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## Present status and future prospectives of freshwater fisheries in Nepal: A short overview

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### Abstract

Third National Fish Festival-2073 organized by Nepal Fish Traders' Association has commenced at Bhrikutimandap, Kathmandu on November 24, 2016. The Festival was inaugurated by Radhika Tamang, State Minister for Agriculture. Inaugurating the festival, Tamang assured of improving the policies and problems associated by fisheries business consecutively. Carp fishes are the major species and uncontrolled unmanaged capture fisheries dominants over systematic aquaculture. The festival started with a slogan "*Swadesi Macha Khawoun, Swastha Rahaun*" (Eat Domestic Fish, Stay Healthy) saw a significant number of visitors on its first day. The five day festival has a total of 60 stalls showcasing fish, fish foods, medicines and equipments for fish farming. Aquaculture is currently the fastest growing food production systems globally. It remains a vibrant and important production sector for high-protein food. Freshwater fisheries in Nepal are mostly dominated by catch up fisheries of indigenous fish species available in rivers, lakes and paddy fields but exotic and sophisticated species been also introduced in small scales.

**Keywords:** Machha, fish, carp, Nepal, aquaculture

### 1. Introduction

Nepal lies between India and China. The country touches with India at its southern, western and eastern borders, while the northern boundary is with China. In the south the altitude is about 50 metres above sea level, while at northern end the elevation goes up to the highest peak 8848 m (Mt. Everest) of the world. Being landlocked, the country is deprived of any oceanic resources and overwhelmed by mountains, which comprise about 83% of the total area of 147,181 sq. km. Approximately, 5% of the total area of the country is known to be occupied by different freshwater aquatic habitats<sup>1</sup> where some 186 fish species are reported to thrive<sup>2</sup>. In general, the aquatic habitats and fish species can be viewed as prospects for fisheries and aquaculture development in the country. This also implies that aquatic resources located at different altitude and climatic zones can offer potential for different fisheries and aquaculture activities in Nepal.

The aquaculture sector in Nepal is currently small but has great potential for growth (Gurung, 2014). The total fish production was only 46779 tons in 2063/64 B.S. which increased up to 64700 tons in 2013/2014 (2070/71 B.S.) and the country is going to self sustain on fish production in B. S. 2071/072 (Fish Mahotsav-2071 B. S.). This indicates that the demand and supply of healthy fish production in the country will not only solve the food security problems but also enhance the economic growth of the aquafarmers. According to 3rd fish festival in Kathmandu Jogendra Mahato, member secretary of the festival, said that 77,000 tons of fish is produced annually in Nepal. Local production can meet only around 30 percent of the demand, added Mahato. The country imports fish worth around Rs 3 billion from India alone. In the last fiscal year, Nepal imported 7,882 tons of fish compared to 11,176 in 2014/15. Fish farming is done in 9,934 hectares across the country (My Republica: Friday, 03 March 2017).

Fisheries have been practiced in Nepal for a long time and have a strong tradition in Nepal. Aquaculture is a relatively new activity and was started in early 1950's. Over the past 20-25 years there have been a significant increase in the production of fish and the annual per capita fish consumption have increased significantly from 0.330 kg per person per year in 1982 up to

1.753 kg per person per year in 2006. The Nepal Agriculture Perspective Plan (APP) has categorized fisheries and aquaculture in Nepal as a small but important and promising sub-sector of agriculture contributing about 2.47 percent of agricultural gross domestic product (AGDP). Fish is considered as good luck (Sagun) in Nepal and is acceptable for consumption by all groups.

Nepal is the second richest country in the world measure against freshwater resources and possesses about 2.27 percent of the world fresh water reserves (CBS 2005). Rivers are one of the major source of capture fishery, contributing almost 50% of total captured fish production and a large number of fishermen and their families are involve in capture fishery which provide income and partial employment for them. Out of total 818 500 ha of total water surface area, about 6 000 rivers and rivulets cover 395 000 ha (or 48 percent). There are also some fisheries activities in the lakes especially around Pokhara valley but the main capture fisheries production is from the rivers. Fishing activities in irrigation channels, rice fields, swampy areas and ghols is also a significant source of capture fisheries production.

## 2. Research and Development

The Directorate of Fisheries Development is the national focal point for fisheries and aquaculture. It is under the Department of Agriculture, Ministry of Agriculture and Cooperatives. To increase the productivity in agriculture sector, Nepal Agricultural Research Council (NARC) was established in 1991 as an autonomous apex body at the national level to undertake agricultural research activities to increase agricultural production and productivity by generating appropriate technologies suitable to various agro-ecological zones for the country's diversified crops, horticulture, livestock and also fisheries. The mandate of NARC is to develop new technologies and to give policy advice to Nepal Government. They are also strongly involved in research and development for the fisheries and aquaculture sector. The development of new technologies need to suitable for farmers and there is therefore a strong link between research and development of new technologies and to the extension work. The goal is to have fisheries and aquaculture making a significant contribution to livelihoods, especially those of the rural poor. There is a strong need for capacity building in the research and development institutions in Nepal. The lack of staff is a potential bottleneck for further expansion of the sector. The work load is carried by an only a small group of people. There is a need to increase both the number of technicians, researchers and extension workers in order to use the potential of the natural resources. There is also a need to develop facilities to produce more seed and feed.

## 3. Marketing and trade

Most of the fisheries and aquaculture production in Nepal is consumed by the domestic market. There is also some export but this is still quite limited and imports far exceed exports. The per capita consumption of fish has increased significantly from 0.330 kg per person per year in 1982 up to 1.753 kg in 2006. Fish is acceptable to every segment of the population, but still Nepal has a low per capita consumption compared to neighboring countries despite the increasing trend. The domestic production of fish is not sufficient to meet the domestic demand and there is a significant import every year from neighboring countries mainly India. The domestic commercial fish production is mainly from the carp species

and with high potential of the economically high value rainbow trout. There are only a few rainbow trout farms. According to the farmers they cannot produce enough trout for the market and consumers come directly to their farms to buy. There is no need to transport the fish to the market. Often the fish is sold before normal market size is reached. These are clear indications that there is a potential domestic market of a considerable size to be exploited.

## 4. Aquaculture and Fisheries Policies

Nepal is land locked and therefore deprived of oceanic resources so all fisheries and aquaculture is based entirely on the use of inland water bodies in rivers, streams, lakes, reservoirs, ponds, swampy lands as well as rice fields. Among the agricultural sectors, aquaculture has been considered as one of the potential areas recently through which substantial improvements in the income generation of farmers are achieved. The long term goal for fisheries and aquaculture development is to enhance livelihoods through sustainable fisheries and aquaculture technology for food, employment and income. The Nepal Agriculture Perspective Plan (APP) has categorized Nepal fishery a small but important and promising sub sector of agriculture contributing about 2.47% of agricultural gross domestic product (AGDP) in the country (DoFD 2015/16). Substantial progress had been achieved in aquaculture sub sector as Government has given due priority during the last few decades with the help of some donor agencies. An estimated 750 000 people are directly or indirectly involved in aquaculture activities nationally and the number is increasing. It is clear that the fisheries and aquaculture sector in Nepal is under development and is one of the priority areas for the Ministry of Agriculture and Cooperatives.

## 5. Training and capacity building

There are currently a few hard working scientists and technicians that are working on research, development and management. There is a need for more contact with universities and technical schools in order to develop a Nepalese curriculum for aquaculture and fisheries and possibly create chances for some overseas training. Shorter training courses for researchers and technicians should be investigated and prioritized. The current limited number of researchers and technicians can be a constraint for further development of the sector and it is likely that more staff will be required. There is also a need for capacity building at laboratories in terms of infrastructure but this should not be done before it is made sure there is sufficient technical staff to maintain and operate the laboratories.

## 6. Conclusion

Abundant fresh water resources are very poorly utilized in Nepal. Much effort has been made by research institute, international aid agencies, government for aquaculture development but they are limited in terms of high biomass and quality production. Besides these, many private fisheries are running successfully in small scale production making profit. Participatory types of management have been successful in some reservoirs and water systems in many parts of country. Poor scientific knowledge on indigenous fish species, poor and unskilled manpower, lack of transportations and infrastructures, electricity facilities at local level are major problems for sustainable development of aquaculture. Lack of proper facility at local levels is challenging issue for

expanding the market demand and trade management in national and international market for produced fish. Carp fishes are the major species and uncontrolled unmanaged capture fisheries dominants over systematic aquaculture. Poor technological implementations, poor budgetary plan, not proper management strategies, lack of quality fish feed and fingerlings, lower market availability are some of the major challenges of Nepalese freshwater fisheries. Long-term sustainable plan, scientific and technological study on indigenous fish species, proper hygiene management and better disease control might improve the current aquaculture status of Nepal. Hence, it can be suggested that proper long-term and concrete vision of infrastructure development along with scientific study, development on indigenous fish species, hygiene maintain, disease control are important for improvement of production and ultimately economic status of people who are dependent on fishing and fisheries research.

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