, for according to [56], researchers and managers refer to fishing adaptations as artisanal, inshore, traditional, municipal, and subsistence, which all overlap with or are subsumable by small-scale fisheries.

Over the past 40 years, Oman has exhibited remarkable growth in various sectors such as infrastructure, retailing, manufacturing, services, and heavy industry. However, fisheries and related industries did not see much growth in the real sense. Fish production in 2012 grew by 21% compared to 2011 and reached 191,000 t in volume (or OMR142 million in value), striking an average growth rate of 6% between 2009 and 2012 [81]. Coastal and artisanal fisheries had been vital to Oman's economy and its citizens. The share of industrial fisheries in Oman, however, had been very

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¹ Rial or Omani Rial (OMR) is the official currency of Oman. Since 1986 the Omani Rial has been pegged to the U.S. dollar at a fixed exchange rate of Rials 0.3845 per US dollar.

low in comparison to the coastal and artisanal fisheries. Industrial fish landing stood at a meagre 398.2 t in comparison to artisanal fisheries, scoring 203,454 t of fish landing [47,47]. In 2013, Oman exported 125,690 t of fish, which mainly included pelagic, demersal, and crustaceans, and imported 11,856.5 t of fish [47,47]. In this year, the artisanal fishing industry had 44,521 registered fishermen with a total of 21,342 small craft [47,47]. However, despite government initiatives to bolster the commercial sector and support the fishermen in the artisanal sector, the substantial artisanal fisheries sector could not perform well. Consequently, the majority of fishermen – particularly on the Batinah coast where 35% of Oman's fishermen live – struggled to subsist [22,23].

The situation of fishermen in the region, which remained grim for a long period of time, demands a thorough examination of the current state of affairs. There is a need to look at the situation of these fishermen from different perspectives. A host of factors are known to affect fishermen's lives and the sustainability of the fishing sector. These factors include, but are not limited to, licensing, fishing experience, targeted fish species, boat ownership, nature of engagement, accompanying crew, travel planning, marketplace literacy, training, safety, working habits, fishing effort, the amount of fish caught, fish disposal, income, profitability, and savings [93,14,9,8,94,15,22,23,13]. There is a dearth of comprehensive studies that give a detailed account of the fishermen in Oman and their activities. Our examination of existing literature reveals that although there is no dearth of data pertaining to fishermen-related activities in the global context, the data, particularly a chronological account of fishermen-related activities, are not available on Oman. There are a couple of dated studies, which have lost relevance in the modern context. [56] claims that "The frequent failure to acknowledge and examine the diversity, complexity, and dynamics of small-scale fisheries can exacerbate problems for fisheries governance as policies designed on assumptions of homogeneity or on outdated conditions founder on the reality of complex, globalised, and changing fisheries." Furthermore, Nielsen et al. [69, p. 153] observe that "Modern fisheries management fails to address the core concerns of fishing communities, is insensitive to local conditions, lacks backing from fishing communities and is even inefficient in achieving its own objectives." This paper, therefore, aims to make some contribution in this regard.

This research shares some of the crucial outcomes of a broader study, which looked into the identification of fishermen's training needs through techniques such as exploratory factor analysis and concept mapping, and their reconciliation with different stakeholders. Following the situation analysis approach, this research, firstly, probes and highlights certain sector-specific issues facing fishermen in Oman, in particular, and the traditional fishing industry in general. Secondly, by drawing on the extant literature, this research reviews the state of fisheries and developments of small scale fisheries in countries which have some similarities with and relevance to Oman. After contextualizing the review results into different themes, and analyzing the primary data collected from 1948 fishermen on the Batinah Coast of Oman, this research then conducts a situation analysis of small scale fisheries in Oman and, finally, reports the findings by placing them into the wider context of global small scale fisheries.

2. Small scale fisheries development in the global context

Fisheries production in the world has been declining at an alarming rate, the recovery and sustainability of fisheries need some proactive measures to prevent any further decline [35,38,76,82,91]. Small scale fisheries play many roles in developing countries, particularly in the areas of poverty alleviation and

food security [24,25,43,57,85,86]. However, social and economic contributions of the small scale fisheries sectors have been undermined globally, due to poor governance, absence of appropriate legislation, and inadequate infrastructure [5,52]. However, the artisanal fishery sector offers a de facto informal insurance system to traditional village societies; artisanal fishermen still struggle for livelihoods due mainly to the population growth and unbalanced market integration of fisheries [17,10,89,77]. In most of the developing countries, fishers are often held in low esteem with others for many reasons such as type of occupation, low education, low income, ethnicity, and general marginalization [54]. The adversities which affect small scale fishermen in developing countries demand detailed investigation of the sector in order to devise measures to boost its productivity, sustainability, and long term contribution to the economy.

It is not uncommon to find that the situation of fishermen in developing countries reveals some uniformity in diversity, i.e., some commonalities and dissimilarities. For example, fishermen's use of boat, fishing gear, fishing activities, demographics, opportunities and challenges could be similar or dissimilar across nations. Studying these characteristics individually or collectively across nations can help in developing effective policies. For example, in Yemen, artisanal fishermen use a combination of small fiberglass boats 'huris' and larger wooden boats 'sambuks'; the latter enables them to stay longer (a few days to three weeks) at sea and harvest more catch with reduced operational costs. [5]. Similarly, artisanal fishermen in Senegal use 'pirogues' - wooden boats ranging in size from 4 to 19 m, carrying 1-16 persons onboard, and allowing crew to stay at sea for five to seven days [40]. In Kenya, fishermen use different types of vessels in its artisanal fisheries sector. Whilst they use mainly plank wood based traditional crafts - such as mtumbwi, hori, ngalawa and dau, which range from 4 to 10 m and account for more than 40% of the vessels in the artisanal fishery, they use mashua, jahazi and motaboti (modern boats with outboard engines) for venturing into the open sea and spending a few nights there [48]. These similarities or dissimilarities have different meanings for fishermen and the sector. Whilst the ownership or use of non-motorized or motorized boat transport determines fishermen's access to and choice of the fishing grounds, the use of motorized boats might act as an indicator of additional income, or the viability of fishery systems [59].

Fishing is known to be seasonal in certain countries (e.g. Yemen, Seychelles) and requires fishermen to change their tools and strategies [32,35,5]. Weather conditions at sea directly affect fishing and environmental variability and seasonal changes in the hydroclimatic conditions, and determine the distribution, migration, and abundance of fish to a large extent [61,63,67]. Fishermen, accordingly, need to change their fishing activities and gear, depending on water levels, habitats and migration patterns, and the species targeted [20].

Fishing activities in coastal communities take different forms: commercial or recreational, licensed or unlicensed, full-time or part-time [85]. When carried out on a small scale, these activities provide multiple benefits to fishermen that range from income benefits, social or cultural benefits, to the benefits of maintaining a healthy and diverse ecosystem [53].

The capacity and capabilities of fishermen in small-scale fisheries are of global concern, and can be ascertained generally from their education, level of awareness, access to technology, sincerity of effort and their productivity. Unfortunately, fishers tend to have lower levels of formal education than the general population even in countries having high standards of education [79]. They also lack awareness of nurturing and using resources prudently for their own benefits and for the benefit of the society. In many developing countries where marine fisheries is a critical resource for

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