



# Balochistan Sustainable Fisheries and Aquaculture Policy 2025 - 2035



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## MESSAGE FROM CHIEF MINISTER

I am honoured to introduce the Balochistan Sustainable Fisheries and Aquaculture Policy 2025-2035, a landmark achievement and first of its kind in Pakistan's history. This policy is a testament to our province's commitment to sustainable development and good governance that will govern the shared resources. Through a bottom-up participatory approach during policy development process, we have ensured that this document is inclusive, comprehensive, and consensus-based. I assure that the same will be continued at all levels during policy implementation through active engagement of relevant stakeholders and government institutions in provincial and federal context.

It provides a futuristic vision and context-specific guidelines for our commitment of improved governance towards the responsible use, sustainable management, and resilient development of marine and inland fisheries and aquaculture resources of the province. I am confident that this policy will lay the foundation for effective governance and management, fostering a thriving and sustainable fisheries and aquaculture sector in Balochistan. This, in turn, will ensure long-term socio-economic prosperity, environmental stewardship, and food security for our people.

The policy is fully aligned with national governance arrangements, international commitments and our provincial vision of a prosperous, equitable, and empowered Balochistan. We believe that by focusing on mass-scale aquaculture development and listening to the voices of key stakeholders, we can turnaround our provincial economy through sustainable utilization of these resources. We are committed to implementing this policy through collective efforts, capacity building, coordination both horizontally and vertically, and mobilizing necessary resources.

I am proud to lead this initiative and look forward to working together towards a brighter future for Balochistan.

**Mir Sarfraz Khan Bugti**  
Chief Minister, Balochistan

## FOREWORD

The Balochistan Sustainable Fisheries and Aquaculture Policy 2025-2035 represents a significant milestone in our efforts to promote sustainable development and ensure the long-term prosperity of our fisheries and aquaculture sector. Under the provision of Gwadar Lasbela Livelihoods Support Project Phase II (GLLSP-II), this policy has been formulated through a collaborative effort, bringing together relevant stakeholders from various sectors to address the complex challenges with workable solutions with futuristic vision.

The policy provides a comprehensive framework for promoting responsible use of fisheries and aquaculture resources through sustainable practices, improving fisheries management for better governance and resilient development, and enhancing the contribution of this sector to the provincial economy. It set performance targets and provides guidance on planning, management and other development needs through context-specific best policy measures. By implementing this policy, we aim to employ ecosystem-based approach for fish production, enhance exports, reduce post-harvest losses, and improve the livelihoods of fishing communities. This policy will also contribute to the achievement of the United Nations' Sustainable Development Goals (SDGs), particularly SDG-1, SDG-2, SDG-3, SDG-8, SDG-12 and SDG-14.

We believe that the successful implementation of this policy will require the active participation and cooperation of all stakeholders. I am confident that together, we can achieve our vision for a sustainable and prosperous future. Effective governance, community engagement, and research and development will be crucial in supporting the sustainable development of our sectors. Furthermore, we will establish a robust monitoring and evaluation system to track progress and make necessary adjustments.

**Zahoor Ahmed Buledi**  
Minister Planning and Development Department  
Government of Balochistan

## PREFACE

The Balochistan Fisheries and Coastal Development Department takes pride in unveiling the first ever provincial policy on fisheries and aquaculture. The Balochistan Sustainable Fisheries and Aquaculture Policy 2025-2035 is a comprehensive framework designed to promote the sustainable development and management of our fisheries and aquaculture sector. This policy has been formulated to ensure the long-term prosperity of the fisheries and aquaculture value chain, related industries and the well-being of our communities.

This policy provides a clear roadmap by outlining strategic interventions to address the challenges being faced by the fisheries and aquaculture sector in Balochistan including overfishing, IUU fishing, trawling, depletion of fish stocks, habitat degradation, harvest losses, inefficient processes, inadequate capacity and governance, coordination gaps, poverty and livelihoods of local communities, climate change, and lack of proper monitoring, control and surveillance (MCS).

The policy maintains its commitment through emphasizing and providing workable guidelines on the importance of improving governance, horizontal and vertical alignment for effective coordination both at provincial and federal levels, placement of a robust MCS system through application of VMS, stock rebuilding measures, protection of habitats and ecosystem, redefining the management and maintenance of fish harbours / jetties, keeping ban on harmful fishing gears, mass-scale aquaculture development for alternate livelihood, community engagement, capacity building, and research and development in supporting the sustainable development of the sector.

By implementing this policy, we aim to transform our fisheries and aquaculture sector, driving economic growth, creating jobs, and improving food security for the people of Balochistan. The policy also recognizes the importance of coordination and collaboration among government agencies, private sector, and civil society to achieve its objectives.

I am confident that this policy will catalyze sustainable development and look forward to working with all stakeholders to achieve our vision. The successful implementation of this policy will require a collective effort and commitment from all stakeholders. We will establish a coordination mechanism to facilitate collaboration and ensure effective implementation of the policy.

**Haji Barkat Ali**  
Parliamentary Secretary  
Fisheries and Coastal Development  
Government of Balochistan

## MESSAGE FROM PROJECT DIRECTOR, GLLSP-II

I am delighted to congratulate everyone engaged in the development of the Balochistan Sustainable Fisheries and Aquaculture Policy 2025-2035, under the provisions of Gwadar Lasbela Livelihoods Support Project, Phase II (GLLSP-II). This policy marks a significant milestone in addressing the critical challenges faced by the fisheries and aquaculture sectors of Balochistan. I am happy to see that its strategic objectives and guidelines align closely with the goals of GLLSP-II.

Balochistan's fisheries sector has long supported coastal communities but faces numerous challenges. I believe that this policy will serve as an important tool in addressing these challenges, focusing on sustainable management of fisheries, promoting aquaculture development, modernizing the infrastructure and enhancing capacity-building.

The Project Management Unit of GLLSP-II Project, funded by the International Fund for Agricultural Development (IFAD) and technically assisted by Food and Agriculture Organization (FAO) of the United Nations, has proudly supported this policy development, providing groundwork for the future of fisheries and aquaculture governance in Balochistan. This policy document has created a very strong linkage of our project endeavours by emphasizing on improving the livelihoods of ultra-poor local fisherfolk through targeted interventions, promoting best practices, gender mainstreaming, and supporting the role of local cooperatives.

This policy complements our capacity-building efforts for the Balochistan Fisheries and Coastal Development Department. This will enhance the capacity of the department, foster better governance and ensure Balochistan meets global challenges while creating sustainable livelihoods for coastal communities. A key focus is improving the socio-economic conditions of local fisherfolk and fish farmers, specifically through establishing and strengthening their cooperatives.

As we move forward, the Balochistan Sustainable Fisheries and Aquaculture Policy will be a cornerstone for a resilient, self-sustaining, and thriving fisheries and aquaculture sector in Balochistan. The GLLSP-II project stands firmly committed to supporting the successful implementation of this policy and empowering local communities to manage and benefit from their resources.

**Rehmat Dashti**  
Project Director, GLLSP-II  
Government of Balochistan

## ACKNOWLEDGEMENT

The development of the Balochistan Sustainable Fisheries and Aquaculture Policy 2025-2035 has been a collaborative effort, and we extend our sincere gratitude to all individuals and organizations involved. This policy will pave the way for a resilient, self-sustaining, and thriving fisheries and aquaculture sector in Balochistan, ensuring sustainable livelihoods, food security, and economic growth, and will bring about a positive impact on the province's economy and the lives of its people in the years to come.

We acknowledge with appreciation the Technical Assistance provided by the Food and Agriculture Organization (FAO) of the United Nations, which has been instrumental in shaping this policy. We are also grateful for the Financial Assistance provided by the International Fund for Agricultural Development (IFAD) under GLLSP-II, which has enabled us to undertake this important initiative. We appreciate the special support provided by FAO Representative Ms. Florence Rolle, Head of FAO's Provincial Office Mr. Waleed Mahdi, Country Director IFAD Ms. Fernanda Thomaz da Rocha, and Country Programme Coordinator IFAD Pakistan Mr. Ghulam Nabi Marri. We also thank FAO's Project Manager (a.i.) Mr. Rizwan Hayat Khan, Project Coordinator Mr. Muhammad Zahoor Ahmad and all other FAO staff for their coordination and support throughout this process.

We express our gratitude to honorable Minister for Planning and Development Mr. Zahoor Ahmed Buledi, Parliamentary Secretary on Fisheries and Coastal Development Mr. Haji Barkat Ali, and Member of Provincial Assembly Maulana Hidayat ur Rehman for their invaluable support and guidance throughout the process. We are grateful for the patronage provided by former Secretaries of the Fisheries and Coastal Development Department, including Mr. Hafiz Muhammad Tahir and Mr. Imran Gichki, as well as former Secretary P&D, Mr. Lal Jan Jaffar. We also appreciate the support from former and incumbent Directors General of Balochistan Fisheries, including Mr. M. Younas Sanjirani and Mr. Imran Ibrahim Bangulzai. We appreciate the leadership provided by the Project Director GLLSP-II Mr. Rehmat Dashti that has been pivotal in driving this policy forward. Our gratitude also goes to Programme Specialist GLLSP-II Mr. Asif Lehri for his supporting role.

We express our special thanks to FAO's Senior Policy Specialist-Fisheries and Lead Author Dr. Kanwar Muhammad Javed Iqbal for his tireless efforts and expertise in drafting this policy. We appreciate the valuable contributions made by the Drafting Committee Members, Dr. Allauddin Kakar and Mr. Asmatullah. We acknowledge the Legal Input provided by Mr. Sharafat Ali, which has ensured that this policy is legally sound. Our thanks also go to GLLSP-II expert Mr. Abdul Rahim and Chairperson Balochistan Commission on the Status of Women Ms. Fauzia Shaheen, for their valuable review input. We appreciate peer review provided by FAO's international experts, including Ms. Angela Lentisco, Blaise Kuemlangan, Ms. Julia Nakamura and Mr. Kim Stobberup, and IFAD Consultants.

We acknowledge the active engagement of all relevant stakeholders, including Rural Community Development Center Gwadar, Gwadar Mahighir Itihad, fisherfolk representatives, representatives of fish processors and industrialists, women representatives from coastal communities, and government department officials from the province and federal level. We appreciate the institutional input and support provided by Lasbela University of Agriculture, Water and Marine Sciences, National Institute of Maritime Affairs, Ministry of Defence, Ministry of Maritime Affairs, Fisheries Development Board (FDB), Joint Maritime Information Coordination Centre, Sindh Marine Fisheries Department, Mercantile Marine Department, Marine Fisheries Department, Gwadar Chamber of Commerce & Industry, Pakistan Fish Exporters Association, and Pakistan Maritime Security Agency.

To conclude, we are deeply grateful for the collective efforts, expertise, and dedication that have made this policy a reality, and we look forward to its successful implementation.

**Dr. Javed Anwar Shahwani**  
Secretary, GoB  
Fisheries and Coastal Development Department

## ACRONYMS

4P	Public-Private-Producer Partnership
BCCP	Balochistan Climate Change Policy
BCDA	Balochistan Coastal Development Authority
BDA	Balochistan Development Authority
BEPA	Balochistan Environmental Protection Agency
BFA	Balochistan Food Authority
BFAA	Balochistan Food Authority Act, 2014
BFAC	Balochistan Fisheries and Aquaculture Council
BFD	Balochistan Fisheries Department
BMP	Best Management Practice
BOT	Build-Operate-Transfer
BPPPA	Balochistan Public Private Partnership Act
BSFAP	Balochistan Sustainable Fisheries and Aquaculture Policy
CBD	Convention on Biological Diversity, 1992
CDR	Central Digital Register for Fishing Vessels
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women, 1979.
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora, 1973.
COLREGs	Convention on the International Regulations for Preventing Collisions at Sea, 1972
CSO	Civil Society Organization
DLO	Departmental Liaison Officer
EEZ	Exclusive Economic Zone
EOBI	Employees Old Age Benefit Institution
ETP	Endangered, Threatened and Protected Species
F&CD	Fisheries and Coastal Development
F&CDD	Fisheries and Coastal Development Department
FAO	Food and Agriculture Organization of the United Nations
FCS	Fishermen Cooperative Society
FDB	Fisheries Development Board
FEZ	Fisheries Economic Zone
FMIS	Fisheries Management Information System
FPIU	Fisheries Policy Implementation Unit
FRAP	Fisheries Resources Appraisal in Pakistan
GDA	Gwadar Development Authority
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GLLSP-II	Gwadar Lasbela Livelihoods Support Project Phase-II
GoB	Government of Balochistan
GoP	Government of Islamic Republic of Pakistan
HACCP	Hazard Analysis and Critical Control Points
HR	Human Resources
IDC	Inter-Departmental Committee
ILO	International Labour Organization
IMO	International Maritime Organization
IOTC	Indian Ocean Tuna Commission
ISO	International Organization for Standardization
IUCN	International Union for Conservation of Nature

IUU	Illegal, Unreported and Unregulated
JMICC	Joint Maritime Information Coordination Centre
MARPOL	International Convention for the Prevention of Pollution from Ships, 1973
MCS	Monitoring, Control and Surveillance
MFD	Marine Fisheries Department, Karachi
MMD	Mercantile Marine Department, Karachi
MOMA	Ministry of Maritime Affairs
MPA	Marine Protected Area
MSY	Maximum sustainable yield
NADRA	National Database and Registration Authority
NDC	Nationally Determined Contribution
NM	Nautical Mile
NRCP	National Residue Control Plan
P&D	Planning and Development Department
PBS	Pakistan Bureau of Statistics
PDMA	Provincial Disaster Management Authority
PES	Pakistan Economic Survey
PHL	Post-harvest losses
PMSA	Pakistan Maritime Security Agency
PPP	Public-private partnership
PSDP	Public Sector Development Programme
PSQCA	Pakistan Standards and Quality Authority
ROI	Return on Investment
SBP	State Bank of Pakistan
SDGs	Sustainable Development Goals
SECP	Securities and Exchange Commission of Pakistan
SME	Small and Medium Enterprise
SOLAS	International Convention for the Safety of Life at Sea, 1974
SOP	Standard Operating Procedure
SSF	Sustainable Small-Scale Fisheries
STCW-F	International Convention on Standards of Training, Certification, and Watchkeeping for Fishing Vessel Personnel, 1995
TWG	Technical Working Group
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea, 1982
UTF	Unilateral Trust Fund
VMS	Vessel Monitoring System

# Contextual Framework

## CONTEXTUAL FRAMEWORK

### 1. INTRODUCTION

Balochistan, the southwestern part of Pakistan, holds the distinction of the area-wise largest including more than 734.5 km (396.59 Nautical Miles) long coastline but the least populous province of the country. It covers approximately 43.6 percent of Pakistan's total land area and accounts for approximately 6.2 percent of the total population of the entire country out of which approximately 69 percent lives in rural areas. It shares borders with Iran to the west and Afghanistan to the north. The province has geo-political and geo-economic significance due to its geographic landscape, proximity to the Arabian Sea and the Strait of Hormuz, rich culture with a variety of ethnic groups and historic cultural values, and abundance of natural resources including the terrestrial and aquatic ecosystems. The province has jurisdiction at sea up to 12 Nautical Miles from the baseline to develop and govern the economic activities through its policies, legislation, and institutional mechanism for the sectoral economies involved. Overall, the province mainly relies on agriculture, horticulture, livestock, fisheries, forestry, mineral mining, and processing along with a small manufacturing sector. Marine and freshwater aquatic ecosystems are important for the fisheries sector with the enormous industrial potential to develop and maintain a significant share in the socio-economic context of Balochistan. The livelihood of more than 70 percent of the population in coastal areas of Balochistan is dependent on this sector.

Although Balochistan's marine fishery has a predominant contribution, the overall fisheries resources in marine waters of Pakistan including the provincial jurisdiction have declined by some 50-90 percent due to overexploitation as reported in the most recent Stock Assessment Survey of Pakistan's Marine Fisheries Resources (FAO, 2016). Whereas the inland fisheries resources are not fully accessed and developed. The freshwater bodies in Balochistan have enormous potential for the sustainable development of inland fisheries and aquaculture. However, there is pressure on the readily accessible inland fisheries resources due to unsustainable practices and inefficient management. Despite huge economic potential and significant role towards food security, the fisheries sector is underdeveloped and underreported not only in Balochistan province but also across Pakistan. Currently, the contribution of nationwide fisheries is less than 0.5 percent towards national Gross Domestic Product (GDP), with a growth rate of approximately 1.44 percent per annum. According to data source from Pakistan Bureau of Statistics (PBS) for fish export, the average annual fish production is about 0.81 million tons (including 0.504 and 0.304 million tons of marine and inland sources respectively) in terms of quantity while per annum export is about 0.185 million tons in terms of quantity or about 430 million US\$ in terms of value. With focused attention on long-run basis, the sustainable management and development of fisheries and aquaculture can help in increasing the national export earning manifolds with an estimated macro level contribution of more than 10 billion US\$ per annum including a significant contribution of Balochistan province i.e. more than 30%. However, Balochistan's share can be increased only if rapid aquaculture growth and sustainable management of fish stocks are achieved and maintained.

Although Balochistan's marine fisheries has a major share in national fish export, the actual data is either inconsistent or unavailable because of the reason that more than 70 percent of Balochistan's marine fish catch is generally bypassed via sea route and lands at Karachi. There is no traceability due to which Karachi fish harbour is very much crowded and the fish harbours in Balochistan are less crowded. This factor is very much linked to inadequate infrastructure and other facilities to meet the handling, processing, and export needs in the areas along the Balochistan coast. In addition to export-based earnings, the overall marine and freshwater fisheries and aquaculture sector has a very big un-tapped nationwide domestic market considering the existing food patterns with very less per capita consumption of fish or fish products (i.e. about 2 Kg per annum) vis-à-vis accelerated future demand due to emerging transformation in food consumption patterns. However, it is facing many challenges.

Efforts to harness the actual potential of the fisheries and aquaculture sector through ease of doing business may create opportunities for investments, livelihoods of the local communities, and substantial economic growth. It can only be possible through an enabling, participatory, and robust governance system that should be centered on the approaches of responsible use, sustainable management, and resilient development of this vital sector of Balochistan's economy. Although fisheries-related legislation and institutional arrangements are in place, there is an issue of coherent and harmonized governance mechanisms. The situation is further aggravated due to the absence of sector-specific policy document for the provincial government's commitment and time-to-time guidance thus acting as a limiting factor for continual improvement and ensuring the sustainability of the resources. Hence, the need was realized to revitalize the provincial governance system by bridging the major gap through development, promulgation, and implementation of the '*Balochistan Sustainable Fisheries and Aquaculture Policy*'.

## 2. POTENTIAL OF FISHERIES AND AQUACULTURE IN BALOCHISTAN

There is enormous potential for both marine and inland fisheries and aquaculture resources in Balochistan. The mariculture is totally untapped segment in the province. Regarding marine fisheries and aquaculture under the Constitution of Islamic Republic of Pakistan, Balochistan province has jurisdiction over a vast fishing ground with an area of around 16324 square km at sea along a very long coastline stretching over more than 734.5 km (396.59 Nautical Miles). The oceanic ecosystems and habitats including two Hors (i.e. Miani Hor and Khor Kalamat) along with reefs in the Marine Protected Area of Astola Island are highly productive and rich in marine biodiversity including more than forty commercial fish species. A large part of the sea is still warm, clean, and uninterrupted from anthropogenic effects. There is an untapped stock of shellfish (i.e. lobsters, crabs, mussels, oysters, clams, etc.), responsible use of which can turn around the socio-economic conditions in the coastal areas of the province.

There is huge investment potential in marine fisheries through cage farming, shrimp farming, oyster farming, fish processing, and cultivation of seaweeds. In addition, there is huge potential in brackish water resources for commercial aquaculture. For freshwater aquaculture, there are three large dams (i.e. Mirani, Hub, and Sabakzai Dam) along with many small dams and water bodies within the province to rear fish. More than 3500 acres of land is under aquaculture or fish farming use in Sohbatpur, Jaffarabad and Nasirabad districts, particularly with canal-based irrigation system for fish rearing and aquaculture activities in the area. However, the actual potential is more than this. The labour force is easily available for a number of investment opportunities for domestic and export purposes including but not limited to aquaculture farming; development of processing units; development of cold storage facilities and transport services for storage; preservation and transportation (including Reefer containers for major shipments within and outside country); development of private jetties / fish harbours through the window of public-private partnership (PPP); marketing for live and processed fish and fish-based products for local and export markets; development of industrial units particularly for fish oils, chemicals, pharmaceuticals, farm equipment including nets, air pumps and aerators etc.; development of special eateries / restaurants; sport fishing based tourism; and education, research and development for value-added products. The potential of value-added products including gelatin from skin, fish oil, pharmaceutical compounds, and products like surimi for international markets offers higher rates of return on investment (ROI).

With focused attention on accelerated growth and sustainable management practices on a medium-term basis, it is estimated that the annual macro-level export-based contribution of fisheries and aquaculture resources in the provincial economy of Balochistan can be increased manifold over the next 5 to 7 years. If continued with the same spirit and with promotion of coastal aquaculture farming on mass-scale, this contribution may be enhanced and maintained to approximately more than 4 billion US\$ per annum over the next 15 to 20 years' time frame. The domestic earnings and creation of jobs would be an additional benefit in terms of socio-economic uplift and development of enterprises along the value chain of this industry in the province.

### 3. STATE OF GOVERNANCE FOR FISHERIES IN BALOCHISTAN

#### 3.1. Historical Legislative Evolution for Fisheries Sector in Balochistan

History has witnessed that the governance of the fisheries sector in Balochistan has undergone a significant and dynamic legal evolution over the years. This historical evolution reflects a continuous effort to adapt to the development challenges and harness the opportunities through regulation and management of inland and marine fisheries, and by addressing the various aspects such as licencing, enforcement, amendments, and the establishment of specific authorities for effective governance. The foundation of all fisheries-related legislation in Pakistan and Balochistan can be traced from a pre-partition period where early efforts were made in the year 1878 which laid the groundwork in the year 1897 in the form of the Indian Fisheries Act. This was the first institutional governance response of the fisheries sector that was also adopted by Pakistan in the early times after the partition of the subcontinent. It was extended to the whole of the East and West Pakistan. This act provided the basis for further legislative development in West Pakistan. In addition, all the food items including dry fish, shellfish, fishmeal, etc. were managed and regulated under the Agriculture Produce (Grading and Marketing) Act 1937. In subsequent developments, the important federal legislations include the West Pakistan Fisheries Ordinance 1961, West Pakistan Fisheries Rules, 1965, Exclusive Fishing Zone (Regulation of Fishing) Act, 1975 (amended 1993), Pakistan Fish Inspection and Quality Control Act, 1997, and Pakistan Fish Inspection and Quality Control Rules, 1998 (amended 2023). The West Pakistan Fisheries Ordinance 1961 and West Pakistan Fisheries Rules, 1965 were subsequently adopted by the provinces including Balochistan through which the legal framework for fisheries governance in Balochistan, excluding the Tribal Areas, was established. It introduced the Director of Fisheries as the administrative head with powers to lease out water, excluding private water. It also outlined the jurisdiction for courts, search warrants, and penalties for various offenses.

In the view of marine and coastal fishing resources production and supervision, the focus got broader due to the involvement of licencing rights, offenses across borders, foreign fishing vessels, and export activities, which ultimately led to the development and promulgation of the Balochistan Sea Fisheries Ordinance No. IX, 1971, and Balochistan Sea Fisheries Rules, 1971. The Balochistan Sea Fisheries Ordinance No. IX, 1971 empowered the Fisheries and Coastal Development Department (F&CDD) for the management and governance of marine fisheries in the territorial waters up to 12 Nautical Miles at Sea from the baseline. This law grants authority to control fishing craft, fishing licences and processing of fish and fishery products. The Act has been amended times and again in the years 1986, 1992, 1994, 2009, 2014, and 2022. In 1986, it introduced amendments related to trawlers, prohibited nets, and increased fines. In 1992, it amended the definitions and increased fines. In 1994, amendments were made for the **retrospective effect of punishment** only. In 2009, amendments were made in definitions and licencing sections along with an increase in fines. In 2014, it substituted provisos related to confiscated vessels and prohibited gear. In 2022, Section 8-A was introduced regarding the functions of patrolling staff. However, despite all these amendments, several gaps exist which include, but not limited to, sustainable management of fish stocks, functions and procedures related to the registration of fishing vessels, and monitoring, control, and surveillance (MCS) mechanisms at sea in the provincial-federal context of the marine fisheries, and horizontal and vertical coordination mechanism.

In addition to the above, the Pasni Fisheries Harbour Authority Ordinance was promulgated in 1983 which declared the harbour as corporate body and outlined the Board's functions, powers, and roles of key positions. It also addressed finance, penalties, and miscellaneous provisions related to the Authority's operations. Over and above that, the Balochistan Coastal Development Authority Act was promulgated in 1998 to oversee the coastal development in Balochistan. It outlined the Governing Body's composition, functions, and collaboration with government bodies. It has emphasized the Authority's role in planning and executing development schemes for coastal regions which becomes highly relevant for the strategic and resilient development of marine fisheries and aquaculture-related infrastructure.

### 3.2. Business-as-Usual Management of Fisheries and Aquaculture in Balochistan

The Balochistan Government has launched some key interventions under Gwadar Lasbela Livelihoods Support Project Phase-II (GLLSP-II) to improve the fisheries sector for food security and employment opportunities. The Provincial SDGs Framework for Balochistan 2021 has also tried to cover the sectoral needs to a reasonable extent. However, the actual scope of work for the sectoral requirements needs to be chalked out through a sector-specific policy and a comprehensive response strategy to realize the necessary measures. On the one hand, the sector is not fully tapped. On the other hand, the management and operational aspects are unsustainable due to outdated practices, use of un-authorized or wrong gears, issues of cost-effectiveness of feed & seed for aquaculture, IUU fishing, informal or unregistered jetties & landing sites, dredging issues and unavailability of data in the overall sector.

The decision-making and management responsibilities are centered within the government, both at provincial and federal levels, with a visible factor of top-down approach. The Balochistan Government Rules of Business, 2012 describe the functions and duties of ministers, advisors and secretaries regarding a subject-specific department. Ministers and advisors are responsible for the policy matters and conduct of the business of their respective departments. A Secretary assists the Minister in formulation of policy and executes of the sanctioned policy by acting as head of the concerned department. The Secretary is also responsible for efficient administration, discipline and for the proper conduct of business assigned to the Department. Whereas no mechanism exists for active engagement of relevant stakeholders for participatory governance and decision making. The role of the stakeholders is primarily one of compliance or failure to comply. There are not only horizontal and vertical coordination gaps within the departmental hierarchy including the fisheries department, but also horizontal coordination gaps with line government departments and other relevant stakeholders at provincial and federal levels. The business-as-usual case of the fisheries and aquaculture sector is largely unmanaged as non-compliance rates are high and the industry's 'ownership' is very low. The management practices for the fisheries and aquaculture sector are unsustainable and outdated. One of the most fundamental management tools in fisheries is the power to restrict or limit access to fish resulting in depletion of fish stock. Unlimited access has almost a 100% rate of collapsing fish stocks, virtually no rebuilding effort has been made or any other attempt remained unsuccessful without firm control over fisheries access. There is a very difficult question that arises in a political and social context i.e. who and how many will be allowed to fish?

In the context, there is a need to devise a sustainable fisheries management system based on fishery-specific approach by considering the four types of marine fisheries including the Small Pelagics, Mesopelagics, Demersal (Groupers, Snappers, Croakers, Sea breams, Threadfin breams, Pomfrets, Ribbonfish, Grunters, Catfish, Elasmobranchs) and Shellfish. Whereas the practices in inland fisheries are also unsustainable and reflect gaps in institutional governance mechanisms vis-à-vis rules of business in the context of auctions for inland fishing vs. licences.

### 3.3. Gaps and Challenges for Sustainable Fisheries and Aquaculture

There is an absence of provincial policy to provide guidance on responsible use, sustainable management, and resilient development of fisheries and aquaculture sector in Balochistan. There is a lack of understanding and vision for the promotion and development of the fisheries and aquaculture resources, value chain and ancillary industry. The existing laws are either outdated or incoherent, thus acting as a limiting factor to govern and promote the sector on modern norms. The operational aspects in the entire sector show non-adherence with international obligations such as IOTC guidelines, FAO's Code of Conduct for Responsible Fisheries, FAO's Sustainable Small-Scale Fisheries (SSF) guidelines, standards and food quality control (including HACCP, ISO-9001, ISO-14001), decent work, traceability, and residual control particularly for the contaminants & toxins.

The situation has aggravated further due to poor enforcement of existing laws. Besides, there is an issue of conflict of laws (including environment, social welfare, labour rights, food, maritime boundaries and security, safety at sea, narcotics, smuggling, and trafficking-related laws) due to

lack of coherence, unharmonized governance, overlapping jurisdiction particularly in marine fisheries segment and lack of interdepartmental coordination within the province and between the province and the federal institutions.

There is a query about how to create a balance between small-scale and industrial fishing in the marine waters under the jurisdiction of Balochistan province by resolving the outstanding issues and demands of small-scale fishers. This issue is important not only for the capture fisheries but also to protect the habitats and the ecosystems. The habitats and ecosystems particularly of marine fisheries are under threat due to pollution and other anthropogenic effects including over-fishing and unsustainable practices. In addition, the climate vulnerability risk index is also high, particularly in coastal areas of Balochistan.

Stocks have been depleted due to overexploitation and there is no procedure or management system for periodic surveys, resources mapping, zoning, stock-based quota allocation, species-specific licencing, and controlling IUU fishing particularly linked with economic trespassing by the illegal trawlers of other province that roam in marine areas under Balochistan's jurisdiction. The fishing effort has been growing steadily in terms of the number of fishing vessels, mechanization, and increased time at sea. There is a high ratio of harvest losses due to poor practices. Control and reduction of unsustainable fishing effort is required to stop the over-exploitation and rebuild the most valuable and highly vulnerable marine resources.

The existing auction mechanism in inland fisheries for leasing the fishing rights in dams, canals, lakes and water reservoirs of Balochistan is inadequate. There is no proper monitoring mechanism in place for these types of permits. There is no procedure for the assessment and management of inland fisheries stocks. The existing procedure has ambiguities and inadequacy for the registration of storage and processing premises; fish farms or aquaculture units; feed mills; rearing facilities; private jetties; fishing vessels and other harbour crafts.

The desired level of institutional capacity is inadequate which is because of several reasons including the under-resourced; insufficient HR; inadequate skills of existing HR; absence of a dedicated legal wing; no legal provision for special prosecutors and special courts or tribunals; and lack of research and development along with poor extension services due to inadequate funding or fiscal allocations. This has also increased the gap between researchers and policy makers. In addition, the existing infrastructure is insufficient particularly to meet the operational requirements of marine fisheries and aquaculture by having adequate breakwaters, jetties, harbours, training and research centres, laboratories, office premises, and residences for staff and road connectivity.

Impediments in aquaculture development include the challenge of insufficient and quality inputs, inadequate facilities i.e. hatcheries, feed mills, and the aspect of cost-effectiveness of fish seed, feed, and rearing activities. The stakeholders are not actively engaged to attract private sector investment and to generate women's employment in the value chain. Loans and credit facilities are inaccessible due to the high interest rates of the commercial banks thus acting as a limiting factor for the development of the value chain particularly for aquaculture related interventions.

There is no knowledge management platform, thus availability of authentic data pertaining to logbooks, catch records, port calls, landing sites, auction halls, processing, violations, prosecutions and convictions, IUU fishing, fish stocks, and other statistical records is a major challenge. There is no adequate monitoring, control, and surveillance (MCS) system and grievance redressal mechanism.

# Policy Framework

## **POLICY FRAMEWORK**

### **4. KEY ELEMENTS OF THE POLICY**

#### **4.1. Vision**

The vision of the Balochistan Sustainable Fisheries and Aquaculture Policy (BSFAP) is to foster a thriving and sustainable fisheries and aquaculture sector in Balochistan, ensuring long-term socio-economic prosperity, environmental stewardship, and food security for present and future generations, while meeting domestic and international demand and promoting best practices for resilient and productive habitats and ecosystems.

#### **4.2. Mission**

The mission of the Balochistan Sustainable Fisheries and Aquaculture Policy is to promote responsible use, sustainable management and resilient development of marine and inland fisheries and aquaculture resources, enhancing socio-economic prosperity, export-based macro earnings, and domestic food security, while ensuring the long-term viability of fish stocks and allied industries. It shall be achieved through coordinated efforts and stakeholder engagement, gender mainstreaming and institutional strengthening, capacity building, awareness raising, and research-driven extension services, and effective monitoring and adaptive management.

#### **4.3. Aim and Objectives of the Policy**

The overarching aim of this Policy is to provide guidance on responsible use, sustainable management, and resilient development of the underutilized potential of fisheries and aquaculture resources in Balochistan, with following objectives:

- a. Harness the provincial potential of fisheries and aquaculture optimally in a responsible and sustainable manner to enhance the per capita availability of nutritious products for food security and growths in exports and income of all relevant persons in the value chain.
- b. Ensure responsible use of the fish stocks on the principle of maximum sustainable yield.
- c. Protection of the fish habitats and ecosystems from irreversible losses to ensure environmental security, native fish genetic diversity, ecosystem services and optimal co-benefits on long-run basis.
- d. Ensure the use of internationally agreed, ecologically sound and best gears for sustainable small-scale and large-scale marine fishing.
- e. Establish and strengthen sustainable aquaculture farming for both marine and inland industrial segments to complement and provide alternative livelihood to have less pressure on the natural fish stocks and enhance food security.
- f. To meet the nutritional demand, increase domestic income and export earnings.
- g. Promote the development of inland fisheries and aquaculture in all freshwater wetlands and dams in the province.
- h. Promote small and medium enterprise development including the women enterprises.
- i. Develop, maintain and strengthen resilient infrastructure to meet time to time requirements of fisheries and aquaculture.
- j. Promote market competitiveness, consumer satisfaction with better choice and increased domestic and export demand for Balochistan's fisheries and aquaculture food products.
- k. Mainstream gender, and provide fair, safe and decent working environment and living conditions to the workforce in all operations including fishing at sea and all other processes in the value chain.
- l. Take appropriate measures for energy conservation, use of renewables, climate preparedness and pollution control and mitigation in the value chain.
- m. Promote research and development for innovative technological solutions, value addition and best practices in the entire value chain of both capture and farm fisheries.

- n. Continually improve the performance by enhancing competence, capacity, understanding on the issues and active role of the fisheries department, relevant institutions, and other stakeholders.
- o. Maintain the active engagement of fishers, fish farmers, private sector, civil society, academia and other stakeholders including women groups in the decision-making system and processes to promote participatory governance.
- p. Establish, maintain and use digital data and knowledge management system by covering the entire value chain for effective decision-making, promoting research and development, and coping the IUU fishing.
- q. Bring reforms in existing governance for improved functions, roles and responsibilities.
- r. Ensure ease of doing business and establish E-Governance for swift solutions including the single window operations for registrations, licencing, leasing, certifications and traceability.

#### **4.4. Policy Targets**

##### **4.4.1. Short-term Policy Targets**

- a. Establish fully functional and integrated E-Governance System by covering all operational aspects of fisheries and aquaculture by the year 2027.
- b. Streamline the registrations of marine fishing vessels along with establishing the integrated and harmonized Vessel Monitoring System (VMS) by the year 2027.
- c. Study, declare and develop twenty (20) new fish sanctuaries for inland fisheries by the year 2030; and five (05) new marine fish sanctuaries by the year 2027.
- d. Establish ten (10) state of the art facilities for shrimp and fish hatcheries for coastal aquaculture in Gwadar-Lasbela areas by the year 2027.
- e. Establish a state-of-the-art complex for monitoring, control and surveillance system at Gwadar as a priority intervention by the year 2027.
- f. Establish, provide technical and financial support to support for Strategic & Business planning of fisherfolks cooperative societies along the Balochistan coast to improve their livelihood by the year 2027.
- g. Establish best practices in fish handling, storage, processing and transportation and improve product quality to ensure the product meets the market demand by the year 2027, under GLLSP-II.
- h. Develop and connect fisheries market information systems in major landing sites to enable fisher folk to access market information regarding the national and international fish auctioning by the year 2027.
- i. Develop cold chain basic infrastructures like fish landing sites / harbours /jetties with allied infrastructure, farm to market link roads and fish storage and grading units to ensure that fish and fish products reach national and international markets in good condition, by year 2027.
- j. Provide technical support for capacity building on financial management and business development to enable fisherfolk cooperatives societies to access and use financial services effectively, by year 2027.
- k. Conduct capacity building programs for fisheries department and local fisherfolks on sustainable fishing practices, fish processing, marketing, business development, hatcheries innovation and aquaculture development, by year 2027.
- l. Develop and implement fisheries policy and legal framework by the year 2025, and policy support programme to promote sustainable practices in the fishery value chain by year 2027.
- m. Develop and implement programs to promote gender equality in the fishery value chain, including increasing women's participation in the sector by the year 2027.
- n. Conduct the first marine fish stock assessment survey and prepare stock-based fisheries management plan by year 2026.

- o. Develop and implement a monitoring and evaluation framework to measure the effectiveness and impact of interventions of fisheries by the year 2025.
- p. Reduce post-harvest losses by volume and value up to 40 percent on a short to medium term basis.

#### 4.4.2. Medium-term Policy Targets

- a. Gears conversion for IOTC compliance by 2030.
- b. Establish District or Tehsil level hatcheries for extensification of freshwater aquaculture in the province by the year 2031.
- c. Increase, maintain and continually improve the value of present annual macro level export-based contribution of fisheries and aquaculture resources in the provincial economy of Balochistan to **1 billion** US\$ by the year 2031.
- d. Achieve 100 percent handling, management and processing of all marine catches in the fish harbours of Balochistan through avoiding its by-passes to Karachi via sea route by the year 2031 on medium term basis. Focus shall be given to improving the existing infrastructure and industrial needs with the approach of market competitiveness.
- e. Reduce post-harvest losses by volume and value up to 40 percent on a short to medium term basis.

#### 4.4.3. Long-term Policy Targets

- a. Establish fully equipped, competent and self-sustained fisheries research centers in universities at Lasbela, Gwadar and Quetta by the year 2035.
- b. Accelerate, achieve, and maintain annual growth rate of 3.5 percent by 2031 on short to medium-term basis; 5 percent by 2035 on medium to long-term basis; and 6 percent by 2044 and beyond on long-term basis, for the sustainable development and management of Balochistan Fisheries and Aquaculture. Focused attention shall be given to the establishment and proliferation of shrimp farming and maintaining its competitive edge on international market giants including India, Ecuador, Indonesia, Iran, and Saudi Arabia.
- c. Attain, maintain and continually improve the annual macro level export-based contribution of fisheries and aquaculture resources in the provincial economy of Balochistan to **more than 4 billion US\$ per annum** by the year 2044 and beyond.
- d. Institutionalize stock-based licencing mechanism for marine fisheries in Balochistan along with rationalized fishing fleet by the year 2035. Prior to its implementation, it shall be rationalized by establishing and maintaining the target reference point after conducting at least three stock assessment surveys over the next ten years timeline, with a frequency of five (05) years.
- e. Develop coastal aquaculture on 100000 Acres of land by the year 2044; and on 150000 Acres of land by the year 2054.
- f. Double the existing freshwater aquaculture or fish farming by the year 2031; and enhance further to maximum possible across Balochistan province by the year 2044.
- g. Reduce post-harvest losses by volume and value up to 90 percent on long term basis.

#### 4.5. Incentives

- a. The Government of Balochistan recommends the Federal Government to provide exemption of all import duties and surcharges on the purchase and import of modern fiber-coated fishing vessels and harbour crafts, dredgers and equipment and material including the renewable energy or solar technology for aquaculture farming, cold storages, processing units, feed mills, and rearing facilities for a period of 20 years.
- b. The Government of Balochistan recommends the State Bank of Pakistan (SBP) to revisit SBP's Guidelines for Fisheries Financing, 2007 for the purpose of granting concessional soft loans which is essential for investments and development of small and medium enterprises in the value chain of aquaculture production in Balochistan.

- c. Provision of electricity and natural gas shall be made on concessional unit price for industrial and other unit operations in the value chain of fisheries and aquaculture.
- d. The Government of Balochistan shall make provision of interest free loans for women-led small and medium enterprise development and for the purchase of aquaculture related equipment including tractors, solar-power system, aerators and others as relevant.
- e. The Government of Balochistan declares twenty-years tax holiday for aquaculture related products, and recommends the Federal Government to exempt all kinds of taxes on purchase or import of equipment, machinery, and other material.

#### **4.6. Recognition**

- a. The Government of Balochistan hereby recognizes the fisheries and aquaculture sector including all the associated unit operations, all types of enterprises and ancillary production and services facilities as Industry. It shall be declared in provincial fisheries legislation accordingly and shall be treated as Industry. All relevant provincial and national rules shall be applicable to it.
- b. Each boat or sea-going vessel shall be considered, declared through the law, and treated as a company or business entity. All relevant provincial and national rules shall be applicable in this regard.
- c. Fisheries and Coastal Development Department shall provide recognition certificates to those registered Trade Unions which represent the genuine fisherfolk or fish farming community.

#### **4.7. Core Values**

Under the guidance of 'Balochistan Sustainable Fisheries and Aquaculture Policy', the core values are based on international best practices and norms that include transparency, accountability, participation, pluralism, social inclusion, fairness, coherence, competition and sustainability in decision-making system and all related processes, procedures, and actions.

#### **4.8. Guiding Principles of the Policy**

Following are the principles of this policy for the purpose of guidance:

- a. Adequate governance.
- b. Compliance with provincial and national laws, and international obligations.
- c. Sustainable fish stocks.
- d. Environmental protection.
- e. Enhance the value of the fish and fishery products.
- f. Traceability and chain of custody.
- g. Access to information.

#### **4.9. Alignment with National Laws and International Obligations**

The BSFAP is aligned with relevant national laws and international obligations including polices, strategies and conventions related to ensure that Balochistan's efforts contribute effectively to socio-economic uplift and food security through sustainable management and development of fisheries and aquaculture in the province. During the synthesis of policy measures, due consideration has been given to relevant governing instruments including, but not limited to, the following, detail of other documents reviewed is placed in Annex-I:

- FAO's Code of Conduct for Responsible Fisheries.
- FAO's voluntary Guidelines for Sustainable Small-Scale Fisheries (SSF).
- Requirements of the Indian Ocean Tuna Commission (IOTC).
- United Nations Convention on the Law of the Sea, 1982.

- Convention on the International Regulations for Preventing Collisions at Sea (COLREGs), 1972.
- International Convention for the Safety of Life at Sea (SOLAS), 1974.
- IMO's International Convention on Standards of Training, Certification, and Watchkeeping for Fishing Vessel Personnel (STCW-F), 1995.
- FAO's Voluntary Standard Specifications for the Marking and Identification of Fishing Vessel, 1989.
- United Nations Agenda 2030 - Sustainable Development Goals.
- United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), 1979.
- FAO's Gender Mainstreaming Policy 2020-2030.
- FAO's Strategic Framework 2022-2031.
- National Gender Policy Framework, 2022, Pakistan.
- MARPOL 73/ 78.
- ILO's Work in Fishing Convention, 2007 (C188).
- Convention on Biological Diversity, 1992 (CBD).
- Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973.
- Pakistan Fish Inspection and Quality Control Act, 1997.
- Pakistan Fish Inspection and Quality Control Rules, 1998 (amended 2023).
- National Climate Change Policy, 2021.
- National Adaptation Plan, 2023.
- Nationally Determined Contributions (NDCs) submitted under the Paris Agreement.
- National Policy and Strategy for Fisheries & Aquaculture Development in Pakistan 2007.
- National Maritime Policy 2002.
- Pakistan Maritime Zones Act, 2023.
- PMSA Act 1994.
- Agriculture Produce (Grading and Marketing) Act, 1937.
- West Pakistan Fisheries Ordinance, 1961.
- West Pakistan Fisheries Rules, 1965.
- Exclusive Fishing Zone (Regulation of Fishing) Act, 1975 (amended 1993).
- Provincial SDGs Framework for Balochistan, 2021.
- The Balochistan Government Rules of Business, 2012.
- The Balochistan Sea Fisheries Ordinance, 1971 (amended 2022)
- Balochistan Sea Fisheries Rules, 1971.
- Pasni Fisheries Harbour Authority Ordinance, 1983.
- Balochistan Coastal Development Authority Act, 1998 (amended 2017).
- GDA Act, 2003.
- Balochistan Environmental Protection Act 2012.
- Balochistan Public Private Partnership Act, 2021.
- Balochistan Climate Change Policy, 2024.
- Balochistan's Gender Equality & Women's Empowerment Policy, 2020-2024.

## 5. CONTEXT-SPECIFIC POLICY GUIDELINES

Globally, fisheries have now transformed into a market-driven and consumer-oriented industry with growing international demand for fish and fishery products. It offers new investment opportunities in Balochistan particularly in the value chain including, but not limited to, the development of modern fishing fleets and infrastructure, processing factories, small and medium enterprises, aquaculture establishments, testing and diagnostic laboratories, technological solutions, transportation, and marketing services.

The Balochistan fisheries and aquaculture sector is diverse and dynamic with an immense potential that can be tapped through sustainable consumption and production of marine fisheries, extensification of inland fisheries and aquaculture, and mass-scale development of coastal aquaculture. However, the existing practices are not sustainable, and the socio-economic contribution of the sector is relatively less. The Government of Balochistan shall improve it largely by addressing the needs for responsible use, sustainable management and resilient development of both marine and inland fisheries and aquaculture resources through context-specific policy measures under the auspices of the 'Balochistan Sustainable Fisheries and Aquaculture Policy'.

### 5.1. Responsible Use of Resources

#### 5.1.1. Marine Capture Fisheries

##### Policy Context

Under the provisions of the United Nations Convention on the Law of the Sea (UNCLOS), coastal states have sovereign rights over the natural resources of their territorial sea, including the seabed and subsoil, and the right to exploit these resources. Coastal states have jurisdiction over artificial islands, installations and structures in their territorial sea and exclusive economic zone, including the right to regulate and enforce laws and regulations related to these activities. As per constitutional arrangements in the Islamic Republic of Pakistan, both coastal provinces i.e. Balochistan and Sindh are entrusted to utilize and manage these resources within twelve (12) nautical miles at sea from the baseline. Balochistan province has vast marine fishing ground with an area of around 16324 square km along a very long coastline stretching over more than 734.5 km (396.59 Nautical Miles). The Balochistan coast is characterized by several prominent headlands with adjoining bays at Ormara, Pasni and Gwadar, as well as large bays at Jiwani and Somiani. There are two uninhabited islands i.e. Churna and Astola, two tomboles at Ormara and Gwadar, and two lagoons i.e. Miani Hor and Khor Kalamat. Reefs around Astola Island are highly productive. There are mangrove areas in Miani Hor, Khor Kalmati and Gwadar Bay. The continental shelf is very narrow in nearby areas at Gwadar. However, it extends for about 70 km in areas around Somiani Bay.

There is enormous potential with a wider distribution and abundance of resources for sustainable use and resilient development of marine fisheries and aquaculture value chain in Balochistan. Although big size vessels operate for commercial fishing in provincial marine waters of Balochistan, the marine fisheries sector is predominantly reliant on the socio-economically backward artisanal and small-scale fishing by the fishers whose lives are historically and very closely intertwined with the Arabian Sea. There is a likelihood of conflicts due to major imbalance between small-scale and large-scale marine fishing in the future. It should be addressed through appropriate policy measures. The Government of Balochistan recognizes the central role of small-scale fisheries, its post-harvest subsector and the actors involved in the value chain. Apparently, it should have less impact on habitats and ecosystems. However, the primitive way of fishing with a very big fleet has put tremendous pressure on available fishery resources. This pressure has been increased manifold over time due to illegal, irrational, and irresponsible trawling on mass-scale in marine waters of Balochistan that has been reportedly done frequently by the trawlers carrying the licence of the other province. This act of illegal trawling needs to be stopped immediately and managed through an effective MCS mechanism at sea with shared roles and responsibilities of the provincial and federal institutions.

Balochistan's marine fishery has a predominant contribution, however, the overall fisheries resources or the available fish stock in marine waters of Pakistan, including the provincial areas, have declined by some 50-90 percent due to overexploitation or overfishing as reported in the most recent Stock Assessment Survey carried out by FAO from 2009 to 2015 under UTF project titled "Fisheries Resources Appraisal in Pakistan". Although anthropogenic pollution is a matter of grave concern in many areas, a large part of the sea is still warm, clean, and uninterrupted by anthropogenic effects in Balochistan areas. There is an untapped stock of shellfish (i.e. lobsters, crabs, mussels, oysters, clams, etc.) responsible use of which can turn around the socio-economic conditions in the coastal areas of the province.

Major constraints impacting the responsible use and sustainable management of marine capture fisheries along with development of its value chain particularly for export-based macro earnings and improving the coastal livelihoods include the limited scope for mass-scale commercial or industrial fishing particularly beyond twelve nautical miles at sea; absence of policy, vision and strategy; inadequate arrangements for institutional governance that lacks the rights-based approach, active engagement of local stakeholders in decision making process and effective coordination system for horizontal and vertical alignments in provincial-federal context; traditional practices with obsolete technology leading to high volume of by-catch or discards; application of wrong gears; old-fashioned fishing boats; inadequate infrastructure especially the harbours or landing sites, jetties and road connectivity; poor handling, storage, processing and value addition; inadequate cold chain, distribution and transportation systems; poor capacity of stakeholders; non-availability of skilled manpower; functional system for traceability and certifications; concerns on food standards and quality control; inadequate extension services; lack of digital registrations of the fishing vessels; absence of VMS; inadequate MCS system; absence of target reference point for maximum sustainable yield; and unavailability of authentic data.

There is a need to adhere to the FAO's voluntary code of conduct for responsible fisheries, FAO's guidelines for sustainable small-scale fisheries, requirement of IOTC, blue economy norms and the requirements of SDGs for food security and poverty alleviation through responsible use, sustainable management, and resilient development of the marine capture fisheries.

### Policy Measures

- (1) The marine fisheries resources of Balochistan province shall be accessed and utilized in a responsible and sustainable manner for nutrition and food security, better livelihoods of local coastal communities and export-based macro-earnings by adhering to the norms of blue economy. In this regard, a comprehensive strategy and action plan shall be prepared and implemented for responsible use, sustainable management and conservation of marine fishery resources, and resilient development of necessary infrastructure.
- (2) The Government of Balochistan shall strengthen the Fisheries and Coastal Development Department by revisiting and improving the existing legal and institutional arrangements and enhancing the institutional capacity to govern the responsible use, sustainable management and resilient development of marine capture fisheries including the small-scale fisheries and its value chain through inclusive decision-making processes by active engagement of all actors and ease of doing business.
- (3) The Government of Balochistan shall map and develop state-of-the-art infrastructure and ancillary facilities including the feasible digital catch scanning or suitable monitoring systems, utilities and road connectivity at all fish landing stations along the coast in Balochistan.
- (4) Fisheries and Coastal Development Department shall ensure effective management for sustainable marine fish stocks by establishing, maintaining and regularly updating the target reference point for maximum sustainable yield (MSY), with evidence-based scientific method.

- (5) The Government of Balochistan recommends that the Federal Government may entrust and empower the coastal provinces to grant and manage licences for industrial or deep-sea fishing in Exclusive Economic Zone (EEZ) of Pakistan beyond twelve nautical miles at sea, by keeping intact ban on bottom trawling. It will help in deconflicting governance and sustainability related issues. In this regard, provinces may submit periodic reports and data to the federal government.
- (6) Following policy measures shall be taken to address the issues between small-scale and large-scale fishing in marine fisheries:
  - (a) Develop and implement separate licencing criteria for small-scale and industrial fisheries to control fishing capacity and prevent overfishing.
  - (b) Allocate quotas to small-scale fisheries to ensure their fair share of the catch and enforce catch limits for industrial fisheries.
  - (c) Establish closed areas and seasons to protect small-scale fishing grounds and allow fish populations to replenish.
  - (d) Implement gear restrictions to prevent industrial fisheries from using destructive gear that harms small-scale fisheries and the environment.
  - (e) Establish fisheries management councils that include representatives from small-scale and large-scale fisheries, as well as government agencies and civil society organizations.
  - (f) Promote eco-labelling and certification schemes that recognize sustainable fishing practices and support small-scale fisheries.
- (7) Fisheries and Coastal Development Department shall take necessary measures to protect the habitats and ecosystems. All anthropogenic pollution from fish harbours shall be controlled and mitigated.
- (8) Considering the marine capture fishing as a risky occupation that also causes reduction of natural resources, F&CDD shall promote suitable conservation measures including temporary ban periods for fishing at sea along with promotion of alternative livelihood activities to enable fishers and fish workers to gradually shift to safer and secure economic activities including coastal aquaculture.
- (9) To curtail extra fishing effort at sea and reduce pressure on natural marine habitats and ecosystems, F&CDD shall promote large-scale sustainable development of coastal aquaculture in the province.
- (10) Develop Fisheries Economic Zones (FEZs) at Surbandan, Ormara, Kund Malir and Gaddani. FEZ shall include end-to-end facilities from catching, processing, export, training and research on fisheries as well as low-cost housing schemes for fishermen and other workers.
- (11) F&CDD shall promote best practices, modern technologies, appropriate fishing vessels and harbour crafts (including fiberglass as well as solar powered boats), permissible gears and hygienic working conditions to reduce harvest losses, decent workplace environment and value addition for export-based macro earnings through improved extension services and incentives.
- (12) F&CDD shall establish and maintain a digital data recording and knowledge management system for all operations in marine capture fisheries including the arrangements for traceability. Digital scanning systems shall be established and maintained to record catch data at all landing sites or stations and harbours including the private jetties and landing sites along the coast in Balochistan.
- (13) F&CDD shall develop and enforce rules and guidelines for permissible fishing gears. It shall be regulated as part of the fishing licence.
- (14) F&CDD shall control IUU fishing within provincial jurisdiction at sea by establishing a robust MCS system.
- (15) The transboundary barter trade of the marine fish catches and other fish products shall be reported and documented through proper custom procedure. F&CDD shall record and maintain all such data.

- (16) F&CDD shall develop and provide a mobile application comprising offline digital fishing maps to owners and crew of all registered fishing vessels for the purpose of safety of life and safe navigation at sea.
- (17) Study, declare and develop five (05) new marine fish sanctuaries in marine areas of the province on a short to medium-term basis.
- (18) F&CDD shall develop artificial corals at various locations within the provincial jurisdiction at sea.

### 5.1.2. Inland Fisheries Resources

#### Policy Context

Inland fisheries are an important source of nutrition for millions of people, particularly in most low-income countries worldwide. It also plays economic, cultural, and recreational roles and is key components of sustainable ecosystem function throughout the world. According to the Rome Declaration regarding Responsible Inland Fisheries (2015), fifty-nine Low-Income Food-Deficit Countries produce 80% (nearly 7 million tonnes) of reported global inland capture fisheries output. More than 60 million people in the developing world work with various aspects of inland fisheries, and women represent more than half of this workforce.

Balochistan province has a long list of water resources including springs, streams, lakes, rivers, karezes, dams or reservoirs and other wetlands which have enormous potential of inland fisheries and aquaculture. However, these resources are neither mapped with respect to fisheries and aquaculture nor tapped to an optimum level. There is no authentic data, information, or strategic plan available in the province to harness this natural potential for the purpose of nutrition, food security, improved livelihoods for poverty alleviation, strengthening the rural economy and mainstreaming the gender. Whereas the existing practices including for freshwater capture and farm fisheries are on small-scale, intensified and limited to some easily accessible geographical areas in the provinces. Freshwater fish stock in these areas is highly degraded due to immense anthropogenic pressure, overexploitation, conventional methods, outdated technologies, inappropriate equipment, and poor and unhygienic working conditions. It needs rebuilding measures which can be possible through sustainable use and extensification of the inland fisheries and aquaculture to an optimum level.

In addition, the existing way of governance lacks a rights-based approach and engagement of local stakeholders. The extension services are inadequate and act as a limiting factor for extensification of inland fisheries in the province. A sector-specific comprehensive sustainable development strategy along with a rehabilitation plan and course of action for extensification and management, and improvement in existing governance mechanism are highly needed.

#### Policy Measures

- (1) The Government of Balochistan shall improve the existing governance mechanism and establish a separate Directorate-General for Inland Fisheries and Aquaculture Division at Quetta to expand and strengthen the mandate and capacity of existing institutional arrangements to govern the sustainable use, conservation, management and resilient development of inland fisheries and aquaculture.
- (2) Rules, procedures and other legal measures shall be developed and implemented to regulate and govern access to the freshwater fisheries resources and sustainable management of natural fish stocks.
- (3) Fisheries and Coastal Development Department, in collaboration with the Irrigation Department, shall carry out a comprehensive scoping study for assessing all fisheries related freshwater resources in the province to map, promote, develop and manage the inland fisheries and aquaculture through scientific methods with ecosystem-based approach, modern technological solutions, social safeguards and best practices. A sector-specific comprehensive development strategy along with a rehabilitation plan for native fish species and course of action for extensification and ecosystem conservation shall be an integral part

- of the study. The study will also examine the future needs for the promotion and development of cold water, recreational and ornamental inland fisheries and aquaculture.
- (4) Fisheries and Coastal Development Department shall carry out mapping exercise for capacity building and active engagement of relevant stakeholders including the line government departments, fishers, fish farmers and other private actors in the value chain of inland fisheries and aquaculture in the province. A comprehensive capacity-building programme shall be launched and complemented through enhanced extension services. Capacity building of the district level offices of F&CDD shall be the central part of the programme.
  - (5) Fisheries and Coastal Development Department shall raise awareness regarding the significance, development, and management of inland fisheries by using appropriate and accessible communication channels for information dissemination.
  - (6) Study, declare, develop and maintain twenty (20) new freshwater fish sanctuaries in the province.
  - (7) Fisheries and Coastal Development Department shall promote the value chain development for inland fisheries and aquaculture across the province.
  - (8) Fisheries and Coastal Development Department shall promote cage-culture in freshwater reservoirs through lease agreements on PPP model. In such cases, the lease period may be considered from 15 to 20 years on a BOT basis.
  - (9) All kinds of data including the fish landings and other information shall be collected through the data collection system and shall be maintained through digital repository by Fisheries and Coastal Development Department.
  - (10) Best practices shall be promoted for harvest, handling and management purposes.

## 5.2. Governance Framework

### Policy Context

The current fisheries governance model is highly centralized, where decision-making and management responsibilities primarily lie within the top-tier leadership including the Ministers, Secretaries and Additional Secretaries. The structure comprises three tiers of government i.e. the Ministerial level, the Secretariat level, and the operational level led by the Director General and other junior officials.

The Balochistan Rules of Business, 2012 describe the functions and duties of ministers, advisors, and secretaries regarding a subject-specific department. Ministers and advisors are responsible for the policy matters and conduct of the business of their respective departments. A Secretary assists the Minister in the formulation of policy and executing the sanctioned policy by acting as head of the concerned department. The Secretary is also responsible for efficient administration, discipline and for the proper conduct of business assigned to the Department. However, there is a notable gap in reflecting the knowledge and challenges faced by lower tiers of government while making financial allocations, transfer of staff and other related decisions.

There is an absence of strategy and coordination mechanism for active engagement of relevant stakeholders and government institutions both horizontally and vertically in provincial and federal context. Consequently, there is a predominant emphasis on regulatory compliance, leading to heightened instances of non-compliance and a lack of collective accountability within the industry. As a result, the fisheries sector remains largely unorganized under the existing operational framework.

Historically, the fisheries remained a provincial subject, including 12 nautical miles at sea with Balochistan and Sindh provinces. The deep-sea fishing remained with the federal government and the Pakistan Maritime Security Agency (PMSA) had the powers of the Fishery Officer. After the 18th Amendment to the national constitution of Pakistan, there have been no change in federal and provincial jurisdiction over fisheries except for exclusive rights and powers with the

provinces to utilize and regulate marine resources within 12 nautical miles from the baseline at sea by withdrawing the delegatory powers of PMSA regarding Fishery Officer. The Federal Government through Marine Fisheries Department and Fisheries Development Board (FDB) remains involved in the governance of both marine and inland fisheries. For a long period of time, fisheries remained a sub-sector of agriculture or the livestock due to which focused attention could not be given to playing a significant role in the national economy and towards achieving food security.

Over the period, the major shortcoming in the overall governance system at Federal and Provincial levels was the unavailability of acceptable policies and rules regarding various aspects. Besides, there are gaps in provincial environmental laws. Although legislation is in place at both provincial and federal levels, these are outdated and non-coherent thus acting as limiting factor for the development and promotion of fisheries and aquaculture. None of the provinces including Balochistan have a policy, strategy and / or clear roadmap for the sustainable management and resilient development of fisheries and aquaculture. In addition, there are coordination gaps and the capacity of all actors, particularly of the line departments, is inadequate. This factor is strongly linked with inadequate research and development, which demands solution-oriented governance arrangements.

Hence, the overall existing governance arrangements are inadequate to meet the emerging needs for sustainable management and development of the fisheries and aquaculture sector in Balochistan. Reforms shall be made into the existing arrangements to establish an adequate, coherent and good governance setup.

### Policy Measures

- (1) Redefine the existing institutional governance setup vis-à-vis design, structure, functions, responsibilities and authorities to meet the emerging needs.
- (2) The Provincial Government shall establish the 'Balochistan Fisheries and Aquaculture Council (BFAC)' comprising of relevant stakeholders including government departments, civil society, academia, fisherfolk, private sector and independent experts. The Council shall be responsible to:
  - ✓ Provide policy vision, guidelines and direction for sustainable fisheries and aquaculture.
  - ✓ Provide guidance on the enforcement of the provisions of this policy and all fisheries related legislation.
  - ✓ Propose amendments to the fisheries policy and legislation in line with the national requirements, international obligations, and best practices.
  - ✓ Monitor enforcement of relevant legislation, adherence with the standards and other guidelines, and issue recommendations for relevant departments.
  - ✓ Guide regarding comprehensive strategies, standard operating procedures (SOPs), guidelines and information management system (including data) for sustainable development and management of fisheries and aquaculture.
  - ✓ Oversight progress on research and extension services to promote sustainable fisheries and aquaculture.
  - ✓ Provide guidance to bridge interdepartmental coordination gaps at provincial and federal levels.
- (3) Given the reason of activities by the local fishermen of Balochistan Province and various management aspects of fisheries within 12 Nautical Miles being the provincial subject, Balochistan province shall acquire Gwadar Fish Harbour. In this regard, the Government of Balochistan shall establish a separate Directorate of Harbour and Coastal Development at Gwadar with the mandate of management, development and maintenance of fish harbours, jetties, ancillary and other marine infrastructure facilities along the coast in Balochistan, by merging the existing harbour authorities and repealing the related laws. As part of the

mandate, this Office shall also identify potential PPP Projects within its mandate and recommend the same to the PPP Authority for further consideration and processing in accordance with the provisions of Balochistan Public Private Partnership Act, 2021. Following legal instruments shall be revisited and aligned through amendments or repeal as deemed appropriate:

- (a) Pasni Fisheries Harbour Authority Ordinance, 1983.
  - (b) BCDA Act, 1998 (Baln Act I of 1998).
- (4) Revisit the fisheries legislation to promote policy coherence with all governing instruments including the laws, rules, regulations, guidelines, procedures, strategies, plans and processes at all tiers of the governance from local to provincial, national and international.
  - (5) Translate the international obligations in the governing instruments.
  - (6) Develop legal procedure for regularization of informal jetties and fish harbours.
  - (7) Develop and implement necessary legal procedures for enforcement, compliance and monitoring the policy guidance.
  - (8) Establish coordination mechanism for intra and inter-departmental horizontal and vertical alignments and engagements with relevant stakeholders in both provincial and federal contexts. This shall be achieved through establishing a coherent E-Governance, Monitoring, Coordination and Public Relations system.
  - (9) Establish a transparent, accountable and robust **E-Governance System** along with single window operations for swift solutions and business-enabling environment for day-to-day affairs in the fisheries and aquaculture sector. All operational aspects related to registrations, licences, certificates, VMS, land lease, jetties, data, catch reports, requirements for traceability, vessel and crew information, service records for EOBI pension and social security, fees, fines and all other transactions as well as all development initiatives shall be maintained through a single and unified database with digital system. It shall be backed by the Fisheries Management Information System (FMIS) that will be developed with integrated data from various sources to provide a comprehensive platform for decision-making, policy development, increasing transparency and accountability.
  - (10) As part of the Fisheries and Coastal Development Department, establish an independent Wing of Marine Surveillance and Enforcement at Gwadar for the purpose of developing and implementing a legally backed robust '**Monitoring, Control and Surveillance Mechanism**' by using the technology and deploying adequate and trained Patrolling Force to regulate the fishing operations at sea. To meet the requirements under international obligations and national laws, this mechanism shall also be entrusted to deter, prevent and eliminate IUU fishing by ensuring that the Balochistan's fishing fleet does not indulge in IUU fishing. F&CDD shall cooperate and collaborate with the Pakistan Maritime Security Agency (PMSA), Joint Maritime Information Coordination Centre (JMICC) and other law enforcement agencies in this regard.
  - (11) **Establish Special Courts** for speedy justice and punishment through investigation, prosecution and trials of reported major offenses and violations, and to undertake the appeals or litigations by the aggrieved persons against fines, penalties, misconduct and abuse of authority.
  - (12) Establish grievance redressal mechanism for handling complaints and feedback at the level of the department.
  - (13) **Lease of Land:** To promote active engagement of private sector for the purpose of development of aquaculture, fishing jetties, landing sites and harbours; land under the control of Fisheries and Coastal Development Department shall be leased either as per land lease policy of Government of Balochistan or under existing Balochistan Public Private Partnership (BPPP) law.
  - (14) **Regularization of Unauthorized Existing Jetties:** All the existing informal unauthorized private jetties shall be registered and regularized by Fisheries and Coastal Development

Department through specific law, rules and guidelines. All such jetties and landing sites shall be levied fee, annual tax and rent amount for the structure erected inside sea (starting from high water mark).

- (15) **Public-Private Partnerships for New Development Projects:** Fisheries and Coastal Development Department shall promote public-private partnership, as per existing BPPP law, for both inland and marine fisheries and aquaculture related projects.
- (16) **Endowment Fund for Fisheries and Aquaculture Governance:** The Government of Balochistan shall establish, utilize, replenish and maintain a dedicated endowment fund for the governance of fisheries and aquaculture in Balochistan; with clear objectives, guidelines, and provision of initial funding to capitalize it along with subsequent annual contribution. Following shall be the management guidelines:
- (a) Establish an Endowment Board under the Chair of the concerned Minister to ensure transparent governance and decision-making processes for the endowment fund, involving stakeholders from government, industry, and civil society. Following shall be the composition of the Endowment Board:
- |        |   |             |
|--------|---|-------------|
| (i)    | Minister-Incharge for the Department                  | Chairperson |
| (ii)   | Secretary Fisheries & Coastal Development Department  | Member      |
| (iii)  | All Director Generals Fisheries                       | Member      |
| (iv)   | Representative from Planning & Development Department | Member      |
| (v)    | Representative from Finance Department                | Member      |
| (vi)   | Representative from Fisheries Cooperative Society     | Member      |
| (vii)  | Representative from Fisherfolk Associations           | Member      |
| (viii) | Representative of Women Development Department        | Member      |
- (b) A sustainable financing mechanism shall be established through voluntary donations, contributions or subscriptions from the government, international organizations, industry, private sector, civil society organizations, charity, or any other donor sources. In addition, funding sources may also include, but not be limited to, annual non-lapsable grants allocated by the government; income from investments as prescribed by the government; and all other sums, properties, or assets payable to or vested in the department.
- (c) An investment strategy shall be developed to grow the endowment fund, such as investing in low-risk assets or impact investments.
- (d) Establish clear criteria for grant-making, prioritizing projects that support sustainable fisheries and aquaculture governance. The fund shall be utilized for development of infrastructure and facilities for fisheries and aquaculture establishment; training and capacity-building programs for fishermen, aquaculture farmers, and coastal communities; sustainable management and conservation of fisheries resources; research and development for improving fisheries management, aquaculture techniques, and conservation efforts; disaster relief and recovery; enhancing market access and value chain efficiency for fishery and aquaculture products; awareness and education on sustainable fisheries and aquaculture practices among coastal communities; and innovation and technology transfer.
- (e) Regularly monitor and evaluate the impact of projects funded by the endowment fund, ensuring accountability and effectiveness.
- (17) **Balochistan Fisheries Welfare Fund:** The Government of Balochistan shall establish, Balochistan Fisheries Welfare Fund to improve the lives and livelihoods of fisherfolk, fish farmers and their communities. Following shall be the guidelines:

- (a) The sources of the fund may include:
- (i) Annual non-lapsable grants allocated by the Government.
  - (ii) Voluntary donations, contributions, or subscriptions from the Government or other institutions.
  - (iii) Donations from private individuals, national or international entities, and juristic persons.
  - (iv) Income from investments as prescribed by the Department.
  - (v) All other sums, properties, or assets payable to or vested in the Department.
  - (vi) All sums collected from convicted persons under the Act shall be deposited in the Balochistan Fisheries Welfare Fund.
- (b) The Department of Fisheries and Coastal Development Department shall establish a Balochistan Fisheries Welfare Committee for the fair, transparent, and effective disbursement of the Balochistan Fisheries Welfare Fund. Following shall be the composition of the Committee:
- |  |             |
|--|-------------|
| (i) Minister-Incharge for the Department                               | Chairperson |
| (ii) Secretary Fisheries & Coastal Development Department              | Member      |
| (iii) Director General Fisheries                                       | Member      |
| (iv) Representative from Social Welfare Department                     | Member      |
| (v) Representative of Women Development Department                     | Member      |
| (vi) Representative from Finance Department                            | Member      |
| (vii) Representative from Fisheries Cooperative Society                | Member      |
| (viii) Representative from Fisherfolk Associations                     | Member      |
| (ix) Representative from District Administration of concerned District | Member      |
- (c) The Balochistan Fisheries Welfare Committee shall utilize funds for the welfare of fisherfolk, fish farmers and their communities including women working in the fisheries and aquaculture sectors, in the prescribed manner.

### 5.3. Sustainable Management of Fisheries and Aquaculture

#### 5.3.1. Sustainable Stock Management

##### Policy Context

Conventional marine fisheries resources in Pakistan including the Balochistan jurisdiction area within 12 Nautical Miles at Sea are all fully or over-exploited. The most valuable demersal groups (i.e. snappers, groupers, grunters, croakers, soles, and shrimp) have declined to a critical level and in some cases by 90% or even more, which is quite alarming due to overfishing. Over-exploitation of small pelagic fish and juvenile catch are also widely practiced in Balochistan's marine waters which not only increases the quantity of trash fish or by-catch but also affects the replenishing factor for the fish stock. In addition, fish egg harvesting practices also affect the healthy stocks.

There is no established target reference point for marine fish stock to provide guidance in devising a strategy or procedure to utilize the available resources on the principle of maximum sustainable yield. Similarly, there is no authentic data and information about the state of inland fisheries stock and its actual potential to be utilized and developed on a long-term basis.

This Policy recognizes that the only measure of close season is not enough to rebuild the overexploited fish stock. Whereas it has also been realized that the other measures like moratorium would have serious socio-economic consequences particularly on ultra-poor households and fisherfolk along the Balochistan coast.

There is a need to sustainably manage the stocks to rebuild the impacted stock and harness the provincial potential of fisheries and aquaculture optimally in a responsible manner bolstering the per capita availability of nutritious products for food security and growths in exports and income of all relevant persons.

### Policy Measures

- (1) Develop and implement two different Harvest Strategies i.e. one for marine and the other for inland fisheries in the province.
- (2) The Harvest Strategy for Marine Fisheries shall be based on ecological risk management system and includes scientific evidence-based rationalized legally backed **Stock-based Licencing Guidelines for Fishing** and Fish Stock Rebuilding Mechanism to ensure responsible use and sustainable management of resources on the principle of **maximum sustainable yield** against an established and well-maintained **target reference point**. It shall also include the catch quota against total available catch based on existing stock and replenishing factor. The rebuilding mechanism shall address the need to sustainably manage the overfished and collapsed stock impact through reducing fishing effort by 50% in a phased manner.
- (3) Carry out periodic stock assessment surveys with a frequency of five years to maintain the log of fish stock status and determine the **target reference point** for effective management of the resources. F&CDD shall rationalize the implementation of stock-based licencing for marine fisheries by establishing and maintaining the target reference point after conducting at least three (03) stock assessment surveys.
- (4) Guidelines on the permissible appropriate gears for various categories of fishing shall be developed, published and implemented. The permissible gears shall be mentioned on each licence.
- (5) Fisheries and Coastal Development Department shall carry out a vessel census on immediate basis to rationalize the existing overcapacity of marine fishing fleet and licences in accordance with the available fish stock.
- (6) To reduce pressure on the marine ecosystem and rebuild the fish stock, any new licence shall not be issued for a period of the next five years, w.e.f. the date of promulgation of this policy. Only existing licences shall be renewed.
- (7) Juvenile fishing and harvesting of fish eggs shall be prohibited in marine fisheries and considered an offence.
- (8) Ensure the use of internationally agreed, ecologically sound and best gears for sustainable small-scale and large-scale marine fishing.
- (9) Develop the capacity of the provincial institutions on stock assessments through training of staff and allocation of adequate fiscal resources for establishing research facilities.

### **5.3.2. Habitat and Ecosystem Protection**

#### Policy Context

Balochistan has unique habitats in both marine and freshwater ecosystems which are critical for sustainable fisheries and aquaculture in the province. The areas of coastal and marine ecosystems in Balochistan province have socio-economic significance due to a wide variety of habitats including mangroves, enclosed bays and lagoons (Miani Hor and Khor Kalamat), estuaries, coral reefs such as around Marine Protected Area i.e. Astola Island, nursery and spawning areas, and beautiful beaches. These habitats play a vital role in ecological functioning and maintaining biodiversity including the marine fisheries which are the major source of livelihood for more than 70% of the population in these areas. The healthy habitats in the coastal areas are also important for the development of mariculture in Balochistan.

Balochistan also has extensive areas of inland or freshwater fisheries resources with enormous potential. However, the actual potential is still untapped, and the existing exploitation of inland

fisheries is very much limited to some irrigation reservoirs, dams, and lakes. Whereas the practices are unsustainable and put ecological pressure due to overexploitation of these resources.

However, these areas are under stress and degradation due to anthropogenic pollution including the discharge of untreated waste, overfishing, use of wrong gears and unsustainable methods and practices for fishing. In addition, any accidental oil spill at sea can aggravate the situation further with the potential of acute to chronic losses. It is the major problem which is adversely affecting the fisheries.

There is no strategy or environmental management plan to control pollution at fish harbours or landing sites and during fishing at sea, particularly by large vessels. There is a need to take appropriate measures to tackle the problem and protect the marine and freshwater habitats and ecosystems from irreversible losses to ensure environmental and food security, native fish genetic diversity, ecosystem services and optimal **co-benefits** on long-run basis.

### Policy Measures

- (1) International, national and provincial environmental laws including the Balochistan Environmental Protection Act shall be respected to control pollution in all operations related to fish production, handling, storage, processing and export.
- (2) Dynamiting or use of any other explosive, poisoning and comparable destructive fishing practices shall be prohibited and considered as an offence.
- (3) Fisheries and Coastal Development Department shall collaborate and coordinate with Balochistan Forest Department for development and implementation of a mangrove conservation programme to protect the fish breeding grounds, marine habitat and ecosystems.
- (4) Fisheries and Coastal Development Department shall coordinate and collaborate with the Provincial Disaster Management Authority (PDMA) for the development and implementation of a Provincial Marine Disaster Contingency Plan to prevent and mitigate oil spillage at sea.
- (5) Fisheries and Coastal Development Department shall coordinate and collaborate with Local Municipalities, Balochistan Development Authority (BDA) and Balochistan Environmental Protection Agency (BEPA) to develop and implement pollution control strategies and management plans for coastal urban areas, enclosed bays and lagoons, fish harbours and landing sites, and other ecological areas associated with inland or marine fisheries.
- (6) Fisheries and Coastal Development Department shall coordinate and collaborate with Balochistan EPA to bring necessary amendments or promulgate new regulations to regulate pollution from industrial, domestic and other anthropogenic sources in the supply and value chains of fisheries and aquaculture. In this regard, promote the adoption of best management practices (BMPs) for waste management, including proper disposal of waste materials and recycling initiatives. Introduce incentives for those industrial units that invest in environmental initiatives including cleaner production and proper waste management practices.
- (7) Enhance coordination among government agencies responsible for pollution control, streamlining regulatory processes and facilitating more effective enforcement of pollution control measures.
- (8) Develop capacity-building and awareness-raising programme to educate stakeholders on the importance of pollution control and provide them with the necessary tools and resources to implement pollution prevention measures.
- (9) Fisheries and Coastal Development Department shall prepare and implement a Rehabilitation and Conservation Plan for vulnerable habitats including the Miani Hor, Khor Kalamat and Astola Island (i.e. Marine Protected Area) and to protect the endangered, threatened and protected species (ETP).

- (10) Ensure the use of internationally agreed, ecologically sound and best gears for sustainable small-scale and large-scale marine fishing.

### 5.3.3. Fishing Operations

#### Policy Context

All the fishing operations in both marine and freshwater capture fisheries should be carried out in a responsible manner. In marine waters, it should be done within the jurisdiction of the states in accordance with the provision of UNCLOS, 1982. There is a need to ensure safe navigation and prevent likely collisions through proper organization of marine traffic at sea, integrate fishing operations into maritime search and rescue system, provide decent work and living place at sea-going vessels, ensure hygienic processes, control illegal activity by any fishing vessel, maintain records of fishing vessels and accidents at sea, mark the fishing gears, optimize the energy use and protect the environment as well as damage to or loss of fishing gear to fulfill the requirements of International Maritime Organization (IMO), FAO Code of Conduct for Responsible Fisheries and Sustainable Development Goals. The fishing vessels should carry sufficient insurance cover to protect the crew of such vessels and their interests, to indemnify third parties against loss or damage and to protect their own interests. In addition, appropriate methods with good technological solutions and best practices should be ensured in all fishing operations to reduce the discards and increase the survival rates of escaping fish and non-fish species.

#### Policy Measures

- (1) The Government of Balochistan shall formulate and enforce rules by covering all such requirements under the provision of this Policy which will promote compliance with the provincial and national legislation and international obligations. Any violation or offense shall be treated as an illegal activity.
- (2) Fisheries and Coastal Development Department shall establish a Wing of Marine Surveillance and Enforcement at Gwadar to regulate all activities, movements of fishing vessels and fishing operations at sea by putting in place a state-of-the-art MCS mechanism in collaboration with provincial and federal government institutions. This MCS shall be coherent and will integrate fishing operations into maritime search and rescue system established by PMSA. Installation and use of a VMS shall be mandatory for all motorized boats and harbour crafts. Special focus shall be given to controlling IUU fishing within provincial jurisdiction at sea. F&CDD shall cooperate and collaborate with PMSA, Joint Maritime Information Coordination Centre (JMICC) and other law enforcement agencies in this regard.
- (3) The months of June and July shall be the banned period for fishing at sea and in freshwater resources.
- (4) Collaboration and partnerships with national and international institutions and organizations including United Nations system organizations shall be promoted for a dedicated observer programme to protect non-target, endangered and threatened species per periodic provincial, national and international lists including the IUCN's list. Protected species include but are not limited to Turtles, Seals, Dolphins, Seabirds, Sharks, Rays and Skates.
- (5) The mesopelagic resources shall be explored and sustainably used.
- (6) Fisheries and Coastal Development Department shall promote the use of energy efficient boat engines and other equipment. In this regard, the use of alternate and renewable energy including solar-powered boats shall be promoted and incentivized through relaxation in import duties and taxation.
- (7) Dynamiting, poisoning and comparable destructive fishing practices shall be prohibited and considered as an offence.
- (8) Catch records regarding fishing operations, retained catch of fish and non-fish species as well as discarded fish shall be collected and forwarded to the concerned departments or observers or inspection teams.

- (9) All kinds of data including but not limited to the catch, landings, fishing vessels and accidents at sea shall be reported and maintained through a transparent digital information management system by the Fisheries and Coastal Development Department. The record and statistical data of all fishing operations shall be updated at regular intervals in accordance with recognized international standards and practices. The statistical data shall be made available to everyone including the researchers and academic institutions, business and local community, individuals, line government departments, federal and provincial law enforcement agencies, UN agencies and all other stakeholders.
- (10) A combined digital database of the stock shall be maintained for each fishery, which will be obtained through periodic stock assessments under defined frequency and on a regular basis.
- (11) On landing, the fishing permit holder, statutory fishing right holder, or a nominated authorized person is required to complete a catch disposal record form detailing the species caught and their accurate weight.
- (12) Fisheries and Coastal Development Department shall develop and implement guidelines regarding available technologies, materials and operational methods that minimize the loss of fishing gear and the ghost fishing effects of lost or abandoned fishing gear at sea.
- (13) Fisheries and Coastal Development Department shall ensure health and safety standards, decent work, better living place at sea-going fishing vessels and hygienic processes during harvesting, handling and storage.
- (14) In addition to existing approved and IOTC compliant gears, Fisheries and Coastal Development Department shall carry out comprehensive assessments regarding introduction on a commercial scale of new fishing gear, method and operation to an area, and submit it to 'Balochistan Fisheries and Aquaculture Council' for necessary approval prior to permit.

#### **5.3.4. Post-Harvest Management and Value Addition**

##### **Policy Context**

Post-harvest management is very important in both capture and farm fisheries to maintain the quantity, quality and value of the fish in the supply chain. It is a critical management aspect not only for the producer to meet consumer expectations and earn monetary benefits but also to reduce extra fishing effort and minimize pressure on the habitats and ecosystems. On the contrary, post-harvest negligence is not only limiting competitiveness in international markets and rendering food security and fish stock related concerns but also causing a significant decrease in per unit value and sector's profitability due to losses in terms of reduction in quantity due to spoilage, quality and value of the fish. There are two main types of losses i.e. the one is the reduced-price loss due to spoilage or damage, and the other is the physical loss due to severe spoilage or infestation of insects. Consequently, there is no income as well as no contribution towards food security. This factor is also linked with extra fishing effort and losses to non-target fish or non-fish species which ultimately deteriorates the health of the habitats and ecosystems.

Globally, fish losses are estimated to be ten to twelve million tons per year, accounting for around ten percent of the total production of capture fisheries and aquaculture. Post-harvest losses (PHL) may depict complex patterns and account for approximately ten percent of the total production of fisheries aquaculture globally. In the circumstances of least developed countries, it may vary from 2 to more than 35 percent from both mono to multispecies fisheries. In the case of **multispecies marine fisheries in Balochistan**, these losses are generally highlighted more than the globally quoted figures. However, there is no data available about the actual extent of these losses in the province.

The fundamental causes to these losses are strongly linked with conventional or primitive methods of fishing, application of wrong gears, inappropriate or irresponsible practices, poor access to infrastructure, equipment and services (including flake ice, water, electricity and roads), unhygienic conditions, and lack of knowledge and skills amongst producers in handling, storage, transfer and processing. Other underlying causes of losses include lack of or poor market information, use of wooden boats or unavailability of fiberglass boats, lack of policy and socio-cultural factors in the province. In addition, there is no focus on value addition of fish or fish-

based products due to which maximum economic benefits are not accrued. There is a need to take appropriate measures in a responsible manner to reduce losses and maximize the benefits through enhanced international demand.

### **Policy Measures**

- (1) Fisheries and Coastal Development Department shall encourage and promote adherence with appropriate methods with modern cost-effective technological solutions, gears, equipment (including fiber boats) and best practices (including the use of flake ice for storage) for responsible fishing and to minimize the post-harvest losses and reducing bycatch or discards, improve the use of by-catch to the extent that this is consistent with responsible fisheries management practices and increase the survival rates of escaping fish and non-fish species. Necessary guidelines including the utilization and disposal of fish wastes or discards shall be developed and implemented along with a capacity-building and awareness-raising programme for fishers and fish farmers in this regard.
- (2) Fisheries and Coastal Development Department shall provide special support and extension services through provision of technical expertise to making optimum use of harvests and reducing post-harvest losses with a target of 40 percent on a short to medium-term basis and up to 90 percent by volume and value on a long-term basis.
- (3) There shall be a mandatory requirement for all industrial units or factories to continually improve their product(s) through establishment of research department to seek ways for value addition through transformation processes by meeting the required sanitary standards.
- (4) Through this policy, the Government of Balochistan recommends Pakistan Standards and Quality Control Authority (PSQCA) to develop necessary standards related to Post Harvest Management and Value Addition for fisheries and aquaculture products. The same should be implemented by the Balochistan Food Authority (BFA) in collaboration with the Fisheries and Coastal Development Department.
- (5) Fisheries and Coastal Development Department shall encourage and strengthen the fishers and fish farmers for modernization of sea-going fishing vessels and harbour crafts in compliance with requirements of post-harvest handling, storage and quality preservation of fish.
- (6) Guidelines and standard operating procedures (SOPs) shall be developed and implemented regarding best management practices at all fisheries harbours and jetties or landing sites for safe fish landing, berthing of fishing vessels, preprocessing and auctioning. In this regard, necessary infrastructure facilities including the quarantine units, testing and diagnostics laboratories shall be constructed or established and maintained by Fisheries and Coastal Development Department.
- (7) The Government of Balochistan shall encourage and incentivize the private sector for the development of post-harvest facilities and services such as cold chain, flake ice plants, freezing and packing plants, value addition and other services including but not limited to the specialized transportation through refrigerated and insulated vehicles or reefer containers, and warehouses.
- (8) Necessary steps will be taken to encourage women in fish processing, value addition, and marketing and management activities as well as in other industrial or commercial operations.

#### ***5.3.5. Efficient Processes, Quality Assurance and Health Management***

##### **Policy Context**

Efficient processes, quality assurance, residual control and health management through best practices and standardized methods at all production stages are very important in both capture and farm fisheries. The harvesting, handling, processing and distribution of fish and fishery products should be carried out in a responsible manner to maintain the nutritional value, quantity, quality, value of the fish, safety of the products, reduce waste and minimize negative impacts on the environment, habitats and ecosystems. The value addition to the fishery products through transformation processes should meet the requirements of sanitary standards including the

HACCP and ISO's quality standards. The performance of all existing fishing gear, methods and practices should be examined and measures be taken to ensure that fishing gear, methods and practices that are not consistent with responsible fishing are phased out and replaced with more acceptable alternatives.

The business-as-usual case of the capture and farm fisheries in Balochistan depicts unsustainable and inefficient processes which is primarily because of inadequate governance and poor capacity of the actors for quality assurance, residual control and health management. According to Balochistan Food Authority, it has developed thirty-nine (39) safety and quality-related SOPs for food businesses including fish and fishery products. These need to be rationalized, adopted, promoted and enforced to improve the existing processes.

### Policy Measures

- (1) Fisheries and Coastal Development Department shall encourage the economic operators for best practices and standards in fish processing, distribution, trading and marketing to use the resources, especially water and energy, in particular wood, in an efficient and environmentally sound manner.
- (2) Fisheries and Coastal Development Department shall develop and implement a capacity-building and awareness-raising programme to improve handling on board fishing vessels, in landing centres and in transportation.
- (3) Fisheries and Coastal Development Department shall ensure appropriate technical capacities of its officials and financial resources to monitor or inspect and certify annually the standardized methods with efficient processes, best management practices and appropriate quality control measures at all stages of production (from catch to processing, trading and marketing) including the operations at aquaculture establishments (brood bank, hatchery, fish farm or feed mill).
- (4) Fisheries and Coastal Development Department shall enhance cooperation at national and international level for the development and transfer of appropriate technologies, ensuring that processing, transporting and storage methods are environmentally sound.
- (5) Fisheries and Coastal Development Department shall support and enforce requirements of National Residue Control Plan (NRCP) in all aquaculture establishments (brood bank, hatchery, fish farm or feed mill) in accordance with the Federal Legislation. The aquaculture products shall comply with all provisions of the NRCP. All such requirements shall be reproduced in provincial fisheries rules.
- (6) Fisheries and Coastal Development Department shall regulate the use of chemical inputs in aquaculture which are hazardous to human health and the environment.
- (7) Fisheries and Coastal Development Department shall promote effective farm and fish health management practices favouring hygienic measures and vaccines. Safe, effective and minimal use of therapeutants, hormones and drugs, antibiotics and other disease control chemicals shall be ensured. In addition, all the workforce and the management personnel shall have health certificates for communicable diseases including but not limited to Tuberculosis (TB), Hepatitis and Corona.
- (8) Fisheries and Coastal Development Department in collaboration with the Balochistan Environmental Protection Agency shall regulate the aquaculture establishments to ensure that the disposal of wastes such as offal, sludge, dead or diseased fish, excess veterinary drugs and other hazardous chemical inputs does not constitute a hazard to human health and the environment.
- (9) Fisheries and Coastal Development Department in collaboration with Balochistan Food Authority shall ensure the food safety and quality of fish and fishery products and promote efforts that maintain product quality and improve their value through particular care before and during harvesting, on-site processing and in storage and transportation processes. Adoption of SOPs of BFA and standards of PSQCA for food safety and quality by the food business entities (including the scope of work for fish and fishery products) shall be ensured. BFA shall assist F&CDD towards enforcement and compliance in this regard.

- (10) To ensure food safety and quality, it shall be mandatory to maintain hygiene in pre and post-harvest sector and its entire value chain. Proper sanitation, clean air, storage conditions, use of clean water and better waste management practices shall be ensured along with application of HACCP or other ISO certification for quality management system.
- (11) Fisheries and Coastal Development Department, in collaboration with federal and provincial institutions, shall establish guidelines for sanitary measures along with certification programme for all stages of production.
- (12) Fisheries and Coastal Development Department shall promote the maintaining of cold chain during transportation of fish and fish products along with the use of packing material of good quality and standards that shall protect the product from contaminated air, water, or dust. Fish and fishery products and ready to eat food shall be transported separately to prevent cross contamination.
- (13) In addition to the requirements under federal rules, labelling procedure shall be enforced by BFA in collaboration and coordination with F&CDD to ensure traceability in a better way. The label shall include information such as product name, name of processing unit, date of production or manufacturing, details of preservatives (if used), instructions on storage condition, allergen, expiry date and source of product (i.e. location of inland or marine catch or registered aquaculture establishment).
- (14) All the sales outlets and product registration shall be governed by BFA. Whereas fish or fishery product Certification Mark Logo shall be issued by PSQCA in accordance with the provisions under BFA Act, 2014.

### 5.3.6. Traceability

#### Policy Context

Traceability is a critical component of responsible and sustainable management of fish and fishery products, and its implementation can have a positive impact on the entire supply chain of fisheries and aquaculture. By ensuring traceability, the fisheries industry can promote sustainability, best practices, food safety, quality, supply chain efficiency, and consumer confidence, while reducing IUU fishing, seafood fraud, and environmental impacts. It helps in meeting international standards and requirements, supporting certification and labelling schemes, facilitating trade and market access for seafood products.

Ensuring traceability in fisheries and aquaculture involves tracking and documenting the movement of seafood products through the supply chain, from catch or harvest to consumption. An effective traceability system can be established through fostering cooperation and coordination among public sector institutions and other relevant stakeholders at national and subnational levels. In the context, Balochistan province requires preparedness and capacity-building related support to establish traceability system for both marine and inland fisheries and aquaculture.

#### Policy Measures

- (1) Fisheries and Coastal Development Department shall foster cooperation through collaboration with national institutions and international organizations engaged in fisheries, trade and food safety; and establish an integrated and harmonized digital system to register, track, document and report the traceability-related requirements for both marine and inland fisheries and aquaculture.
- (2) Clear Rules and standards for traceability shall be described and enforced by considering the provincial needs, national legislation and international obligations for export-based macro earnings.
- (3) Traceability-related requirements shall include catch documentation to record catch data, including species, weight, location, and time; identification of fishing vessel and aquaculture establishments; electronic tracking for vessels, gear, fish food products and movements during transportation; supply chain mapping; data management; certification and labelling; regular audits and inspections.

- (4) Fisheries and Coastal Development Department shall make necessary arrangements for preparedness and institutional capacity building regarding effective implementation, monitoring, and enforcement of traceability systems at the province level for both marine and inland fisheries and aquaculture.
- (5) Fisheries and Coastal Development Department shall actively engage the relevant stakeholders including local fishing communities, industry representatives, and CSOs in traceability efforts. Comprehensive training and capacity-building programmes shall be provided for stakeholders at all levels.
- (6) Encourage private sector companies to adopt traceability systems and collaborate with industry associations.
- (7) Regularly assess the effectiveness of traceability efforts and make adjustments as needed.
- (8) Collaborate with international organizations and countries to harmonize traceability standards and share best practices.

### 5.3.7. Fishing Gears

#### Policy Context

The FAO's Code for Responsible Fisheries requires the selection and use of environmentally safe and cost-effective fishing gears, techniques, and practices to avoid and minimize the harvest losses due to wastes, discards, catch of nontarget species (including both fish and non-fish species) and negative impacts on associated or dependent species, in particular endangered species. The adoption of appropriate gears and best practices particularly for marine fisheries can help in maintaining biodiversity and to conserve the population structure and aquatic ecosystems along with the protection of fish quality. In this context, specific guidelines are provided by the Indian Ocean Tuna Commission for the selection and use of appropriate gear to protect the marine habitats and ecosystems.

The regulation of appropriate gears vis-à-vis fishing methods and the type of vessel is critically important to avoid the risk of conflict among those fishers who do not comply with the guidelines for the permissible gears and methods. Conflicts due to this factor are frequently reported in areas under Balochistan's marine jurisdiction where trawlers licenced by another province not only violate the existing ban on trawl netting in Balochistan province but also destroy the marine habitats, ecosystem, and gears of the small-scale or artisanal fishermen. In addition, there is a need to mark the fishing gear for the identification of the owner of the gear. It should be done uniformly in accordance with internationally recognizable gear marking systems.

In the context, there is a need to carry out an appraisal of existing gears, methods, and practices in Balochistan's marine fisheries to phase out the inconsistencies with suitable alternatives including gears with proper mesh size vis-à-vis size of the target species to protect the spawners and juveniles.

#### Policy Measures

- (1) The Government of Balochistan shall develop and implement legal measures along with guidelines for fishing gears, methods and practices by incorporating the national and provincial requirements and international obligations including the specifications of the Indian Ocean Tuna Commission particularly for commercial or industrial fishing and FAO's code of conduct for responsible fisheries as well as FAO's Voluntary Guidelines for Sustainable Small-Scale Fisheries.
- (2) Fisheries and Coastal Development Department shall carry out research study for detailed appraisal of existing gears, methods, and practices in Balochistan's marine fisheries to identify and phase out the inconsistencies with suitable alternatives.
- (3) The Government of Balochistan shall allow only such gears which will be helpful in maintaining biodiversity, conserving the population structure and aquatic ecosystem, protecting the quality of the catches.

- (4) All detrimental gears including trawl netting to catch non-target species (both fish and non-fish species including turtles) shall not be allowed. Bottom trawling shall be prohibited completely in marine waters under the provincial jurisdiction of Balochistan. In addition, all those gears that impact associated or dependent species shall also not be permitted.
- (5) The use of fishing gears and practices that lead to the discarding of catch shall be discouraged and those fishing gears and practices shall be promoted which increase the survival rates of escaping fish and non-fish aquatic organisms.
- (6) The Provincial Department of Fisheries shall develop and employ such applied technology and operational methods which minimize the loss of fishing gear and the ghost fishing effects of lost or abundant fishing gears.
- (7) All marine fishing licence holders shall be responsible to mark their fishing gears for the identification of the ownership of the gear. In this regard, Fisheries and Coastal Development Department shall develop and implement gear marking system and guidelines as part of the licencing.
- (8) Use of toxic substances and explosive materials shall be banned in both freshwater and marine fisheries and shall be made an integral part of the licences.
- (9) Any violation or offence to the above guidelines shall lead to penalty, fine, cancellation of licence or registration or imprisonment of the violator and the offender.

### **5.3.8. Registrations, Licencing, Certifications and Auctions**

#### **Policy Context**

The existing fisheries rules and procedure in Balochistan have ambiguities and inadequacies regarding the registration, certification and recognition of various premises and organizational setups (including handling, storage and processing facilities), fishing vessels and other harbour crafts, aquaculture establishments (i.e. brood banks, hatchery, fish farm and feed mill), fisheries cooperatives or associations, trade unions, private or informal jetties and landing sites, and laboratories. There is lack of clarity for registration of multiple handling, storage and processing units at different locations in the name of a single company which creates hurdle in export-oriented brands which have been established over a long period of time. There are five export-oriented categories of fish products including the fresh, frozen, dry, live and canned items that also entail the need to develop multiple sites under single company ownership though majority of the products can be managed at a single facility area. There is no legal procedure available to register, regularize and manage the private or informal jetties and landing sites particularly along the coast in Balochistan. Similarly, legal guidance is also required regarding registration or recognition of fisheries cooperatives or associations and trade unions vis-à-vis their functional aspect at various operational stages in the overall fisheries and aquaculture sector.

Traceability at various stages of the operations in the fisheries and aquaculture sector is linked with the aspects of registrations, licencing and certifications. In Europe, fish demand is high. However, traceability is a limiting factor for the export because it is a pre-requisite for issuance of quality or health certificates.

According to recent amendments in Pakistan Fish Inspection and Quality Control Rules, 1998 (as amended in the year 2023 with the consensus of the provinces), provincial fisheries departments have the powers to register and inspect the aquaculture establishments (brood bank, hatchery, fish farm and feed mill) and to issue traceability certificates. Whereas the certificate of quality and origin for the export consignments of aquaculture products shall be obtained from the Marine Fisheries Department of the Federal Government. Provinces are required to constitute the inspection committee for registration of aquaculture establishments consisting of one deputy director and one assistant director at each district or division level of the province.

So far, the issue of registration of fishing vessels and harbour crafts is not settled in federal-provincial context. However, vessel registration is the linchpin not only for the economic activity including the sustainability of the marine fish stock through rationalized fishing effort against the

MSY principle and product traceability at all stages of production (from catch to processing and marketing) but also for controlling the IUU fishing and addressing needs for security and safety through effective surveillance and proper navigation at sea. It is critically important with respect to export of fish products particularly to the European countries. In the EU, catch certification is an essential part of IUU Regulation. It applies to all catches and trade of marine fishery products originating from third-country **fishing vessels** and exported to the EU by any means of transport. From 10<sup>th</sup> of January 2026 onward, maintenance of digital record of fishing vessels' activity data vis-à-vis vessel name and flag will be mandatory as part of transport detail under EU catch certification scheme.

According to FAO's voluntary Code of Conduct for Responsible Fisheries 1995, flag states should exercise effective control over all fishing vessels including the fishing support vessels and maintain their record including the ownership and authorization to fish. The flag states must ensure responsible operations of fishing vessels within their maritime zone at sea to ensure compliance with and enforcement of conservation and management measures. In the context, as deem appropriate, the flag states should implement effective fisheries MCS, and law enforcement measures including observer programmes, inspection schemes and VMS, along with collection and provision of data relating to fishing activities. States and fisheries management organizations and administrative arrangements should regulate fishing in such a way as to avoid the risk of conflict among fishers using different vessels, gear and fishing methods for which compliance with FAO's Voluntary Standard Specifications for the Marking and Identification of Fishing Vessel, 1989 is required. The FAO code also requires the States to ensure that compliance with the IMO's requirements including the International Convention for the Safety of Life at Sea (SOLAS), 1974 and the International Regulations for Preventing Collisions at Sea (COLREGs) 1972, as well as IMO's other requirements relating to the navigation, protection of the marine environment and the prevention of damage to or loss of fishing gear. These guidelines are not only important to ensure the sea worthiness of a vessel at the time of first registration but also for its periodic inspection subsequently. Additionally, the IMO's International Convention on Standards of Training, Certification, and Watchkeeping for Fishing Vessel Personnel (STCW-F), 1995 sets certification and training requirements for seagoing fishing vessel crews, considering the unique nature of the fishing industry. Similarly, the ILO's Work in Fishing Convention, 2007 (C188) provides guidance for best labour conditions on fishing vessels. However, Pakistan's accession to IMO's STCW-F and ILO's C188 is still awaited.

In the context above, there is a need to establish and maintain a country-level coherent '**central digital register**' of all fishing vessels and harbour crafts operating in Pakistan's maritime zones and link up the single window through an integrated digital system for certification of traceability, quality and origin for the purpose of export. It may be established on a similar pattern to what has been done in the case of aquaculture-related registrations and certifications with shared responsibilities at federal and provincial levels. The same digital system may be used for the purpose of integrated solutions such as Employees Old Age Benefits (EOBI) and social or legal benefits for the fisherfolk. In Pakistan, Fishing Vessels Registration Rules, 2021 were promulgated under the provision of Pakistan Merchant Shipping Ordinance 2001, and federally administered Mercantile Marine Department (MMD) is entrusted to maintain a Central register.

In addition to the above, although existing licencing for marine fishing in Balochistan requires compliance with specified gears including the ban on trawling and crew-related information, there is a compliance issue due to which ecosystem degradation and destruction of habitats are underway. The marine ecosystem is under severe stress due to the illegal act of trawling by the licensee of another province. The same can be addressed through better MCS by employing VMS; central database of all fishing vessels; complete ban on destructive fishing gears; promotion of IOTC compliant gears and developing stock-based licencing mechanism. However, stock-based licencing is a very costly and specialized job which cannot be achieved without maintaining a stock database on a regular basis through a defined frequency of stock assessment surveys.

Moreover, as per current practice, the Fisheries and Coastal Development Department leases out the freshwater fishing rights through auction process. This process does not cover the actual scope of freshwater fish resources in the province. There is a need to streamline this process through a proper procedure against a comprehensive list of water bodies containing fish resources in the province. A detailed mapping exercise is required for the preparation of a comprehensive list of all those freshwater bodies which have the potential of fisheries resources in the province. Besides, there is also a legal procedure required regarding recreational, sports or ornamental fisheries.

### Policy Measures

#### *a. Registrations*

- (1) The Fisheries and Coastal Development Department shall describe and implement business-friendly rules with clear procedures to register and govern the following and to issue registration certificates:
  - (a) Boats and harbour crafts related to fishing.
  - (b) Fishers, Fish Farmers, Nakhuda and crew.
  - (c) Premises including handling, storage and processing units or factories for fish, fish food or seafood products.
  - (d) Aquaculture establishments (including brood banks, hatcheries, fish farms and feed mills).
  - (e) Fishing jetties, landing sites and harbours.
  - (f) Cold storage units or factories.
  - (g) Boat building yards.
  - (h) Net and other gear-making units or industry.
  - (i) Fisheries cooperatives or associations.
- (2) The Fisheries and Coastal Development Department shall register every vessel, except merchant and cargo ships, which intends to operate in the territorial waters of Balochistan, in the prescribed manner under provincial legal measures.
- (3) F&CDD shall complement its efforts in establishing a country-level integrated and coherent 'Central Digital Register' for sea-going fishing vessels and harbour crafts by the MMD of the Federal Government which shall have devolved system arrangements for registration processing at provincial level. In this regard, the record of the registrations made under this Section shall be linked electronically and digitally to the Mercantile Maritime Department and JMICC in the prescribed manner.
- (4) All motorized boats and harbour crafts shall be equipped with VMS.
- (5) All un-registered boats or sea-going vessels and harbour crafts present in marine waters under Balochistan's jurisdiction shall be registered and regularized under the provision of amnesty scheme which has already been granted by the Government of Balochistan.
- (6) Each boat or sea-going vessel shall be considered as a company to operate and contribute towards employees' old-age benefits. Whereas each individual or worker associated with any process or operation at various stages in the overall fisheries and aquaculture sector shall be recognized as bonafide employee eligible for all benefits of an industrial worker or employee under the Factories Act and all other applicable laws including for social security, compensations and other rights as guaranteed under the Constitution of Islamic Republic of Pakistan. The same shall apply to employers and employees or workers for all types of premises including small and medium enterprises, net and other gear making units or industry, and aquaculture farming units registered under Registration guidelines.
- (7) F&CDD shall constitute the committee for the registration of aquaculture establishments (i.e. brood banks, hatcheries, fish farms and feed mills) and other fish processing or export related premises consisting of one deputy director and one assistant director at each district, tehsil or division level of the province as deem appropriate vis-à-vis geographical areas,

population and development needs. All the registrations shall be made coherent to the federal legislation in this regard. Registration of multiple facilities or aquaculture establishments at different locations under a single company name shall be permissible and facilitated by F&CDD.

- (8) Maintain digital record of all registrations through single window operations.
- (9) Link all the records with NADRA through a single window system.
- (10) Create a dedicated digital record window to issue certificates for the purpose of EOBI and other social benefits.
- (11) Separate registration rules shall be developed and implemented to describe the role and governance mechanism for social organizational setups i.e. fisheries cooperative societies or associations. Necessary guidance is provided in the relevant section of this policy.
- (12) Through this Policy, the Government of Balochistan recommends the Federal Government to proceed with the accession of IMO's International Convention on Standards of Training, STCW-F, 1995 and ILO's Work in Fishing Convention, 2007 (C188), and to provide necessary capacity building support in this regard.

#### **b. Licencing**

- (1) The Provincial Fisheries Department shall issue licences along with their specific guidelines as per following:
  - (a) Fisheries specific (pelagic, mesopelagic, demersal and shellfish) annual licences and periodic quota permits, and carry out periodic inspections of boats, functional VMS, gears and compliance with catch quota along with record of catch for renewal of licences.
  - (b) Area-specific fishery.
  - (c) Cage installations for aquaculture.
  - (d) Recreational and sports fishing.
  - (e) Ornamental fisheries.
  - (f) Research and development facilities and units in the value chain of fisheries and aquaculture.
- (2) Any fishing activity without licence shall be treated as fishery violation and an illegal activity that may result in punishment.
- (3) No foreign vessel shall be licenced for any existing conventional capture fishery. However, foreign investments and joint ventures shall be allowed for aquaculture establishments (brood banks, hatcheries, fish farms and feed mills) and industrial units for the development of value chain and value-added products.
- (4) **Catch Quota:** Catch quota shall be allocated as part of the licence on seasonal basis vis-à-vis species. Once rationalized as part of the first review of this policy and based on successful periodic stock assessment surveys, it shall be linked with the existing stock.
- (5) Allow fishers to apply and renew licences or permits online; reducing paperwork, minimizing waste and increasing efficiency.

#### **c. Certifications**

- (1) The Provincial Fisheries Department shall describe a procedure to verify and issue certificates for following:
  - (a) Nakhuda and crew (one time).
  - (b) Inspections of sea-going fishing vessels and harbour crafts (annual basis).
  - (c) Traceability (annual basis).
  - (d) Residual Control (annual basis).

- (2) For transparency and accountability, Fisheries and Coastal Development Department shall verify and provide recognition certificates to those Trade Unions which intend to get registered or already registered under relevant industrial laws for representation of the bonafide fishers, fish farmers, processors, fisheries associated community members or associated workers at all process stages (i.e. from production to processing and marketing) in the fisheries and aquaculture sector.
- (3) Traceability-related certification shall be processed under the provincial system and procedure, and in accordance with the Federal rules as described under the provision of Pakistan Fish Inspection and Quality Control Act, 1997.

#### **d. Auctions**

- (1) Fisheries and Coastal Development Department shall streamline the existing auction process through formulation and implementation of rules to govern and lease out the freshwater fishing rights.
- (2) F&CDD, in collaboration with the provincial irrigation department, shall carry out a detailed mapping exercise to determine the actual scope and prepare a comprehensive list of all those freshwater bodies in the province which have the potential of fisheries resources or can support freshwater aquaculture. This will serve as the master list for planning, management, development and auction of freshwater fisheries and aquaculture.

### **5.4. Resilient Development of Fisheries and Aquaculture**

#### **5.4.1. Aquaculture Development**

##### **Policy Context**

Aquaculture is an environmentally responsible farming practice to produce food and commercial products through breeding, raising, and harvesting fish, shellfish, and other aquatic plants. It can be instrumental in food and nutrition security, livelihood benefits and rebuilding the depleted fish stocks for healthier habitats in both freshwater and marine ecosystems by reducing pressure on existing level of fishing effort in Balochistan. However, the fish farming or aquaculture in Balochistan is limited to only small scale intensified inland fisheries. There is no existence of coastal or brackish water aquaculture or mariculture to utilize the untapped tremendous potential bestowed by nature along the coast of Balochistan.

The canal-based irrigation system is primarily used for freshwater *carp species* rearing and aquaculture activities stretching over 4000 acres of land, with more than 105 established farms in the areas of Sohbatpur, Jaffarabad and Nasirabad districts. Three indigenous species of major Indian carps i.e. Thaila, Rahu and Mirgal, and three exotic species of Chinese carps i.e. Grass Carp, Common Carp and Silver Carp are commonly cultivated in ponds. A combination of five to six species is reared under a poly culture system. However, the actual potential of freshwater aquaculture is huge and its extensification can be done to rear fish by utilizing the water of three large dams (i.e. Mirani, Hub and Sabakzai Dam) along with many small dams, karezes & springs, and other water bodies including the small and big rivers within the province. The three large dams have also the potential of cage culture which needs to be utilized through appropriate mechanisms.

There are two government-owned functional freshwater fish hatcheries i.e. one at Dera Murad Jamali for carp species and the other at Quetta for Trout fish. The third hatchery for Mahseer fish has been approved at Sabakzai Dam, Zhob. Whereas another freshwater fish hatchery for carp species is under construction process at Turbat. In addition, the Fisheries and Coastal Development Department has also constructed a small shrimp hatchery at Okar, Jiwani for the promotion of mariculture along the coast, but it is not operational yet. Moreover, the Fisheries Development Board of the Federal Government is also establishing a Shrimp Hatchery at Dam, Balochistan to augment the aquaculture development in the province. However, the services of these hatcheries are not sufficient to meet the growing demand of fish farmers and the future development prospects and proliferation of aquaculture in Balochistan. The private sector can

utilize this gap as an opportunity for investment which will give higher rates of return in a shorter period.

The local fishermen in coastal areas of Balochistan are totally relying on captured fisheries. As a result, there is immense pressure on marine resources and the fish population is decreasing at a faster rate. There is a need to develop coastal fish farming and aquaculture for responsible use of resources by maintaining a balance in the natural environment. Many coastal nations including but not limited to India, Brazil, Ecuador, Indonesia, Iran, Saudi Arabia, Thailand and Bangladesh have realized the significance of aquaculture, thus transforming themselves from captured to cultured fisheries.

The coastal belt of Balochistan has a favorable environment for the development of aquaculture. The estuarine areas of Dasht, Basol, Hingol and Hub rivers have the potential for development of **aquaculture clusters**. The enormous potential of mariculture (including the pen culture) through cage farming, shrimp farming, oyster farming, fish farming, and cultivation of seaweeds can be harnessed by utilizing the vast available land area under the control of Fisheries and Coastal Development Department for establishing fish farms on land lease-based system with enabling procedures and provision of bank financing. Cages are installed in marine and freshwater bodies particularly in the habitats of fish and shellfish. In Balochistan, cage culture has good prospects in the sea particularly in areas of enclosed bays (such as Miani Hor and Khor Kalamat) as well as in the large freshwater reservoirs like Mirani Dam, Hub Dam, and Sabakzai Dam.

Abundant populations of **shrimps** are found in their natural habitat at Dam, Kalamat, and Jiwani bays along Balochistan coast, which is also under overexploitation. Shrimp farming is being practiced worldwide to provide masses with protein rich diet and to meet its growing demand. In the past, the Balochistan Government introduced the **Shrimp Farming Policy** to promote its production and support the livelihood of local population. However, it couldn't flourish due to various reasons including the strict requirement of bank guarantee and bankable feasibility study for land leases, unavailability of shrimp hatcheries or seed and feed, capacity gaps, inadequate infrastructure and other facilities-related issues. However, with revised incentive-based policy and focused attention, it can be promoted for mass-scale production and export of commercially significant shrimp species along Balochistan coast.

Shrimp farming can boost the sectoral economy manifold. With **50,000 Acres of Shrimps farming** along Balochistan coast, the annual export-based gross macro earning can be around **2 billion US\$** and it can be achieved over medium to long-term basis by devising a phase-wise development plan for it. In a single farming facility, shrimp can be grown separately by dividing the overall facility area into two portions in order to avoid any disease. The other portion can be utilized for some selected fish species including *Tilapia*.

**Sea Bass** (Barramundi) is a high-value fish that has export demand all over the world. It can also be grown with **Crabs** in a polyculture system. **On another 50,000 Acres of farming, Sea Bass** can generate gross income of **1.5 to 2 billion US\$ per annum** in addition to macro earnings from shrimp farming. Whereas **Crabs** can add another additional earning as these are in great demand in various countries including Japan, Korea, Hong Kong, Taiwan, Vietnam, Thailand, and Cambodia. There is a big window of opportunity for export-oriented investments in crab-fattening units to earn foreign exchange. In addition, there are good prospects for developing mariculture farms of other shellfish including lobster, oysters and mussels; and finfish species including Sea bream, Threadfin bream, Milk fish, Cobia and yellow tail catfish. Moreover, *Tilapia* can also be instrumental for farming in coastal areas as it can be grown in both fresh and brackish waters. It can be consumed mostly in the domestic market. However, large-size *Tilapia* can also be exported and has the potential to generate approximately **1 billion US\$ gross earnings per annum**. *Tilapia* can also be grown as polyculture to serve as feed in the Crab farms.

Although aquaculture is a profitable and feasible option in Balochistan, there are several impediments in its development. The challenges include inadequate capacity of stakeholders despite readily available human capital, insufficient and quality inputs and inadequate hatcheries, feed mills and rearing facilities. In addition, the stakeholders are not actively engaged to attract private sector investment and to generate women employment in the value chain. Loans and credit facilities are inaccessible due to high interest rates of the commercial banks thus acting as limiting factor for the development of the value chain for aquaculture-related interventions.

In a nutshell, aquaculture development in Balochistan offers immense investment opportunities in both marine and freshwater domains. Large-scale coastal aquaculture development with two crops of shrimp and one crop of fish per annum is very much possible. This can turn around the provincial economy of this sector manifold and reduce pressure on available natural fish stocks. The ROI is possible within a two-year timeframe. It can contribute substantially towards the scope of SDG-1, SDG-2, SDG-3, SDG-12, SDG-14 and SDG-17. However, there is a need to prepare and devise target-oriented incentive-based development strategies along with action plans to harness the untapped potential through proper mapping and clustering of these resources to develop efficient, inclusive, and resilient aquaculture value chains in fresh, marine and brackish waters of the province.

### Policy Measures

- (1) The Government of Balochistan shall allocate necessary fiscal and human resources to prepare and implement long-term target-oriented incentive-based strategies along with action plans for the development and proliferation of marine, brackish and fresh waters aquacultures on a larger scale in the province. For administration and effective management, proper mapping and clustering through zoning and spatial planning of these resources shall be done before formulating the strategies, aiming to increase the total acreage devoted to aquaculture production to meet growing demand sustainably. Any negative impact of aquaculture development on socio-economic conditions or cultural aspects of local population shall be evaluated and mitigated with alternative solutions as part of the provincial strategies.
- (2) F&CDD shall give focused attention to promote the mass-scale establishment and proliferation of shrimp farming in Balochistan and maintaining its competitive edge on international market giants including India, Ecuador, Indonesia, Iran, and Saudi Arabia.
- (3) **Small-Scale Aquaculture Scheme on 50,000 Acres:** To **jump-start** coastal aquaculture development, Government of Balochistan shall prepare and launch a **10 Acres Small-scale Coastal Aquaculture Farming Scheme on 50,000 Acres** of government's land, which shall be allocated to **5000** coastal fisherfolk community members on **25 years' lease tenure**. This may be launched as a special incentivized **Chief Minister's Aquaculture Scheme for Coastal Communities**. The necessary allocation shall be completed by the end of **the year 2026**. These schemes shall be incentivized and allocated with 25 years land lease agreement on easy terms and conditions without bank guarantee or without any other pledge except for affidavit bond for the purpose of aquaculture-related use of the land. There shall be no requirement for feasibility or other report prior to operationalizing the farming activities. All the schemes shall be granted to bonafide fisherfolk individuals in an **inclusive, fair, transparent, and accountable manner**, by maintaining digital record for the purpose of **E-Governance**. Preference shall be given to youth, women and ultra-poor fishermen in the coastal areas by allocating up to 25 percent share in the schemes. This lease shall be transferable to dependent family members of lease holders. During the first lease period of 25 years, lease holders shall not be charged any rental amount. However, all the infrastructure shall be the property of the Government of Balochistan after 25 years and rent shall be applicable thereafter. There shall be two broad categories for these schemes, i.e. one for the Shrimp and Fish farming on a single facility area, and the other for the cultivation of Sea Bass and Crabs on another single facility area. All farms shall be registered free of cost and their GIS mapping shall be maintained for the purpose of traceability. Fish farmers or

the lease holders may develop their land in a phase wise manner. As a first step from 2027 onward, the development of one or two acres for each farmer may be incentivized with the provision of free of cost seed, solar pumping system and interest-free tractor scheme. For a period of five years (from 2027 to 2031), the Fisheries and Coastal Development Department shall provide free of cost aquaculture seed from its hatcheries and solar-powered water pumping system (including solar electric panels, motors, paddle aerators, ring and root blowers, and other water pumping accessories) to all lease holders to support the development of their first two (02) Acres out of allocated ten (10) Acres land under this scheme.

- (4) **Large-Scale Corporate Interventions on another 50,000 Acres:** Fisheries and Coastal Development Department, Government of Balochistan shall develop public-private including the social partnerships for the development of coastal aquaculture over a land area of **50,000 Acres** along the coastal belt through introduction and promotion of large-scale corporate schemes. These partnership schemes shall be on a Build-Operate-Transfer (BoT) basis for a period of 25 years and the procedure shall be followed in accordance with the provisions of Balochistan Public Private Partnership Act, 2021. Any national or foreign investor shall be allowed under this window. Any foreign national, multinational company or foreign company shall be allowed through PPP or with a local partnership with the owner of the land in Balochistan. The head office of multinational company or foreign company shall be based in Balochistan province, and the company shall be established under the rules and procedures of Securities and Exchange Commission of Pakistan (SECP). Any foreign individual can develop a local joint venture through partnership deeds with head office in Balochistan province. Whereas the farm(s) shall be registered by Fisheries and Coastal Development Department. All companies and partnerships shall be required to open and maintain bank accounts in any bank branch located within Balochistan province. In this context, A **detailed procedure** shall be prepared and implemented for the registration of all such interventions by maintaining digital record for the purpose of **E-Governance**. A minimum piece of 100 Acres and maximum 500 Acres can be developed under one partnership scheme. Under this intervention, **fish farmers' cooperatives** may develop social partnerships in accordance with the public-private partnership law of the province. All the **cooperatives formed under the scope of GLLSP-II** may be granted 100 - 200 Acres of land on a twenty-five (25) years lease agreement. In the first three years, the development of aquaculture on thirty percent of allocated land shall be mandatory as part of the agreement. The establishment of Hatchery shall also be mandatory for each scheme under Corporate Interventions.
- (5) Any fish farmer, individual, private company or other groups including the community-based organizations may develop aquaculture on their personal or privately owned piece of land anywhere in Balochistan including the inland and coastal areas. In all such cases, F&CDD shall encourage and facilitate them through extension services, and collect and maintain production data through digital repository. There shall be no strict farm registration requirement for all these farming practices, and the same may be done voluntarily for traceability and taking additional benefits for export and other government schemes.
- (6) The government of Balochistan shall make provision for interest-free tractors, aerators and necessary accessories on seven years' easy installments from the banks, against the registration certificate of the farm. This provision shall be made over a period of five (05) years i.e. from 2026-2031.
- (7) The Government of Balochistan recommends the Federal Government of Pakistan to make provision for tax and custom duties free import of all aquaculture farm-related machinery and equipment including instruments and accessories, for a period of twenty (20) years i.e. from 2025-2045.
- (8) F&CDD shall ensure equitable access to fish seed and feed to support sustainable aquaculture practices, through various governance measures including, but not limited to, price control and other social safeguards.

- (9) As a pre-requisite to jump start coastal aquaculture development, F&CDD shall establish at least ten (10) facilities comprising six (06) facilities for Shrimps and Tilapia including six shrimp hatcheries and four hatcheries for Tilapia fish (at Jiwani, Surbundan, Pasni, Ormara, Kund Malir and Dam); and four facilities i.e. two for Fin fish species (Sea Bass, Sea Bream and Milk Fish) at Dam and Pasni, and two for Crabs (at Pasni and Agor / Kund Malir) at separate locations. All these facilities shall be established and fully operationalized over a period of three years i.e. 2025-2027. The private sector shall also be encouraged through the provision of land on lease to establish and run hatcheries on individual or public-private including social partnership model. In this context, **fish farmers' cooperatives** may develop social partnerships under the window of public-private partnership in the province.
- (10) **Establish Research Centres and Feed Mills along coastal areas in Balochistan:** Local production of feed material shall be promoted, and the private sector shall be encouraged to develop feed mills and laboratories along the Balochistan Coast. In addition, Fisheries Department, and universities at Lasbela and Gwadar shall be strengthened through the provision of sufficient funds for establishing two **Coastal Aquaculture Research Centres** along with two feed mills (i.e. one at Lasbela and the other at Gwadar) for Shrimp, Fin Fish (Sea Bass, Sea Bream and Milk Fish), Crabs and Tilapia. The Research Centres shall also include the establishment of state-of-the-art laboratories for fish health, nutrition, genetic & breeding, biology & ecology and water & soil analysis. Whereas the feed mills shall be established initially as pilot projects over a period of three years. In the long run, these mills shall be self-sustained through commercial sale of feed. A substantial part of the income shall be used for the research and scholarships of graduate students.
- (11) **Mobile Laboratories and Extension Services:** F&CDD shall establish adequate number (at least ten) of mobile units for aquaculture-related laboratory (including testing services for water quality, soil and disease) and other extension services along the coastal areas in the province to provide doorstep solutions. This shall be done on a short to medium-term basis.
- (12) **Early warning system for diseases:** As part of extension services, F&CDD shall establish and operationalize an integrated early warning system regarding the spread, control and preventive measures of diseases to help the fish farmers.
- (13) Promote the extensification of aquaculture farming in all freshwater wetlands and dams in the province through best practices and methods. To support the extensification of existing freshwater aquaculture farming, F&CDD shall establish and operationalize Tehsil level hatcheries in potential areas of inland fisheries on a short (3 years) to medium (7 years) term basis.
- (14) Best practices, biosafety protocols, modern technologies, standards, residual and quality control shall be followed in all schemes and other related interventions and activities including spawning, hatcheries, rearing, feed mills, post-harvest, cold-storage, and transportation. All related infrastructure shall be developed by adhering to the modern norms of climate resilience and biosafety protocols.
- (15) No genetically modified species shall be allowed for aquaculture in Balochistan. To avoid the overexploitation of wild ornamental fish species, hatchery-based aquaculture production system of all such ornamental species shall be promoted.
- (16) As a parallel activity, to enhance the capacity of the actors and develop the human capital for vocational skills and knowledge through training the target population particularly the land lease holders, a **capacity mapping exercise** shall be carried out to devise a comprehensive capacity-building programme to meet the preparedness requirements for **aquaculture development** through training, research and improved extension services. The training modules shall include but not limited to spawning, hatching, rearing and live feed production, and best practices for pre-harvest and post-harvest processing, quality & residual control, and mitigation of climate & environmental risks in aquaculture.

### 5.4.2. Value Chain Development

#### Policy Context

So far, the value chain of fisheries and aquaculture is not developed in Balochistan despite huge investment and export-based macro earning potential. It is due to several reasons including the lack of vision, absence of policy and strategy, non-conducive business environment particularly in the coastal areas; poor infrastructure; lack of stakeholder engagement; outdated practices and equipment; non-compliance with permissible gears; illegal, IUU fishing; overfishing; cost-effectiveness of seed and feed vis-à-vis local production and availability; inadequate capacity of the fishers and fish farmers; lack of research and extension services; inadequate number of hatcheries, feed mills and cold storage chain; unavailability of data; unavailability of soft or interest-free loans through bank financing; absence of women enterprises; lack of awareness on aquaculture business opportunities and low level of private sector engagement.

The potential avenues for investment in the value chain of fisheries and aquaculture include but not limited to the development of inland and coastal aquaculture establishment (i.e. brood banks, hatcheries, fish farms and feed mills); development of cold storage facilities and transport services for storage, preservation, and transportation (including Reefer containers for major shipments within and outside country); development of processing units for domestic and export purposes; fish food products such as frozen, smoked, dried, salted, canned, sausages, nuggets; high value products such as oils, chemicals, and pharmaceuticals; development of private jetties for marine capture fisheries; establishment of marketing business - live and processed fish for local and export markets; development and trading of aquaculture farming equipment including but not limited to nets, air pumps and aerators; development of boat building and maintenance yards; sports and recreational fishing through enhanced coastal tourism and education initiatives and establishing special eateries and restaurants. In addition, there are so many other ancillary business opportunities if the value chain is developed and managed sustainably.

#### Policy Measures

- (1) Develop the value chain through incentives, access to loans and credit facilities, active engagement of private sector for investments, PPP, promotion of small and medium enterprise (SME) development including women-led businesses, creation of enabling business environment for existing industries or factories in the value chain, and adherence to modern technologies, best practices, uniform standards, safety, quality control, decent workplace environment, enhanced coordination at all levels, and harmonized rules and procedures particularly in provincial-federal context of shared responsibilities as deemed necessary.
- (2) The Government of Balochistan shall promote the Public-private partnership or Public-private-producer partnerships (4Ps) model for fisheries and aquaculture value chain development to address the priorities at micro, meso and macro levels. This will be operationalized through a comprehensive value chain package for developing capacity of fisheries cooperatives, fisherfolks, consolidators and improving market links to the processing industry, meeting the needs in terms of infrastructure, finance and creating the enabling environment.
- (3) Fisheries and Coastal Development Department shall map the need and develop necessary infrastructure related to capture and farm fisheries including the fish harbours and jetties in marine fisheries; hatcheries for aquaculture; sea water pumping stations; enhanced road connectivity and provision of electricity in fa-flung coastal areas for aquaculture clusters and capture fisheries.
- (4) Fisheries and Coastal Development Department shall promote shrimp farming through specialized campaigns, capacity building and incentives-based programme.
- (5) Fisheries and Coastal Development Department shall establish model fish and aqua business markets including the services and sales outlets and technology parks at Gwadar and Lasbela

- for marine segment and at Dera Murad Jamali for freshwater segment, on 4Ps model in accordance with legal provisions for PPP in Balochistan and on short to medium-term basis.
- (6) Fisheries and Coastal Development Department shall establish model shrimp production units through private sector investment on 4Ps or PPP mode.
  - (7) Fisheries and Coastal Development Department shall promote small and medium enterprises (SMEs) and industrial development including the women and youth led business initiatives for fisheries and aquaculture in the province, through specialized campaigns.
  - (8) Fisheries and Coastal Development Department shall promote local manufacturing of modern fishing boats and establishing maintenance facilities, and take necessary measures for preservation of traditional knowledge and skills of boat building.
  - (9) Fisheries and Coastal Development Department shall establish an integrated, harmonized and digital single-window system for all necessary processes and procedures to ensure ease of doing business in the entire value chain for fisheries and aquaculture.
  - (10) Fisheries and Coastal Development Department shall establish public sector hatcheries for freshwater aquaculture at district and tehsil levels in potential areas of the province. In addition, establish at least ten (10) hatcheries to support coastal aquaculture along the coast in the province.
  - (11) Improve the commercialization of fishery products through value addition including the food and pharmaceutical items.
  - (12) Fish marketing mechanisms shall be strengthened by Fisheries and Coastal Development Department and through active engagement of private sector to protect fishers and fish farmers from the vagaries of middlemen, traders and safeguard the interests of consumers. E-markets and e-trading of fish and fish products will be encouraged and promoted. Dissemination of market and product information including the dynamics of prices for competitive, transparent and accountable processes shall be improved. Access to international markets for local fish and fishery products shall be improved.

#### ***5.4.3. Development and Maintenance of Infrastructure and Facilities***

The existing infrastructure and other facilities in Balochistan are inadequate to meet the production, handling, storage, transfers, processing and transportation needs for domestic consumption and export demand of fish products. There is a need to either develop the new or rehabilitate the existing public sector infrastructure including the harbours or landing sites, jetties, roads for better connectivity, testing laboratories, quarantine facilities, utilities, and roads better connectivity and transportation. In addition, private sector engagement is equally important for the development of facilities including the establishments for industrial production units, fish harbours or landing sites and jetties, and other services including but not limited to dredging, fish markets and sales outlets.

#### **Policy Measures**

- (1) Fisheries and Coastal Development Department shall carry out spatiotemporal mapping along with formulation of its implementation plan for resilient development and management or governance of necessary public or private sector led infrastructure and other facilities for both inland and marine fisheries including fish harbours or landing sites and jetties, breakwaters, auction halls, catch and by-catch transfer facilities comprising digital scanning and data recording system for target and non-target species, aquaculture establishments (i.e. brood banks, hatcheries, fish farms and feed mills), marine water pumping stations and distribution system for aquaculture farming along the coast, processing or other industrial units, fish markets, model business centres and technology parks, boat building yards, input quality testing and diagnostics laboratories, quarantine facilities, training and research centres, office premises including MCS Complex at Gwadar and staff residences, ancillary industrial units, clusters or facilities, road connectivity for better transportation, and all others as found relevant.

- (2) Government of Balochistan shall take necessary measures for the development, management and maintenance of landing sites / stations at sea along Balochistan coast; including but not limited to Bunderwari, Hub, Gaddani, Damb, Berra, Pore, Sapat (Kuchari), Kund Malir, Malan (Maid Bandar), Ormara, Taq, Sakoni, Sirki, Kiwari, Makola, Chandi, Gure-sunt, Ispiak, Bidok, Pasni, Chur, Shumal Bandar, Kappar Darag, Kappar Karela, Sur Bandar, Gwadar, Pishukan, Gunz, Jiwani, Bandri, Okar, and Panwan.
- (3) Fisheries and Coastal Development Department shall foster, provide and enable investments in appropriate infrastructures, facilities and capacity development to support small-scale fisheries post-harvest subsector in producing good quality and safe fish and fishery products, in a responsible and sustainable manner.
- (4) Fisheries and Coastal Development Department shall prepare and implement a Rehabilitation and Maintenance Programme for existing infrastructure related to the fish harbours or landing sites, jetties, auction halls, catch transfer system and road connectivity to the markets. This includes the rehabilitation of Pasni Fish Harbour.
- (5) Fisheries and Coastal Development Department shall establish a state-of-the-art complex for monitoring, control and surveillance system at Gwadar as a priority intervention.
- (6) Fisheries and Coastal Development Department shall develop and implement a Dredging Programme for regular maintenance of marine fish harbours.
- (7) The Government of Balochistan shall plan, construct and operationalize fifty (50) solar-powered sea water pumping and supply stations for the purpose of water supply to aquaculture clusters along the coast. These stations shall be established on a short to medium-term basis.
- (8) Fisheries and Coastal Development Department shall engage the private sector for investment purposes in new development schemes on PPP model including, but not limited to, the development of jetties and harbours on BOT basis. The scope of PPP schemes shall include infrastructure for marine and inland fisheries and aquaculture establishments.
- (9) All infrastructure facilities shall be developed and managed or governed by adhering to the modern norms and best standards.

#### ***5.4.4. Social Development and Well-being***

Social development is important in fisheries and aquaculture sector of Balochistan province because it will improve the business-as-usual scenario of livelihoods and food security for promoting better income, nutritious food and well-being of fishers, fish farmers, processors, industrial workers, and dependent communities particularly in coastal areas. It can empower the local people through active participation in decision-making processes and management of fisheries resources. It would target poverty and risk reduction and promote equal opportunities for marginalized groups. It would protect the rights of the fishers and fish farmers and support gender mainstreaming through equal opportunities. It would encourage sustainable practices and strengthen governance and management through improved transparency, accountability, and cooperation among stakeholders.

By prioritizing social development and implementing appropriate measures in the fisheries and aquaculture sector, the Government of Balochistan can ensure a more equitable, sustainable, and responsible industry that benefits both people and the planet.

#### **Policy Measures**

Fisheries and Coastal Development Department shall:

- (1) promote access to nutritious food, particularly for vulnerable coastal communities.
- (2) implement programs to enhance income and livelihoods for fishers, processors, and aquaculture farmers.
- (3) promote the establishment of safety nets for fishers and aquaculture workers. Safety-nets scheme may include but not limited to insurance; pension schemes; catch share programs;

- fiscal incentives to fishers and fish farmers during periods of low catch or economic hardship; aquaculture insurance to cover losses due to disease, environmental factors, or market fluctuations; emergency response fund to support fishers affected by natural disasters or fishing gear damage; fisheries credit programme through affordable loans for fishers to purchase gear, repair vessels, or cover operational costs; fisheries cooperative societies; social assistance programmes; and fisheries rehabilitation programme to support fishers affected by resource management measures such as closed areas or catch limits.
- (4) encourage gender balance in the sector, promoting women's participation and empowerment.
  - (5) provide vocational training, capacity building, and education for fishers, processors, and aquaculture farmers.
  - (6) ensure access to healthcare, sanitation, and hygiene facilities for fishing and aquaculture communities.
  - (7) encourage and support community-led initiatives, infrastructure development, and social services in fishing and aquaculture areas.
  - (8) enforce human rights, particularly for vulnerable groups such as women, migrant workers and local communities.
  - (9) implement measures to mitigate the impact of natural disasters on fishing and aquaculture communities.
  - (10) encourage stakeholder participation in decision-making processes, ensuring inclusive and representative governance.
  - (11) conduct regular assessments to identify and address the social impacts of fisheries and aquaculture development.
  - (12) support small-scale fishers, processors, and aquaculture farmers.

## 5.5. Data and Knowledge Management

### Policy Context

The availability of the best scientific evidence is critical in decisions related to conservation, sustainable management and resilient development of fisheries and aquaculture resources. This should also consider the traditional knowledge of the resources and their habitat, as well as relevant environmental, economic and social factors. It helps in evaluating the current state of the fishery resources and the possible impact of the proposed policy or management measures upon them. However, there can be wrong decision making due to unreliable insights from incomplete, outdated, or incorrect data. There is a need to determine priority for undertaking research and data collection to improve scientific and technical knowledge about fisheries and aquaculture resources. Broadly, fisheries and aquaculture sector-related data can be categorized into production data; biological and ecological data; economic and market data; social and community data; and environmental and climate data. Authentic data and knowledge management can be ensured through the promotion of research. There is a need to collect, verify, maintain and update reliable statistics on catch and fishing effort through an appropriate system. All such data should be compiled and disseminated in a manner consistent with any applicable confidentiality requirements. Policies should seek to improve the data, definitions and information available on small-scale fisheries, particularly where catches go unreported, and trade is informal.

In the context of Balochistan, availability of fisheries and aquaculture related authentic data and research-based publications including reports, briefs and journal articles is a major challenge. There is no dedicated institutional repository of authentic data or knowledge management platform that can be utilized in decision-making process or considered as scientific evidence. The catch records are either inadequate, incomplete, or unavailable for all landing stations including the private jetties. Whereas approximately 70 to 75 percent of marine catch is by-passed through sea route and lands at Karachi whose data is unavailable. It reflects inadequate funding and

capacity, poor development, management and maintenance of necessary infrastructure and human resources to collect, manage, and analyze data pertaining to handling, processing, marketing and trading the marine catch within Balochistan. The existing legislation has gaps in regulating this aspect. There is a need to regulate, manage and make readily available the catch data. Application of digital scanners or alternate technological solutions may be placed at all landing sites or stations particularly along the coast in Balochistan. Data of fish catch transfers to collection boats at sea and subsequently arriving at different processing units by using private jetties should also be regulated and mainstreamed.

### **Policy Measures**

- (1) A state-of-the-art data collection and management system shall be established by Fisheries and Coastal Development Department to support informed decision-making, sustainable management, and responsible development of fisheries and aquaculture. It shall consist of appropriate data collection methods, digital scanners to record catch, digital data storage and management, tools and techniques for data analysis, visualization and reporting.
- (2) F&CDD shall rationalize the use, installation, operationalization and maintenance of digital scanners including Species Identification Scanners (e.g. image recognition technology to identify species, the database of species images for comparison) and Acoustic Scanners (e.g. use sound waves to measure fish length and weight, and identify species based on acoustic characteristics) to record data on multispecies fish catch landings, improving the accuracy and efficiency of catch reporting.
- (3) Fisheries and Coastal Development Department shall foster cooperation and collaboration with marine fisheries related provincial and federal institutions and international organizations to compile and exchange fishery-related and other supporting scientific data relating to fish stocks.
- (4) Fisheries and Coastal Development Department shall develop international linkages and partnerships for the use and transfer of modern technology including but not limited to scientific equipment and gadgets for marine fish stock assessments and digital scanners for multispecies catch reporting.
- (5) Develop a catch reporting system by enabling fishers to submit catch reports electronically, facilitating real-time monitoring and data analysis.
- (6) Develop and implement a knowledge management system or platform to capture, organize, and share knowledge and expertise including document management, expert databases, lessons learned, best practices and communities of practice.
- (7) Ensure active participation and engagement with stakeholders including fishers and aquaculture producers, researchers and scientists, policy makers and managers, industry and market stakeholders and local communities.
- (8) Provide training and capacity-building programs for stakeholders to ensure effective use and management of the knowledge system.
- (9) Establish a monitoring and evaluation framework to assess the knowledge system's performance and impact.

## **5.6. Research and Extension Services**

### **Policy Context**

Research and extension services play a vital role in supporting the responsible use, sustainable management and resilient development of fisheries and aquaculture, contributing to food security, livelihoods, and the conservation of marine and inland resources. Research and extension services are required to promote sustainable practices; transfer technology; manage fisheries effectively, ensuring sustainable use of marine resources and reducing overfishing; promote sustainable aquaculture development, improving productivity and reducing environmental impact; provide advice and support on disease management, reducing the impact of disease outbreaks on fish and aquaculture production; connect fishers and aquaculture farmers with

markets, improving market access and price; ensure the production of safe and quality seafood, meeting national and international standards; support fishers and aquaculture farmers in adapting to climate change, reducing vulnerability and improving resilience; build the capacity and skills of fishers, aquaculture farmers, and extension personnels, enabling them to adopt best practices and new technologies; and influence fisheries and aquaculture policies, ensuring a supportive environment for sustainable development.

Although agriculture has a separate department for extension services, there is no clearly defined set-up or structure for fisheries and aquaculture related research and extension services. In Balochistan fisheries, research and extension services are unavailable, highlighting a significant gap or disconnect in the reach and accessibility of these services. For aquaculture development needs, the best research and extension services could be achieved through public-private partnerships and strong linkage with academia through university-industry interaction as fish farmers seem to have great appetite and trust in them.

### Policy Measures

- (1) The Government of Balochistan shall promote and strengthen research and extension services through the allocation of sufficient resources.
- (2) Fisheries and Coastal Development Department shall prepare and implement a strategy and course of action for improved research and extension services across the province. It shall be based on inclusive and participatory approach and shall focus on prioritized research areas; establishing linkages with universities; fostering international and interdisciplinary collaborations; capacity building; strengthening outreach and advisory services for fishers and aquaculture producers; adoption of innovative technologies and practices; exotic species' management, control, and eradication; knowledge sharing; private sector engagement and international cooperation for technology transfer.
- (3) Fisheries and Coastal Development Department shall promote university-industry interaction and strengthen the academic institutions for the purpose of research and extension services.
- (4) Improve the commercialization of fishery products through value addition including food and pharmaceutical items.
- (5) All the offices of the Assistant Director Fisheries shall provide extension services.
- (6) Fisheries and Coastal Development Department shall promote research on artificial reefs and fish aggregation devices for increasing stock populations and enhancing fishing opportunities through the use of artificial structures, placed with due regard to the safety of navigation, on or above the seabed or at the surface.
- (7) Fisheries and Coastal Development Department shall, where appropriate, promote research and, when feasible, the development of culture techniques for endangered species to protect, rehabilitate and enhance their stocks, taking into account the critical need to conserve the genetic diversity of endangered species.
- (8) Fisheries and Coastal Development Department shall sponsor research in fish technology and quality assurance and support projects to improve post-harvest handling of fish, taking into account the economic, social, environmental and nutritional impact of such projects.
- (9) Establish an adequate number of Research Centres and Hatcheries in the province. Universities at Lasbela and Gwadar shall be strengthened through provision of sufficient funds for establishing two **Research Centres** for marine fisheries and aquaculture. In addition, a third Research Centre shall be established at Quetta for inland fisheries and aquaculture. These Research Centres shall also include the establishment of state-of-the-art laboratories for fish health, nutrition, genetic & breeding, biology & ecology and water & soil analysis.
- (10) F&CDD shall introduce Biofloc Fish Culture Technology in Balochistan.
- (11) Promote value-added product development for export and domestic purposes.

- (12) Promote production of fish feed materials locally to reduce reliance on imported feed materials and encourage the private sector to develop feed mills and laboratories along Balochistan coast.
- (13) Introduce and promote innovative climate compatible techniques, methods and best practices for aquaculture.
- (14) Promote high-value species for aquaculture in Balochistan.
- (15) Carry out periodic stock assessments for both inland and marine fisheries in Balochistan.

## 5.7. Fisheries Cooperative Organizations

### Policy Context

The formal fisheries cooperatives were formed in the 1940s through a collective response to the cooperative principles worldwide. The major reasons behind the formation of fisheries cooperatives were the poverty in fishing villages, subsistence-level small-scale fishing operations, unorganized marketing, exploitation by the middlemen or traders. The governance framework of fisheries cooperative is almost similar in India, Japan, the Republic of Korea, Taiwan, the Philippines and Bangladesh. The origin, the formation, the success, or the failure of fisheries cooperatives in these countries depended basically on similar reasons. However, the success or failure of the Fisheries Cooperatives depended mainly on State policy. For example, traditional small-scale fishermen, a backward economic community in India, received only marginal attention until the 1940s. Subsequently, the formation of cooperatives, the mechanization programme, and the emphasis on fish marketing in the Cooperative sector brought them many benefits. The primary objective of the Fisheries Cooperative Movement in India was to help the small-scale producer.

In Sindh, the Fishermen Cooperative Society (FCS) has been functioning since the pre-partition of India. It has relatively different roles than the globally practices functions and responsibilities. There is a need to develop a new structure with the practical mandate for fisheries cooperatives in Balochistan to empower fishermen and fish farmers by providing them with ownership and control over their livelihoods in a transparent, accountable and fair manner. Cooperatives can help in improving the fishers' and fish farmers' livelihoods by providing better prices, market access, and income stability in Balochistan.

### Policy Measures

- (1) Fisheries and Coastal Development Department shall develop and implement dedicated rules to describe the role and governance mechanism regarding social organizational setups i.e. fisheries cooperative societies or associations. The governance mechanism of these organizations must ensure transparency, accountability, participation, fairness, pluralism, and inclusion.
- (2) The stakeholders may also establish federation of these cooperative societies or association as an umbrella organization by combining the local, tehsil and district level primary organizations and their assemblies. The Government of Balochistan shall support the federation on the model and style of Chambers of Commerce and Industry.
- (3) Representation of fisheries cooperatives shall be ensured in decision-making processes with a bottom-up approach. They may act as whistleblowers or policy influencers through advocacy on pertinent governance-related issues including the protection of the rights of small-scale fishers, processors, and aquaculture farmers including the women, migrant workers and local communities.
- (4) These organizational setups shall be engaged primarily in coastal aquaculture development through corporate farming interventions and other aquaculture establishments on social partnership model. These setups shall also have the liberty to enter the fisheries and aquaculture related business or enterprise development. They may invest in community development projects, such as education, healthcare, and infrastructure.

- (5) Support the policy, strategy, plans, programmes and course of action of the Fisheries and Coastal Development Department or the provincial government in raising awareness and building capacities to promote access to nutritious food, health care facilities, education, enhancing income and livelihoods for fishers, aquaculture farmers and workers, processors, and other industrial workers, particularly for vulnerable coastal communities.
- (6) Participate in the establishment of safety-nets and other livelihood initiatives for fishers, aquaculture workers and other fisheries-dependent members of the local communities, particularly in coastal areas of Balochistan.
- (7) Promote and support government-led and community-led initiatives regarding infrastructure development, improving harvest practices to reduce bycatch, data management, sustainable stock management, protection of habitats and ecosystems, and other social services in fisheries and aquaculture areas.
- (8) Cooperatives shall help fishers, fish farmers and small-scale processors to market their products effectively and add value through processing and branding.
- (9) Promote gender mainstreaming through equal opportunities for employment in the supply or value chain of fisheries and aquaculture including women-led enterprises and pre-harvest businesses such as making of fishing nets or gears.

## **5.8. Policy Measures for Cross-Cutting Aspects**

### **5.8.1. Mainstreaming Gender**

- (1) Fisheries and Coastal Development Department shall develop and implement legal measures to ensure conducive and safe workplace environment along with mandatory requirement for creation of women job opportunities in all industrial and corporate aquaculture establishments, export processing units and other economic activities including the marketing related to fish-based products and all other ancillary industries. This shall be made an integral part of premises registration and licencing. Periodic inspections shall be done to ensure compliance.
- (2) All economic operators or business entities shall be responsible to identify, recognize and mainstream the gender including the women and transgender community members through equal opportunity employment in the post-harvest subsector and its value chain. For this purpose, improvements shall be brought in the post-harvest subsector or processes and operations including the safe and decent workplace environment to facilitate the women's participation in such work.

### **5.8.2. Climate Preparedness and Response**

- (1) Fisheries and Coastal Development Department, in collaboration with BEPA and PDMA, shall prepare and implement climate response and disaster risk management strategies for marine and inland fisheries and aquaculture in the province. Measures for the development of resilient infrastructure including the harbours, jetties, aquaculture establishments and road connectivity, and climate-smart practices and processes, and resilient coastal communities shall be an integral part of these management strategies.
- (2) Enhance disaster preparedness, build capacities, raise awareness, and strengthen the institutions to adapt and address the local community needs regarding impacts of climate change, including increased vulnerability to extreme weather events and sea level rise.
- (3) To control and minimize emissions of greenhouse gases (GHGs), F&CDD shall promote the adoption of renewables and energy-efficient technologies at all stages from catch to handling, storage, transportation, processing, marketing and export of fish and fishery products, and in the aquaculture related additional pre-harvest operations. Solar powered fishing vessels and harbour crafts shall be promoted, along with proliferation of solar electricity for aquaculture establishments, fish harbours and industrial units or factories.
- (4) Fisheries and Coastal Development Department, in collaboration with Balochistan Forest Department, shall develop initiatives to promote conservation and restoration of mangrove

forests to mitigate the warming effect and to protect the habitats, ecosystems and biodiversity of marine fish species.

- (5) Fisheries and Coastal Development Department shall collaborate with PDMA to carry out climate vulnerability mapping and risk indexing particularly in the coastal areas for highly vulnerable marine fishing communities.
- (6) Fisheries and Coastal Development Department shall collaborate with PDMA for establishing early warning systems in the areas of interest for marine and inland fisheries and aquaculture. Priority intervention shall be launched in the coastal areas to mitigate the impacts of climate change-induced disasters, such as floods and cyclones, on highly vulnerable marine fishing communities and ecosystems.
- (7) Fisheries and Coastal Development Department shall take necessary measures to preserve the local climate knowledge particularly for operational aspects of the fishing at sea.

### ***5.8.3. Environmental Compliance, Pollution Control and Mitigation***

- (1) Fisheries and Coastal Development Department, in collaboration with BEPA, shall develop and enforce environmental guidelines or provincial environmental quality standards for corporate large-scale aquaculture establishments, fish harbours, fishing vessels, transport vehicles and industrial units or factories to prevent and mitigate pollution and effluent discharges along with proper waste management from fisheries and aquaculture activities. A checklist method shall be developed and followed for periodic inspections or audits of all these establishments or facilities against the approved guidelines or standards. In addition, maximum axle load shall be defined for all categories of transport vehicles to reduce air emissions and wear and tear of road infrastructure in the province.
- (2) Fisheries and Coastal Development Department, in collaboration with BEPA, shall conduct regular assessments to identify and mitigate potential environmental impacts.
- (3) BEPA shall regularly monitor and enforce compliance with pollution control regulations.
- (4) Fisheries and Coastal Development Department, in collaboration with BEPA, shall provide education and training to fishers, aquaculture farmers, and industry stakeholders on pollution control and sustainable practices.
- (5) Fisheries and Coastal Development Department, in collaboration with BEPA, shall raise public awareness and encourage participation in pollution control efforts through outreach and education programs.

### ***5.8.4. Regulation of Exotics***

- (1) Fisheries and Coastal Development Department, in collaboration with BEPA, shall develop and implement legal guidelines for the import and export of exotic species. A permit system shall be established for the introduction of exotic species, ensuring thorough risk assessments, biosafety protocols and evaluation of potential impacts through a risk assessment framework.
- (2) Fisheries and Coastal Development Department shall establish sufficient quarantine and holding facilities to contain and monitor exotic species prior to release.
- (3) Fisheries and Coastal Development Department shall regularly monitor and survey water bodies for exotic species, enabling early detection and rapid response.
- (4) Fisheries and Coastal Development Department shall develop and implement plans for eradication or controlling exotic species in case they become established. It will include rapid response to exotic species outbreaks or discoveries.
- (5) Educate and aware the public, industry, and stakeholders about the risks and impacts of exotic species.
- (6) Foster collaboration among government agencies, research institutions, and industry stakeholders to address exotic species issues.
- (7) Collaborate with international organizations and neighboring countries to address transboundary exotic species issues.

#### ***5.8.5. Labour Rights and Welfare***

- (1) Enforce labour rights at stages in the fisheries and aquaculture sector. Special focus shall be given to protect the rights of the vulnerable groups such as women, migrant workers and local communities.
- (2) All relevant industrial rules about social benefits, rights and trade unions shall be narrated in fisheries related legislation and shall be provided to the fishers, fish farmers, labourers, workers and staff members in the fisheries and aquaculture sector of Balochistan. In this regard, a transparent and accountable mechanism shall be described in the fisheries related rules.
- (3) A digital system or registry for fishermen, aquaculture and other industrial workers shall be established to ensure social benefits including EOBI pension and other compensations.
- (4) Each boat or sea-going vessel shall be considered, declared through the law, and treated as a company or business entity. All relevant provincial and national rules shall be applicable in this regard.

#### ***5.8.6. Child Protection and Child Labour***

- (1) All the existing provincial and national laws and international obligations shall be respected, and their enforcement mechanism shall be strengthened to protect children from all forms of violence including child labour, abuse (sexual, physical or emotional), neglect, and exploitation in the entire supply chain, including processing and trade in fisheries and aquaculture sector of Balochistan province. Any such violence shall be an offense and punished as per available rules.
- (2) Any kind of child labour shall be prohibited and considered an offense. Age verification system shall be implemented through digital database of registry for fishers, aquaculture and industrial workers and processors to ensure children under 18 are not engaged in fishing or aquaculture activities.
- (3) Conduct awareness campaigns and education programs for fishermen, aquaculture farmers, and communities to recognize the importance of child protection and child labour.
- (4) Provide alternative education and livelihood opportunities for children to prevent them from entering child labour.
- (5) Establish a monitoring and reporting system to identify and address child labour cases.
- (6) Offer support services, such as counseling and rehabilitation, for children rescued from child labour or any other violence.
- (7) Support community-based initiatives that promote child protection and education.

# **Policy Implementation**

## **POLICY IMPLEMENTATION**

### **6. STRATEGIES FOR POLICY IMPLEMENTATION**

#### **6.1. Enactment of principle and delegated legislation for the implementation of the policy**

The Provincial Fisheries Departments shall review periodically the needs for amendments in the existing legislation or bringing new legal instruments as deem appropriate for management, development and regulation of sustainable fisheries and aquaculture in the entire value chain. The existing legislation shall be revisited to accrue benefits through enforcement of this policy, which may include:

- (1) Balochistan Sea Fisheries Ordinance, 1971 and its Rules.
- (2) Balochistan Fisheries Ordinance, 1961 and its Rules.
- (3) Pasni Fisheries Harbour Authority Ordinance, 1983.
- (4) Balochistan Coastal Development Authority Act, 1998.

#### **6.2. Mainstreaming Fisheries into Development Planning**

- (1) The institutional setup of the fisheries department shall be restructured through legislation.
- (2) Establish E-Governance through digital transformation.
- (3) Establish a dedicated Directorate for management, development and maintenance of Fish Harbours, Jetties, ancillary and other marine infrastructure facilities along the coast in Balochistan.
- (4) Rationalization of licences for maximum permits based on stock quota.
- (5) Periodic stock assessment on regular basis based on which annual licences shall be issued.
- (6) Allocation of adequate financial and human resources. Mainstream sustainable development of fisheries and aquaculture in PSDP and other funding windows.
- (7) Develop and implement a dedicated Policy Response Support Programme.
- (8) Promote alternative resources including aquaculture to reduce pressure on wild stock.

#### **6.3. Role of Public Sector Institutions and Other Stakeholder Organizations**

- (1) Fisheries and Coastal Development Department and its relevant Ministry shall have the overall responsibility for policy implementation, regulation, and management.
- (2) Fisheries and Coastal Development Department may take assistance from PMSA, Pakistan Coast Guards and JMICC towards enforcement of provincial policy and legal provisions, and in establishing effective MCS system at sea.
- (3) Public sector universities shall be engaged in scientific research, data collection, and advice. This will also support the extension services pertaining to education, training, and support for fishers and aquaculture farmers.
- (4) BEPA shall regulate and enforce environmental requirements. Whereas BFA shall regulate and enforce food safety, standards and other related requirements.
- (5) BDA, F&CDD and Provincial Irrigation Department shall support the development needs of the fisheries and aquaculture sector in accordance with the guidelines of this policy document.
- (6) F&CDD shall collaborate with the Federally administered Marine Fisheries Department to address needs for export, fish stock survey and other related requirements.
- (7) F&CDD shall collaborate with Federally administered MMD to establish a central digital register for fishing vessels and harbour crafts.
- (8) F&CDD shall collaborate with trade and commerce departments, and chambers of commerce and industry (at provincial and federal levels) to promote and facilitate seafood trade.

- (9) F&CDD shall collaborate and cooperate with banking institutions for the provision of interest free loans and other schemes in accordance with requirements of this policy.
- (10) F&CDD shall identify or determine relevance of other institutions and stakeholder organizations for collaboration to promote the fisheries and aquaculture sector in the province.

#### **6.4. Coordination Mechanism**

- (1) Government of Balochistan, in collaboration with the Federal and Sindh Governments, shall establish an Inter-Departmental Committee (IDC) with representatives from relevant provincial and federal departments to ensure inter-departmental coordination and collaboration, through holding meetings on quarterly basis. SOPs shall be developed for inter-departmental collaboration, outlining roles, responsibilities, and communication channels. Departmental Liaison Officers (DLOs) shall be designated to serve as focal points for effective communication, coordination, and follow-up on IDC decisions. Joint Task Forces shall also be established for specific policy initiatives, bringing together experts from relevant departments.
- (2) Fisheries and Coastal Development Department shall establish a dedicated Fisheries Policy Implementation Unit (FPIU) within the Fisheries Department to oversee policy implementation, coordinate with other departments, and monitor progress on regular basis.
- (3) Establish a shared data management system for seamless information exchange, cooperation and coordination.
- (4) Provide training and capacity-building programmes for departmental officials to enhance their understanding of fisheries policy and implementation requirements.
- (5) Encourage active participation of relevant stakeholders representing local community, civil society organizations and private sector in IDC and Task Forces, to ensure inclusive and effective policy implementation.

#### **6.5. Monitoring, Evaluation and Reporting**

- (1) F&CDD shall establish Monitoring, Evaluation and Reporting mechanism and procedure along with policy performance indicators to ensure that fisheries policies are effective, adaptive, and responsive to the needs of fisheries resources, ecosystems, and stakeholders.
- (2) F&CDD shall collect and analyze data regularly, and monitor fishing gear, vessel movements, and catch landing sites.
- (3) F&CDD shall track compliance with regulations, permits, and licences.
- (4) F&CDD shall conduct regular inspections and patrols.
- (5) F&CDD shall assess the effectiveness of policy interventions and management measures.
- (6) F&CDD shall evaluate the economic, social, and environmental impacts of fisheries policies and present them to Technical Working Group (TWG).
- (7) F&CDD shall conduct regular reviews of policy performance and progress and present them to TWG.
- (8) F&CDD shall compile and publish regular reports on fisheries data, policy implementation, and evaluation findings.
- (9) F&CDD shall share reports publicly to promote transparency and accountability.
- (10) F&CDD shall use reporting to inform policy adjustments, decision-making, and future planning.
- (11) F&CDD shall develop skills and resources for effective monitoring, evaluation, and reporting.
- (12) F&CDD shall involve stakeholders in monitoring, evaluation, and reporting processes for the purpose of participatory governance.

## 6.6. Capacity Building and Awareness Raising

- (1) Carry out a comprehensive mapping exercise for need assessment and launching specific programme to enhance competence, capacity and active role of the fisheries department, relevant institutions, and other stakeholders.
- (2) Strengthen capacities of fisheries and aquaculture stakeholders to adopt sustainable practices and manage marine resources effectively, by providing training to fishers, aquaculture producers, and coastal communities.
- (3) Involve local communities in decision-making processes.
- (4) The Government of Balochistan shall provide **international scholarships** to students from all over the province to pursue their degrees in the discipline of aquaculture and fisheries. This shall include the provision of scholarships for master and bachelor level degrees. It shall be done in a short-term timeframe.
- (5) Awareness raising for Fisheries and Aquaculture is crucial to promote sustainable practices, conservation, and responsible management of marine resources. Public events, exhibitions, and media campaigns shall be organized to reach a wider audience. The nutritional significance of fish shall be included in the school curricula. Utilize social media, documentaries, and online resources to reach a broader audience and share information on sustainable fisheries and aquaculture practices. Disseminate research findings and scientific information to inform stakeholders and raise awareness on critical issues.
- (6) Foster partnerships among government agencies, CSOs, community-based organizations, fisheries cooperative, industry stakeholders, and research institutions to promote awareness and coordinate efforts.

## 6.7. Periodic Review of the Policy

### 6.7.1. Validity and Frequency for Policy Performance Cycle

This policy document shall be valid for a period of ten (10) years w.e.f. the date of approval by the Provincial Cabinet of Balochistan. Upon completion of the first validity period, a comprehensive performance review shall be carried out to determine the level of success for the provisions made and targets set under this policy. Periodic performance review frequency for all subsequent policy performance cycles shall be five (05) years.

### 6.7.2. Annual Progress Review

Progress on the measures and targets set under this policy shall be reviewed and reported on annual basis, for the purpose of continual improvement.

### 6.7.3. Review Procedure

- (1) A Technical Working Group under the chair of the Secretary Fisheries along with a balance representation of all stakeholders shall be constituted for annual progress reviews, evaluation of monitoring reports, suggestions and cyclic update based on overall performance of this policy document.
- (2) F&CDD shall produce third-party performance monitoring reports on an annual basis. TWG shall evaluate the monitoring reports and suggest necessary measures as deem appropriate. The TWG finding and suggestions shall be presented to the Apex Council i.e. 'Balochistan Fisheries and Aquaculture Council', for necessary guidance and support.

## Annex-I: List of Documents Reviewed

- Ahmed, M., Capistrano, D., & Hossain, M. (1995). Fisheries co-management in Bangladesh- experiences with go-ngo-fisher partnership models. Department of fisheries Bangladesh.
- Bourque, B. J., Bradbury, R. H., Cooke, R., Erlandson, J., Estes, J. A., Hughes, T. P., & Peterson, C. H. (2001). Historical overfishing and the recent collapse of coastal ecosystems. *Science*, 293(5530), 629637.
- Chandrasekera, C.H.M.T. (1994). Fishery cooperatives in Asian countries. Colombo, Srilanka.
- Coward, H., Ommer, R., & Pitcher, T. J. (2000). Fish ethics: Justice in the Canadian fisheries. Institute of Social and Economic Research (ISER). Memorial University, St. John's, Newfoundland, Canada.
- Ecuador (2024). National Aquaculture Sector Overview – Fisheries and Aquaculture. Food and agriculture and organization of the United Nations.
- European Commission (2008). EC regulations 1005/2008 to prevent deter and eliminate illegal, unreported and unregulated (IUU) fishing. Official Journal of the European Union.
- Fanning, P., Medley, P., Khan, M. W., & Valinassab, T. (2016). Comprehensive assessment of Pakistan's marine fisheries resources to 2015. Fisheries Resources Appraisal in Pakistan Project (FRAPP). Field Document, (9).
- FAO (1995). Code of conduct for responsible fisheries. Food and Agriculture Organization of the United Nations Rome.
- FAO (2001). What is the code of conduct for responsible fisheries? Food and Agriculture Organization of the United Nations Rome.
- FAO (2015). Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication. Food and Agriculture Organization of the United Nations Rome.
- FAO (2016). The Rome Declaration: the steps to responsible Inland Fisheries. Michigan State University.
- FAO (2021). Evaluation of the project "Enhancing the contribution of small-scale fisheries to food security and sustainable livelihoods through better policies, strategies and initiatives. Food and Agriculture Organization of the United Nations Rome.
- FAO (2021). Fishery and aquaculture statistics. Food and Agriculture Organization of the United Nations Rome.
- FAO (2022). Blue transformation - road map 2022-2030 a vision for FAOs work on aquatic food systems. Food and Agriculture Organization of the United Nations Rome.
- FAO (2022). Streamlining efforts to combat IUU fishing - The Global Capacity Development Portal. Fisheries Global and Regional Processes Team, Fisheries and Aquaculture Division, Food and Agriculture Organization of the United Nations (FAO).
- FAO (2023). A framework for gender-response livestock development. The Food and Agriculture Organization of the United Nations, the International Livestock Research Institute, the International Fund for Agricultural Development and the World Bank Rome.
- FAO (2024). International instruments and technical guidelines - Fisheries and aquaculture. United Nations Food and Agriculture Organization.
- Fisheries Development Board (2015). Fisheries and Aquaculture Production and Potentials. Background Study to Support the Development of Pakistan's Agriculture Vision 2050 Paper.
- Gordon, H. S. (1954). The economic theory of a common-property resource: the fishery. In *Classic Papers in Natural Resource Economics* (pp. 178-203). Palgrave Macmillan, London.
- Government of Balochistan (2014). Balochistan Agriculture Sector Policy and Strategy.
- Government of Bangladesh (1998). National Fisheries Policy. Ministry of Fisheries and Livestock.
- Government of Gambia (2018). Fisheries and Aquaculture Policy of the Gambia. Ministry of Fisheries, Water Resources and National Assembly Matters - Department of Fisheries.

- Government of India (2020). National Fisheries Policy, 2020. Ministry of Fisheries, Animal Husbandry and Dairying.
- Government of Kenya (2008). National Oceans and Fisheries policy, 2008. Ministry of Fisheries Development.
- Government of Malawi (2012). National Fisheries Policy 2012 - 2017. Ministry of Agriculture and food security.
- Government of Maldives (2019). National Fisheries and Agriculture Policy 2019-2029. Ministry of Fisheries, Marine Resources and Agriculture of the Republic of Maldives.
- Government of Pakistan (2007). National Policy and Strategy for Fisheries and Aquaculture Development in Pakistan. Ministry of Food, Agriculture and Livestock.
- Government of Pakistan (2021). Status of Fish Stocks in Pakistan. Study Report produced by Food and Agriculture Organization of the United Nations for Ministry of Maritime Affairs, Islamabad.
- Government of Sindh (2023). Sindh Water Policy. Sindh irrigation department.
- Government of Solomon Islands (2019). Solomon Islands National Fisheries Policy 2019–2029. Ministry of Fisheries and Marine Resources.
- Government of Somalia (2020). Draft National Fisheries Policy 2020-2030. Ministry of Fisheries and Marine Resources Mogadishu.
- Government of Sri Lanka (2007). Ten year Development Policy Framework of the Fisheries and Aquatic Resources sector 2007-2016. Ministry of Fisheries and Aquatic and Resources.
- IUCN (1995). Sustainable Fisheries. A Pakistan National Conservation Strategy Sector Paper No. 5, ISBN 969-8141-09-X.
- Kerala Legislature Secretariat (2021). The Kerala Inland fisheries and Aquaculture (amendment) Bill. Kerala niyamasabha printing press.
- Khan, M. W. (2021). Status of fish stock in Pakistan. Food and Agriculture Organization of the United Nations.
- Lockwood, S. J. (2000). The Effects of Fishing on Marine Ecosystems and Communities (Fish Biology and Aquatic Resources Series 1), by Stephen J. Hall. Blackwell Science, Oxford, 1999, 274 pp. 55. ISBN 0-632-04112-9. Aquatic Conservation: Marine and Freshwater Ecosystems, 10(3), 226-227.
- Megahed (2020). National Policy for sustainable Fisheries and Aquaculture sector in Pakistan 2020-2030. Ministry of National Food Security & Research, Ministry of Maritime Affairs in Islamabad and FAO Representation in Pakistan.
- Megahed, M.E.M.A., & Khan, M. W. (2019). National Implementation plan for sustainable Fisheries and Aquaculture sector in Pakistan 2020-2030. Ministry of National Food Security & Research, Ministry of Maritime Affairs in Islamabad, FAO Representation in Pakistan.
- Moore, G. (1978). Legal and institutional aspects of fisheries management in Sri Lanka with particular reference to the control of foreign fishing in the exclusive economic zone. Food and Agriculture Organization of the United Nations and United Nations Development Programme.
- Pauly, D. (1997). Small-scale fisheries in the tropics: marginality, marginalization, and some implications for fisheries management. *Global trends: fisheries management*, 20, 40-49.
- Republic of Ghana (2015). Fisheries Management Plan for Ghana - National Policy for the Management of the Marine Fisheries Sector 2015-2019. Ministry of Fisheries and Aquaculture Development.
- Republic of South Sudan (2012). Draft - Fisheries Policy for South Sudan 2012 – 2017. Ministry of Animal Resources and Fisheries Juba.
- Republic of Yemen (2012). National Fisheries Strategy 2012-2025. Ministry of Fish Wealth.
- Scheffer, M., Carpenter, S., Foley, J. A., Folke, C., & Walker, B. (2001). Catastrophic shifts in ecosystems. *Nature*, 413(6856), 591.
- Shelley, C. & Lovatelli, A. (2011). Mud crab aquaculture (A practical manual). Food and Agriculture Organization of the United Nations Rome.

- Shyam, S.S, & Anuja, A.R. (2022). 1st Indian Fisheries outlook 2022 – Marine Fisheries Policies in India: Opportunities and Challenges. Central Marine Fisheries Research Institute, Kochi - 682 018, Kerala, India.
- Sumaila, U. R. (1997). Cooperative and non-cooperative exploitation of the Arcto-Norwegian cod stock. *Environmental and Resource Economics*, 10(2), 147-165.
- Suvarna (2019). Institutions and Collective action for enhancing livelihoods in inland fisheries – Role of Governance in Telangana. The Seventh Biennial Conference of the International Association for the study of commons, held in Lima, Peru.
- Ward, A. & Signa, D. (2019). Reducing Post-harvest fish losses for improved Food security. A brief publication series # 17 under Smart FICHES Programme for the Implementation of a regional Fisheries Strategy for the Eastern and Southern Africa - Indian Ocean Region. Food and Agriculture Organization of the United Nations.
- World Bank (2018). Revitalizing Pakistan’s Fisheries: Options for Sustainable Development. Published by the World Bank Group.



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