SAARC Agriculture Centre (SAC)
South Asian Association for Regional Cooperation

Policy Brief

SAC Policy Brief 12/Fisheries 09
September 2020

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Guidelines for ensuring sustainability of fisheries and aquaculture in South Asia

Purpose

The aim of this policy brief is to:

- Identify the opportunities and challenges in fisheries and aquaculture in the South Asian region
- Evolve recommendations and policies which can ensure sustainability of fisheries and aquaculture in the region
- Document the prevalent technologies and know-how for effective transformation of scientific knowledge into a policy for addressing the issues in fisheries and aquacultur

Operational background of fisheries and aquaculture in South Asia

Coastal aquaculture and marine fisheries is practiced in five countries - Bangladesh, India, Maldives, Pakistan and Sri Lanka of South Asia, all of which have abundant coastal areas with Bay of Bengal in the east and Arabian Sea in the west. Fish production from wild capture in both the Western and Eastern Indian Ocean (areas 51 and 57) reported a peak in 2016. With slow progress in mechanization, catches in these areas have been increasing almost steadily since the 1980s, with restrained growth only during the early and mid-2000s. In the past decade, small pelagics such as sardines and mackerel, coastal fishes and shrimps have been the major contributors to the increased production in the Indian Ocean, while catches of the tuna group have been steady at 1.6 to 1.8 million tonnes since 2012. Deep sea resources and tuna like fishes have a good potential for further growth.

Gillnetters/bagnetters off Mumbai coast. Photo: Dr. Akhilesh K.V. Scientist, ICAR-CMFRI, Mumbai

The inland fisheries have undergone a serious downfall with degradation of habitats. But with culture based capture fisheries prevalent in the large extent of water spread areas in reservoirs, there is an enhanced production. Among the global nations, South Asia is represented by India and Bangladesh in the second and third positions respectively. Though freshwater aquaculture has picked up in the region with an exception in Maldives, perils of climate change in the form of extreme droughts in

summer and floods during rains are affecting the very existence of the enterprise seriously. The present aquaculture production in South Asia is 10.2 m tonnes (SOFIA, 2020). In global farmed fish production, the major contributors are India ranking second and Bangladesh, in the fifth position. There are already some proven strategies in fisheries and aquaculture such as ecosystem based management, resource value addition, integrated multi-trophic aquaculture (IMTA) etc. which will reduce the climate change driving factors and ensure food security for the practitioners.

Progress in South Asian fisheries and aquaculture

Globally there is an increase in demand for fish. Fish is looked upon as a quality protein resource which is economically viable than other animal protein sources. Fish is one of the most recommended protein forms due to the high proportion of healthy poly unsaturated fatty acids and nutritionally rich amino acids present in it. Bulk of this fish protein is sourced from the wild capture fisheries and globally there is a stagnation or retarded growth on fish production from this sector. Farmed fish can substantially replace the wild capture fisheries.

FAO has estimated global fish production as 179 million tonnes in 2018. Out of this, 156 million tonnes were consumed as food by the people. This indicates that globally there is an annual supply of 20.5 kg per capita. The remaining 22 million tonnes were destined for non-food uses, mainly to produce fishmeal and fish oil. Farmed fish contributed 46% of the total production and 52% of human consumption. China has remained a major fish producer, accounting for 35% of global fish production in 2018. Excluding China, a significant share of production in 2018 came from Asia (34%) (SOFIA, 2020).

South Asian countries contribute significantly in both capture and aquaculture production. The statistics from FAO (http://www.fao.org/fishery/countryprofiles/search/en) indicates that South Asian region is a major contributor of fisheries (30% of global fish production share) with India and Bangladesh leading significantly (Table 1). The sector provides livelihood for more than 35 million people in this region which is 57% of global employment generated in fisheries and aquaculture.

With a global initiative on minimizing pressure on wild resources, the share of aquaculture for national fish production is looked upon as a significant stride towards sustainable fish production. In most of the South Asian countries, the proportion of aquaculture to national fisheries production is higher than that of the world average (Table 2).

Fish is contributing 17% of the global protein intake. South Asian countries are faring better with Maldives (72%) and Bangladesh (60%) as leading countries with high percentage on fish protein as a major share of consumed animal protein. Therefore, fish production from culture and capture domain deserves a roadmap which can be prepared based on guidelines for ensuring sustainability of fisheries and aquaculture in South Asia.

Table 2: Proportion of aquaculture to national fish production statistics for SAARC Countries: 2018 (estimated in percentage)

Country	Aquaculture to national fish production (%)
Afghanistan	79.5
Bangladesh	56.2
Bhutan	No aquaculture data
India	57.0
Maldives	No aquaculture data
Nepal	72.8
Pakistan	29.6
Sri Lanka	5.7

Source: FAO, 2018; Giri, 2018; SOFIA, 2020

Table 1: Fisheries production statistics for SAARC Countries: 2018 (in tonnes)

Country	Inland capture	Inland aquaculture	Inland total	Marine capture	Mariculture	Marine total	Total fish production
Afghanistan	2050	7950	10000	0	0	0	10000
Bangladesh	1216538	2405416	3621954	654687	-	654687	4276641
Bhutan	-	-	223	0	0	0	223
India	1700108	7053000	8753108	3620145	13000	3633145	12386253
Maldives	-	-	-	151 013	-	151013	151013
Nepal	22070	59000	81070	0	0	0	81070
Pakistan	141232	158 952	173084	363578	131	363709	536793
Sri Lanka	87690	30148	117838	422518	450	422968	540806

'-' No information available

Source: FAO FishStat

Targeted stakeholders

The policy guidelines recommended in this brief has to be communicated to a primary audience that includes planners and managers in government departments, fishermen associations, aqua-farmer's associations, researchers & technologists, regulators, credit & commercial investors, donors and other humanitarian agencies. Broad-based issues, related to fisheries and aquaculture relevant in South Asia, are discussed here. SAARC Agriculture Centre, Dhaka has taken several initiatives including regional consultation meetings for policy framing on the following aspects of South Asian fisheries and aquaculture which formed the basis for developing this policy brief:

- fish biodiversity management in the transboundary rivers
- climate change impact on coastal fisheries and aquaculture
- fish and crustacean diseases
- technologies on fisheries for poverty alleviation
- small-scale fisheries
- control of transboundary aquatic animal diseases
- diversification in aquaculture towards achieving sustainability
- coastal and marine fisheries management
- threatened freshwater fishes
- farm made aqua-feeds
- aquaculture of commercially important fin fishes

In all these SAARC regional consultation meetings, the member countries nominated their expert representatives to discuss country status and future needs. The governmental, non-governmental and academia also participated in addition to the representatives and their views are compiled in the publications dedicated to each meeting which is available freely online in the SAARC Agriculture Centre website (https://www.sac.org.bd/publications/).

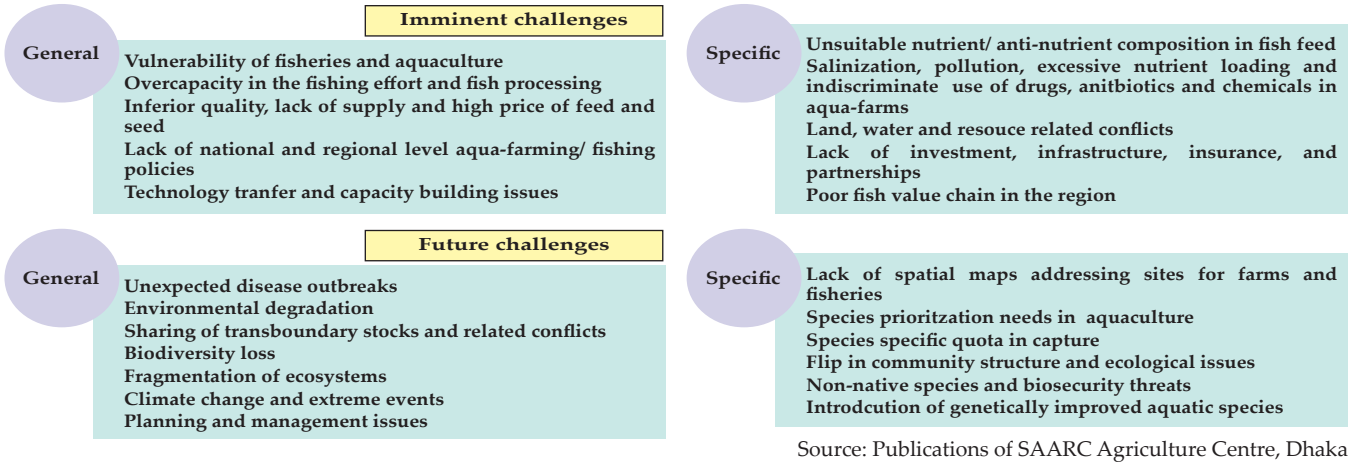
Major challenges in fisheries and aquaculture to be addressed in South Asia for ensuring sustainability

Despite the significant contributions made by the South Asian nations mentioned above, there are various issues constraining the sustainable development of fisheries and aquaculture in this region. Based on the regional consultation meeting held on various issues related to fisheries and aquaculture in South Asia, the SAARC Agriculture Centre, Dhaka prioritized the major imminent and future challenges in this region (Figure 1).

Policy guidelines for sustaining capture fisheries and augmenting aquaculture production in South Asia

- Identification of problems and vulnerability issues in fisheries and aquaculture
- Develop a network of South Asian regional laboratories catering to fisheries and aquaculture for time to time support and response on contingent issues in the sector
- Reducing effort in capture fisheries by regulating registration of fishing vessels
- Scale-up best practices in fisheries and aquaculture compatible to climate change and disaster risk
- Develop alternate energy and fuel sources to reduce carbon foot print in capture fisheries and aquafarming systems
- Establishment of national level regulatory agencies which can support the fish processing sector by implementing Good Manufacturing Practices (GMP) and Sanitation Standard Operating Procedures (SSOP)
- Implementation of fisheries and aquaculture policies at the national level and in the South Asian region with adequate reference to transboundary issues, biodiversity conservation, aqua-eco-tourism, credit support for fisheries, import regulations

Figure 1: Major imminent and future challenges in fisheries and aquaculture identified during various regional consultation meetings of SAARC Agriculture Centre



Source: Publications of SAARC Agriculture Centre, Dhaka

(quarantine protocols), fish diseases, fish germplasm transfer protocols and seed certification

- Introduction of saline, high temperature tolerant and fast growing fish species in the areas of saline ingression
- Promotion of seasonal aquaculture in perennial waterbodies, farming of potential carbon sequestering species such as seaweeds to combat climate change
- Mooting national level farm registries for better coordination of aquaculture in the region
- Prioritize species for aquafarming considering access in market, technology, management and operating environmental conditions
- Introduction of modern farming systems such as recirculating aquaculture systems (RAS), integrated multi-trophic aquaculture (IMTA), cage farming, pen culture, raceway aquaculture and offshore aquaculture based on the diversification needs of the region with specific recommendations for each ecological zones
- Rotation of cropping patterns in existing polyculture systems to reduce environmental damage utilizing the food available in different trophic levels of farmed ecosystem
- Ensure that quality feed with right nutrient composition and reduced anti-nutrients are available in sufficient quantity at an affordable price
- Spatial mapping in GIS platform on aquafarming sites by identifying zones of suitable water quality, environment and reducing conflicts among open water bodies and related resources
- Improve value addition of harvested fish utilizing fresh, live, frozen, ready to cook, ready to serve and other convenient processed products such as chilling, modified atmospheric packaging, active packing, freezing, drying, thermal processing, dry and wet smoking and others based on the market feasibility studies
- Develop diversified markets utilizing the correct market segment at the right time and at the best prize adhering to the local needs.
- Establishment of regional and national level scientifically vetted fishery and aquaculture databases for proper assessment, evaluation and monitoring of the sector
- Development of a South Asian network on fisheries and aquaculture experts and professionals for guidance and interventions on challenging issues related to the sector

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