CONSULTANCY WORK IN THE FRAME OF LAO-HUNGARIAN 3rd TIED AID LOAN PROGRAM

Develop aquaculture and culture-based fisheries for the better use of abundant of aquatic resources for food supply

CONSULTANCY REPORT

Prepared by:
Dr. Emese Békefi Bozánné
marketing expert

Szarvas, Hungary
2021

I. Name of expert: Emese Békefi Bozánné, PhD

II. Project Component/Work Package/Task

***Project Component*:** Develop aquaculture and culture-based fisheries for the better use of abundant of aquatic resources for food supply

Work Package: WP2 (Task: 2.3, 2.4); WP3

III. Main goals of the mission:

The main objective of the consultancy work is to assist project activities related to fish value chain development with special regards fish to marketing and also to assist the R&D collaboration in aquaculture. The consultancy work includes the followings specific activities:

- Elaborate a fish product development program taking into account the results of the survey on consumers' preferences.
- Elaborate a draft fish marketing strategy with special regards to the promotion of local fish products.
- Assist the elaboration of "Lao-Hungarian Quality Fish" certification system.
- Identification of promising horizontal fish integrations in target provinces and collect data and information for the elaboration of specific fish value chain models.
- Evaluate the opportunities in aquaculture R&D and training programs between MATE HAKI and Lao institutions (LARReC, NAFDEC and NUoL).
- Evaluate the aquaculture extension programs in the target provinces in collaboration with experts in fish genetics and fish propagation and elaborate proposal for the improvement of the extension services.
- Assist the elaboration of distance learning program in aquaculture through consultation with relevant Lao partners and collection of data and information (including visual materials).
- Deliver presentations on "fish value chain development" and "fish marketing" in the frame of workshops and specific training programs.

IV. Duration of the mission: 01.08.2021 – 12.09.2021

01 – 15 August: Quarantine period

According to the current Covid-19 restriction I had to spend the first 14 days of the visit in quarantine. During the quarantine period, the aquaculture experts (Dr. László Váradi, Dr. Sándor Gorda, Mr. Gyula Kovács and Dr. Emese Békefi Bozánné) had daily online meetings to facilitate the preparation of consultancy work after the quarantine period.

16 August – 12 September: Consultancy period

Since this consultancy work is not site specific, activities and achievements are described by main thematic areas indicating the link to relevant Work Packages and Tasks. The Itinerary of the consultancy work is shown in *Annex 1.*

V. Description of activities and achievements:

Summary

Value chain concept is a basic principle of the 3rd Hungarian agriculture tied aid loan program, that is applied for the two main value chains: fish and cattle. Project activities have been focused on infrastructure and technology development so far, however as the project is proceeding it is very important to include marketing aspects into the value chain development. Marketing is a relatively new area of aquaculture development in Laos, therefore special efforts are needed to improve local resources -including human resources- that are required to meet consumers needs that is also beneficial to stakeholders of the aquaculture sectors in particular producers. I explained the fish value chain concept, the objectives and the workplan in a ppt presentation during the kick-off meeting of the aquaculture expert consultancy program that is shown in *Annex 2.*

During the six-week consultancy, I have made progress in the exploration of fish value chain realities in the Lao PDR, and various means and actions have been elaborated to respond some specific issues of fish marketing. Market survey has been made and additional surveys have been planned, the elaboration of a "Lao-Hungarian Quality Fish" certification schemes and a Good Aquaculture Practice (GAqP) have been initiated and various related activities have been identified that are described in the relevant chapters of the report below.

1. Development of the fish value chain in Laos (WP.2.)

Aquaculture development in Lao PDR is recent compared to its neighbouring countries in South East Asia. Production has been growing in the last years, whilst imports of farmed fish from Thailand, China and Vietnam remain high. Despite systematic fish value chain development approach is new in Lao aquaculture. Nevertheless, there is significant potential for growth and diversification of species and fish farming systems, in order to supply the domestic and regional markets more efficiently.

Value chain analysis looks at every step, a fisheries business goes through, from raw materials to the eventual end user. The goal is to deliver maximum value for the least possible total cost. The model also reveals how the value chain activities are tied together to ultimately create value for the consumer. Value chain analysis can help local market and also export of Lao to be competitive in the fish markets.

Below is an infographic that represents the different steps that constitute a value chain, taking the example of fish farming from fish eggs in farms to the consumer's plate. A value chain is a key concept to understand aquaculture system economics and development. It considers all the stakeholders that intervene and interact in fish production and consumption. It shows the links between different activities and economic sectors.

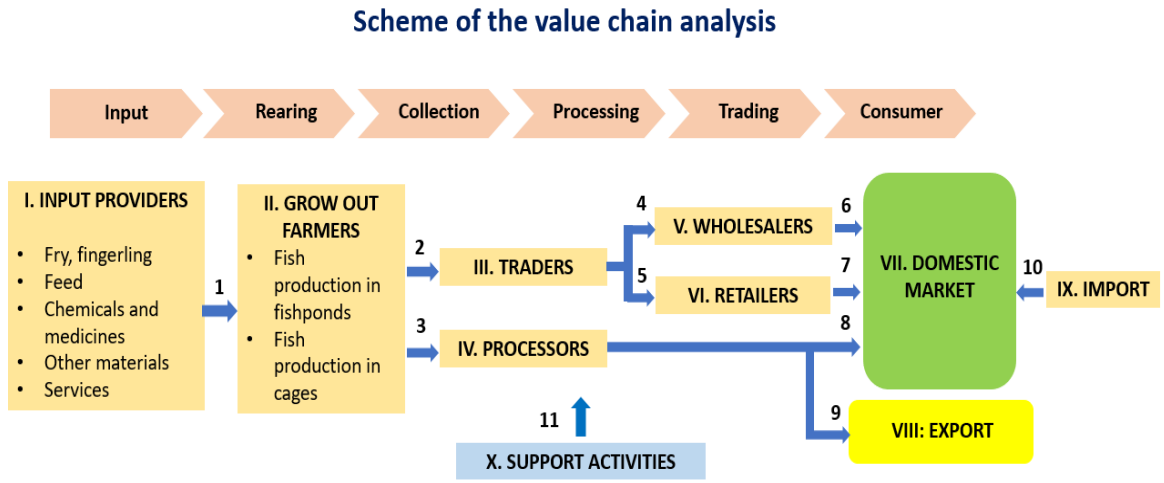


Figure 1: Fish value chain in Laos

The Hungarian 3rd Tied aid Loan project activities have focused on the input supply (Figure 1) seed and feed production and recently the development of market size production is also started. However, this is the first time when we focus on the end of the value chain processing and marketing. I assist this important work with the final objective to supply high quality, safe and certified fish products to the market.

Marketing influence supply chain processes significant but at the same time hidden for most players in the value chain. Marketing activities are centred around these 4Ps: Products, Place, Price and Promotion.

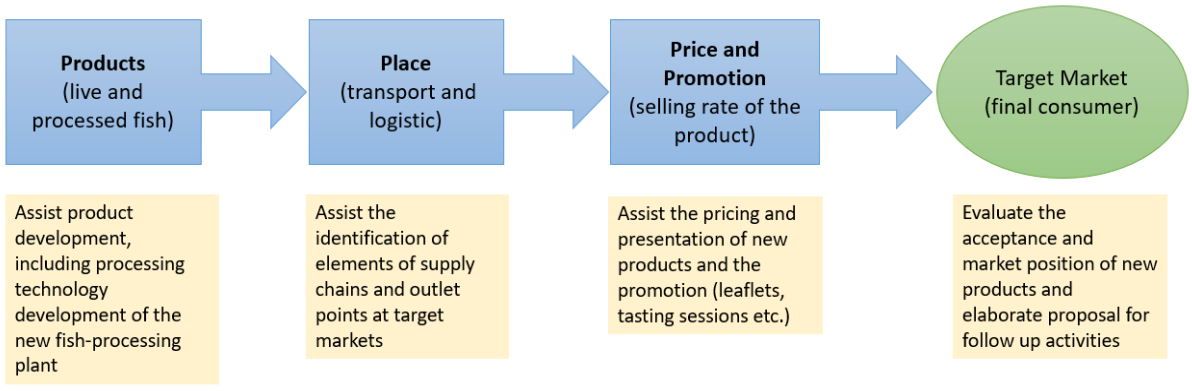


Figure 2: Simplified flow chart of marketing with the 4P

Smooth functioning of value chain requires not only production technologies and related factors, it includes additional important elements such as efficient transport, market information systems and management, Product (quality fish production), Place (transport and logistics), Price, Promotion and Consumer (Figure 2). During my consultancy work I have identified that different market surveys are needed at each point of the value chain in order to evaluate and determine which elements are needed to be further developed.

I have also determined that different consumer groups need to create different value chain and different marketing concepts.

- Fish farmers (hatchery operators and grow out farmers): will have to understand how to develop the marketing, how to get easier market access, define new products based on the costumer/consumer demand and create value added products.
- Processors should be able to operate effectively their products by applying new and high standard technologies then it will lead to the sustainability and profitability both in short and long terms.
- In terms of consumer survey for the average Laotian consumer, who purchase the fish in the local market, the value chain ends with delivery and processing at the local markets for them. There is a growing number of consumers who are ready to buy more modern and processed products, which ends with the processed, packed quality fish product from fish processing plant. In both cases, it is important to examine which values are important to Lao consumers, especially for young generation (represents 18-25 ages students) and which final products of value chain they interested in more?

Accordingly, I prepared a questionnaire that is primarily focusing on the young generation (*Annex 3.*). The questionnaire will be completed and evaluated in the near future. Data analysis will be covered by experts of VAA (marketing and FCS experts.

As the final step in value chain analysis, I suggest that we have to prepare a SWOT analysis, which contains all the strength and weak points of value chain.

2. Market size fish production (WP.2., T.2.3.)

Market size fish production is a core activity in the value chain. The success of market size fish production however is largely depending on the market acceptance of the product. Taking into account the increasing of consumers' needs for high quality and healthy fish products and also environmental consciousness producers should follow Good Aquaculture Practice (GAqP) scheme and meet specific criteria of the GAqP.

2.1. Private farm visits for select farmers for market size fish production where Good Aquaculture Practice (GAqP) is applied

A delegation of 5 people; Hungarian aquaculture experts Dr. Emese Békefi Bozánné, Dr. Sándor Gorda, Mr. Gyula Kovács, and an aquaculture expert from Vitafort Agro Asia (VAA) Mr. János Szakáli and the deputy director of NAFDEC, DDG of DLF Mr. Vannaphar Tammajedy visited the candidate farms for model farm selection. In total 5 grow out fish farms were

visited in Vientiane province. During the farm visits we applied a previously made list of requirements and criteria (11 points) for the visited candidate farms. The model farm evaluations were based on this list of criteria that was jointly prepared by VAA and DLF experts.

Visit to Mr. Khamla's farm

All information, recommendations and conclusions related to the private farms are included in the reports of the two aquaculture experts (Dr. Sándor Gorda and Mr. Gyula Kovács).

As far as the role of private producers in the fish market chain is concerned, the farmers have good basic knowledge in fish farming even if there is a scope to develop their applied systems and technologies, the critical issue is the supply their product to the market. Marketing is becoming more critical as consumer's demand is changing and needs for high quality and processed fish products is increasing. Marketing channels are also changing when supermarkets will play a more important role in the future in selling fish products. Thus, small fish farmers should be prepared to meet these challenges.

Among the 11 selection criteria of the partner farmers, only one, the No. 6. "Experiences in fish production (experience in processing and/or marketing is an advantage)" is related to marketing in line with the value chain concept. Although there was no time to make in-depth study on the marketing activities of small-scale farmers, I got the impression that was also confirmed by consultations with local experts that small farmers are vulnerable in marketing. Therefore, during the implementation of the planned pilot program (farmer managed trials) should cover not only production issues but post-harvest and marketing issues as well through training and demonstration.

3. Market development (WP.2., T. 2.4.)

Market development is a complex issue, thus the consultancy included various marketing related activities that are described in the chapters below.

3.1. Market surveys

3.1.1. *Fish and fish products consumption survey*

A market survey has already been conducted in the frame of the project prepared by the DLF Division of Fisheries, Vientiane Provincial Livestock and Fisheries Section, Vern Kham Aquaculture and Fish Processing Cooperative. They prepared a questionnaire, and 300 consumers in 10 markets, 10 restaurants and 10 hotels were interviewed.

The two major findings of the survey are that fish is an important food in Laos and that fish is a traditional food that is mainly purchased from traditional markets. These are important facts that should be considered when we develop fish marketing. This survey was an important initial work however we have to make further surveys to know more about consumer preferences and its variations by consumers' groups and other factors (as I mentioned in chapter 1.).

Traditional fish markets

3.1.2. *Fish markets in Vientiane capital*

During my consultancy I tried to explore what fish and fish products are available in various markets and what market channels are used for selling fish. This exploration of course was not a scientific survey but provided basic information on fish markets in Vientiane that contributes to elaborate an overall view on present situation and future opportunities in fish marketing. This information together with systemic markets survey that has been and will be carried out in the frame of the 3rd tied aid loan program will contribute to elaborate recommendations to improve the supply of new fish products to consumers with growing health- and environment consciousness.


Fresh and processed fish are available in traditional markets

The result of my survey is illustrated by photos with some description in the *Annex 5.*

3.1.3. Market size fish production and sales by rural fish farmers

A delegation of 4 people, Dr. Sándor Gorda, Mr. Gyula Kovács aquaculture experts, Mr. János Szakáli project assistant and aquaculture expert of VAA and the deputy director of NAFDEC, DDG of DLF Mr. Vannaphar Tammajedy visited the government fish hatcheries in the target provinces and besides the evaluation of the activities and the facilities a questionnaire was also filled with the assistance of VAA experts. The experts used that questionnaire I prepared previously which contained the following eighteen questions:

Questionnaire survey in provincial fish hatcheries

1. Seed supply by provincial hatchery (%), other hatcheries (%), import (%)
2. Quantity of larvae (%) and fingerling (%) to fish farmers per season
3. Species by % (first 5 most important)
4. Purchased by middleman (%), farmer (%)
5. Supply/transport to the farm by middleman (%), farmer (%), hatchery (%)
6. Number of farms supplied with seed from the hatchery
7. Regular costumers (%)

8. Advanced contract (%)
9. Type of farms: pond (%), cages (%), rice cum fish (%) others (%)
10. Size of farm?
11. Assistance from the hatchery? If yes, what?
12. Other source of information on fish farming: other farms; organised trainings; others
13. Share of own consumption by household (%)
14. Selling fish to middleman (%) directly to market (%) restaurants (%)
15. Number of fish markets/selling points by village/region
16. Any processing? If yes, what product?
17. Trends in fish consumption?
18. Other relevant issues:

A summary table of the results of the completed questionnaires is provided in *Annex 6.*

3.2. Certification

All actors or stakeholders of the value chains should focus on competitiveness and productivity and look for and exploit multiple ways to add value once initial success. Ensure sustainability within the value chains is key important feature to cater the changing demands. Such a key feature value-added option is the processing of fish and the certification of processed fish products.

The aim of the TAL program is to develop a certification system for Laotian quality processed fish products. The "Lao-Hungarian Quality Fish" trademark can be given to products that meet the specific criteria of a standard. This standard will be elaborated soon based on our results and experiences with a similar Hungarian standard that will be adapted to Lao conditions. The outline and the special conditions for the certification system is provided in *Annex 7*.

3.3. Product development

We visited the site of the processing plant during the second week. We had a discussion about the possibilities with the Laotian experts who participated in the visit (Dr. Sisavath, Mrs Chanta, Mr. Phu, etc.). Taking into account their professional opinion as well as the results of the fish consumption survey conducted by the DLF, the following considerations can be made:

- The goal is to acquire energy-saving, simple and efficient equipment for the processing plant;
- It is recommended to qualify and produce 2 kind of fish products (one traditional: fish ball and one modern: fish fillet);
- The 2 products must be produced and placed to the market as soon as possible, after conduction experimental “manufactural” processing and;
- Developing and selling new processed products may be the future goal, taking into account the market demand.

Accordingly, we reviewed the design documents of the processing plant and made a proposal for the design of the internal layouts and the procurement of the necessary equipment. Furthermore, we proposed to reallocate the start date of the construction to an earlier date. This can be professionally supported by the fact that the first trial production of the new products should take place before the end of the project.

We discussed this issue through an online and also personal meeting to the VAA post-harvest expert and VAA leadership.

Meeting with the future operator of the fish processing plant

3.4. Market infrastructure development

Potential fish market outlets will be developed in the frame of the 3rd Hungarian tied aid loan program. During my consultancy we visited some places where potential certified, processed fish products can be sold. Our partners in fish processing are planning the establishment of new fish shops, where some fish selling activities have already been started.

Basic infrastructure, such as fish storage tank and live fish transporting truck are available at the potential sites, however additional developments are needed to improve hygienic conditions and ensure appropriate conditions for selling processed fish products, that will be certified and labelled (e.g. freezer, refrigerator).




Possible venues/shops for Lao quality fish products

The 2nd and the 3rd Hungarian tied aid loan programs contributed to the establishment of a meat shop in a central area of Vientiane. Some of the high-quality meat products are produced in the slaughterhouse and meat processing plant in Namxouang that was built in the frame of the 2nd Hungarian tied aid loan program. The shop is operated by the Lao Fresh Meats (LFM) company that is one of the partners of Vitafort Agro Asia. The shop is becoming popular especially among expatriates and this year became financially successful first time since opening. The LFM shop is a potential outlet for new fish products that will be produced in a modern fish processing plant will be built in the frame of the 3rd tied aid loan program next year.

Significant experiences have gained in the LFM shop regarding consumers preferences that can be beneficial also for the sales of fish products. One such experience is that consumers who are buying meat products are also interested in purchasing vegetables, eggs, and other ingredients thus they can buy all of their food in one place that is hygienic, HACCP certified shop. LFM therefore decided to enlarge the sales area and sell not only meats but other food items.

The LFM shop on the Samsenthai Road and a part of the wide selection of meat products.

3.5. Product promotion

During the market introduction of processed products, it is essential to carry out various promotional activities within marketing. For this purpose, we recommend the design and implementation of leaflets, which are also available in printed and electronic form. The design and elaboration of promotion materials would take place during the next consultancy work. In order to make the products known to consumers, it is also necessary to organize product demonstrations and tastings. The selection of location and organisation of such events will be done in consultation with Laotian experts.

3.6. Cooperation in market development with other project components

Considering the similarities of the value chain and the possibilities for cooperation in conducting consumer surveys, it is appropriate to cooperate in the development of the meat (cattle) and fruit (orange) value chains. In the course of expert work, co-operation has begun, but this needs to be further strengthened in the future.

Meeting in Nambak with leading experts of PAFO and DAFO


Visit to Asia cattle farm and orange farms in Nambak

4. Workshops and trainings (WP.3.)

Because of the difficulties caused by COVID-19 the aquaculture experts are preparing the online (distance learning) training materials. Practice oriented theoretical training is important part of the program so the prepared training materials are appropriate for trainers, researchers, farm managers and appropriate stakeholders. In addition to the completed online training program, we also plan to organize online workshops. Outline of the training program is shown in *Annex 8*.

5. Other activities

Agriculture R&D and training cooperation between Hungarian and Lao institutions

As Deputy Director of the Research Centre for Fisheries and Aquaculture (HAKI) of the Hungarian University of Agriculture and Life Sciences (MATE) I contributed to the strengthening and development of R&D and training cooperation between Hungarian and Lao institutions through the involvement in the preparation of MoUs (with NAFRI and NUoL) and initial discussions with leaders of competent Lao institutions namely the National Agriculture and Forestry Research Institute (NAFRI).

Aquaculture and fisheries are included in the cooperation areas with NAFRI and NUoL, however further efforts are needed to identify R&D programs of mutual interest and elaborate specific work programs. There is traditional partnership between HAKI MATE and LARReC NAFRI, however we believe that there is a good opportunity in the collaboration between HAKI AKI-MATE and NAFDEC MAF DLF. Based on preliminary discussions between Hungarian and Lao experts a draft MoU has been elaborated between HAKI and NAFDEC that can be finalized and signed in the near future during the visit of the Director of HAKI to Laos.

The main conclusion and recommendation about the collaboration and memorandum of understanding are available at the report of Dr. László Váradi.

Participants of the meeting in NAFRI

VI. Irregularities if any:

Despite the restriction and difficulties caused by the Covid pandemic I was able to complete my mission thanks to the organization of VAA local staff and also the cooperation of Lao experts.

VII. Comments to the Project Management if any:

There is a need to bring forward the implementation of the fish processing plant, as this will largely determine the market access of newly developed products.

It is proposed to prepare the 2 selected processed fish products even before the start of the operation of the processing plant by “manufactural way” that may be preliminary certified and marketed.

It is necessary to finalize the certification system of the quality fish products. Collaboration between Hungarian marketing and FCS experts and Laotian experts is essential in the future.

There is a need to develop a common concept for the cooperation of aquaculture experts on GAqP, as requested by the Laotian side.

VIII. Persons met:

Vientiane

- **VAA local staff**: Dr. István Lénárt project manager; Mr. János Szakali, project assistant; Mr. Sipho, office assistant; Ms. Mong, secretary.
- **DG of VAA and VAA experts:** Dr. László Váradi DG of VAA, Mr. Istvan Harsvölgyi, post-harvest expert; Dr. Sandor Gorda, fish breeding expert; Mr. Gyula Kovács, aquaculture expert; Mr. András Penczi, laboratory expert.

- **Advisers**: Dr. Phouangparisak Pravongviengkham; Dr. Somphanh Chanpengxay, Mr. Anonh K.
- **Department of Livestock and Fisheries (DLF):** Dr. Sithong Phiphakhavong, DDG; Dr. Kaviphone Phouthavong, DDG; Dr. Panthavong, DDG; Mr. Vannaphar Tammajedy, DDG; Mr. Akhane Phomsouvanh, Head of Fisheries Division.
- **Representatives of government institutions:**
  Dr. Chay Bounphanousay, DG of NAFRI
- **Private sector representatives:**
  ADC: Mr. Ferenc Lévai, managing director
  Lao Fresh Meat Co.: Mr. Serge Selbe, manager
  Quality Tilapia Fishfarm: Dr. Sisavath, Mrs. Chanta

Luangprabang

- **PAFO:** Leading staff of PAFO
- **Pak Pa Slaughterhouse**: Mr. Sheng, manager
- **Vernkham Cooperatives**: head and staff
- **Aura Co.:** Mr. Souriya, Financial Adviser.
- **Asia Farm**: Mr. Pui Sansavanh
- **Lion Brand Roof Tile Factory**: Mr. Khamsing Chanthavong

Nongteng: Mr. Thongkham, feed mill manager
Nambak: leaders of Nambak DAFO

IX. Attachments:

Annex 1.: Itinerary
Annex 2.: Presentation on the kick-off meeting
Annex 3.a: Questionnaire for young people in Laos (Fish and fish products consumption)_EN
Annex 3.b: Questionnaire for young people in Laos (Fish and fish products consumption)_Lao
Annex 4.: Good Aquaculture Practice (GAqP) criteria
Annex 5.: Survey on Fish markets in Vientiane capital
Annex 6.: Scheme of the "Lao-Hungarian Quality Fish" Certification
Annex 7. Lao-Hungarian Quality Fish Trademark Certification
Annex 8. Distance learning program

Szarvas, 05 10 2021

Dr. Emese Bekefi Bozanne

Itinerary
Dr. Emese Bekefi
between 1st of August and 12th of September 2021

Date	Program
1 August	Arrival to Vientiane
Between 1-15 August 2021 Quarantine in Chantapanya Hotel Daily online meetings with aquaculture experts between August 2-14	
15 August	Release from quarantine
16 August	Kick off meeting of the Aquaculture component of the 3rd Hungarian Tied Aid Loan Program
17 August	Visiting Namxuang (NAFDEC)
18 August	Visiting Nongteng (LARReC, Feed mill)
19 August	Visiting Namhoum (ADC)
20 August	Discussion in NAFRI with Dr. Chai Preparing questionnaire for *Market size fish production and sales by rural fish farmers*
21 August	Vientiane
22 August	Vientiane
23 August	Identify source of information on VCA, discussions, visit farms and markets
24 August	Visiting the place of fish processing plant Meeting with Dr. Sisavath
25 August	Discussions on quality fish certification
26 August	Discussion with post-harvest expert Online meeting with NEBIH experts
27 August	Discussions at NAFRI and NUoL on MATE collaboration
28 August	Vientiane
29 August	Vientiane
30 August	Preparing questionnaire for fish consumption trends in young generation
31 August	Discussions on marketing issues and certification
1 September	Visiting private farms
2 September	Travel from Vientiane to Luang Prabang Visit Mr. Seng's pig slaughterhouse and the site of the cattle slaughterhouse in Pak Pa, Discussion with Mr. Seng and PAFO leading experts
3 September	Visit Nambak, discussion with representatives of PAFO and DAFO, Aura Co. and local businesspeople, visit the feed mill, site of the orange processing plant, potential sites of cattle farming development and orange plantations
4 September	Discussion with Dr. PhouangParisak
5 September	Luang Prabang
6 September	Travel from Luang Prabang to Vientiane, discussion with VAA aquaculture experts

7 September	Consultation with VAA aquaculture experts and post-harvest expert
8 September	Working in DLF, discussion with Dr. Akhane on GAqP and Fisheries Law
9 September	Finalize the fish consumption questionnaire for young generation Working on training material
10 September	VAA-DLF 3rd Hungarian tied aid loan project Mid Term Review Meeting Signing of the Final Taking Over Certificate of the 2nd Hungarian Agriculture Tied Aid Loan Project
11 September	PCR test, preparation for travel
12 September	Departure from Vientiane

KICK OFF MEETING OF THE AQUACULTURE COMPONENT OF THE 3RD HUNGARIAN TIED AID LOAN PROGRAM
16TH AUGUST 2021, MAF DLF, Vientiane

Workplan on fish marketing

Ms. Emese Békefi, PhD

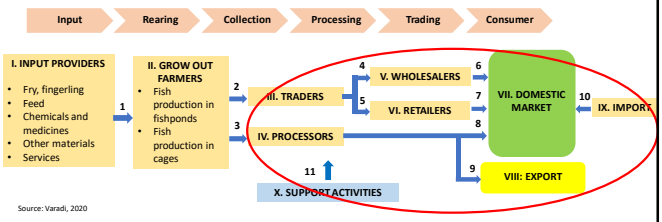
HAKI

Introduction of the expert

Name: Dr. Emese Békefi Bozánné
Workplace: MATE HAKI
Hungarian University of Agriculture and Life Sciences, Research Center for Fisheries and Aquaculture
Title: Deputy Director of the HAKI
Other positions: Vice President of HUNATiP (Hungarian Aquaculture and Innovation Platform)
Editor of the Hungarian Journal of Aquaculture and Fisheries
Field of competence: fish marketing and aquaculture economics
Work experience:
- studying fish consumption and consumers' behaviors in Hungary
- economic, environmental and social analysis of fish farming in Hungary

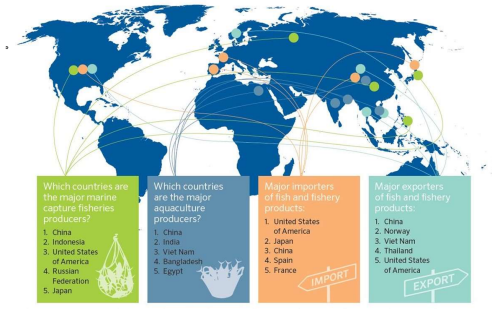
Asian work experience:
- Thailand, China and Vietnam (Involvement in aquaculture R&D projects)

Fish value chain analysis in Laos



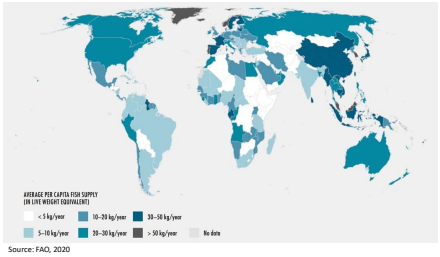
Source: Varadi, 2020

Global fish trade



Source: FAO, 2017

World consumption of fisheries and aquaculture products by continent (kg/capita/year)



Source: FAO, 2020

World fish consumption: **20.3** kg/cap/year

Asia: **24.1** kg/capita/year
North America: **22.4** kg/capita/year
Europe: **21.6** kg/capita/year
Latin America: **10.5** kg/capita/year
Africa: **9.9** kg/capita/year

Fish consumption in Laos

Lao PDR: 25,3 kg/capita/year

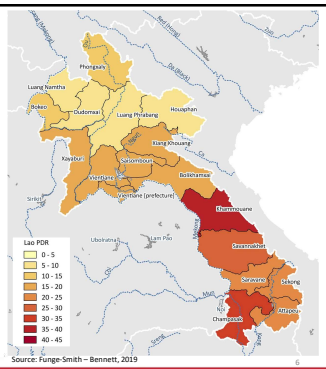
Asia: **24.1** kg/capita/year

China: **38.2** kg/capita/year
Cambodia: **42.7** kg/capita/year
Myanmar: **45.9** kg/capita/year
Thailand: **29.2** kg/capita/year
Vietnam: **37.7** kg/capita/year

LAO FOOD BALANCE SHEET Species	Supply (t) live weight	Export (t)	Import (t)
Aquatic animals	70	10	30
Cephalopods	9	15	22
Crustaceans	35	1	36
Demersal fish	30		30
Freshwater and diadromous fish	174 902		52
Marine fish	322		322
Molluscs	0		0
Pelagic fish	350		350
Total	175 718	26	842

Population in 2017: 6953030

Source: FAO FistatPlusl Food Balance Sheet, 2017

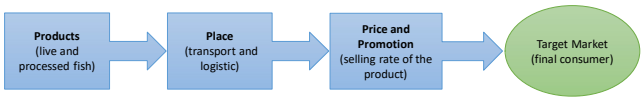


Source: Funge-Smith – Bennett, 2019

Summary of consultany work in fish marketing in the frame of the Hungarian-Lao Tied Aid Loan program

- Elaborate a **fish product development program** taking into account the results of the survey on consumers' preferences.
- Elaborate a **fish marketing strategy** with special regards to the promotion of local fish products.
- Assist the elaboration of **"Lao-Hungarian Quality Fish" certification system**.
- Identification of promising horizontal fish integrations in target provinces and collect data and information for the **elaboration of specific fish value chain models.**
- Evaluate the opportunities in **aquaculture R&D and training programs** between MATE HAKI and Lao institutions (LARReC, NAFDEC and NUoL).
- Evaluate the **aquaculture extension programs** in the target provinces in collaboration with experts in fish genetics and fish propagation and elaborate proposal for the improvement of the extension services.
- Assist the elaboration of **distance learning program** in aquaculture (including visual materials), through consultation with relevant Lao partners and collection of data and information

Value chain and concepts of marketing – 4Ps



Products	Place	Price and Promotion	Target Market
Assist product development, including processing technology development of the new fish-processing plant	Assist the identification of elements of supply chains and outlet points at target markets	Assist the pricing and presentation of new products and the promotion (leaflets, tasting sessions etc.)	Evaluate the acceptance and market position of new products and elaborate proposal for follow up activities

Fish consumption and consumers' behaviour in Laos

Fish market study prepared by the DLF Division of Fisheries, Vientiane Provincial Livestock and Fisheries Section, Vern Kham Aquaculture and Fish Processing Cooperative.

300 consumers in 10 markets, 10 restaurants and 10 hotels were interviewed.

Main findings:

Fish is an important food in Laos: 58,2% of the respondents eat fish several times a week

Fish is traditional food:
- 65% of the respondents like to buy whole fresh fish and prepare at home
- Fish sauce (97,2%), fermented fish sauce (94,8%) are the most popular products (however fish fillet is also popular (85,4%)
- 70% of the respondents buy processed fish products in traditional markets, 35% never go to supermarkets
- Respondents prefer to by Lao fish products (100%)

Source: Division of Fisheries DLF, 2020

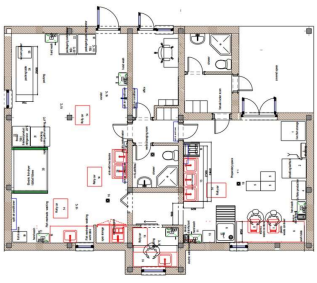
Further surveys on fish consumption in Laos

The research work will be based on questionnaire survey and deep interviews with different elements of the value chain. We have to make further surveys to know more about consumer preferences.

Objectives are as follows:

- distinction of consumer preferences,
- assessment of the parameters of domestic fish consumption at regional level,
- determination of the features of domestic fish products supply,
- role of imported and exported fish products in domestic consumption.

Establishment model fish processing plant



Floor plan of the plant (120 m²)

ລູກຊິ້ນ ປາ Fish ball

Source: Lenart, 2020

ປາ ຟີ ເລ Fish fillet

Elements of quality fish certificate system

„LAO – HUNGARIAN QUALITY FISH" certification system

- Basic definitions and general conditions
- Requirements for fresh fish (whole fish, fish slice, fillet)
- Sensory requirements

- Optional criteria items
  - Process of fish production and processing
  - Technological processes
  - The process of fish rearing
  - Sustainability

Outputs and outcomes

- Fish marketing strategy with special regards to the promotion of local fish products
- "Lao-Hungarian Quality Fish" certification system
- New and certified fish products
- Specific fish value chain model
- Distance learning program in aquaculture economy and marketing (including visual materials).

- Satisfy consumer's demand for high quality and safe fish products
- Contribute to the increase of healthy and nutritious fish consumption
- Contribute to sustainable aquaculture development in Laos
- Contribute to the improvement of rural livelihood of stakeholders along the value chain

Thanks for your attention!
ຂອບໃຈ!

Emese Békefi
bekefi.emese@akvapark.hu

QUESTIONNAIRE for young people in Laos

Fish and fish products consumption

(It takes only 10 minutes!)

1.) Please, tell us about your preferences about fish. Pick the answer that fits best.

□ I like fish very much
□ I like it, but not my favourite
□ I eat it, but nothing special
□ I avoid eating fish if I can
□ I don't like fish at all

2.) Please, tell us about your fish consumption habits. Pick the answer that fits best.

□ I eat fish every day
□ I eat fish several times a week
□ I eat fish about once a week
□ I eat fish only occasionally
□ I never eat fish

3.) If you eat fish, at least once in a while, in which form do you prefer? Please give a grade from 1 to 5 according to your preference. 1 means: I don't like it at all; 5 means: This is my favourite dish.

Fish soup	①	②	③	④	⑤
Fried fish	①	②	③	④	⑤
Dried fish	①	②	③	④	⑤
Fermented fish	①	②	③	④	⑤
Others:…….	①	②	③	④	⑤

4.) Which way the fish gets to your plate? Please give a grade from 1 to 5 according to the frequency. 1 means: I never get fish meals this way; 5 means: I always get fish meals this way.

I get fish at my school canteen	①	②	③	④	⑤
I buy it from a street vendor	①	②	③	④	⑤
I buy it in a restaurant	①	②	③	④	⑤
I order it on the internet or phone	①	②	③	④	⑤
I cook it at home	①	②	③	④	⑤
Someone else cooks it at home	①	②	③	④	⑤

5.) If you or someone else cook fish at home, how do you get the raw material? Please give a grade from 1 to 5 according to the frequency. 1 means: We never get fish this way; 5 means: We always get fish this way.

We catch it in a river or pond	①	②	③	④	⑤
We get it from a friend or relative for free	①	②	③	④	⑤
We buy it from a fisherman	①	②	③	④	⑤
We buy it from a street vendor	①	②	③	④	⑤
We buy it in a market	①	②	③	④	⑤
We buy it in a supermarket or similar shop	①	②	③	④	⑤
We order it on the internet or phone	①	②	③	④	⑤

6.) If you buy fish at a shop for cooking, what is your preference? Please give a grade from 1 to 5 according to it. 1 means: I don't prefer buying fish this way; 5 means: I always buy fish this way.

I buy living fish	①	②	③	④	⑤
I buy fresh-cut whole fish uncooled	①	②	③	④	⑤
I buy fresh cut whole fish on ice or from refrigerator	①	②	③	④	⑤
I buy frozen fish	①	②	③	④	⑤
I buy dried fish	①	②	③	④	⑤
I buy fermented fish	①	②	③	④	⑤
I buy processed (fillet) and pre-packaged fish products	①	②	③	④	⑤

7.) Do you do your general shopping in local markets? Pick the answer that fits best.

□ I usually do my shopping in local markets
□ I go to local markets a few times in a month
□ I rarely go to local markets
□ I never go to local markets

8.) Do you do your general shopping in supermarkets? Pick the answer that fits best.

□ I usually do my shopping in supermarkets
□ I go to supermarkets a few times in a month
□ I rarely go to supermarkets
□ I never go to supermarkets

9.) Do you do your general shopping on internet/mobile phone? Pick the answer that fits best.

□ I usually order food on internet or phone
□ I order food a few times in a month on internet or phone
□ I rarely order food on internet or phone
□ I never order food on internet or phone

10.) Please tell us, how important are the following aspects for you when buying fish or fish products? Please give a grade from 1 to 5 according to the importance. 1 means: Not important at all; 5 means: Very important.

Low price	① ② ③ ④ ⑤
Good flavour	① ② ③ ④ ⑤
Good quality	① ② ③ ④ ⑤
Food safety	① ② ③ ④ ⑤
Nice packaging	① ② ③ ④ ⑤
Fitting in a healthy diet	① ② ③ ④ ⑤
Environment-friendly production	① ② ③ ④ ⑤
Certified product (quality fish logo)	① ② ③ ④ ⑤
Convenient to use at home (pre-processed or processed)	① ② ③ ④ ⑤

11.) We are thinking of developing new Lao products from fish. We are interested in your opinion about them.

THIS PRODUCT IS A TRADITIONAL FISH BALL.

Would you like to taste it?

□ Yes, it must be very good
□ Yes, I am interested
□ I would give it a chance, but not too interested
□ I am not interested, I prefer not to taste
□ I won't try it by any means

If it would be available at the shops near you, would you buy it?

□ I would buy it for a reasonable price
□ I don't think I would buy it
□ I will never buy it

What is the reasonable price for this product for you?
Reasonable price:
_____ KIP/250 g
_____ KIP/500 g
_____ KIP/1000 g

THIS PRODUCT IS A MODERN AND CONVENIENT FISH FILLET.

Would you like to taste it?
□ Yes, it must be very good
□ Yes, I am interested
□ I would give it a chance, but not too interested
□ I am not interested, I prefer not to taste
□ I won't try it by any means

If it would be available at the shops near you, would you buy it?
□ I would buy it for a reasonable price
□ I don't think I would buy it
□ I will never buy it

What is the reasonable price for this product (500g) for you?
Reasonable price:
□10 000 – 15 000 KIP/500g
□15 000 – 20 000 KIP/500g
□20 000 – 25 000 KIP/500g

12.) Do you have any information on local fish and fish product?
□ No information available
□ Very little information available
□ Informal information through friends and family members
□ Others

How often do you eat the listed meat types? Please rate it!
1 means: rarely; 5 means: very often.

Meat type	Frequency of consumption	I never eat it
Poultry	① ② ③ ④ ⑤	❑
Pork	① ② ③ ④ ⑤	❑
Beef	① ② ③ ④ ⑤	❑
Fish from fresh water	① ② ③ ④ ⑤	❑
Fish from the sea	① ② ③ ④ ⑤	❑
Other sea fruits (crab, mussel, octopus)	① ② ③ ④ ⑤	❑

Does fish from fresh water has any better properties than fish from the sea? Please explain if you think so: _____

Does fish from the sea has any better properties than fish from fresh water? Please explain if you think so: _____

13.) Now we list some countries, from where fish can come from. Please rate the according to your preference from 1 to 5. 1 means: I don't prefer that at all; 5 means: I prefer it very much.

Fish product from Laos	①	②	③	④	⑤
Fish product from Thailand	①	②	③	④	⑤
Fish product from Vietnam	①	②	③	④	⑤
Fish product from Cambodia	①	②	③	④	⑤
Fish product from China	①	②	③	④	⑤
Fish product from the United States of America	①	②	③	④	⑤
Fish product from the European Union	①	②	③	④	⑤
I do not care where it comes from	①	②	③	④	⑤

14.) What kind of promotion is efficient to encourage fish consumption? Please rate them according to your preference from 1 to 5. 1 means: I don't prefer that at all; 5 means: I prefer it very much.

Street signs/posters	①	②	③	④	⑤
Instagram	①	②	③	④	⑤
Tik-Tok	①	②	③	④	⑤
Twitter	①	②	③	④	⑤
Facebook	①	②	③	④	⑤
Other(s):……..	①	②	③	④	⑤

15.) How health-conscious do you think you are?

□ Not health-conscious at all
□ Mostly not health-conscious
□ Averagely health conscious
□ Mostly health-conscious
□ Very health-conscious

16.) How environmentally-conscious (eco-conscious) do you think you are?

□ Not environmentally conscious at all
□ Mostly not environmentally conscious
□ Averagely environmentally conscious
□ Mostly environmentally conscious
□ Very environmentally conscious

17.) Gender:

□ Female
□ Male

18.) Age: _____ years

19.) Living place:

Province: _____
District: _____
Village: _____

20.) Type of settlement:

□ City
□ Close to city
□ Village

21.) What is the highest level of education you have completed?

□ Finished Secondary School
□ Finished Vocational-Technical School
□ Finished Bachelor Degree
□ Finished Master Degree
□ Finished Doctorate (PhD)

22.) What can you say about the income of your family?

□ We make a good living and can save money as well
□ We make a proper living but cannot save too much money
□ We barely cover living costs and we cannot save money
□ Our income is sometimes not enough for the costs of living
□ We regularly have problems with the daily costs of living

23.) The type of the household that you live in:

□ One-person household
□ Two-person household
□ 3-4 person household
□ 5 or more person household

24.) Who pay for your expenditure (school, food, living) per month?

 My family pays all my expenses
 My family and I pay for my expenses together
 I myself pay all my expenses

25.) What is your expenditure per month?

My expenditure: about…….. KIP

Thank you very much for your cooperation!

ແບບສອບຖາມ
ສຳຫຼັບໄວໜຸ່ມໃນລາວ

ການບໍລິໂພກປາ ແລະ ຜະລິດຕະພັນຈາກປາ
(ໃຊ້ເວລາປະມານ 10 ນາທີ)

1.) ກະລຸນາບອກພວກເຮົາກ່ຽວກັບປາທີ່ທ່ານມັກ. ເລືອກຄຳຕອບທີ່ເໝາະທີ່ສຸດກັບທ່ານ.
□ ຂ້ອຍມັກກິນປາຫຼາຍທີ່ສຸດ
□ ຂ້ອຍມັກ, ແຕ່ບໍ່ແມ່ນອາຫານທີ່ມັກທີ່ສຸດ
□ ຂ້ອຍກິນ, ແຕ່ກໍ່ບໍ່ມີຫຍັງພິເສດ
□ ຖ້າເລືອກໄດ້, ຂ້ອຍຈະເລືອກບໍ່ກິນ
□ ຂ້ອຍບໍ່ມັກກິນປາເລີຍ

2.) ກະລຸນາບອກພວກເຮົາ ກ່ຽວກັບພຶດຕິກຳການກິນປາຂອງໂຕທ່ານ.
□ ຂ້ອຍກິນປາທຸກໆມື້
□ ຂ້ອຍກິນປາຫຼາຍຄັ້ງຕໍ່ອາທິດ
□ ຂ້ອຍກິນປາ ປະມານອາທິດລະຄັ້ງ
□ ຂ້ອຍກິນປາບາງໂອກາດ
□ ຂ້ອຍບໍ່ເຄີຍກິນປາເລີຍ

3.) ຖ້າຫາກທ່ານກິນປາ, ຢ່າງໜ້ອຍຄັ້ງໜຶ່ງໄລຍະຜ່ານມາ. ອາຫານຈາກປາປະເພດໃດທ່ານມັກ? ກະລຸນາໃຫ້ຄະແນນຕັ້ງແຕ່ 1 ຖຶງ 5 ຕາມຄວາມມັກຂອງທ່ານ. 1 ບໍ່ມັກເລີຍ; 5 ມັນເປັນອາຫານທີ່ຂ້ອຍມັກທີ່ສຸດ

ແກງປາ	①	②	③	④	⑤
ຈືນປາ	①	②	③	④	⑤
ປາແຫ້ງ	①	②	③	④	⑤
ປາສົ້ມ	①	②	③	④	⑤
ແລະ ອື່ນໆ:……	①	②	③	④	⑤

4.) ອາຫານຈາກປາໄປຮອດຄາບເຂົ້າອາຫານຂອງທ່ານແນວໃດ? ກະລຸນາໃຫ້ຄະແນນຈາກ 1 ຖຶງ 5. 1 ຄາບເຂົ້າຂອງຂ້ອຍບໍ່ມີປາ; 5 ຄາບເຂົ້າຂອງຂ້ອຍມີປາຕະຫຼອດ

ຂ້ອຍກິນປາຈາກຫ້ອງອາຫານຂອງໂຮງຮຽນ	①	②	③	④	⑤
ຂ້ອຍຊື້ມາຈາກຄົນຂາຍແຄມທາງ	①	②	③	④	⑤
ຂ້ອຍຊື້ມາຈາກຮ້ານອາຫານ	①	②	③	④	⑤
ຂ້ອຍສັ່ງຜ່ານອິນເຕີເນັດ ຫຼື ໂທລະສັບ	①	②	③	④	⑤
ຂ້ອຍແຕ່ງກິນເອງຢູ່ບ້ານ	①	②	③	④	⑤

ມີຄົນແຕ່ງກິນໃຫ້ຂ້ອຍຢູ່ບ້ານ	①	②	③	④	⑤

5.) ຖ້າທ່ານມີຄົນແຕ່ງອາຫານຈາກປາຢູ່ບ້ານ, ທ່ານໄດ້ວັດຖຸດິບມາຈາກໃສ? ກະລຸນາໃຫ້ຄະແນນ 1 **ຫາ** 5 **ຕາມຄວາມຖີ່.** 1: **ໝາຍເຖິງ: ພວກເຮົາບໍ່ເຄີຍໄດ້ປາມາຈາກແຫຼ່ງນີ້**; **ຫຼື** 5 **ພວກເຮົາໄດ້ປາຈາກແຫຼ່ງນີ້ຕະຫຼອດເວລາ**.

ພວກເຮົາຫາປາຈາກແມ່ນ້ຳ ຫຼື ໜອງ	①	②	③	④	⑤
ພວກເຮົາໄດ້ຈາກເພື່ອນ້ອງ ຫຼື ໝູ່ເພື່ອນ	①	②	③	④	⑤
ພວກເຮົາຊື້ຈາກຄົນຫາປາ	①	②	③	④	⑤
ພວກເຮົາຊື້ຈາກແມ່ຄ້າຂາຍແຄມທາງ	①	②	③	④	⑤
ພວກເຮົາຊື້ຈາກຕະຫຼາດສົດ	①	②	③	④	⑤
ພວກເຮົາໄດ້ຊື້ຈາກຮ້ານຂາຍປາສະເພາະ ຫຼື ຮ້ານຊັບພະສິນຄ້າ	①	②	③	④	⑤
ພວກເຮົາໄດ້ສັ່ງຊື້ທາງອິນເຕີເນັດ ຫຼື ທາງໂທລະສັບ	①	②	③	④	⑤

6.) ຖ້າຫາກທ່ານຊື້ປາມາຈາກຮ້ານເພື່ອແຕ່ງກິນ, ທ່ານມັກປະເພດໃດ? ກະລຸນາໃຫ້ຄະແນນຕາມຄວາມເປັນຈິງ. 1: **ຂ້ອຍບໍ່ຢາກຊື້ປາແບບນີ້**; 5: **ຂ້ອຍຊື້ປາແບບນີ້ຕະຫຼອດ**.

ຂ້ອຍຊື້ປາສົດ (ຍັງບໍ່ຕາຍ)	①	②	③	④	⑤
ຂ້ອຍຊື້ປາຄົວແລ້ວເປັນໂຕ ບໍ່ແລ່ນ້ຳກ້ອນ	①	②	③	④	⑤
ຂ້ອຍຊື້ປາແລ່ນ້ຳກ້ອນທີ່ຄົວແລ້ວ	①	②	③	④	⑤
ຂ້ອຍຊື້ປາແລ່ແຂ	①	②	③	④	⑤
ຂ້ອຍຊື້ປາແຫ້ງ	①	②	③	④	⑤
ຂ້ອຍຊື້ປາສົ້ມ	①	②	③	④	⑤
ຂ້ອຍຊື້ປາແປຮູບ (ຊີ້ນປາ) ແລະ ຜະລິດຕະພັນປາມີການຫຸ້ມຫໍ່	①	②	③	④	⑤

7.) ທ່ານມະດາທ່ານຊື້ປາຈາກຕະຫຼາດທ້ອງຖິ່ນຂອງທ່ານບໍ່? ເລືອກຄຳຕອບທີ່ເໝາະສົມທີ່ສຸດ.

□ ຂ້ອຍຊື້ເຄື່ອງຢູ່ຕະຫຼາດທ້ອງຖິ່ນເປັນປົກກະຕິ
□ ຊື້ເຄື່ອງຢູ່ຕະຫຼາດທ້ອງຖິ່ນ 2-3 ເທື່ອ ຕໍ່ເດືອນ
□ ຂ້ອຍຊື້ເຄື່ອງຢູ່ຕະຫຼາດທ້ອງຖິ່ນດົນໆ ເທື່ອໜຶ່ງ
□ ຂ້ອຍບໍ່ເຄີຍຊື້ເຄື່ອງຢູ່ຕະຫຼາດທ້ອງຖິ່ນ

8.) ທ່ານຊື້ເຄື່ອງຢູ່ຫ້າງຊັບພະສິນຄ້າປົກກະຕິບໍ່? ເລືອກຄຳຕອບທີ່ເໝາະສົມທີ່ສຸດ.

□ ຂ້ອຍຊື້ເຄື່ອງຢູ່ຫ້າງຊັບພະສິນຄ້າປົກກະຕິ
□ ຂ້ອຍຊື້ເຄື່ອງຢູ່ຫ້າງຊັບພະສິນຄ້າ 2-3 ເທື່ອຕໍ່ເດືອນ
□ ຂ້ອຍຊື້ເຄື່ອງຢູ່ຫ້າງຊັບພະສິນຄ້າດົນໆ ເທື່ອໜຶ່ງ
□ ຂ້ອຍບໍ່ເຄີຍຊື້ເຄື່ອງຢູ່ຫ້າງຊັບພະສິນຄ້າ

9.) ທ່ານຊື້ເຄື່ອງຜ່ານອິນເຕີເນັດ ຫຼື ໂທລະສັບມືຖື ປົກກະຕິບໍ່?

□ ຂ້ອຍສັ່ງອາຫານຜ່ານອິນເຕີເນັດ ແລະ ໂທລະສັບເປັນປະຈຳ
□ ຂ້ອຍສັ່ງອາຫານຜ່ານອິນເຕີເນັດ ແລະ ໂທລະສັບ 2-3 ເທື່ອຕໍ່ເດືອນ
□ ຂ້ອຍສັ່ງອາຫານຜ່ານອິນເຕີເນັດ ແລະ ໂທລະສັບ ດົນໆເທື່ອໜຶ່ງ
□ ຂ້ອຍບໍ່ເຄີຍສັ່ງອາຫານຜ່ານອິນເຕີເນັດ ແລະ ໂທລະສັບ

10.) ກະລຸນາບອກພວກເຮົາວ່າສິ່ງສຳຄັນຕໍ່ໄປນີ້ ສຳຫຼັບທ່ານໃນການຊື້ປາ ຫຼື ຜະລິດຕະພັນຈາກປາ ມີຄວາມສຳຄັນແນວໃດ?
ກະລຸນາໃຫ້ຄະແນນຈາກ 1-5 ອີງຕາມຄວາມສຳຄັນ. 1: ບໍ່ສຳຄັນເລີຍ; 5: ສຳຄັນຫຼາຍ.

ລາຄາຖືກ	①	②	③	④	⑤
ລົດຊາດດີ	①	②	③	④	⑤
ຄຸນນະພາບດີ	①	②	③	④	⑤
ອາຫານປອດໄພ (ສະອາດດີ)	①	②	③	④	⑤
ການຫຸ້ມຫໍ່ງາມດີ	①	②	③	④	⑤
ເປັນອາຫານທີ່ດີຕໍ່ສຸຂະພາບ	①	②	③	④	⑤
ການຜະລິດເປັນມິດຕໍ່ສິ່ງແວດລ້ອມ	①	②	③	④	⑤
ຜະລິດຕະພັນມີການຢັ້ງຢືນ (ໂລໂກຄຸນນະພາບ)	①	②	③	④	⑤
ສະດວກນຳໃຊ້ຢູ່ບ້ານ (ກ່ອນແປຮູບ-ແປຮູບແລ້ວ)	①	②	③	④	⑤

11.) ພວກເຮົາກຳລັງພັດທະນາຜະລິດຕະພັນຈາກປາຂອງລາວ. ພວກເຮົາສົນໃຈກ່ຽວກັບຂໍ້ຄິດເຫັນຂອງທ່ານ.

ຜະລິດຕະພັນນີ້ແມ່ນລູກຊີ້ນປາພື້ນເມືອງ.

ທ່ານຕ້ອງການຢາກລອງຊີມບໍ່?
☐ ແມ່ນແລ້ວ, ມັນຄືຈະແຊບຫຼາຍ
☐ ແມ່ນແລ້ວ, ຂ້ອຍມັກ
☐ ຂ້ອຍຈະລອງຊີມເບິ່ງ, ແຕ່ບໍ່ມັກປານໃດ
☐ ຂ້ອຍບໍ່ມັກ, ແລະ ບໍ່ຄິດຢາກລອງ
☐ ຂ້ອຍຈະບໍ່ລອງກິນ ບໍ່ວ່າຈະດ້ວຍການປຸງແຕ່ງແນວໃດ

ຖ້າວ່າມີຈຳໜ່າຍໃກ້ທີ່ພັກອາໃສເຈົ້າ, ເຈົ້າຈະຊື້ບໍ່?
☐ ຂ້ອຍຈະຊື້ຫາກລາຄາສົມເຫດສົມຜົນ
☐ ຂ້ອຍຄິດວ່າ ຂ້ອຍຄົງບໍ່ຊື້
☐ ຂ້ອຍຈະບໍ່ຊື້ເລີຍ

ລາຄາທີ່ເໝາະສົມ ສຳຫຼັບການຊື້ຂອງທ່ານແມ່ນເທົ່າໃດ?
ລາຄາທີ່ສົມເຫດ ສົມຜົນ:
_____ ກີບ/250 ກຣາມ
_____ ກີບ/500 ກຣາມ
_____ ກີບ/1000 ກຣາມ

ຜະລິດຕະພັນຊີ້ນປາ ທີ່ສະອາດ ແລະ ທັນສະໄໝ.

ທ່ານຕ້ອງການຢາກລອງບໍ່?
□ ແມ່ນແລ້ວ, ຊີ້ນປາຕ້ອງດີແທ້ໆ
□ ແມ່ນແລ້ວ, ຂ້ອຍສົນໃຈ
□ ຂ້ອຍອາດລອງ, ແຕ່ຄົງບໍ່ຄ່ອຍມັກ
□ ຂ້ອຍບໍ່ມັກ, ແລະ ຄົງບໍ່ສົນໃຈທີ່ຈະລອງ
□ ຂ້ອຍບໍ່ຢາກລອງ ບໍ່ວ່າຈະໃນຮູບແບບໃດ

ຖ້າວ່າມີຈຳໜ່າຍໃກ້ທີ່ພັກອາໃສເຈົ້າ, ເຈົ້າຈະຊື້ບໍ່?
□ ຂ້ອຍຈະຊື້ຫາກລາຄາສົມເຫດສົມຜົນ
□ ຂ້ອຍຄິດວ່າ ຂ້ອຍຄົງບໍ່ຊື້
□ ຂ້ອຍຈະບໍ່ຊື້ແນ່ນອນ

ລາຄາທີ່ເໝາະສົມ ສຳຫຼັບທ່ານທີ່ຈະຊື້ປາ ຈຳນວນ (500 ກຣາມ)?
ລາຄາທີ່ສົມເຫດ ສົມຜົນ:
□ 10 000 – 15 000 ກີບ/500 ກຣາມ
□ 15 000 – 20 000 ກີບ/500 ກຣາມ
□ 20 000 – 25 000 ກີບ/500 ກຣາມ

12.) ທ່ານມີຂໍ້ມູນກ່ຽວກັບຜະລິດຕະພັນປາ ຫຼື ສະຖານທີ່ຂາຍປາບໍ່?
□ ບໍ່ສາມາດສະໜອງຂໍ້ມູນໄດ້
□ ຂໍ້ມູນມີ ແຕ່ບໍ່ຫຼາຍ
□ ໄດ້ຂໍ້ມູນຈາກທາງຄອບຄົວ ແລະ ໝູ່ເພື່ອນ ໂດຍບໍ່ເປັນທາງການ
□ ແລະ ແຫຼ່ງອື່ນໆ

ທ່ານກິນອາຫານປະເພດຊີ້ນຕາມຕາຕະລາງລຸ່ມນີ້ເລື້ອຍປານໃດ? ກະລຸນາໃຫ້ຄະແນນ! 1: ບໍ່ຄ່ອຍກິນ; 5: ກິນເລື້ອຍໆ.

ປະເພດຊີ້ນ	ຄວາມຖີ່ການບໍລິໂພກ					ບໍ່ເຄີຍບໍລິໂພກ
ຊີ້ນສັດປີກ	①	②	③	④	⑤	❑
ຊີ້ນໝູ	①	②	③	④	⑤	❑
ຊີ້ນງົວ	①	②	③	④	⑤	❑
ຊີ້ນປານ້ຳຈືດ	①	②	③	④	⑤	❑
ຊີ້ນປາທະເລ	①	②	③	④	⑤	❑
ອາຫານທະເລປະເພດອື່ນ (ປູ, ຫອຍ, ປາໝຶກ)	①	②	③	④	⑤	❑

ທ່ານຄິດວ່າປານ້ຳຈືດມີຄຸນສົມບັດດີກວ່າປາທະເລບໍ່? ຖ້າແມ່ນກະລຸນາອະທິບາຍຄວາມເຫັນຂອງທ່ານ:
_____

ຄິດວ່າປາທະເລມີຄຸນສົມບັດດີກວ່າປານ້ຳຈືດບໍ? ຖ້າແມ່ນກະລຸນາອະທິບາຍຄວາມເຫັນຂອງທ່ານ:

_____

13.) ປະຈຸບັນພວກເຮົາບອກວ່າປາມາຈາກປະເທດໃດ. ກະລຸນາໃຫ້ຄະແນນຕາມຄວາມມັກຂອງທ່ານ ຈາກ 1-5; 1: **ບໍ່ຕ້ອງການເລີຍ**; 5: **ຂ້ອຍຕ້ອງການຫຼາຍ**

ຜະລິດຕະພັນປາຈາກລາວ	①	②	③	④	⑤
ຜະລິດຕະພັນປາຈາກໄທ	①	②	③	④	⑤
ຜະລິດຕະພັນປາຈາກຫວຽດນາມ	①	②	③	④	⑤
ຜະລິດຕະພັນປາຈາກກຳປູເຈຍ	①	②	③	④	⑤
ຜະລິດຕະພັນປາຈາກຈີນ	①	②	③	④	⑤
ຜະລິດຕະພັນປາຈາກສະຫະລັດອາເມລິກາ	①	②	③	④	⑤
ຜະລິດຕະພັນປາຈາກກຸ່ມສະຫະພາບເອີລົບ	①	②	③	④	⑤
ຂ້ອຍບໍ່ສົນໃຈວ່າມາຈາກໃສ	①	②	③	④	⑤

14.) ທ່ານຄິດວ່າການສົ່ງເສີມແບບໃດທີ່ມີປະສິດທິພາບ ໃນການບໍລິໂພກປາ? ກະລຸນາໃຫ້ຄະແນນຈາກ 1 **ຖ້ຶງ** 5. 1: **ຂ້ອຍບໍ່ມັກເລີຍ**; 5: **ຂ້ອຍມັກມັນຫຼາຍ.**

ປ້າຍຕາມເສັ້ນທາງ/ໂປດສະເຕີ	①	②	③	④	⑤
Instagram	①	②	③	④	⑤
Tik-Tok	①	②	③	④	⑤
Twitter	①	②	③	④	⑤
Facebook	①	②	③	④	⑤
ແລະ ອື່ນໆ:……..	①	②	③	④	⑤

15.) ທ່ານຄິດວ່າທ່ານໃສ່ໃຈເລື່ອງສຸຂະພາບໃນລະດັບໃດ?

□ ບໍ່ໃສ່ໃຈສຸຂະພາບເລີຍ
□ ບໍ່ຄ່ອຍໃສ່ໃຈສຸຂະພາບເລີຍ
□ ໃສ່ໃຈສຸຂະພາບທົ່ວໄປ
□ ໃສ່ໃຈສຸຂະພາບລ້ຳໜ້ອຍ
□ ໃສ່ໃຈສຸຂະພາບເປັນຫຼັກ

16.) ທ່ານຄິດວ່າທ່ານໃສ່ໃຈຕໍ່ສິ່ງແວດລ້ອມໃນລະດັບໃດ?

□ ບໍ່ໃສ່ໃຈຕໍ່ສິ່ງແວດລ້ອມເລີຍ
□ ບໍ່ຄ່ອຍໃສ່ໃຈຕໍ່ສິ່ງແວດລ້ອມ
□ ໃສ່ໃຈສິ່ງແວດລ້ອມແບບທຳມະດາທົ່ວໄປ
□ ໃສ່ໃຈສິ່ງແວດລ້ອມເປັນສ່ວນໃຫຍ່
□ ໃສ່ໃຈສິ່ງແວດລ້ອມເປັນຫຼັກ

_____

17.) ເພດ:
□ ຍິງ
□ ຊາຍ

18.) ອາຍຸ: _____ ປີ

19.) ທີ່ຢູ່ປະຈຸບັນ:
ແຂວງ: _____
ເມືອງ: _____
ບ້ານ: _____

20.) ລັກສະນະທີ່ພັກອາໃສ:
□ ໃນຕົວເມືອງ
□ ໃກ້ຕົວເມືອງ
□ ນອກເມືອງ

21.) ລະດັບການສຶກສາທີ່ຈົບມາ?
□ ຊັ້ນມັດທະຍົມປາຍ
□ ຊັ້ນວິຊາຊີບ
□ ຊັ້ນປະລິນຍາຕີ
□ ຊັ້ນປະລິນຍາໂທ
□ ຊັ້ນປະລິຍາເອກ

22.) ກ່ຽວກັບລາຍຮັບຂອງຄອບຄົວທ່ານ?
□ ພວກເຮົາມີອາຊີບທີ່ດີ ແລະ ມີເງິນເກັບ
□ ພວກເຮົາສາມາດລ້ຽງຊີບໄດ້ ແຕ່ບໍ່ສາມາດເກັບເງິນໄດ້
□ ຄ່າໃຊ້ຈ່າຍພວກເຮົາຫຼາຍ ແລະ ພວກເຮົາກໍ່ບໍ່ສາມາດເກັບເງິນໄດ້
□ ລາຍຮັບທີ່ໄດ້ ບາງຄັ້ງກໍ່ບໍ່ພໍໃຊ້
□ ພວກເຮົາມີບັນຫາກັບລາຍຈ່າຍ ໃນແຕ່ລະມື້

23.) ປະເພດທີ່ພັກອາໃສຂອງທ່ານ:
□ ອາໃສຢູ່ຄົນດຽວ
□ ອາໃສຢູ່ 2ຄົນ
□ ອາໃສຢູ່ຮ່ວມກັນ 3-4 ຄົນ
□ ອາໃສຢູ່ຮ່ວມກັນຫຼາຍກວ່າ 5 ຄົນ

24.) ໃຜເປັນຜູ້ຮັບຜິດຊອບຈ່າຍຄ່າ (ຮຽນ, ອາຫານ, ຄ່າກິນຢູ່) ໃນແຕ່ລະເດືອນ?
□ ພໍ່ ແມ່ ເປັນຜູ້ຮັບຜິດຊອບຄ່າໃຊ້ຈ່າຍຕ່າງໆ
□ ພໍ່ ແມ່ ແລະ ຂ້ອຍ ຮ່ວມກັນຮັບຜິດຊອບຄ່າໃຊ້ຈ່າຍຕ່າງໆ
□ ຂ້ອຍເປັນຜູ້ຮັບຜິດຊອບຄ່າໃຊ້ຈ່າຍທັງໝົດໃນເຮືອນ

25.) ຄ່າໃຊ້ຈ່າຍຕໍ່ເດືອນຂອງທ່ານປະມານເທົ່າໃດ?
ມູນຄ່າໃຊ້ຈ່າຍຂອງຂ້ອຍ: ປະມານ……..…….. ກີບ

ຂໍຂອບໃຈ ສຳຫຼັບການໃຫ້ຄວາມຮ່ວມມືຂອງທ່ານ ຕໍ່ແບບສອບຖາມນີ້!

Criteria of the Good Aquaculture Practice (GAqP)

Preliminary proposal

Theme	General and specific requirements to be checked
I. Water management	1. The fishpond must be in good ecological condition. The ecological status of the effluent should be in line with that of the receiving water. 2. Suitability of water quality for fish rearing should be checked minimum 2 times a year. 3. Water should be saved by using appropriate water management methods. 4. When the pond is filled and drained the escape of the cultured fish and the incoming of the wild fish to the pond should be prevented. 5. In the event of a significant drop in water level, replacement must be provided during the growing season. 6. Fishponds must be fully covered with water during the growing season 7. The relevant regulations must be observed during water supply and drainage.
II. Nutrient management of fishponds	1. The application of manure must comply with the relevant regulations and ensure that it is used in full by planktonic organisms. 2. Fertilizer application is not recommended, in order to achieve a natural yield, the use of organic fertilizer is recommended, the application of which is prohibited in the last month before the start of the drainage. 3. The nutrients and active substances necessary for the production of fish on the pond farm must be provided on the one hand by the natural yield formed in the ponds and on the other hand by feeds introduced from outside the system. At the pond farm level, at least 40% of all nutrient requirements should come from natural yields. 4. In order to ensure a natural yield, livestock manure may be used as well as other plant products of organic origin (eg. grass, green fodder, green manure crops, etc.) and / or mineral products. 170 kg / ha in a given year.
III. Fish rearing	1. A fishpond can be stoked with juveniles propagated and nursed in certified fish hatchery. 2. The stocking density of fishponds shall not exceed 500 kg / ha / year and shall not be less than 50 kg / ha / year for all fish species. 3. During fish farming, the pond farmer must ensure that the fish have living conditions that are appropriate to the sex and age of the given species, the physical, physiological, behavioural and good health characteristics of the animal. 4. Only feed which do not endanger animal or, indirectly, human health may be used in the feeding of fish. 5. The use of synthetic yield enhancers, hormonal agents and antibiotics as fish feed for the purpose of yield enhancement, with the exception of medical treatment, is not permitted. 6. The application of any GMO product is forbidden. 7. Feed shall be applied in such a way as to minimize the stress and to adapt to the species of fish cultivated, to their stage of development and to allow them to behave in the natural environment during feeding. 8. Overfeeding should be avoided during feeding.

	9. The farmer is obliged to ensure regular veterinary inspection of his fish stock and to organize regular fish health inspections in his own competence. 10. . In the context of animal health, the objective is to maintain a high level of natural resilience of fish stocks through the proper use of the natural aquatic environment and the production methods adapted to it. Preventive measures and treatments, such as the necessary water treatments (filtration, disinfection, plankton selection), as well as the selection of the appropriate species and strain, the maintenance of optimal animal density and feeding, and NaCl bathing are of paramount importance. 11. In the case of unexpected changes in the unusual behaviour of living organisms in aquatic ecosystems, the water quality shall be assessed and documented. 12. The fishing gear and procedures used must be such as to be gentle on the fish so that stress can be kept to a minimum. 13. Equipment in contact with fish must be moistened before fishing to avoid potential damage. 14. Any deaths of fish and birds shall be fully reported to the territorially competent organization. The disposal of dead carcasses must be fully ensured in accordance with the relevant legislation.
IV. Fish transport	1. The farmer shall ensure compliance with animal health, animal welfare and environmental standards during the transport and marketing of fish. 2. Fish may be moved from one farm to another or to natural water only under veterinary control. 3. The transport conditions and means of transport must meet the needs of the species and the transport (eg. distance, frequency) must not cause stress or physical harm or poisoning. The surface of the means of transport in contact with fish must be smooth. 4. For the transport of live fish, the dissolved oxygen content of the water is expected to be at least 5 mg / l at all times of the year. 5. Depending on the species and age of the fish, the temperature difference between the means of transport and the receiving water must be less than 2 to 5 °C. 6. In all cases, efforts shall be made to ensure that live fish are transported under starvation, in particular when intended for sale.
V. Protection of aquatic habitat and landscape	1. Where possible, biodiversity shall be ensured by keeping suitable fish species together with other aquatic plants and animals including predators and herbivores, and taking into account the species-specific needs of the fish 2. A natural plant strip shall be provided at the edge of fishponds in order to maintain biodiversity and protect the dike. 3. The natural elements that make up the landscape must be preserved, and existing trees must be preserved where possible.
VI. Farm area	1. The pond farmer shall keep the farm and its surroundings in order and waste-free in accordance with the provisions of the relevant legislation. 2. The pond farmer shall ensure that the economic roads in use are maintained in good condition and that road defects caused by rainy weather are corrected.

VII. Data and activity recording	1. An up-to-date record of the pond farmer's activities in the farm shall be kept in a pond management logbook set up for that purpose. 2. It must be ensured that the quantity and quality of feeds can be checked and documented. 3. The pond farmer shall keep a separate log of the chemicals, medicines and related activities used in his farming. 4. The pond farmer shall keep the records detailed in the veterinary and animal welfare legislation during fish farming. 5. The farmer shall keep the records and their documentation for at least 5 years.

Survey of fish markets in Vientiane capital

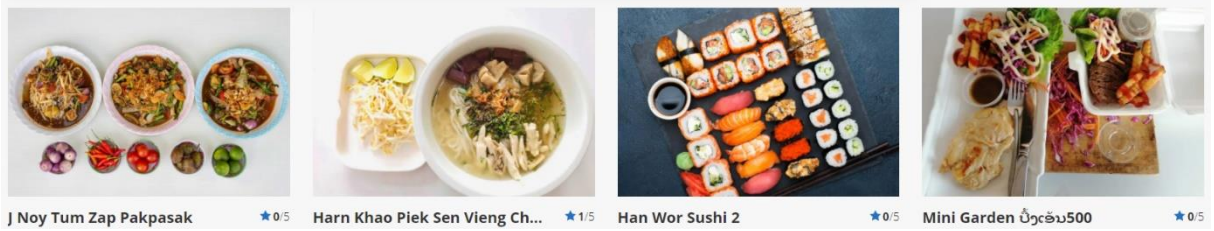
1. Street vendors


There are less and less food sellers who are carrying various foods including fish on shoulder poles and stop certain places in downtown areas to sell products. The women on the photos are selling fish from the wild and separately fish eggs.


Women with shoulder poles regularly visit some costumers in central Vientiane.

Fish stalls, usually mobile ones, are still common parts of temporary city markets (e.g. night markets) as shown on the photos. Dried seafood is a common item for sale, however fish grilled at the site is also popular.

The “Food Panda” delivery motorbike in the background of the photos indicates the changes in fish marketing.



Wide varieties of various Asian foods with fish can be ordered online through “Food Panda Lao” that is becoming popular especially during the Covid-19 epidemic.

In the photos below the operation of a grilled tilapia shop is illustrated. The shop is a simple fish selling place in the downtown area of Vientiane, where freshly grilled tilapia is sold in the morning hours. The price of the grilled tilapia is minimum two times higher than in conventional markets or restaurants, however the place is popular, and all the fish is sold before lunch time.


Fresh tilapia is supplied to the shop by a live fish delivery truck from a farm near Vientiane.


After delivery, the fish is kept alive in a simple tank that is supplied with clean water and air. Then the fish is cleaned and prepared for grilling.


The fish is carefully grilled on charcoal fire on a grid placed on the top of a concrete trough and the grilled tilapia is nicely displayed for costumers, most of them are regular ones.

2. Traditional fish markets

Selling the fish on traditional markets is the most common way of supplying fish to the costumers in Laos. There are several markets in Vientiane, where fish is sold, however the “Khua Din” market and the “Organic” market seems to be the most important ones.

In traditional food markets, meat is available during the whole day, however fish is a “morning product” except dried, fermented and preserved products of fish and other aquatic food.

In some traditional markets fish is sold together with other foods, however in markets where fish is an important product, special fish market components are available and even some specialization within the fish market can be observed for example by species, product types.


Fishes caught from natural waters are popular on the fish markets like various catfishes and the featherback.



Fish mongers are ready to clean, slice and even filleting the fish responding the consumers' needs.


Kitchen ready fish products packed in plastic bags and the popular fish sauce (padek) sold in plastic bottles are also prepared in some markets.


Even exotic and import products are not missing from the wide selection of fish products.

3. Supermarkets

There are growing number of supermarkets in Vientiane that are also selling fish products, like the "Mini Big C" (Thai business background) and the "K-Mart" (Korean business background), where mainly canned, dried and preserved fish products are available. Great selection of high-quality food from all over the world is available in the "Rimping" Supermarket.

The Mini Big C store has limited selection of fish products, however the fish section of the Rimping supermarket is similar to others all over the world.

4. Restaurants

Fish is a traditional dish that is readily available in all Lao traditional restaurants in various forms, however premium fish dishes such as salmon steak, oyster or caviar can also be ordered in some modern restaurants.

Traditional restaurant at the countryside

The restaurant owner is a fisherman who is planning fish culture in cages


The traditional “Fish larb” (fish mixed with fresh green herbs) and fried fish from the Mekong and from fish farms are common food in traditional restaurants.

Modern restaurants in Vientiane


Fish and chips is readily available in many modern restaurants, however oyster is becoming a popular appetizer for some Lao business people.

Questionnaire					
Market size fish production and marketing of rural fish farmers					
		Provincial hatcheries			
	Question	**Don Keo and Nam Hin Oudomxay**	**Phon Tong Hatchery Vientiane**	**Nam Tien Sayaboury**	**Thin Som**
1	Seed supply by provincial hatchery (%)	30	2,5 (250 000)	0,95 (400 000)	10
	other hatcheries (%)	0	0	13,3 (5,6 million)	60
	import (%)	70	97,5 (9 750 000)	85,75 (demand 42 million)	30
2	Quantity of larvae (%) to fish farmers per season	1 million import from Nongteng	0	320 000, import tilapia from Nam Houm	0
	quality of fingerling (%)	80-90	100	90 (remaining 10% for broodstock)	100 (30 million demnad)
3	Species by % (first 5 most important)	Common carp (50%) Silver barb (30%) Mrigal carp (10%) Tilapia (5%) Hybrid catfish (5%)	Tilapia 60% Silver barb 30% Common carp 10% Hemibagrus vickioides in the plan Pangasiodon hypophtalmus in the plan	Silver barb 50% Mrigal 20% Common carp 18% Rohu 10% Catfish 2%	Silver barb 50% Tilapia 30% Common carp 10% Small scale mud carp Chirrhinus microlepis 5% Labeo chrysophecadion (Pa Pai) 5%
4	Purchased by middleman (%)	0	10	30	20
	farmer (%)	70	90	70	80
	other (%)	Organization e.g. nutrition project (30%)	0	0	0
5	Supply/transport to the farm by middleman (%)	0	10	30	20
	farmer (%)	80	88	70	80
	hatchery (%)	20	2	0	0

6	Number of farms supplied with seed from the hatchery	250 farms (intensive farms mainly)	60 (~100 family is the demand and only 60 served)	300	2 middlemen, over 1000 farmer and NGOs (farmers and NGOs from other provinces)
7	Regular costumers (%)	100	100	100	100 (demand increases)
8	Advanced contract (%)	0	0	0	0
9	Type of farms: pond (%)	99	100	100	100
	cages (%)	0	0	0	0
	rice cum fish (%)	1	0	0	0
	others (%)	0	0	0	0
10	Size of farm?	400 m2	300 m2	150-300 m2	600 m2
11	Assistance from the hatchery? If yes, what?	YES: Project activity, program assistance	No, sometimes on phone	YES: By phone to farmers (farm management, fish health issues)	YES: Mainly at transport and on phone
12	Other source of information on fish farming (other farms; organised trainings; others)	organized on-site training	organised trainings, students from agriculture technician collage come to 4-6 months;	No at the moment	No
13	Share of own consumption by household (%)	20 (80% sell)	100	50	over 90 (Mainly for own consumption)
14	Selling fish to middleman (%)	100	0	50	0
	directly to market (%)	0	0	50	100
	restaurants (%)	0	0	0	0
15	Number of fish markets/selling points by village/region	10 open markets, every district	11 district, at least every district has 2 markets, 22 markets at least	3 markets around Sayaboury (Mekong bridge seasonal market)	6 markets

16	Any processing? If yes, what product?	NO; future possibility	YES: Household processing in Huay Mo Num Ngeum reservoir. traditional products dried, fermented, salted fish, fish sausage, smoked fish	No	Not yet
17	Trends in fish consumption?	Increasing (fresh fish)	increasing, fresh and processed as well	increasing fresh fish	live fish consumption increasing
18	Other relevant issues:	Fish feed price too high import price, Provincial feed factory produces low quality of fish feed which is not acceptable for farmers,Fish seed quality low mainly due to inbreeding, broodstock refreshment is needed,Fish seed from outside (imported) not unique size too high variation,The distribution of fish to market is not managed well (sometimes too many farmer send fish to the market over the market demand and sometimes too little amount of fish goes to market) It should be organized better (association)	Human resources (only 6 people) lack of technicians, low nursing efficiency	Sufficient fish seed production, no possibility to further spread the station in size (no more ponds can be built), rice fields use majority of water from irrigation channel, human resource (low knowledge), Indigenous species have high market potential	water supply shortage, too expensive commercial feed (low benefit)

1. LAO-HUNGARIAN QUALITY FISH TRADEMARK REGULATION

Adaptation of the Hungarian Quality Fish trademark regulation

1.1 Az L-HQF Description of trademark regulation

1.2 Details and purpose of the holder of the L-HQF trademark

1.3 Organization entrusted with the administration of the L-HQF trademark

1.4 The right for use the L-HQF trademark

1.4.1 Basic criteria according to the origin and production of the product

1.4.2 By product range

1.4.3 By place of production or distribution of the products

1.5 Rules for product certification

1.6 Use of the L-HQF trademark and conditions for checking its use

1.6.1 Basic conditions for using the L-HQF trademark

1.6.2 Use of the L-HQF trademark

1.6.3 Scope of information to be provided when using the L-HQF trademark - labeling

1.6.4 Conditions for verifying the use of the L-HQF trademark

1.7 Procedure for dealing with unauthorized use of the L-HQF trademark

1.8 Improving the L-HQF trademark and reputation

Some details of the regulatory process are described in Annexes

ANNEX

Annex I: Corporate Identity Manual

Annex II: System of regulation requirements

Annex III: Application form

Annex IV.: The rules for trademark certification

Annex V.: Recommendations

DISTANCE LEARNING: AQUACULTURE AND FISHERIES COMPONENT OF THE HUNGARIAN 3rd AGRICULTURE TIED AID LOAN PROGRAM

Key expert	Chapters	Titles of the lessons	Materials
Dr. Laszlo Varadi	**1.**	**AQUCULTURE SUPPLYING HEALTHY FOOD**	
	1.1.	History of aquaculture	• 45 min ppt presentation
	1.2.	Aquaculture in the world	• English summary with control questions
		o Asia	
		o Laos	
	1.3.	Specificities of aquaculture	
		o Water unitization	
		o Energy efficiency	
		o Using of feed resources (FCR)	
		o Carbon footprint	
	1.4.	Fish as healthy food	
	1.5.	Challenges and opportunities	
		o In general	
		o In Laos	
Dr. Bela Halasi Kovacs	**2.**	**SPECIES IN AQUACULTURE**	
	2.1	Finfish	• 45 min ppt presentation
	2.2.	Crustaceans	• English summary with control questions
	2.3.	Molluscs	
	2.4.	Water plants	
	2.5.	Others	
	2.5.	Cultured species in Laos	
Dr. Laszlo Varadi	**3.**	**AQUACULTURE SYSTEMS AND TECHNOLOGIES**	
	3.1.	Marine versus freshwater aquaculture	• 45 min ppt presentation
	3.2.	Pond systems	• English summary with control questions
	3.3.	Flow through systems	• Video (Example of aquaculture systems)
	3.4.	Cage culture systems	
	3.5.	RAS	
	3.6.	Integrated systems	
	3.7.	Aquaculture systems and technologies in Laos	

Dr. Emese Bekefi	**4.**	**FISH VALUE CHAIN**	
General information (4.1) Model value chain in Laos (4.2 - 4.8)	4.1. 4.2. 4.3. 4.4. 4.5. 4.6. 4.7. 4.8.	Value chain concept Seed supply Feed supply Growout Processing Marketing Services SWOT analysis	• 45 min ppt presentation • English summary with control questions • Video (Example of Lao value chain in Vientiane)
	5.	**FRESHWATER POND AQUACULTURE**	
Dr. Laszlo Varadi	**5.1.**	**POND FISH FARMS**	• 45 min ppt presentation
	5.1.1. 5.1.2. 5.1.3. 5.1.4.	Type of ponds Dikes and water control structures Machines, equipment, and tools Support facilities	• English summary with control questions • Video (structures, machines, equipment)
Dr. Sandor Gorda and Mr. Gyula Kovacs	**5.2.**	**FISH PROPAGATION AND FISH SEED SUPPLY**	• 45 min ppt presentation
	5.2.1. 5.2.2. 5.2.3.	Broodstock management Hatchery management and incubation Nursing and seed supply	• English summary with control questions • Video • Posters for farmers • Booklet for farmers (Simplified version of FAO training material)
Dr. Sandor Gorda and Mr. Gyula Kovacs	**5.3.**	**PRODUCTION TECHNOLOGY OF FISH FINGERLING**	
	5.3.1. 5.3.2. 5.3.3. 5.3.4. 5.3.5. 5.3.6.	Pond preparation Stocking Feeding Manuring and fertilization Water quality control Fish health management	• 45 min ppt presentation • English summary with control questions • Video • Posters for farmers • Booklet for farmers (Simplified version of FAO training material)

	5.3.7.	Harvesting	
	5.3.8.	Security and protection (weather, predators, poaching)	
Dr. Sandor Gorda and Mr. Gyula Kovacs	**5.4.**	**PRODUCTION TECHNOLOGY OF MARKET SIZE FISH**	
	5.4.1.	Pond preparation	• 45 min ppt presentation
	5.4.2.	Stocking	• English summary with control questions
	5.4.3.	Feeding	• Video
	5.4.4.	Manuring and fertilization	• Posters for farmers
	5.4.5.	Water quality control	• Booklet for farmers (Simplified version of FAO training material)
	5.4.6.	Fish health management	
	5.4.7.	Harvesting	
	5.4.8.	Security and protection (weather, predators, poaching)	
Dr. Sandor Gorda and Mr. Gyula Kovacs	**5.5.**	**PRODUCTION TECHNOLOGY OF MARKET SIZE FISH**	
	5.5.1.	Data monitoring	• 45 min ppt presentation
	5.5.2.	Financing	• English summary with control questions
	5.5.3.	Marketing	
	5.5.4.	Others	
Dr. Bela Halasi-Kovacs	**6.**	**CULTURED BASED FISHERIES**	
	6.1.	Culture-based fisheries in inland water	• 45 min ppt presentation
	6.2.	Constraints to the sustainability	• English summary with control questions
	6.3.	Harvesting and marketing strategies	• English summary of thr 17 NACA video lectures
	6.4.	Risks associated with culture-based fisheries and their management	• Video (Asian examples of CBF)
	6.5.	Others	
Dr. Bela Halasi-Kovacs	**7.**	**GOVERNANCE, LEGAL ISSUES, FINANCE**	
	7.1.	**GOVERNANCE AND LEGISLATION**	• 45 min ppt presentation
		o International (FAO, CCRF)	• English summary with control questions

		o Regional (EU, ASEAN) o National (Lao) o Producers' associations, interbranch organisations	
	7.2.	**FINANCIAL SUPPORT**	
		o owner sources o bank loans o government (public) support o others	
	7.3.	**GOVERNANCE AND FINANCE IN LAOS**	
		o Relevant ministries, PAFOs o Produsers' association	
	7.4.	**AQUACULTURE FINANCE IN LAOS**	
		o Produsers' association	
Dr. Emese Békefi	**8.**	**INFORMATIONS**	
	8.1.	In general	• 45 min ppt presentation
	8.2.	FAO FishStat	• English summary with control questions
	8.3.	FishBase	
	8.4.	Regional sources	
	8.5.	Local sources	
	8.6.	Others	
Dr. Emese Békefi	**9.**	**SOCIAL ASPECT**	
	9.1.	Aquaculture and consumers	• 45 min ppt presentation
	9.2.	Aquaculture and employment	• English summary with control questions
	9.3.	Social acceptance of aquaculture	
	9.4.	Social licence	
Dr. Laszlo Varadi and Dr. Emese Békefi	**10.**	**INNOVATION AND HRD IN AQUACULTURE**	
	10.1.	Importance of innovation and HR for efficiency and competitiveness	• 45 min ppt presentation
	10.2.	Examples of successful innovations in aquaculture	• English summary with control questions
	10.3.	Potential for aquaculture innovation and HRD in Laos	• Video (on innovative systems and technologies)