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Series 5: Programme 8 (of 9) - 'High Tide'

Craving for Crayfish – Armenia

The gentle turquoise waters of Lake Sevan in Armenia - the 'emerald of Armenia' - have long been a source of awe and inspiration for Armenians. In the wake of the collapse of the Soviet Union, the lake has once again given hope to those trying to survive in a new, competitive world of global capitalism. Lake Sevan is home to the crayfish, which rivals lobster for its delicacy of flavour. A local company called Aquatic has tapped into this rich resource and is now both profiting from and helping to maintain the natural ecosystem of the lake by harvesting crayfish in a sustainable way.

Post-Independence in Armenia

During the past decade almost all spheres of life in Armenia have gone through fundamental changes. When the Soviet Union disintegrated, Armenia found itself in a precarious situation. Problems common to all the newly independent states, caused by the collapse of the centralised economy, were intensified in Armenia by the consequences of earthquakes, conflict with a neighbouring country, and an economic blockade.

Under these circumstances the country's leadership initiated a radical restructuring of the economy and a process of decentralisation. These processes were implemented under difficult conditions, and top ranking administrators were not prepared for the task. Their ideas about restructuring were over-simplified and based on 'textbook' examples. Their approach brought about a breakdown of the entire economy, social polarisation, mass out-migration of local manpower and, eventually, a total dependence on foreign financial and economic centres. The restructuring process was plagued by large-scale abuses. Those in power took advantage of the vulnerability of individual citizens who lacked legal and social protection. This had an adverse impact, in turn undermining the confidence of the people in the State.

The result is a growing state of income poverty in Armenia, which is a new phenomenon in former Soviet Union countries. Despite rather stable economic performance over the past years, Armenia has failed to provide a spill-over effect of growth for large segments of the population. In fact, this growth did not contribute to poverty reduction but, due to unfair income distribution, deepened the gap between

the rich and poor. Poverty reduction has become one of the most challenging and urgent issues on the Government's agenda and has been sponsored by the international community. For example, the US government's Business Information Service

for the Newly Independent States (BISNIS) organisation explores business opportunities in Russia and other newly independent states, including Armenia. In 2001, BISNIS representatives visited Armenia's Gegharkunik province to explore investment and trade opportunities. The search for trade partners and tenders led them to Aquatic, a company specialising in crayfish breeding and marketing.

BISNIS

The Business Information Service for the Newly Independent States (BISNIS) was established in 1992 under the Freedom Support Act and is a part of the US Department of Commerce's International Trade Administration, which promotes market access for US companies worldwide. BISNIS is the US Government's market information centre for US companies pursuing business development in some of the world's developing market economies. A critical feature of BISNIS is its ability to bring buyers and sellers together to facilitate successful transactions.

Gegharkunik Province

Gegharkunik is situated in the eastern part of Armenia, 1500-1900 metres above sea level. Rainfall amounts to 544 mm a year, and temperatures average around -9°C in the winter and 17-19°C in the summer. The province includes five former administrative regions surrounding Lake Sevan: Gavar, Martuni, Sevan, Vardenis, and Krasnoselsk (now Tchambarak). Of the ten provinces formed in 1995 during the reform of Armenia's territorial administrative divisions, Gegharkunik is the largest. It occupies 5348 km² and has approximately 279,000 inhabitants, of whom 40 per cent live in the region's five major cities. The region has a 125 km-long border with neighbouring Azerbaijan to the east.

Before the collapse of the Soviet Union, the province's output accounted for 60 per cent of the total national economic activity. Today, industry comprises 20 per cent, and agriculture 80 per cent of the region's output. This is largely due to a decrease in industrial output, while agriculture has slightly increased. The province has 52 large and medium sized enterprises, including electrical-mechanical, clothing, agribusiness, and construction companies. The majority are private or newly privatised enterprises.

Agricultural production dominates the region, which is the country's major potato supplier. As well as potatoes, local entrepreneurs specialise in fishing, especially the Sevan trout. Armenian lake trout (*Ishkhan*) is particularly popular in Armenia and the rest of the Caucasus region for its taste. The fishing industry markets fresh fish within Armenia, as well as exporting to Georgia and Russia. Crayfish harvesting is one of the most profitable and fast-growing industries in the province, with Lake Sevan providing a healthy source.

Lake Sevan

Lake Sevan is situated in the centre of the region, 60 kilometres north-east of Armenia's capital, Yerevan, and in ancient times was known as the Geghama Sea.

Every visitor to Armenia admires Sevan and its fresh-water beauty, which has helped it become known as the emerald of Armenia. The name Sevan is of Urartian origin, and is derived from Siuna, meaning country of lakes. Sevan is one of the highest freshwater lakes in the world. With a surface area of 1916 km² and a depth of 82 metres, it is the largest lake in the Caucasus. Twenty-eight rivers and springs flow into Sevan but only the river Hrazdan flows out. Perched high in the elevated Armenian terrain, the lake fills a gigantic depression situated at height of 1897 metres above sea level. As a result, the winter cold is quite harsh, while the summer sun is strong.

The emerald of Armenia is a favourite destination for fishing. The Salmon Trout (*Ishkhan*) or 'Prince Fish' is the signature fish of the lake. Any of the many shoreline restaurants prepare and serve delicious fresh fish and crayfish. About 90 per cent of fish catch and 80 per cent of crayfish catch of Armenia is from Lake Sevan.

Unfortunately, during the Soviet era, hydroelectric industrialisation, irrigation and the construction of large dams reduced the water table significantly. Efforts are under way to stabilise the situation. The Government of Armenia, with the assistance of the World Bank, has developed a programme to stop excessive drainage and to raise the water level by 3 metres within a 25-year period.



Catching Crayfish

Among the most well-known and highly esteemed of crustaceans, the lobster has often been considered the most delicate. But lobsters are rivalled as a delicacy by their smaller fresh-water counterpart, the crayfish, which belongs to the Astacidae family. There are more than 300 species of true crayfish, which are found on all continents except for Africa. Crayfish have attained importance as a commercial food product in parts of Europe and the United States, but are still relatively under-used as food by humans. In Lake Sevan it is the long-hand crayfish (*Astacus leptodactylus*) species that is harvested.



One of the most difficult aspects of entering the crayfish market is harvesting. A common method is to use a 0.8-1 metre-long funnel shaped trap, made from 21-com mesh wire. Smaller traps can be as effective, but dissolved oxygen concentrations may become very low in crowded, submerged traps, which may cause deaths. Long traps may be propped up at an angle, to ensure that a small portion is above the surface of the water, which enables trapped crayfish to obtain air. Traps are commonly baited with fish heads. When

fish are scarce during winter, any other high-protein substance, such as soyabean cake or pet food, can be used.

To achieve maximum yield, it is essential that harvesting is intensive throughout the season. The demand for labour is particularly great at the start of the season, in late November and early December, when many prefer to harvest as heavily as possible to beat the peak of the wild crop. Intensive early harvesting also captures adults that have already spawned and will die shortly.

Aquatic Crayfish

The local company, Aquatic, sells 500 tonnes of crayfish a year, and is one of the largest crayfish exporters in the country. Aquatic was established over 10 years ago, and its products have been sold to the Netherlands, Belgium, France, and Russia. However, in 1998 Aquatic was ousted from the European market and reduced the delivery of crayfish to Russia, Lithuania, Latvia and Estonia. Having gained EU registration in 2002, the company has rebuilt good relations with Belgium, Sweden, Spain and France.

The company owns 30,000 m² of land on the shores of Lake Sevan as well as several crayfish breeding lakes. The processing plant is divided into a 'live' (700 m²) section and a 'cooked' (1000 m²) section. In the live section, cultivated crayfish are brought to the plant, straight from the fishing vessels, where they are placed alive into storage pools. The water in the pools is from the artesian shafts, and they are 150 metres deep. When the crayfish in the pools are ready to be processed, 30 plant workers select and package the crayfish. In the 'cooked' section, crayfish meat and crayfish tails are cooked and quickly frozen, ready for export. The plant processing procedures are monitored by the Armenian Department of Sanitation.

Nune and her husband Sarko, who have long been fans of the crayfish, established Aquatic. When the Soviet Union collapsed in 1991, they were presented with the opportunity of private enterprise and turned their hobby into an international business.

'When I and my husband married we were poor students so, as one of my husband's hobbies was fishing, he decided to catch crayfish... He would catch crayfish in the morning, I would cook the crayfish and take them to the markets and small shops in Yerevan.'

Nune, Co-founder of Aquatic

To ensure that they will have enough crayfish to cultivate in the following year, Nune and Sarko have struck an effective balance between intensive cultivation and conservation. The young and small crayfish are separated from the adolescent and adult crayfish. The young are returned to Lake Sevan to grow larger and to procreate, while the adolescent and adult crayfish are kept for cultivation. By maintaining the stock of crayfish in this way, Aquatic is not only ensuring future income, but also ensuring the future of the lake. Lake Sevan is still reeling from the effects of Soviet industrialisation and so the local community must commit to the on-going programmes of conservation and eco-system protection. Aquatic set an example: it is showing that being profitable means preserving, rather than exploiting, the local environment.

Further Information

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