

Policy paths for tackling transboundary aquatic animal diseases ACTION NEEDED FOR PREVENTION AND CONTROL



Live fish seed market in India

Photo: B.N. Paul

Purpose

- Highlight the emergence of transboundary aquatic animal diseases (TAADs) in South Asian aquaculture and their impacts on the aquaculture industries and national economy;
- Identify the issues and challenges in managing TAADs in aquaculture; and
- Sensitise South Asian governments for the need of framing a harmonised policy for prevention and control of TAADs.

How important is aquaculture for South Asia?

South Asia contributes 27.3% of the global and 30% of the Asia's fisheries production. The two South Asian nations India and Bangladesh rank 2nd and 5th in aquaculture volume production in the world, and respectively contribute 6.62 and 2.65% of world fisheries production. The increased population and wealth, and the health benefit of seafood has increased consumers' preferences for fisheries products across the globe. The capture fisheries production is relatively static since 1980s and aquaculture has been responsible to meet the growing demands for fish. It is expected that aquaculture to share 50% of the world fisheries to keep up with the

greater demand for fisheries products 189.1 million tonnes by the year 2030. In South Asia, the average annual growth of aquaculture is 6%, but in some of its nations the annual aquaculture growth is above 10%. The contribution of aquaculture to the South Asia nations' fish production in 2018 remained over 90% in Bhutan, 75.7% in Nepal, 57.0% in India, 56.2% in Bangladesh and 51.0% in Sri Lanka in comparison to that of the world average, 44%. Aquaculture is not only the backbone of the food and nutrition security and livelihood; the South Asian countries heavily rely on it for national economic growth through foreign exchange. South Asia houses 90% of the actual numbers of people engaged in fisheries in Asia and 57% of the world.

How devastating are transboundary aquatic animal diseases (TAADs)?

The aquaculture sector involves array of production systems, diverse technologies and species. In recent years, the growth of aquaculture has been much dependent on the introduction of exotic species. The movement of live animals (broodstock, post-larvae, fingerlings, fry), fisheries products (live, fresh, frozen), contaminated water, packaging or wrapping materials and aquafeeds are the sources of spread of new pathogens and outbreak of diseases across the aquaculture regions. The transboundary rivers and shared water bodies are also the important channels of spreading aquatic animal diseases in neighbouring countries. In the past, the transboundary aquatic animal diseases had jeopardized sustainable aquaculture production in many aquaculture regions of the world and inflicted serious socio-economic and environmental impacts. The White spot syndrome virus (WSSV) in shrimp is an example of such pandemic transboundary disease first reported in 1993 in Japan, which later spread all over the world through the movement of live broodstock and post-larvae. The disease caused mass mortality and the aquaculture production of *Penaeus monodon* was severely affected. The White tail disease in freshwater prawn *Machrobrachium rosenbergii* caused at least 10-15% production cost loss across the world. Following first reports of Mycotic granulomatosis (MG) in Japan in 1972, the disease caused severe mortality of freshwater fishes in Papua New Guinea (1974), most of south-east and south-Asian countries, Indonesia (1980), Malaysia (1979-83), Thailand (1981-85), Kampuchea and Lao PDR (1984), Myanmar (1984-85), Sri-Lanka (1987), Bangladesh (1988) and India (1988). Recent spreading of TAADs, Infectious myonecrosis (IMN) and Acute hepatopancreatic necrosis disease (AHPND) are seriously affecting shrimp aquaculture. Tilapia lake virus (TiLV) clearly demonstrates the vulnerability of the sector. The aquatic animal disease report of OIE has listed Hepatopancreatic microsporidiosis and Viral covert mortality disease of shrimps, *Spiroplasma eriocheiris* infection in crayfish and freshwater prawn and Shrimp haematocyte iridescent virus (SHIV) infection are the emerging threats in crustacean

aquaculture, which might spread anytime in the region.

The transboundary aquatic animal disease threats and their impacts on South Asia nations' economic losses are not clearly understood. However, some studies estimated the annual economic losses due to shrimp diseases is US\$ 145 million (10,220 million INR) and the losses due to White spot disease is around US\$100 million (7,000-8,000 million INR) in India. A Bangladesh study revealed that losses due to fish disease in the country is about US\$ 310 (BDT 24,876) ha⁻¹ yr⁻¹.



Epizootic ulcerative syndrome (EUS) in carps Photo: N. Sood

Issues and concerns

Related to movement of animals and their products

Increased globalization of trade and markets of live animals (broodstock, post-larvae, fry and fingerlings) and fisheries products (live and processed) are the source of spread of pathogens across the aquaculture regions. Expansion of ornamental fish trade is also new threat. Intensification of fish-farming practices and introduction of new and exotic species source the diseases in to the aquaculture systems.

Related to disease records

Lack of basic pathogen data (e.g. transmission), basic host data (e.g. immunity, genetics), disease surveillances programs for monitoring and controlling spread of diseases and poorly implemented biosecurity and quarantine measures are the challenges of diseases reporting, their control and preventions.

Related to infrastructure

Insufficient specialized laboratories to diagnose the disease epizootics and isolation of pathogens, inadequate trained manpower for diseases diagnosis and handling, low capacity for emergencies and lack of awareness on emerging diseases are the limitations of TAADs management in South Asia's aquaculture.

Related to aquaculture management

Unanticipated interactions between cultured and wild populations of aquatic animals, misuse of stocks, arbitrary use of chemicals and drugs, and inadequate mitigation strategy of climate change impacts are the constraints of TAADs management.

Related to research and development

Mismatch between research agenda and farmer/commodity sector needs, lack of collaborative research and development network among the SAARC member countries as well as international partners and weak public-private sector partnership are few of the gaps of TAADs management in South Asian aquaculture.

Suggested priority actions

The SAARC regional governments are not well-prepared to deal with TAADs related

socio-economic outfalls. Insufficient reporting system and research facilities to diagnose the diseases are the limiting factors for non-availability of information. Therefore, it is necessary to learn from each other's experiences and from the experiences of the countries where diseases occurred, in order to take necessary control and management measures at national, regional and international levels. A SAARC regional level policy might guide managing the transboundary aquatic animal diseases in aquaculture and minimise related massive economic losses.

- A mandatory reporting system for fish diseases that are detected by the fish health officers and fish farmers
- Establishment of SAARC regional database for disease recording that can be used to identify and maintain disease free zones
- Registration of aquaculture at national level
- Assessments of health status of animals at the production sites through regular inspections with clearly defined procedures for inspection, sampling and health control in fish farms
- Identification or establishment of SAARC regional level laboratories for fish disease diagnosis
- Defined procedures for dealing with outbreaks of serious transmissible diseases, including eradication procedures viz., vaccination strategies, sanitary slaughtering, disinfection etc.
- Development of regional import regulations viz. quarantine measures and regulations regarding introduction of new species
- Development aquatic animal health certification facility and transport regulations
- Human resource development in SAARC member states through education, training, exchange visits and collaborative projects



Frozen fish trade

Photo: S.S. Giri

Recourses

FAO (2016). Risk analysis to manage and control transboundary aquatic animal diseases. FCC-EMPRES Information Sheets-2.

FAO (2018). Food and Agriculture Organization of the United Nations. The state of World fisheries and aquaculture, meeting the sustainable development goals. Rome, Italy.

Giri, S.S. ed. (2018). Policy framing for control of transboundary aquatic animal diseases. SAARC Agriculture Centre, South Asian Association for Regional Cooperation, Dhaka, Bangladesh, 150 p.
<http://www.fao.org/3/a-i5411e.pdf>

Kalaimani, N., Ravisankar, T., Chakravarthy, N., Raja, S., Santiago, T.C., Ponniah, A.G. (2013). Economic losses due to disease incidences in shrimp farms of India. *Fishery Technology* 50, 80-86.

Nagasawa, K. (2004). Background and objectives of the meeting on Current status of transboundary fish diseases in Southeast Asia: Occurrence, surveillance, research and training. Southeast Asian Fisheries Development Center, Aquaculture Department Tigbauan 5021, Iloilo, Philippines.
<https://repository.seafdec.org.ph/bitstream/handle/10862/1675/Nagasawa2004-Background-and-Objectives.pdf?sequence=1&isAllowed=y>

Sahoo, P.K., Mohanty, J., Garnayak, S.K., Mohanty, B.R., Kar, B., Prasanth, H., Jena, J. K. (2013). Estimation of loss due to argulosis in carp culture ponds in India. *Indian Journal of Fisheries* 60(2), 99-102.

Vijayan, K.K., Sanil, N.K. (2012). Introduction to exotics and trans-boundary movement of aquatic organisms: Policy requirements and relevance to Indian aquaculture in the Post-WTO scenario. *Manual on World Trade Agreements and Indian Fisheries Paradigms: A Policy Outlook*.
http://eprints.cmfri.org.in/9076/1/11.Vijayan_Introduction_to_Exotics_and_Trans.pdf

Where has this come from?

The policy brief is prepared from the outcome of the SAARC Regional Consultation on 'Policy Framing on Transboundary Fish Diseases and their Control Measures in South Asia' held in Paro, Bhutan in 2018. The SAARC member states' expert representatives shared their experiences on the prevailing and emerging diseases in the South Asia's aquaculture and their managements they practice. The committee discussed the need for framing a SAARC regional policy on fish diseases that are transboundary spreading in nature and their managements. The governmental, non-governmental organizations and academia also participated in the meeting and discussed the issues.

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