FISHERY COUNTRY PROFILE	Food and Agriculture Organization of the United Nations	FID/CP/NEP
PROFIL DE LA PÊCHE PAR PAYS	Organisation des Nations Unies pour l'alimentation et l'agriculture	May 1997
RESUMEN INFORMATIVO SOBRE LA PESCA POR PAISES	Organización de las Naciones Unidas para la Agricultura y la Alimentación	

THE KINGDOM OF NEPAL

GENERAL ECONOMIC DATA

Area:	147,181 km^2
Water area	818 500 ha [1] .
Population [2] :	20.5 millions
GDP at purchasers' value (1995/1996) [3] :	US$ 4 462 millions [4]
GDP per head:	US$ 218
Agricultural GDP:	US$ 1 720 millions

FISHERIES DATA

Commodity balance 1995/1996 [5] :

	Production	Imports	Exports	Total Supply	*Per caput* Supply
	Thousand tons liveweight equivalent				kg/year
Fish for direct human consumption	21.9	NA	NA	21.9	1.1

Fish for animal feed and other non-food purposes	1.0	-	-	1.0	0

Estimated employment (1996):	
(i) Primary sector:	Total employment in the sector is about 266000 (including subsistence and part-time)
(ii) Secondary sector:	
Gross value of fisheries output (at ex-vessel prices) (1995/1996):	US$ 29.3 millions
Trade (1995/1996) [6]:	
Value of imports:	n.a.
Value of exports:	n.a.

THE STRUCTURE AND CHARACTERISTICS OF THE INDUSTRY

Inland fisheries

Capture fisheries in Nepal have an artisanal character and no industrial fisheries have developed. Fishermen living scattered along lakes and rivers use traditional gear mainly for subsistence fishing. It has been estimated that there are some 395 000 ha. of rivers and about 5 000 ha. of small and medium sized lakes in the country. Fishing also takes place in irrigated paddy fields and marginal swamp areas, together constituting some 410 000 ha. of water surface. Moreover, there are approximately 1 500 ha. of manmade reservoirs. The planned construction of hydro-electric plants and irrigation projects is likely to increase the number of water bodies in the future. According to official statistics, 11 320 tonnes of fish were produced from capture fishing in the fiscal year 1995/96.

Aquaculture

Aquaculture has a relatively recent history in Nepal. It first started on a very small scale with imports of fish seed from India in the mid-1940s. However, further development only begun in the 1960s and more significant progress was first seen as from the beginning of the 1980s. Various fish species have been imported from abroad over the years and some indigenous carps have also been introduced for farming. At present, seven commercially valuable carp species are bred and cultured in the country. These include the three indigenous species rohu (*Labeo rohita*), naini (*Cirrhus mrigala*) and bhakur (*Catla catla*). The remaining four are exotic species; common carp (*Cyprinus carpio*), silver carp (*Hypopthalmichthys molitrix*), bighead carp (*Aristichthys nobilis*) and grass carp (*Ctenopharyngodon idella*).

Pond polyculture of the above cited carp species is by far the most common aquaculture system and contributed 90% of the total production of some 10 600 tonnes in 1995/96.

The lion part of the production take place in the southern part of the country; 94% of all ponds - which are mainly smaller village ponds - are situated on the Terai plain.

Cage fish culture of carp was introduced in the lakes of the Pokhara valley already several years ago. However, at present, cage culture is only undertaken in an extensive form even though studies are currently being undertaken for developing more intensive systems with supplementary feeding of common carp. Open water stocking of carp seed has recently increased the production by local fisherfolk communities and is reported to have contributed some 130 tonnes to production in 1995/96.

In spite of its potential, fish-cum-rice culture has not taken off in Nepal. The culture, which is practised in the mid-hills and valleys, only contributed 39 tonnes in 1995/96.

Culture of high-value cold water species, in particular rainbow trout (*Onchorhynchus mykiss*), has been on-going for some years with assistance from Japan. The technical viability has been proven but the culture has not yet been introduced on a commercial scale.

Utilisation of the catch

Virtually the entire domestic production of fish is consumed fresh, mainly by local communities. Limited amounts of fish are smoked but there are no large-scale processing facilities. Generally in Nepal, transportation is a constraint for marketing and this is particularly true for a perishable product such as fish; there is a lack of all-weather roads connecting fish producing areas with consumption centres. Moreover, there is no infrastructure in the form of cold storage nor insulated vehicles for fish distribution. When transported, fish is generally packed in bamboo baskets together with ice and sent by public buses.

State of the industry

The Nepalese aquaculture sector has an entirely artisanal character; no "industry" in its proper sense exists. The larger private aquaculture farms have pond areas of some 5-8 ha. but most farmers would operate with considerably less than 1 ha. of ponds. Nevertheless, productivity has improved considerably during the last fifteen or so years. The average yield per hectare which was 0.8 tons in 1981/1982, had increased to 1.9 tons/ha. in 1995/1996. The large private farms produce 3-5 tons/ha.

Also the capture fisheries rely on artisanal catching methods. Gill-nets were introduced in the mid-1960s but the main fishing methods continue to make use of cast-nets, traps, hand lift nets, hooks and lines, and loop lines. Traditional canoes or plank boats - developed by fisheries projects - are used to operate the gear. Fishermen are usually not organised in co-operatives or larger private companies but operate on an individual basis. In fact, the capture fishery is to a large extent subsistence fishing.

The marketing and distribution system is not well-structured and fishermen act to some extent as their own sales agents. Moreover, there is a large number of small wholesalers as well as retailers, often operating on foot or by rickshaw in local communities. Larger entrepreneurs are involved in trade with Kathmandu and border towns in India. There is no tradition for fish auctioning; there is one auction in Biratnagar, in the south, handling some ten tons daily, being the biggest - and probably only - in the country.

Economic role of the fishing industry

The fisheries and aquaculture sub-sector plays a relatively limited role in the overall

Nepalese economy; it contributes only 1.5% of the agriculture GDP [7]. Nevertheless, it has been estimated that the sector provides income (or food from subsistence activities) for some 74 000 households (including part-time occupations). Hence, some 400 000 people may benefit from the fisheries and aquaculture activities, i.e., 2% of the total population. Moreover, it should be remembered that in rural areas where the diet is generally poor and low on minerals, vitamins, etc., even a small portion of fish may be of great importance for nutrition. On an average, fish provides 10% of the animal protein consumed in the country.

Little exact information is available on fish trade. However, there is a relatively important activity taking place on the Indo-Nepalese border and it appears that considerably more fish is being imported than exported, transported by trucks and to some extent on public buses. In addition, imports to Kathmandu are carried out by air freight from Calcutta (India), Bangkok (Thailand) and Singapore. These products are, though, mainly destined to hotels and restaurants catering for tourists and foreign residents.

DEVELOPMENT PROSPECTS

Nepal possesses a large number of rivers with a perennial supply of water from melting snow from the Himalayas, a considerable amount of smaller lakes as well as a large number of reservoirs, existing or expected to be constructed under many hydro-power projects. Moreover, there is a vast amount of ponds and irrigated paddy fields suitable for fish farming. Most of these water resources are currently largely under-utilised. Hence, it can be concluded that there is an important potential for development of aquaculture. The significant increase in output during various aquaculture projects confirms this view. For example, aquaculture production increased from merely 750 tonnes to almost 5 000 tonnes from 1981/82 to 1986/87 when the first phase of an ADB-supported aquaculture project was implemented. Currently, the main constraints to the development of the sector appear to be insufficient knowledge of fish farming, in particular polyculture as well as integrated farming systems, among potential fish farmers. There also seems to be a certain lack of fish seed for some of the species needed for polyculture. Moreover, the general problem in Nepal of transportation limits the marketing possibilities of fishery products which most probably also has a blocking effect on the expansion of production units.

Demand

There is very limited information available on fish demand and consumption patterns in Nepal. However, it appears that fish is generally accepted and liked by all non-vegetarian Nepalese. In the south, where the warm-water carp is produced, the fish is often consumed close to the production point with a certain amount of fish being sent to Kathmandu. Supply and transportation constraints seem to be the reason behind the relatively low *per caput* consumption of 1.1 kg/inhabitant, rather than a lack of demand. It can be noted that domestic supply appears to be supplemented by imports, mainly from India. It should be remembered, though, that purchasing power, particularly in rural Nepal, is limited and the current selling price of good quality carp in retail markets is seldom more than NRs. 100/kg (US$ 1.80) (1997).

RESEARCH

Nepalese fisheries research is focused on applied research in aquaculture aiming at providing the private sector with practical technology packages. Priority is given to fish pond culture of major carp species including:

- the development of poly-culture systems, including enhanced quality and quantity of fish seed;
- fish health/disease;
- water quality aspects;
- fish nutrition and feed formulas elaboration.

Moreover, studies are carried out with regard to:

- the biology/limnology of the major river systems together with socio-economic impact studies on river-side populations;
- the possibilities to rear important trans-Himalayan species (e.g., katle, sahar and asala);
- lake cage culture;
- commercial production of high-value fish, in particular rainbow trout.

The Fisheries Research Division under the Nepal Agriculture Research Council (NARC) is responsible for the aquaculture research programme. Research projects are usually implemented in the five Fisheries Research Centres available in the country. Certain collaborative research is carried out by the Fisheries Development Centres, under the Ministry of Agriculture (Fisheries Development Division). Moreover, the Tribhuvan University in Kathmandu also carries out some research activities through its graduate programmes.

AID

Present

After having received assistance in the 1960s and 1970s from FAO, WFP and UNDP, the aquaculture sector was supported by UNDP technical assistance grants combined with Asian Development Bank (ADB) loan financing during the period 1981-1994. During the 1980s, the Canadian International Development Research Centre provided assistance with regard to human resources development through high level training programmes. At present, assistance is received from the Japan International Co-operation Agency (JICA) for research activities mainly with regard to enhancement of lake fisheries and cold water species aquaculture. Within this programme, physical research infrastructure has been provided together with technology transfer. Moreover, Peace Corps Volunteers (PCVs from USA) and Japan Overseas Co-operation Volunteers (JOVCs) are continuing to support the sector. Moreover, a couple of projects financed by GTZ (Germany) and WFP are involved in pond construction as well as in the development of a methodology for enhancing semi-intensive carp polyculture at village user group level.

Future

Technical and financial assistance is needed in order to continue to develop the aquaculture potential of the country. One aspect which requires special attention is the lack of reliable data and information. This is true in particular with regard to the assessment of production potentials and the state of wild fish stocks in natural waters as well as for socio-economic and market information. The Nepali Government has applied for

international assistance for carrying out sector plan studies but the outcome of the request is still unknown.

1	Including irrigated paddy fields of 398 000 ha.
2	Estimate for 1996 based on census 1991.
3	Fiscal year ending July 1996.
4	Exchange rate 1 US$ = 56 Nepali Rupees (NRs).
5	Data on trade is not avilable. However, it is probable that the border trade between Nepal and India is significant.
6	See footnote 5.
7	Fiscal year 1995/1996.