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RESEARCH

Trapped in a gulf of hope and despair: the Wagher small scale fisheries on the Kutch coast of Gujarat, India

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Abstract

This paper discusses a case study located on the northern shore of the Gulf of Kutch in the western Indian state of Gujarat. Specifically the paper explores the major characteristics of small scale fisheries practiced by the Muslim Wagher community and investigate the challenges and dilemmas faced by them in their pursuit of a livelihood in fisheries. Wagher fishers have occupied the lowest rungs in local continuums of social and economic status historically. Their livelihoods and conditions of living have become particularly precarious since the early 2000s when the government of Gujarat embarked on an ambitious plan for port-based industrialisation and privatisation of vast tracts of wastelands, grasslands and coast line. Given this context, the paper focuses attention on the relations of exchange like market-tying informal credit contracts widely used by traders to consolidate their control over marketing processes and their impact on the lives and livelihoods of Wagher fishers. It is argued that the unfreedom that arises from the embeddedness of market transactions in social interactions constrains the ability of Wagher fishers to effectively resist ongoing processes of economic exploitation and coastal expropriation, or to advocate for their fair inclusion in social and economic development.

Keywords Gujarat · Small scale fisheries · Wagher fishers · Infromal credit · Port-based industrialisation

Introduction

Indian fisheries encompasses a variety of fishing practices pursued by different communities spanning diverse geographies which makes a precise definition of small scale fisheries highly contested. The typical characterisation of small fisheries is that of traditional, local market oriented, low technology fisheries embedded socially, culturally and institutionally in specific socio-spatial contexts. A large part of fisheries activities across regions in India fits this description. Though marine fisheries policies of the country acknowledge the predominance of small scale fisheries, no clear direction is provided in them for translating the policy intent into concrete action. The approach to fisheries development essentially remains productivist in that it privileges capitalisation and modernisation of fisheries as a means to maximise economic gains from the sector. With the introduction of the Blue Economy paradigm in the 2010s the strategy of marine resource development has become aggressively expansionist making the policy outlook on small scale fisheries development further ambivalent. Within Blue Growth discourse small fisheries are portrayed as an economically weaker, subordinate category of industrial fisheries that accommodate a large number of traditional and artisanal fishers but make marginal contribution to fisheries production.[1] Improving the efficiency of productivity of small fisheries is considered to be the solution to deliver fishers from entrenched poverty attributed mainly to their lack of skills and entrepreneurship and limited fisheries resources (Government of India 2017; 2020). As Jadhav (2017) points out, such a top-down approach exaggerates the economic value of small fisheries and ignores its valuable

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[1] As per the Draft of National Fisheries Policy 2020 though artisanal and small-scale fishers dominate the marine fishing community, about 98 percent of the capture fish production emanates from the mechanised and motorised sector.

'diversity' that varies with place, while completely overlooking the multifaceted challenges that exacerbate their vulnerabilities.

Recognising the need to bring this diversity, complexity and dynamics of small-scale fisheries to policy focus at regional and national levels, this paper discusses a case study located on the northern shore of the Gulf of Kutch, in the western Indian state of Gujarat. Specifically, we explore the major characteristics of small scale fisheries practiced by the Muslim Wagher community and investigate the challenges and dilemmas faced by them in their pursuit of a livelihood in fisheries. Compared to the urban merchant Muslim communities, Wagher fishers have occupied the lowest rungs in local continuums of social and economic status historically (Bond 2020; Pandya 1951). Their livelihoods and conditions of living have become particularly precarious since the early 2000s when the government of Gujarat implemented a special development package for the region focussed on port-based industrialisation and privatisation of vast tracts of wastelands, grasslands and coast line (Mehta 2013). Over the past couple of decades many mega industrial projects have been set up along the coast, including oil refineries, cement and fertilizer plants, salt pans, mining activities (e.g. for bauxite and limestone), and shipping-related activities. Illegal destruction of biodiversity-rich mangroves, blocking of creeks in the intertidal zone for industrial activities, and pollution have disturbed marine ecologies and have caused declines in fish catches (Perspectives, 2012). These developments have significantly impacted Wagher fishers, aggravating their already vulnerable social position and limited bargaining ability in small fish value chains.

Specifically, this paper focuses attention on the relations of exchange that produce deeply unfavourable outcomes for Wagher fishers. As found in earlier enquiries, exchange relationships in traditional production settings are shaped by diverse formal and informal institutional arrangements and social relationships founded in values like reciprocity and trust (Johnson 2010; González-Mon et al. 2023). Mainstream economic theories explain such arrangements as mutually beneficial, autonomous strategies used by market agents to reduce risk, secure long term gains and manage transaction costs in imperfect markets with incomplete information. They overlook, however, factors like asymmetry in resource ownership and control, pervasive informality of markets, and interlocking of transactions in credit and product markets that decisively define the character and outcomes of market arrangements in resource constrained contexts (Russell 1987). Market-tying informal credit contracts are widely used by traders to consolidate their control over marketing processes in such settings. The current paper demonstrates how the market transactions of Wagher fishers and the value chains they participate in are embedded in such complex non-market interactions. The unfreedom that arises from this embeddedness constrains the ability of Wagher fishers to effectively resist ongoing processes of coastal expropriation, or to advocate for their fair inclusion in social and economic development.

The paper is organised in five sections. Following this introduction, we briefly describe the methodology and context of the study. In the third section we describe the Wagher fishing organisation and practices. The fourth section discusses the dynamics of social relations that affect dried fish (the most common processing technique in the area) markets in the region. This section discusses the ways in which institutional relationships reconfigure the economic calculus of suppliers and buyers and thus create different value perceptions in small fisheries economies. Section five draws the main arguments of the paper together while raising some important questions that emerge from the analysis in the earlier sections.

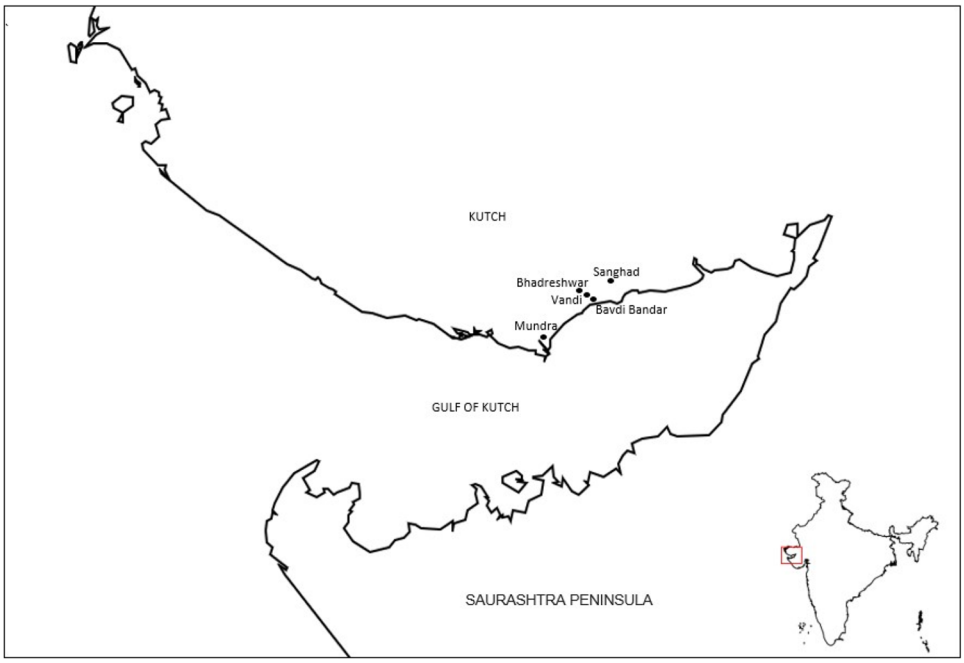
Methodology

Fieldwork for this paper reflected the migration cycle followed by Wagher fishers. Usually, during the fishing season of eight months every year (September to May), they migrate from inland villages where they have permanent residences to temporary hamlets or *bandars* they set up on the coast. The fishers have no legal claim over the land on which they set up bandars, or their access routes to the sea (Perur 2016). The first phase of our field work took place in June 2021 in three inland fisher villages – Bhadreshwar, Sanghad and Vandi (see Map 1). There are about 700–800 fishing households in these inland villages (Amita et al. 2012).

In order to understand the socio-economic conditions of the fishers and the nature of their fisheries activity, we collected detailed information from 32 households using a structured questionnaire, including data relating to craft and gear owned, catch variety, processing practices, and marketing channels. The respondents of the survey were chosen through convenience sampling. As the entire village is inhabited by fishers sharing uniform socio-economic characteristics, dealing with the same market forces and facing the same risks and challenges, convenience sampling was considered appropriate for this exploratory study.

In November 2021, after the fishers migrated to the seasonal hamlets to undertake fishing we conducted in-depth discussions with two groups of fishers and one group of local traders at the Bavdi *bandar*. This hamlet houses fisher families from several villages including those from the villages selected for the study. The group discussions helped us deepen our understanding of the changing livelihood circumstances and local market context, as well as the factors that shape the relationship between traders and small fishers.

Additionally, we conducted detailed discussions with the functionaries of a local producer company – Kutch Fish – focussing on its history and current business strategies, and



Map 1 Gulf of Kutch and the Study Villages

the challenges it faced. Kutch Fish was initiated in 2013 by the Fisheries Management Resource Centre (FishMARC), a non-government organisation (NGO) working for cooperative institution building in fisheries. It has local fishers as shareholders and directors. The company was formed to facilitate collective procurement and sales of fish harvested and processed by small fishers, and to counter the entrenched market power of private traders. The company's audited financial statements provided us with additional insights into the regional trade in dried fish.

The spatial context and the small fisher community

The north-western Indian state of Gujarat has the longest coastline in India, extending for about 1600 km from the south of the state to Kutch district in the north. It covers highly diverse coastal structures and processes engendering multiple socio-economic formations and fishing technology combinations. The Gulf of Kutch is characterised by a unique coastal ecology due to the occurrence of extreme daily tides. The intertidal zone, where the ocean meets the land between high and low tides, is highly dynamic with rich and diverse marine biota (Perspectives 2012). The southern shores of the Gulf has many low level coastal plains, islands and inlets covered with mangroves and surrounded by coral reefs. The northern shore is characterised mainly by creeks, vast mud flats, estuaries and lowlands that get submerged during high tide and are fully exposed during low tide (Nair 2002). Apart from mangroves and coral reefs, the diverse habitats harbour immense marine wealth comprising different types of algae, molluscs, and commercially valuable finfish and shellfish (Krishnan et al.1995; Nair 2002; Rathoure 2018). The local livelihoods in fishing, farming, and salt-making have evolved around these resources.

The 65 km long Mundra coast harbours one of the largest intertidal zones of the country that stretches up to 5 km. Historically, Mundra has occupied a special place in the maritime heritage of Kutch due to its convenient connectivity with trading markets extending over the hinterlands of northwest India. As Goswami (2015) observes, it was used as an intermediate port for transporting goods to inland destinations towards the northeast and supplies of salt and dates to other ports in the Gulf of Kutch, as well as distributing merchandise to local markets in Kutch and Kathiawar (also known as Saurashtra). Fishing has contributed significantly to Mundra's economic prosperity since the early nineteenth century. Muslims have dominated the fishing and related sectors in the region for a long time.

The Gazetteers of Bombay Presidency and Baroda State, published in 1880 and 1923 respectively, provide insights into the early social history of the Wagher community. The former (Campbell 1880) reported that fishing along the Gulf of Kutch was “chiefly in the hands of ‘Vaghers’” (p.37), while the latter (Desai 1923) stated that by occupation they were ‘first fishermen and then landholders, freebooters and sailors (p.188). The Wagher community’s religious practices were fluid in that many followed both Islamic and Hindu faiths simultaneously. Such fluid religious affiliations were prevalent among many social groups in pre-modern Kutch particularly due to their continual movement across regional boundaries, exposure to diverse religious sects, and an opportunistic desire for political and economic power (Sheikh 2010). Importantly, the Wagher community was generally portrayed by the colonial rulers as a tribe

of rebels, pirates and plunderers, probably due to their habitual insubordination to the British (Vyas 2018). Currently, the fishers among the Wagher caste follow the Islamic faith while the farmers are Hindus. Compared to the urban merchant Muslim communities and many Hindu communities, Wagher Muslim fishers have occupied the lowest rungs in local continuums of social and economic status (Bond 2020; Pandya, 1951). The stigma of a criminalised community seems to continue into current times, alienating them from the pursuit of more socially valued and profitable activities like coastal trade. Consequently, they remain invisible like many other subaltern seafaring Muslim castes of the region (such as *Bhadelas*) in the dominant representations of Kutch's past and present (Ramani 2010). Having been classified officially as a socially and economically backward class (SEBC) in independent India, the members of the caste are constitutionally entitled for reservation in higher education and public sector employment.

If the historical legacy has banished the Wagher fishers to the margins of the local social order, contemporary developments have further deepened their vulnerability. With the emergence of the Mundra coast as a prominent industrial hub and logistics gateway since the 1990s, Wagher livelihood challenges have assumed ominous dimensions (Ramani 2010; Amita et al. 2012). Especially after the setting up of the Gujarat Adani Port Limited in 1998 (renamed later as the Mundra Port Special Economic Zone (MPSEZ) in 2006), investment in coastal projects like cement, salt, and thermal power plants has grown phenomenally. Coastal industrialisation activities received significant impetus as part of the reconstruction and rehabilitation programme launched in the aftermath of the 2001 earthquake.[2] The state, private capital, and bilateral/multilateral agencies have come together to drive industrial and infrastructural transformation of the coast. Many studies have shown that these activities are harmful for the already fragile ecology of the Gulf of Kutch coast and threaten the livelihoods of fishers, pastoralists, farmers and salt workers (GEC et al. 2014; Mehta and Srivastava, 2021; Prusty and Farooq 2020). Moreover, fishers have lost access to the sea due to construction activities on the coast, despite them having customary claims to the coastal land, as well as possessing passage and fishing rights granted by concerned government agencies (Kapoor and Upadhyay nd).

Organisation of Wagher fisheries

The organisation of fishing activities by the Waghers has some peculiar features. The Waghers practice both artisanal and small-scale commercial boat fishing. The artisanal form is known as *pagadiya* fishing or foot fishing (*pag* in Gujarati meaning foot). In this form of fishing fishers either use baited hooks or install hand nets and gillnets on the seabed along the shallow creek regions extending up to several hundred metres. When the tide ebbs, they walk up to the nets and collect the fish (Nair 2002; Perur 2016). *Pagadiya* fishing is usually practised by those who cannot afford to own boats and gears, though many boat fishers too engage in it during the non-fishing season imposed under the statutory fisheries regulation of the state[3] in the monsoon period (mid-June to mid-August). These fishers typically perceive the sea and its environment as a gift of God and protect these against degradation by being sensitive to natural processes. Their disinclination to set up permanent structures on the coast is seen as a demonstration of this sensitivity.

The boat fishers on the coast were traditionally using plank-built canoes. Mechanised boats started entering the area around the mid-1980s and early 1990s (FishMARC 2008), when fishing craft modernisation became the dominant state project for fisheries development across the country (Pillai and Katiha 2004). The number of mechanised crafts started to surge in the mid-1990s with the advent of fibre-reinforced plastic (FRP) boats or *hodi*s sourced from the shipbreaking units at Alang, situated in the Bhavnagar district of Saurashtra (Perur 2016). Currently, almost the entire fleet used by the Waghers is made up of FRP boats fitted with 10 to 12.5 hp inboard diesel engines.

Most of the small fisher households own only one fishing boat. The cost of a boat is close to Rs.150,000 ($1800) at current prices. The fleet is largely of homogeneous size – 24 feet – though some respondents have slightly larger boats. Each typically carries three to four nets. Bag nets and gill nets (known locally as *gunja* and *ras*, respectively) are the dominant gears used. Special nets are carried to catch specific species, including seer fish (*Scomberomorus guttatus*), Indian salmon (*Eleutheronema tetradactylum*), and ghol (*Protonibea diacanthus*), though these varieties are rarely harvested these days. The boats are operated by fishers themselves and no paid crew is employed in any of them.

Some of the fishing practices followed by the Wagher fisherfolk have their roots in indigenous knowledge traditions. For instance, the fishing trips are planned based on lunar phases. The Wagher men set out four days before the full moon/new moon day and remain in the sea for six days after. Thus, each trip typically lasts for ten days, followed by non-fishing days when the fishers mend their boats and gears and mobilise necessary resources to undertake the next trip. In scientific terms, the fishing trips are undertaken during the period that extends from waxing gibbous (when the

[2] The Kutch earthquake of 26 January 2001 was one of the most devastating natural disasters occurred in India in the twentieth century. The earthquake resulted in severe and widespread damage to property and an estimated death toll of about 14.000. Kutch alone accounted for 88 per cent of the deaths. See, Mishra (2004).

[3] As per the Fisheries Statistics of Gujarat 2020–21, there are 7129 pagadiya fishers in the state, of whom 622 are in Kutch.

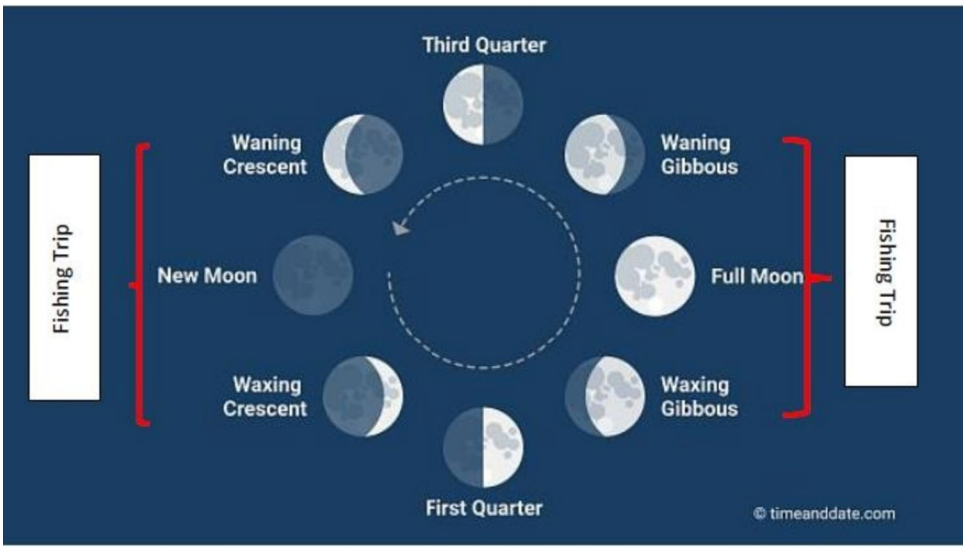


Fig. 1 Fishing Trips by Lunar Phases followed by Wagher Fishers. Source: https://www.timeanddate.com/astronomy/moon/phases.html; Interviews with fishers

sunlit part of the moon is more than a half and still increasing) to waning gibbous (when the part starts to decrease following the full moon) and from waning crescent (when moon loses brightness as it moves towards becoming the new moon) to waxing crescent (when it gains brightness to become the full moon)[4] (Fig. 1).

Catch composition and processing

As mentioned, gillnet fishing is the dominant mode on the Mundra coast. Reviewing available data from 2001, Nair (2002) observed a high diversity in gill net catch at Mundra (i.e., 34 varieties including Bombay Duck (a small pelagic), anchovies, mullet, catfish, white pomfret, shrimps, prawns and small *sciaenidae*). The study also observed that Mundra is the most productive segment in fishery resources along the northern Gulf due to the presence of dense mangroves, as well as zooplankton stock and diversity.

The damage to the benthic habitat due to the dredging of shipping channels by the Mundra port has meant that many commercial fish species have either disappeared or have become rare. During discussions with fishers, they also complained that ships destroy their nets in the sea, causing further economic distress. The official fisheries statistics reflect the impact of these changes: the combined share of the landing centres on the Mundra coast in the total fish production of Kutch declined from about seven per cent in 1999–2000 to five per cent in 2020–21 (Government of Gujarat 2021). The production at the Mundra section alone has declined by 55 per cent during this period.

By the late 2000s, the catch diversity had come down, as shown in a study by FishMARC (2008). The study found 25 commercial fish varieties harvested by boat fishers. However, the catch was dominated by Bombay Duck (*Harpadon Nehereus*), in terms of volume (42 per cent), followed by golden anchovies (15 per cent) and mixed fish varieties (*kuto* in the local language), including juveniles and shrimps (6–7 per cent). Other fish, like white pomfrets, seer fish and tiger shrimp made up only one per cent or less. Considered by the local traders as 'trash' fish suitable to be used only in industries that produce livestock feed, fish feed, or fish meal, *kuto* fetches the lowest price in the market – the average price during the 2020–21 season was Rs. 13.50 per kg. At the same time, washed golden anchovies fit for human consumption were sold at Rs.20–22 per kg. Bombay Duck fetched much higher prices – Rs. 100–110 per kg. It may be noted that India's north-west coast extending from Mumbai in Maharashtra to Kutch in Gujarat contributes the highest share (estimates vary from 65 per cent to 90 per cent) of the total Bombay Duck landings at the national level (Kurian 2000). Since the fish is susceptible to spoilage due to its high moisture content, most of the catch is dried unsalted in the sun. Field research showed that Gujarat supplies the bulk of its sun-dried Bombay Duck to major domestic markets in Mumbai, Assam, West Bengal and Tamil Nadu, whereas Sri Lanka, Bangladesh and United Arab Emirates are the leading overseas markets for the fish.. Almost the entire harvest

[4] Studies elsewhere have documented how artisanal fishers in countries like Malawi (Nsiku 2007), Vanuatu (Hickey 2007), and northern Australia (Phelan 2007) make use of their knowledge of the lunar phenomenon to optimise fishing efforts. In the case of India, Libini and Khan (2012), in their study of the Cuddalore district of Tamil Nadu, noted variations in fish caught by gillnets during different lunar phases. Particularly, they observed that seven or eight days from the New Moon or Full Moon are a good time for shrimp fishing. Similarly, Giri et al. (2019), who studied Hilsa dynamics with respect to lunar phases in the northern Bay of Bengal, found a higher catch during the waning crescent and waxing gibbous phases or the days immediately preceding the new moon and full moon.

of the fish comes from small fishers using indigenous bag nets or dol nets (Koya et al. 2017).

Our study reveals that the catch composition of fisheries on Mundra coast has significantly changed since FishMARC's investigation in the late 2000s. During the season ending in June 2021, kuto constituted almost two thirds of the total catch of the households surveyed by us. Golden anchovies made up for a fifth and Bombay Duck only 11 per cent of the total catch. Other varieties together – prawns, pomfret etc. – accounted for another 11 per cent. In terms of revenues, Bombay Duck is the leading variety with a contribution of 35 per cent followed by kuto with a 26 per cent share. The golden anchovies makes up only 11 per cent of the revenue. Thus, the fisheries harvest on the Mundra coast is currently dominated by low quality and low-value fish that includes unsorted juveniles and small fish. Indiscriminate use of tiny mesh sizes in codend of bag nets is the principal reason for the capture of non-targeted fish including juveniles.

Typically, the Wagher fishers venture about 8–10 kms out into the sea. As mentioned earlier, a fishing trip lasts up to 10 days. The boats, however, do not carry any ice to preserve the catch for a long time. Hence, fishers from a bandar pool their catch while at sea and arrange to send it to the hamlet every day to be processed by women back at home. Still, lack of ice or cool-storage facilities on- and off-board, causes considerable spoilage especially of highly perishable varieties like Bombay Duck. Women play an important role in the post-harvest phase. Once the catch reaches the bandar, women and young girls of the fisher households sort, grade and separate the fish for drying.

Fisher-trader relations

The livelihood of the Wagher fishers depends on processing and selling dried fish to local traders. They do not directly engage with consumers as there are no dried fish retail markets in the Mundra area (as elsewhere in Kutch, there is widespread practices of vegetarianism, especially among the economically and politically dominant caste elites like the Jains). In our research, we found that there are 27 wholesale traders and one producer organization – Kutch Fish Producer Company Limited – operating around Mundra, buying dried fish from fishers and selling it to different markets within and outside Gujarat state. The traders are predominantly Muslims. Of the six individual traders we interviewed, three were from the Wagher caste, two from other Muslim communities, and one from the Hindu Koli caste. Our discussions revealed that the majority of traders in Mundra hail from families involved in the fish trade for a few generations. The monthly average sales of the individual traders in our sample ranged from one metric ton to 125 metric tons of dried fish. The producer company, owned by share-holding Wagher fishers, sells about 140 metric tons. The company has thus emerged as the largest trader in the region. No organized processing facility is available on the Mundra coast.[5]

The dried fish produced by the Wagher fishers typically enters into three distinct value chains (Fig. 2). The first one, the Bombay Duck chain, extends to the wholesale food fish markets of Assam (mainly Jagi road, the biggest dried fish market in Asia), West Bengal, Orissa and Maharashtra within India, and across the borders to Bangladesh and Sri Lanka.[6] These have historically been the major markets for Gujarat's dried fish products. As noted, Gujarat is the major source of Bombay Duck production in India and contributes to about two-thirds of the total landings of the fish at the national level, nearly 95 per cent of which is harvested by dol nets.

Our research found that the unsorted small and juvenile fish chain that accounts for 60 per cent of the local dried stock is used in the broiler industry located in Punjab, Haryana, Andhra Pradesh, Tamil Nadu, and Karnataka. There is a demand in these regions for fish meal as a source of protein in poultry feed mainly composed of soya and corn meal (Landes et al. 2004). Even small fish like golden anchovies that are highly recommended for human consumption, especially by children due to their high content of polyunsaturated fatty acids and protein (Bonanomi et al. 2019), often get mixed with juveniles in Mundra.

The third chain is of dried and boiled prawns and extends within the state to local markets (mainly, Patan, Surendranagar, Viramgam, and Ahmedabad). Figure 2 shows that post-processing intermediaries play a critical role in the dried fish value chain, driving up prices.

Interlocked contracts to control risk and fishers' choices

A substantial part of dried fish transaction between the processors and traders is governed by informal agreements

[5] The only processing factory set up by a trading family in Bhadreshwar worked for about a decade. After that, it was closed down as they found that the varieties and volumes of fish were not adequate to run a factory to capacity. Personal interview with Javedbhai Juma, Bavdi bander, Bhadreshwar, November 28, 2021.

[6] In the distant domestic markets, the agents or dealers procure dried fish either based on predetermined prices negotiated before the consignment is despatched or against advances previously made. The traders generally deal with exporters directly using the facility of a letter of credit to settle trade payments. A letter of credit is a popular payment instrument in international trade. It is a written commitment from a bank on behalf of the importer that payment will be made to the exporter under agreed terms and conditions (either on demand or at a specific point in time).

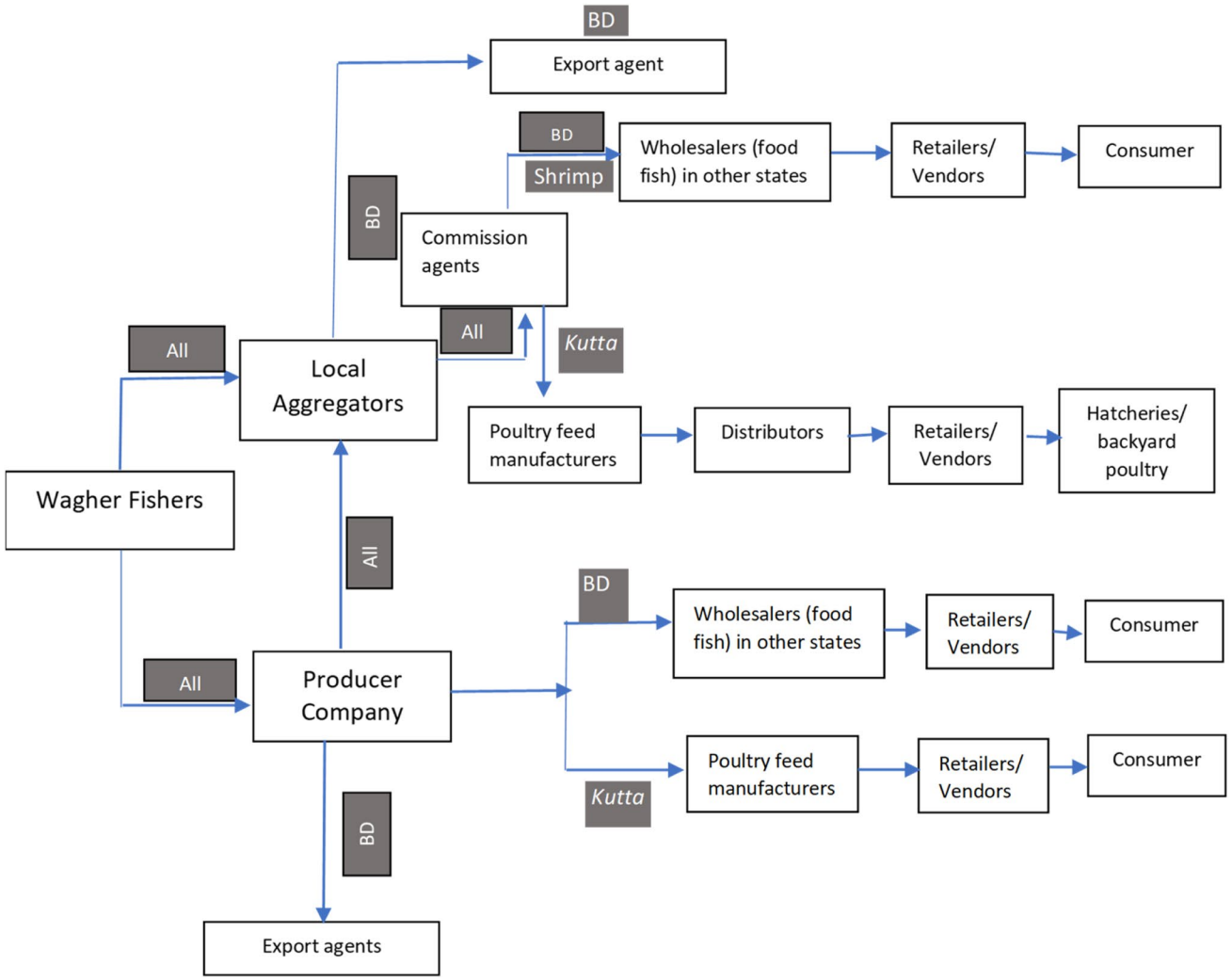


Fig. 2 Vale Chain of Dried Fish Marketing. Source: Authors' conceptualisation based on field work data

and mechanisms. For example, fishers often receive cash advances from traders. Being indebted, fishers are bound to sell their dried fish to those traders who have given them the advance. Meanwhile, the prices of different varieties are fixed collectively by traders in advance around September every year. These agreements and mechanisms ensure that traders have access to future fish catches on terms that are favourable to them, while fishers are less able to secure themselves against uncertainties in markets when the products are ready. Such patron-client relationship between resourceful middlemen and dependent producers sustained through labour-tying or market-tying credit contracts has been observed in many studies on agrarian and small fishing communities in India (Platteau and Abraham 1987). As Johnson (2010) explains, the relationship is characteristic of societies wherein reciprocity is a valued cultural norm.

Wagher fishers' vulnerability to exploitative arrangements is caused by their highly irregular income flow while the need for working capital per fishing trip (for food and fuel mainly) is largely fixed. Moreover, they do not have any source of income during the annual fishing ban (mid-June to mid-August). They take cash advance from traders at the beginning of every season to manage working capital during the season and tide over the crisis of subsistence during the period of the fishing ban. Hence, most of the fisher households live in perpetual indebtedness to fish traders.[7]

The Kutch Fish company's rise as the dominant trader in the market has led to some improvement in trading

[7] For a detailed exposition of how debt evolves into the essenceof fisher-trader relationship, see, the case study by Ferolin (2014) of the Panguil Bay peasant fishing system in the Philippines.

arrangements, at least for its more than 500 shareholding members. Being the market leader, the company now plays the key role in fixing advance prices of dried fish every season. The profits gained by the company from trading margins are partially shared among the shareholders and partially used to build its capital reserve. The company has also eased the economic burden of member households to some extent by offering them credit facility by raising funds from mainstream financial institutions. However, being a profit-oriented business, Kutch Fish has to keep its own financial sustainability as the central goal, lest it loses its foothold in the dried fish trade. Hence, the company has adopted a careful strategy not to work with fishers who have outstanding loans and other liabilities. This automatically excludes the most vulnerable households from the benefits of membership in the collective.

The rapid commercialisation and industrialisation of the Mundra coast has evolved into an intractable additional challenge for Wagher fishers (Ramani 2010; Amita et al. 2012; Kohli 2014; Rahman 2019). As large industrial units have started appropriating the intertidal zone, access to fishing and boat landing areas has reduced drastically. Industrial pollution and port activities have adversely affected the marine habitat including the richly bio-diverse mangrove forests and depleted fish catch. Fishers' incomes have declined dramatically even as fishing effort increased considerably (Perspectives 2012). Fishers and other local farming and pastoral communities tried to collectively resist the 'march of industrialisation' (Rahman 2019) on the coast by forming a trade union, *Machimar Adhikaar Sangharsh Sangathan (*MASS), in the late 2000s with the support of civil society groups. The union campaigned against the damaging impact of coastal industrialisation and commercial port development on the livelihoods of traditional fishers and the fragile coastal ecosystem. In a significant move, it also initiated a legal battle in 2011 challenging the decision of the International Finance Corporation (IFC) to financially support a large power generation company on Mundra coast after ignoring adverse social and environmental impact reports (Harrison and Bailey 2022). Though MASS could gain permission from the US Supreme Court to sue IFC in a lower court, the case was eventually dismissed in 2020.[8]

Women in Wagher fisheries

Though boat fishing is done exclusively by Wagher men, women's household-based labour is critical to producing dried fish for the market. As fish is brought ashore many times a day, and very often also late at night, there is no fixed work time for women in the hamlets. Immediately after fish is landed women start their work to clean, sort and dry them either on sand or on poles and frames. They also provide valuable labour to help men prepare for fishing trips. Women ride horse- or donkey-driven carts to transport water, fuel and other utilities required for fishing and carry out mending of crafts and gears. It appears that all such work gets counted as extensions of women' culturally mandated care responsibilities and hence is undervalued and unwaged. At the same time, women are completely excluded from participating directly in market transactions and are denied access to the income earned from the product of their labour. Male members usually control all household finances. The gendered labour arrangements and institutionalised undervaluation of women's work effectively act as a concealed subsidy to the downstream players.

Discussion: making sense of Wagher fisheries

This paper has taken a closer look at the specific case of Wagher small-scale fisheries along the northern coast of the Gulf of Kutch, aiming to understand the changing dynamics of small-scale fisheries in a coastal region that has undergone faster industrial growth since the late 1990s. There have been notable changes in these fisheries in terms of quality and diversity that impact composition and value of post-harvest processed fish. Low-value dried products dominate the trade basket of the region. Factors like unsustainable fishing practices (using nets with tiny mesh sizes), poor post-harvest handling of catch, and absence of a dynamic local market for fresh and dried fish contribute to this situation. Even though dried fish of low quality and value prevents fishers from realising higher revenues from the market, it offers a risk-free and high-volume business opportunity for traders. The lure of the market for low value fish is so high that even highly valuable small fish like golden anchovies pass off as kuto in the market, with negative implications for the food security of low income groups. Mundra-based traders mentioned that their immediate business plans are driven by the market prospects of fast growing sectors like broiler production. Such myopic view of dried fish business may be arising from a concern that fishing on the Mundra coast will soon disappear as port development further engulfs fishing and fish-landing areas.

The other facet of vulnerability of Wagher fisheries is the persistent indebtedness of fishers to traders. It works as a debilitating constraint on the former's freedom to decide the terms of market participation. They are forced to remain passive 'takers' of prices fixed collusively by traders. The closely interlocked credit and product markets protect traders against market risks while helping them to appropriate

[8] The case details are discussed in Budha Ismail Jam et al. vs. IFC: an Indian fishing community takes on the World Bank', available at https://earthrights.org/.

a substantial share of the value of dried fish. The producer company was set up as a community-led institutional solution to the marginalisation and indebtedness faced by fishers. It has succeeded in addressing these issues to a great extent. Under collective ownership of fishers the company has emerged as the market leader with the ability to play a key role in fixing the price at which traders procure various varieties of dried fish from fishers. With the help of financial resources mobilised from formal financial institutions, the company extends loans to its members which has reduced the latter's dependence on traders. However, despite these important shifts in local power relations between traders and fishers in Mundra, many fisher households continue to remain trapped in dearth and debt, as the company is unable to extend its outreach to vulnerable segments of producers due to constraints of profit orientation?.

The enduring of poverty of Wagher fishers is manifest In their patently subhuman working and living conditions, particularly in the seasonal coastal hamlets where they are settled for nine months every year. The make-shift dwellings are made of bamboo or wooden poles and jute bags. Most of the bandars have no access to basic amenities like sanitation and potable drinking water as they are not recognised as fishing areas by the state. Children of Wagher households rarely study beyond the seventh grade. Boys are drawn into fishing at the onset of their teens, while girls start working at a much younger age in post-harvest activities and drying, along with sharing household tasks and care work. Commenting on their living and working conditions, an elderly fisher exclaimed during our discussion: "We live a life of animals; we can be driven away any time by the authorities and people wielding power from this land on one pretext or the other". There is a pervasive feeling among the fishers that their minority religious identity is a major barrier to asserting their demands with the state. "We do not speak much as we are a minority community", as one respondent said during a group discussion.

Conclusion

The findings above demonstrate how small scale fisheries practiced by a distinct community of Muslim fishers in Gujarat who are resource constrained as well as marginalised in policy planning get trapped in a vicious circle of poverty and debt bondage in the face of expanding coastal industrialisation and commercial port development, depleting fisheries resources, and a myopic and market centric trade regime. The study reiterates the social embeddedness of markets and value chains. It underlines the significance of acknowledging the institutional character of market and the structural relations among market agents analyses. By using a structural and relational lens, we found that the traders in Mundra who have access to financial resources are able to exert control over the market and constrain the choices of Waghers who depend on them for credit (Russell 1987). Similarly, we observed that the dominant gender norms overlook or undervalue women's labour and deny them access to earnings from the market, completely invisibilises them in the value chains.

Apart from unravelling the dynamics of producer-trader relations in dried fish trade in the region, the paper raises a moot question: can social innovations focusing solely on individual economic distress help address the apparent stagnation in Wagher fisheries and the social and political exclusion of small fishers? We argue that while reforming market relations is critical, equally critical is to address the institutional deficits that cripple fishers' capability to engage with their livelihood activity in a more dignified and less burdensome manner. Studies done in many other contexts emphasise the necessity for more broad-based strategies like setting up resource management systems at all levels, establishing formal credit facilities and investing in human capital development (especially education of girls and boys) to create 'buffers against vulnerability and crises' of small fishers and enhance the wellbeing of men, women and children (Islam 2011; Prosperi et al 2018).

We noted in the paper that despite their long presence on the coast of Kutch and Saurashtra, Wagher fishers remain invisible to the state's policy machinery. The most obvious reason for non-recognition of the existence of fishers in the area seems to be the latter's occupation of parcels of coastal land restricting the expansion of private sector commercial activities. The most deleterious impact of the state's reluctance to acknowledge the continuation of fishing activity on Mundra coast is the denial of basic human and civil rights of traditional fishers. There are no institutional mechanisms to protect fishers' rights to access resources (like land and water) that support their lives and livelihoods and the right to be part of decisions concerning fisheries and coastal resource management.

A recent review of the fisheries development policies and schemes of the Gujarat state showed that there is considerable administrative apathy in attending to fundamental problems that negatively affect the economic and social wellbeing of small fishers and fish processors (Nair and Himani, 2022). As Johnson et al. (2017) point out, fisheries development in Gujarat has privileged the material economic (or exchange) value emanating from the sector to the virtual neglect of the social relational, subjective, cultural, and intangible values that it endows.

> "While this orientation is characteristic of Indian national fisheries policy… there is good reason to believe this it has been heightened in Gujarat for cultural reasons" like the 'preponderant ethic of vegetari-

anism' (unlike other maritime states) that "has had a profound influence on the historical development of the fishery, and current state of resource depletion, and fishers' own self-perceptions of the value of their occupation" (p.269).

Instead, fisheries policy prescriptions in India are driven predominantly by the demands of the Blue Growth imaginary. Thus the development imagination and legal-regulatory design at all levels of the government have shifted increasingly in favour of large scale, capital-intensive commercial fisheries, private capital and entrepreneurship on the one hand and port-based industries and maritime trade on the other (Government of India 2017; 2020). Needless to say that blind pursuit of such a philosophy is more likely to produce development outcomes antithetical to the causes of sustainable fisheries resource management, responsible governance, social and gender equality, and food security that are central to the discourse on small-scale fisheries.

Declarations The paper is drawn out from the scoping research done on the Mundra coast as part of Phase 1 of the project titled *Dried Fish Matters: Mapping the social economy of dried fish in South and Southeast Asia for enhanced wellbeing and nutrition* (DFM Project) with financial support from the Social Sciences and Humanities Research Council of Canada (Grant/Award Number: 895–2018-1017) and carried out at the Gujarat Institute of Development Research (GIDR), Ahmedabad, India. Detailed comments and suggestions from Derek Johnson, Thijs Schut, Nireka Weeratunge and an anonymous referee were immensely helpful in bringing the paper to its final shape. Valuable research support by Arti Oza and Aparna Raj is gratefully acknowledged.

Competing interests Bharat Patel is actively associated with the fishworkers' collectives and the fish producer company in the study region.

References

Bonanomi, Sara, Alessandro Colombelli, Bruno Bucciarelli, Riccardo De Angelis, Antonello Sala. 2019. Serving local fish in school meals: The nutritional importance of consuming oily fish'. *Sustainability 11* (14). https://doi.org/10.3390/su11143990

Bond, Brian E. 2020. A heavy rain has fallen upon my people: Sindhi sufi poetry performance, emotion, and islamic knowledge in Kachchh, Gujarat. Dissertation submitted to the Graduate Faculty in Music in partial fulfilment of the requirements for the degree of the Doctor of Philosophy. The City University of New York. https://academicworks.cuny.edu/cgi/viewcontent.cgi?article=4672&context=gc_etds. Accessed 28 September 2022.

Campbell, James MacNabb. 1880. *Gazetteer of the Bombay presidency: Cutch, Pálanpur, and Mahi Kántha*. Bombay: Government Central Press.

Desai, Govindbhai H. 1923. Gazetteer of the Baroda State, Volume I. Bombay: The Time Press.

Ferolin, Maria Cecilia. 2014. Commodity-chained fishing households. In *Gendered commodity chains: Seeing women's work and households in global production*, ed. Wilma A. Dunaway, 156–171. Stanford: Stanford University Press.

FishMARC. 2008. Understanding Kutch fishery. Unpublished note.

Gujarat Ecology Society (GEC). 2014. Ecological profile for coastal talukas of Gulf of Kachchh: Overview. Government of Gujarat, Gandhinagar.

Giri, Sandip, Sugata Hazra, Pramit Ghosh, Amit Ghosh, Sourav Das, Abhra Chanda, Isha Das, Kunal Chakraborty, Anirban Mukhopadhyay, and Sourav Maity. 2019. Role of lunar phases, rainfall, and wind in predicting Hilsa shad (Tenualosa ilisha) catch in the northern Bay of Bengal. *Fisheries Oceanography*. https://doi.org/10.1111/fog.12430

González-Mon, B., Ö. Bodin, and M. Schlüter. 2023. Small-scale fisheries and agricultural trade networks are socially embedded: emerging hypotheses about responses to environmental changes. *Ecology and Society* 28(3): 9. https://doi.org/10.5751/ES-14265-280309.

Goswami, Chhaya. 2015. Mundra: a tale of a walled port town. In *Port Towns of Gujarat*, eds. Sara Keller and M. N. Pearson, 93–110. Delhi: Primus publication.

Government of Gujarat. 2021. *Fisheries statistics of Gujarat state 2020–21*. Gandhinagar: Commissioner of fisheries, Government of Gujarat.

Government of India. 2017. National policy on marine fisheries, 2017. *The Gazette of India*. No 121 May 1. New Delhi: Ministry of agriculture and farmers welfare, Department of animal husbandry, dairying and fisheries.

Government of India. 2020. National fisheries policy, 2020 (Sixth Draft, 30 December). New Delhi: Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying.

Harrison, Michelle and Lindsay Bailey. 2022. Ending "absolute Immunity" for the International Finance Corporation: The legacy of Jam v. IFC. Earth Rights International, July.

Hickey, Francis R. 2007. Traditional marine resource management in Vanuatu: World views in transformation. In *Fishers' knowledge in fisheries science and management*, ed. Nigel Haggan, Barbara Neis, and Ian G. Baird, 112–131. Paris: UNESCO Publishing.

Islam, Mohammad Mahmudul. 2011. Living on the margin: the poverty-vulnerability nexus in the small-scale fisheries of Bangladesh. In *Poverty Mosaics: Realities and Prospects in Small-Scale Fisheries,* eds. Svein Jentoft and Arne Eide (71–95), Springer. https://doi.org/10.1007/978-94-007-1582-0

Jadhav, Adam. 2017. Undefining small-scale fisheries in India: Challenging simplifications, highlighting diversity and value. In *Social wellbeing and the values of small-scale fisheries,* eds. Derek Johnson, Tim Acott, Natasha Stacey, and Julie Urquhart (147–173), Springer. https://doi.org/10.1007/978-3-319-60750-4_7

Johnson, Derek S. 2010. Institutional adaptation as a governability problem in fisheries: Patron–client relations in the Junagadh fishery, India. *Fish and Fisheries* 11: 264–277.

Johnson, Derek S., Rajib Biswal and Jyothis Sathyapalan. 2017. History and social difference in arguments for the societal values of small-scale fisheries in Gujarat, India. In *Social wellbeing and the values of small-scale fisheries*, eds. Derek S. Johnson, Tim G. Acott, Natasha Stacey, and Julie Urquhart, MARE Publication Series 17. https://doi.org/10.1007/978-3-319-60750-4_1

Kapoor, Rajesh and Sanjay Upadhyay (nd.), mundra special economic zone case study: socio – legal issues, prepared for the Government of Gujarat and supported by the World Bank.

Kohli, Kanchi. 2014. Envisioning environmental futures: Conversations around socio-ecological struggles and industrialisation in Mundra, India. In *Socio-economic insecurity in emerging economies*, ed. Khayaat Fakier and Ellen Ehmke, 232–240. New York: Routledge.

Koya, K. Mohammed, K. R. Sreenath, M. Muktha , Gyanranjan Dash, Swathipriyanka Sen , P. U. Zacharia3, Soniakumari, N.

K. Makwana , H. K. Dhokia , J. P. Polera, and P. Shiju. 2017. Stock assessment of Bombayduck Harpadon nehereus (Hamilton, 1822) from Gujarat coast using non-equilibrium production model. *Indian Journal of Fisheries*, 64 (Special Issue): 179–181. https://doi.org/10.21077/ijf.2017.64.

Krishnan, Smita, Rishad Pravez and A.P. Mansuri. 1995. Fishery and anthropogenic pressures in the Gulf of Kachchh, India. *Journal of the Marine Biological Association of India* 37 (1 and 2): 49–55.

Kurian, Alexander (2000). *The Bombay duck: stock status and response to exploitation.* In *Marine Fisheries Research and Management*, eds. V.N. Pillai and N.G. Menon, 349–363. CMFRI, Kochi,.

Landes, Maurice, Suresh Persaud, and John Dyck. January 2004. India's poultry sector: development and prospects. *Agriculture and Trade Report WRS-04*–03.Market and Trade Economics Division, Economic Research Service, U.S. Department of Agriculture, Washington DC.

Libini, C.L., and S Ajmal Khan. 2012. Influence of lunar phases on fish landings by gillnetters and trawlers. *Indian Journal of Fisheries* 59 (2): 81–87.

Mehta, Sonal. 2013. Changing mode of the pastoralist economy and globalisation of Kutch. *Revolutionary Democracy*, 19 (1). https://www.revolutionarydemocracy.org/rdv19n1/kutch.htm. Accessed 01 November 2022.

Mehta, Lyla and Shilpi Srivastava. 2021. The social life of mangroves: Neoliberal development and mangrove conservation in the changing landscape of Kutch. *Environment and Planning E: Nature and Space* (Open access). https://doi.org/10.1177/25148486211045360

Mishra, Pramod K. 2004. The Kutch Earthquake 2001: Recollections, Lessons and Insights. National Institute of Disaster Management, New Delhi.

Nair, Vijayalakshmi R. 2002. Status of flora and fauna of Gulf of Kachchh, India. Dona Paula, Goa: National Institute of Oceanography. http://drs.nio.org/drs/handle/2264/87. Accessed 22 January 2022.

Nair, Tara and Himani Joshi. 2022. Institutional context of marine fisheries in Gujarat: A review. *DFM working paper 11. Department of Anthropology, Faculty of Arts,* The University of Manitoba.

Nsiku, E. 2007. Indigenous technical knowledge of Malawian artisanal fishers. In *Fishers' knowledge in fisheries science and management*, ed. Nigel Haggan, Barbara Neis, and Ian G. Baird, 57–74. Paris: UNESCO Publishing.

Pandya, G.B. 1951. Vagher revolt of 1858-59. *Proceedings of the Indian History Congress* 14: 225–229.

Perur, Srinath. 2016. The ultra mega powerless take on the ultra mega power plants in India's Gulf of Kutch'. *Hakai Magazine* April 26.

Perspectives. 2012. Swimming against the tide: Coastal communities and corporate plunder in Kutch. *Economic and Political Weekly 47* (29): pp.12–17.

Phelan, Michael J. 2007. Tropical fish aggregations in an indigenous environment in N. Australia: Successful outcomes through collaborative research. In *Fishers' knowledge in fisheries science and management*, eds. Nigel Haggan, Barbara Neis and Ian G. Baird, 132–143. Paris: UNESCO Publishing.

Pillai, N.G.K. and Pradeep K. Katiha. 2004. Evolution of fisheries and aquaculture in India. Kochi: Central Marine Fisheries Research Institute.

Platteau, Jean-Philippe., and Anita Abraham. 1987. An inquiry into quasi-credit contracts: The role of reciprocal credit and interlinked deals in small-scale fishing communities. *The Journal of Development Studies* 23 (4): 461–490. https://doi.org/10.1080/00220388708422044.

Prosperi, Paolo, James Kirwan, Damian Maye, Fabio Bartolini, Daniele Vergamini, Gianluca Brunori. 2018. Adaptation strategies of small-scale fisheries within changing market and regulatory conditions in the EU. *Marine Policy*. https://doi.org/10.1016/j.marpol.2018.12.006

Prusty, Pintu, and Syed Hilal Farooq. 2020. Seawater intrusion in the coastal aquifers of India - A review. *HydroResearch* 3: 61–74. https://doi.org/10.1016/j.hydres.2020.06.001.

Ramani, Srinivasan. 2010. Development and displacement: Resentment in the Kutch. *Economic and Political Weekly* 45 (8): 15–18.

Rahman, Azera Parveen. 2019. March of industrialisation tramples Kutch's coastal ecology. https://india.mongabay.com/2019/05/march-of-industrialisation-tramples-kutchs-coastal-ecology/. Accessed 18 December 2021.

Rathoure, Ashok K. 2018. Marine biodiversity of Gulf of Kutch located in north-eastern Arabian Sea. *International Journal of Avian and Wildlife Biology* 3 (4): 312–318.

Russell, Susan D. 1987. Middlemen and moneylending: Relations of exchange in a highland Philippine economy. *Journal of Anthropological Research* 43: 139–161. https://doi.org/10.1086/jar.43.2.3630222.

Shah, Amita, Deepak Nandani and Hasmukh Joshi. 2012. Marginalisation or mainstreaming? Evidence from special economic zones in Gujarat. *Working Paper No.210.* Gujarat Institute of Development Research, Ahmedabad.

Sheikh, Samira. 2010. *Forging a religion: Sultans, traders, and pilgrims in Gujarat, 1200–1500*. New Delhi: Oxford University Press.

Vyas, Maulik. 2018. Texts of historipoeia and India. *Grand Academic Portal Bodhi Taru* 1 (2): 17–28. https://www.gapinterdisciplinarities.org/res/articles/Paper-4%20(3).pdf. Accessed 27 Sep 2022.