



BEYOND
FOOD SAFETY
IN LAOS

**SPECIAL REPORT ON THE DEVELOPMENT OF THE MEAT AND FISH VALUE CHAINS
TO IMPROVE FOOD SAFETY AND FOOD SECURITY IN THE LAO PDR**

PROJECT FINANCED BY HUNGARIAN TIED AID LOAN, 2016-2020



MINISTRY OF AGRICULTURE
AND FORESTRY

ABOUT THIS REPORT

This special report is published jointly by the Hungarian Vitafort Agro Asia Co., Ltd. (VAA) and the Department of Livestock and Fisheries (DLF) of the Ministry of Agriculture and Forestry in the Lao PDR. VAA and DLF were partners in the implementation of the 2nd Hungarian tied aid loan program for Laos in agriculture development between 2016 and 2020. The ultimate objective of the project was to assist the development of the food chain safety system in the Lao PDR. This special report provides information on the importance of food safety and food security, and how the Hungarian assistance contributed to the sustainable utilization of the valuable green resources in Laos to improve food safety and food security.

The project introduced in this special report is not just one of the many donor projects in the Lao PDR, but it is an integral part of a long-term cooperation in agriculture development between Hungary and Laos that started about 60 years ago. An important part of the Hungarian assistance has been the training of Lao professionals in Hungary since the 1960s.

Hungarian assistance in agriculture development to Laos was intensified when Hungary became a member of the EU in 2004, and the tied aid credit facility was available

H.E. Viktor Orban PM of Hungary and H.E. Thongloun Sisoulith PM of Laos signed the partnership agreement between the two countries in Budapest on 11th March, 2019

for international development assistance in the frame of the OECD scheme. This special report introduces the 2nd agricultural tied aid loan program with a budget of 30 million USD, that was a follow up of the 1st tied aid loan program (8.6 million USD) implemented successfully between 2009-2011 and was aiming at the improvement of the conditions of high-quality seed and feed supply.

The relationship between Hungary and Laos was further strengthened when the two countries signed a strategic partnership agreement in 2019. This provides an excellent environment for technical and economic cooperation.



Lao students in Gödöllő Agricultural University in 1980

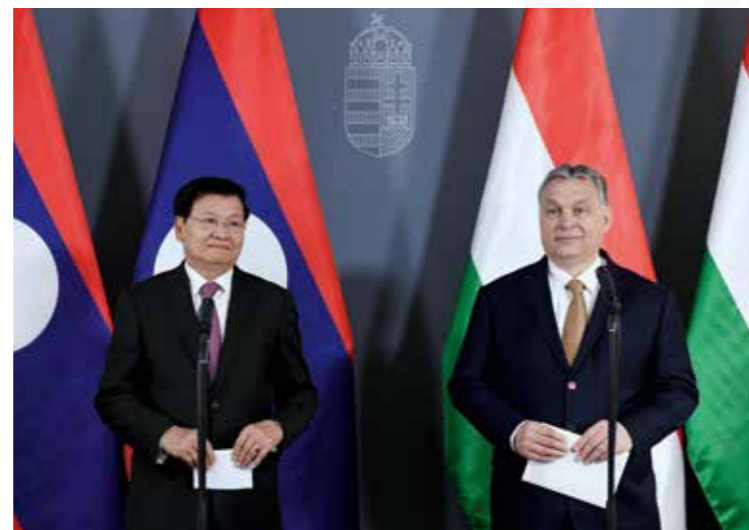


TABLE OF CONTENTS

 <p>4 FOOD SAFETY AND FOOD SECURITY</p>	 <p>18 MODEL FARMS TO PRODUCE HIGH QUALITY AND SAFE FOOD</p>
 <p>7 FOOD CHAIN SAFETY (FCS) IN LAOS</p>	 <p>34 HUMAN RESOURCES DEVELOPMENT</p>
 <p>10 LEGAL AND INSTITUTIONAL BACKGROUND OF FCS</p>	 <p>35 R&D COOPERATION</p>
 <p>13 LABORATORY BACKGROUND OF FCS</p>	 <p>36 LAO-HUNGARIAN STRATEGIC PARTNERSHIP</p>

FOOD SAFETY AND FOOD SECURITY

Although ready access to safe and nutritious food is a basic human right, every year around the world, hundreds of thousands of people die and hundreds of millions of people fall ill after eating contaminated food. The key messages of the 1st FAO/WHO/AU International Food Safety Conference in 2019 are the followings:

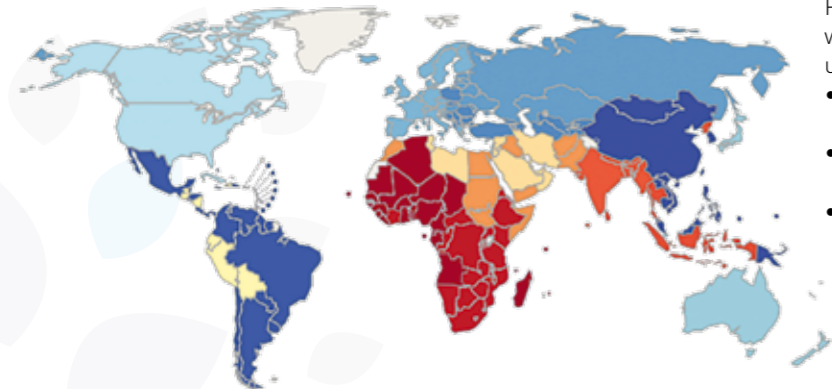
- Food safety is an integral part of the Sustainable Development Goals;
- Unsafe food takes a huge toll on human health and the economy;
- Agriculture is under pressure, and food production is changing with consequences for food safety;
- From production to consumption – food safety is a shared responsibility.

ALARMING FACTS ABOUT FOOD SAFETY

- Unsafe food containing harmful bacteria, viruses, parasites or chemical substances, causes more than 200 diseases – ranging from diarrhea to cancers.
- An estimated 600 million – almost 1 in 10 people in the world – fall ill after eating contaminated food and 420 000 die every year.
- Children under 5 years of age carry 40% of the foodborne disease burden, with 125 000 deaths every year.
- Diarrheal diseases are the most common illnesses resulting from the consumption of contaminated food, causing 550 million people to fall ill and 230 000 deaths every year.
- Unsafe food creates a vicious cycle of disease and malnutrition, particularly affecting infants, young children, elderly and the sick.
- Foodborne diseases impede socioeconomic development (health care systems, national economies, tourism and trade).
- Food supply chains now cross multiple national borders.

Source: WHO, 2017

THE GLOBAL BURDEN OF FOOD BORN DISEASES



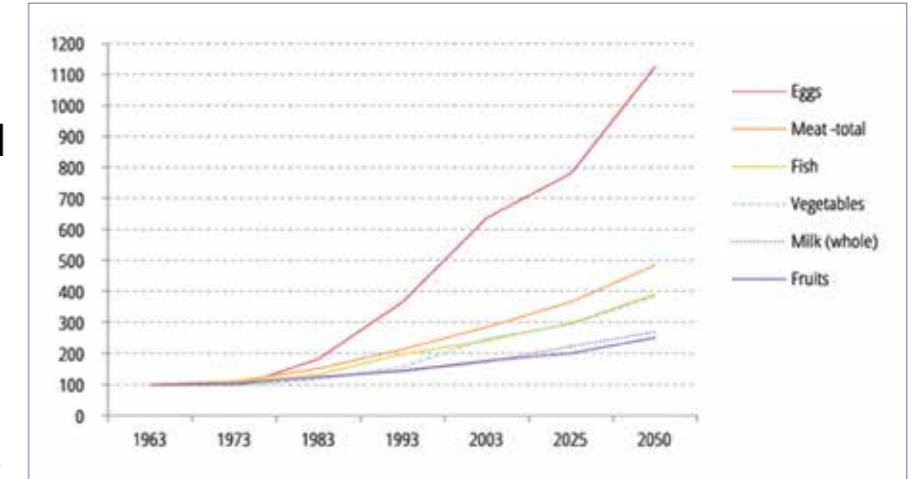
People living in the poorest areas of the world: make up 41% of the world population

- suffer from 53% of all foodborne illnesses
- succumb to 75% of foodborne deaths
- bear 72% of global foodborne DALYs (Disability-Adjusted Life Year)

Source: WHO, 2015

Foodborne Per 100,000 DALYs SubRegion	
AFR D	1,276
AFR E	1,179
SEAR D	711
SEAR B	685
EMR D	571
EMR B	362
AMR D	315
WPR B	293
AMR B	140
EUR B	52
EUR C	49
EUR A	41
WPR A	38
AMR A	35

INCREASE OF CONSUMPTION OF PERISHABLES IN DEVELOPING COUNTRIES



Source: FAO, 2009

FOOD SAFETY AND FOOD SECURITY



FOOD SAFETY refers to the food which are free from causing any danger or harm to the members of any given community.

FOOD SECURITY refers to a situation when the community has enough healthy food for all its members.

Food safety and security refers to access healthy and enough nutritious food that can sustain life and promote good health.

FOOD SAFETY CONTRIBUTES TO FOOD SECURITY



Food and Agriculture Organization of the United Nations

Ensuring safe food has positive implications for food security:

- Access to safe food is in itself an element of food security.
- Food-borne illnesses may have serious social and economic consequences.
- Application of GAP, GMP and GHP improves food safety and reduces food losses >increases food availability and food security.

THERE IS NO FOOD SECURITY WITHOUT FOOD SAFETY

FOOD SUPPLY AND GREEN GROWTH

The development of safe, nutritious and high-quality food supply should be in line with the green growth that means fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies.

Green development is becoming an integral part of government's policies all over the world to improve farmers' incomes, national nutrition, and food security. The Lao government recognized green growth that offers opportunities to contribute to sustainable economic, social and environmental development. The National Green Growth Strategy of the Lao PDR was published in 2019.



FOOD CHAIN SAFETY (FCS) IN LAOS

The Lao PDR is one of the least developed countries (LDC) of the world. The Lao government makes significant efforts to achieve an upgrade from the LDC status at the United Nations to become a middle-income country by 2030 through strengthening international economic partnerships. The UN's 2018 triennial review of Laos' LDC status found that the country is eligible for graduation for the first time, having passed thresholds for two of the three graduation criteria: gross national income per capita and the human assets index. While not yet meeting the threshold for the economic vulnerability index, the remaining criterion, Laos has managed to reduce this index to a level close to the required threshold. If at least the current level of progress is maintained, Laos will graduate from LDC status three years after its next 2021 triennial review in 2024.

However, food safety and food security remain an important issue in Laos considering that the Global Hunger Index (2020) is still "Serious" though proportion of "hungry poor" has been reduced to 2% of the population. Chronic malnutrition of children is still high: 35.6% between 6 and 59 months. It is also a fact that 25% of households are food insecure in remote upland areas.

Even in cities where food is sufficient, food safety is far below international standards



OBJECTIVES, INTENDED IMPACTS OF THE 2ND HUNGARIAN TIED AID LOAN PROGRAM

Pivotal objectives:

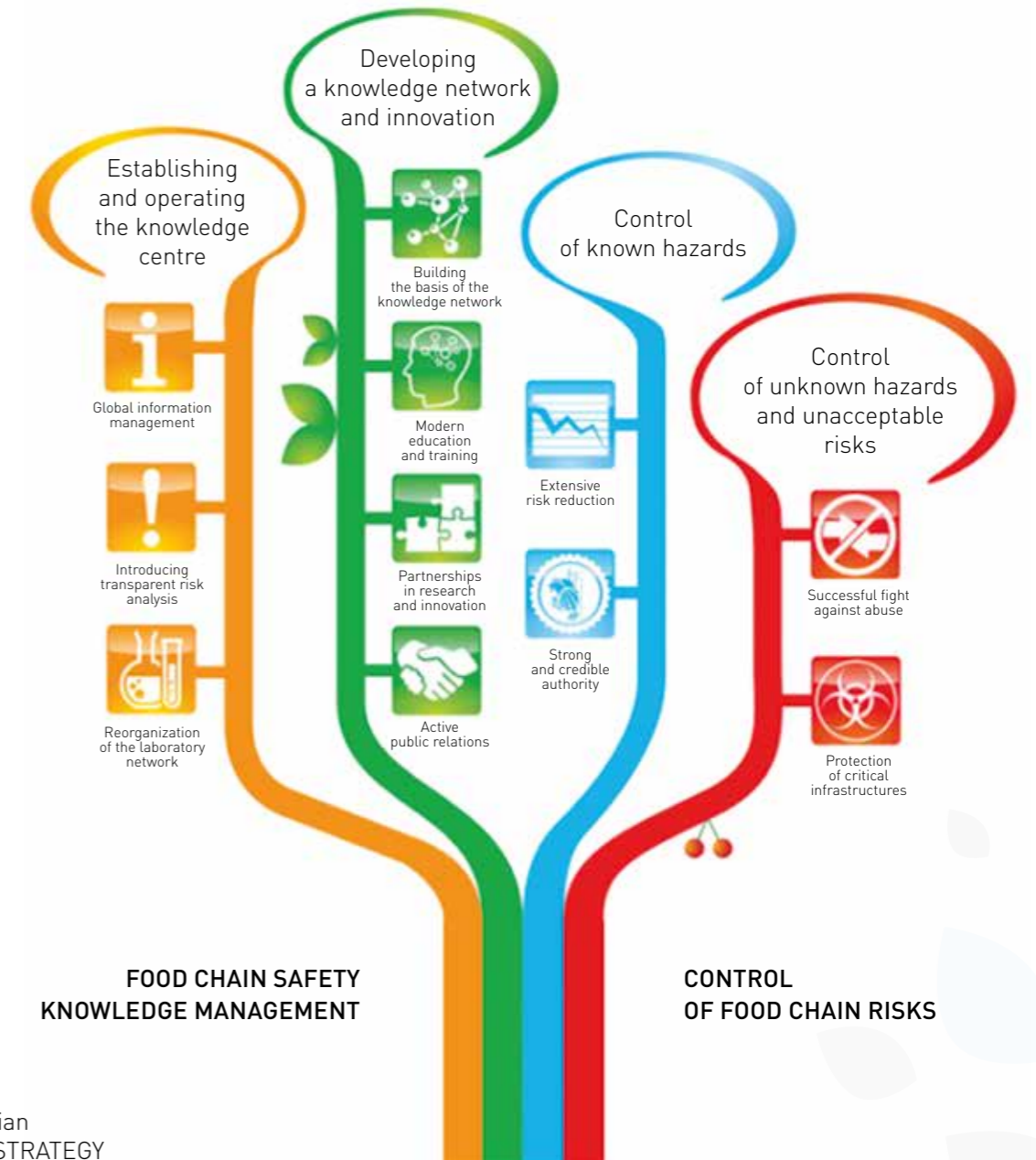
- Development of high quality and safe food production using the unique “green resources” available in Laos and applying the principle “from the field to the table”;
- Establishment of a food chain safety and quality control system along the whole value chain, that will contribute to food safety and food security and make also possible the export of food products;
- Establishment of “model” systems and facilities that can be applied later on wider scale using external funding from institutions like World Bank, Asian Development Bank and IFAD and also through bilateral and multi-lateral projects;
- Focusing on the central provinces of Laos and also provinces north to Vientiane where abundant but unexploited land and water resources are readily available.

Main intended impacts of the project is an enhanced food chain safety management system in Lao PDR, consisting of the following expected components:

- **Safer agriculture and food products** that meet international standards;
- **More efficient production** of agriculture and food products;
- **Increase in the domestic and export trade** of food.



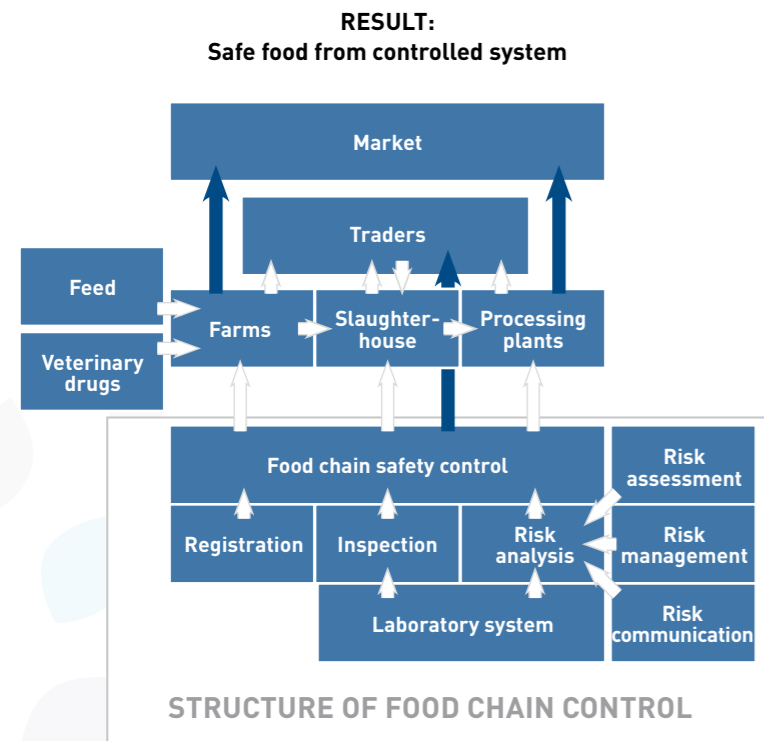
The Hungarian Food Chain Safety Office (NÉBIH) provided technical assistance using and adapting results and experiences with the establishment and operation of the food chain safety system to Lao conditions.



Scheme of the Hungarian
FOOD CHAIN SAFETY STRATEGY

LEGAL AND INSTITUTIONAL BACKGROUND OF FCS

The establishment of a functional food chain safety system on national level is a long-term and complex activity. The 2nd Hungarian tied aid loan program was focussing on the meat and fish value chains and on the development of a model according to the scheme of the food chain safety control system shown in the diagram below:



Activities aiming at the development of the legal and institutional background of the food chain safety system included system audits, field visits, interviews, workshops and regular consultation and planning in cooperation with the Department of Livestock and Fisheries (DLF) of the Ministry of Agriculture and Forestry (MAF) with the involvement of all relevant Lao stakeholders. During the development work, major criteria were that activities had to be implementable, effective, and efficient, adapted to the development level of the Lao food chain safety control system, and aim compliance with WTO standards.

A major achievement of the work was the elaboration of 21 drafts of legal documents, supporting documents and conceptual/strategic documents. These documents will provide a basis for future development activities and trainings of Lao officers on the central, provincial, and district level.

In order to establish the Lao food chain safety system a step-by-step approach should be followed that will allow sufficient time for the officers and food business operators to accommodate the changes of the system. By completing the projected reforms, the future Lao food chain safety authority will be able to effectively detect and monitor risks, use preventive actions, deal with incidents and crisis situations, and demonstrate competence in broadening the horizon of international trade agreements.

LIST OF DELIVERED DOCUMENTS

1. Draft Strategic Document
2. Implementation Plan of the Food Chain Safety component of the project
3. Animal Health Regulation Content Draft
4. Animal Health Regulation Content Draft Appendix
5. Animal Health Compensation Concept
6. Classical swine fever disease control strategy in pilot region of Vientiane Capital
7. General hygiene and meat inspection
8. SOP Meat inspection of pigs
9. Trichinella sampling and testing SOP
10. SOP on veterinary drug residue sampling at the slaughterhouse
11. Laboratory capacity improvement concept document
12. Food chain monitoring plan
13. Pesticide residue sampling guideline
14. Guideline on Sampling of animals, animal and plant products
15. Concept Document on Registration and Certificate System
16. Draft Terms of Reference of the Registration Unit
17. Trademark system concept document
18. Draft Terms of Reference of the Certification Body for the Trademark System
19. Communication plan
20. IT system concept document
21. Workshop plan - Establishment



workshop, meeting

The whole food chain safety control is integrated into an e-governance system. In the frame of the project, an IT system was established, that connects provincial offices with the Department of Livestock and Fisheries. The old, mostly paper-based administrative system is not able to keep up with the challenges of growing economy of Laos. More than 40 Lao officers were trained to use the system. Once officials will be able to finish the registration of farms, feed mills, slaughterhouses and other facilities, traceability of living animals and animal products will ensure transparency and safety in the food chain. This system will also monitor the food safety risks, according to the requirements of ASEAN standards. This will open new gates for high value-added exports while efficiently protects the internal market of Lao PDR. Thus, besides contributing to economic growth, it also delivers benefits for public health by reducing the risk of food-borne risks in the country.

HARDWARE DELIVERED

ITEM	QUANTITY	DESCRIPTION
Workstations	55	Desktop computers with proper peripherals (monitor, keyboard, mouse) to manage the granted business processes and software functions.
Tablets	64	Mobile devices with Android operating system to manage data collection and field inspection activities at remote locations.
Network devices	27	Ensures local office infrastructure and connects workstations, printing machines and tablets locally and to the Internet (high-speed wired connection or 4G/3G data sim card).
Multifunctional printers	27	All-in-one fax, photocopy, scanning and printing services are integrated into a multifunctional device.

Workstations and Android-based tablets are connected to the central application servers via Internet. For reliable connection, high-speed wired Internet (where possible) and mobile broadband routers are being deployed at the project involved offices.

Besides supporting the registration, the IT system handles the licences and stores all important information of the sites (owner, location, activities, animals kept, etc.). It also helps officers to keep tracking of the control measures that are carried out there (inspection, sample taking, vaccination, warnings, obligations, issued penalties etc.). The new custom-built application can trace and record movements of live animals within the border of Laos, and through the inspection points (airport, bridge, railway, quarantine). The system also supports the field work. During on-site investigations, inspectors can record information by mobile devices while being synchronised with the central database.

Once the central service and the provincial offices manage to move all control activities to the online space, Laos could present a good example of modern e-governance in the region.



Server Cabinets

LABORATORY BACKGROUND OF THE FOOD CHAIN SAFETY SYSTEM

This was the largest component of the 2nd Hungarian tied aid project (about 41% of the total budget) taking into account that available laboratory facilities were weak and partly deficient. Furthermore, they were also underutilized due to the lack of government budget allocation for operation. In order to provide an appropriate laboratory background for the new food chain safety system significant upgrade and expansion of the existing laboratories were required.

The laboratory development included mainly the procurement of various laboratory equipment and auxiliary facilities; however, construction works, installation, supply of spare parts and consumables, start up operation training and technical assistance (TA) were also essential elements of the development works.

The project also provided support to the Food and Drug Quality Control Center of the Ministry of Health and to the Veterinary Medicine Laboratory of the University of Lao PDR that included the supply of new equipment, development of communication, technical assistance and human resources development.



Various Laboratory Equipment



SUMMARY OF THE DEVELOPMENT OF KEY LABORATORIES

LABORATORY	NEW EQUIPMENT
Soil Analytic Laboratory	ICP-OES, Discrete analyser, Kjeldahl, oven, pH meter, microwave digester and other necessary glassware, plasticware, chemicals reagents, consumables, fume hoods and laboratory furniture.
Water Analytic Laboratory	ICP-OES system, discrete analyser system, microwave digester system, COD analyser, various test kits, pH meter, DO meters, glassware, plasticware and other necessary consumables, chemicals, reagents laboratory furniture and fume hood.
Plant Analytic Laboratory	GC and GC-MS systems, LC and LC-MS/MS and ELISA equipment, glassware, plasticware, chemicals reagents, fume hoods, consumables and laboratory furniture.
Animal Feed Laboratory	ICP-OES, bomb calorimeter, hot air oven, digestion unit, distilling unit (Block digest & Pro-nitro II), Soxhlet apparatus & extraction battery heating mantles, extractor for determination of cellulose and fibre, muffle furnace, spectrophotometer, ICP-OES system, discrete analyser, HPLC – DAD, HPLC – FLD, GC – MS/MS with dioxin system, Kjeldahl digester Fibertec, Soxtec, ion change amino acid analyser, microwave digester system, bomb-parameter, plastic and glassware, distilled water production apparatus, analytical balance, fume hood, grinder, consumables and reagents
National Animal Health Laboratory	ICP-OES, LC – MS/MS, HPLC – DAD, FLD, microwave digester system as well as glassware, plasticware, reagents, chemicals fume hoods and other necessary consumables.

DEVELOPMENT OF PROVINCIAL ANIMAL HEALTH LABORATORIES

Animal health laboratories belonging to local PAFOs were improved and upgraded in four provinces: (1) Champasack; (2) Luang Prabang; (3) Savannakhet; and (4) Xiengkhouang. ELISA reader's accessory post-mortem instrument sets, sample collection tool kits, refrigerators, cool boxes, transport vials, transport media, microscopes, au-

toclaves, incubators, centrifuges, haematocrit centrifuges, water baths, shakers, plastic and glassware; chemicals, reagents and consumables, spare parts for maintenance were delivered and installed in the provincial laboratories. Practical trainings for the laboratory staff were also organised.

Animal Health Laboratory



DEVELOPMENT OF VETERINARY INSPECTION CHECK POINTS AND QUARANTINE AT BORDER CROSSINGS

Since cross-border transmission of animal diseases is a critical issue in food chain safety, the project provided assistance for the development of veterinary inspection check points at 9 major border crossings and also assisted the development of one quarantine site according to the followings:

1. Wattay International Airport
2. Thanaleng Lao-Thai Friendship Bridge
3. Thanaleng Railway Station
4. Thanaleng Animal Quarantine
5. Luang Prabang Provincial Laboratory
6. Boten Luang Namtha Check Point
7. Sayabouri Province
8. Savannakhet Province
9. Pakse Vangtao-Xongmex Check Point
10. Pakse Nokkien Check Point



The project delivered sample collection kits, sample storages (freezer, refrigerator), water baths; rapid test kits; PPE and decontamination facilities (sprayer, water tank, consumables and a biosafety cabinet, etc) for the Veterinary Inspection Check Points. The quarantine was also equipped with primary animal health check kit and disposal facility (incinerator and PPE).

| Laboratory Freezer



NONGTENG VACCINE PRODUCTION CENTER AND LABORATORY ANIMAL FARM OF DLF, MAF

Although the vaccine factory is not a direct component of the food chain safety system, the Government of Laos considers that the activity of this Center is essential to promote animal health and the production of safe food. Therefore, the program provided complementary support for the upgrading of the Center in order to improve its production and quality control. The upgrading of the Vaccine Production Center (VPC) includes building rehabilitation and upgrading of key equipment and the technology of vaccine production providing reagents and consumables for vaccine quality control as well as training and demonstration.

Besides the massive reconstruction of the VPC, a new laboratory animal production and experimental farm was also built for keeping mice, rabbit, chicken, guinea pig, duck, goat and sheep as well as pig and occasionally cattle. The experimental farm is also available for medicine testing, disease diagnosis, toxicological identification, bio-scientific research as well as animal vaccine efficiency testing. With the assistance of the project, the laboratory animal farm has become a leading and well manageable laboratory animal farms in the Lao PDR.



The rebuilt and expanded Vaccine Production Center of DLF, MAF in Nongteng

MODEL FARMS TO PRODUCE HIGH QUALITY AND SAFE FOOD

The food chain safety control system with appropriate legislation, IT and laboratory background is an essential component of safe and high quality food supply, however elements of the product value chain (production, processing and marketing facilities) should be able to meet food safety criteria. Therefore, the development of facilities, technologies and management along the food production value chain is indispensable. The development of model farms was an important component of the 2nd Hungarian tied aid loan project that was carried out in the frame of Public Private Partnership.

MAJOR ACTIVITIES ALONG THE VALUE CHAIN

Food Chain Safety laboratories

Food Chain Safety Authority (inspection, certification)



DEVELOPMENT OF CROP CULTIVATION IN VIENTIANE CAPITAL

The "From the soil to the table" concept can only be achieved if high quality crops are produced as animal feeds and raw material of animal feed production. The project assisted the technology development for the cultivation of corn, soybean, cassava and green fodder by providing modern machinery and through knowledge and technology transfer.

The project provided the following agricultural machines for the partners: Kubota tractors (2); mobile shredder; trailer; small quadrat baler; mower; seeder machine (2); windrower; big round baler; bale wrapper; heavy harrow; comminutor and sprayer.

The plant production activities involved both the public sector (NAFRI-LRI) and the private partners of the project (XP Farm and PPC farm).



The haybales were produced by Hungarian machines and technology

DEVELOPMENT OF FEED MANUFACTURING IN NONGTENG AND NAMBAK

The use of high-quality animal feed is a basic criterion of the production of safe and high quality meat and fish. In the frame of the 2nd tied aid loan program, two feed mills built earlier by Hungarian assistance were upgraded and expanded.

The upgrading work of the **feed mill in Nongteng in Vientiane Municipality** included the followings: (1) improvement of the security of the facility; (2) expanding the storage space for raw material and final products; (3) instalment of a steam boiler using waste wood; (4) instalment of a special machine line for the production of high-quality feed for fish fingerling. The development work resulted in more cost-efficient production, wider product range (special fish feed using alternative protein sources e.g. insect meal and Artemia), turning the feed mill a national reference plant that provides training and demonstration.

In the **Nambak feed mill in Luan Prabang Province** the upgrading activity included some minor reconstruction- and technology development works that contribute to the increase of efficiency and reliability of the animal feed production. More efforts are needed however to ensure appropriate management and to integrate the feed mill into the meat value chain.

| View of the animal feed factory in Nambak



| Aerial view of the feed mill in Nongteng showing the expansion of the existing building



| The production of special feed for fish fingerling

DEVELOPMENT OF LIVESTOCK AND FISH FARMING IN VIENTIANE AND CHAMPASSACK

An important part of this project component was the development of government stations in order to strengthen experimental and demonstration capacities that is the basis of knowledge and technology transfer to farmers. The program of the upgrading experimental animal farms of NAFRI included the followings:

- Namxouang experimental cattle farm in Vientiane Municipality
- Namxouang experimental pig farm in Vientiane Municipality
- Nongteng experimental pig farm in Vientiane Municipality
- Nongteng experimental poultry farms in Vientiane Municipality

An important part of the development work was the **establishment of an Artificial Insemination (AI) station at the Namxouang** experimental farm of the Livestock Research Center (LRC) of NAFRI. A new shed was constructed for 3 bulls that were also provided by the project (2 Red Brahman and 1 fighting bull). A laboratory was also built here and equipped with necessary instruments needed for collecting, checking and storing semen. Specific AI training of 10 staff members was also organized. At the end of the project, the AI station was ready for teaching students, training farmers and PAFO staff and for providing deep frozen bull semen of high genetic value for farmers in the region.

Besides the development of government experimental animal farms, the project also provided assistance to selected private farms that included the upgrading facilities, technology transfer and training. One of the partner farms was a medium size farm operated by the XP Company, and the other one was a small family farm operated by PPC farm.

Bulls in the new Artificial Insemination (AI) Station at the Namxouang experimental farm of the Livestock Research Center of NAFRI



INTERVIEW WITH MR. SOMSAARTH PHIROUPHOCHANH OWNER OF PPC FARMING

The Phiouphochanh family dwelling in Nabone village of Vientiane Province is a typical example of a dynamicaly growing small agro business that relies on pragmatic and committed work and continuous technological and infrastructural development. Mr. Somsaarth Phiouphochanh, his wife and their two children breed cattle and pigs and cultivate 5 ha of land, mainly growing Napier and Ruzi grass for their livestock. Mr Somsaarth, when did you get into contact with the Hungarian tied aid loan project?

Mr. Somsaarth: In 2018, the Department of Livestock and Fisheries of the Lao Ministry of Agriculture and Forestry together with the employees of Vitafort Agro Asia visited our farm and provided technical support and trainings in the frames of the Hungarian tied aid loan project. We were very proud to have been selected as a model demonstration farm of the project.

How did you benefit from the Hungarian cooperation?

We gained substantial knowledge in various fields including cattle and pig breeding, selection of proper feed, veterinary issues and artificial insemination and so on. The project also helped us in land cultivating technologies: this was the first time we produced bales for animal feed. Our whole farm was re-organized thanks to the Hungarian



Mr. Somsaarth and his pig pen of 300 heads of pig

Mr. Somsaarth and his Napier grass



consultancies. Two new wells were drilled and a modern irrigation system was established that enables us to produce fresh grass for the cattle even in the dry season.

When did you start your business and what are your aims for the coming period?

We started operation in 2010 with 5 hectares of land. Due to the continuous improvement, now we extended our activities to another 5 hectares which we mainly use for producing Neiper grass, also for rice cultivation. Besides our family members, we employ 4 permanent staff that help us in our daily operation. Our biggest improvement project now is the construction of a cattle barn that will accommodate 150 cattle, 40 of those will be provided by the Hungarian project for the genetic improvement of our livestock. We will crossbreed our local yellow cattle with the bigger and stronger Red Brahman cattle. We will keep on working with the aim of producing clean and safe meat. Another target is to let other farms know about these developments: we organized the Nabone Farmer Group, an association of 8 small farms in the region sharing knowledge and technology with each other. In November 2020, we were also recognized as a model farm of Vientiane province, so farmers and agricultural experts are visiting our farm now from all over the country. We are glad and proud to disseminate the knowledge we gained over the years stemming from our own experience and from the highly developed Hungarian agricultural sector.

The fish farming development component of the project also included upgrading of government facilities, technical assistance and training at four sites according to the followings:

- LARREC in Vientiane Municipality
- NAFDEC in Vientiane Municipality
- Ban Had Aquaculture station in Champasack Province
- Ban Na Aquaculture station in Champasack Province



A cattle breeding program was started with Hungarian assistance in close collaboration with local farmers.

Major activities of this project component are summarised in the followings:

- artificial propagation of indigenous Mekong fish species at Ban Had and Nongteng 6 times in the breeding season;
- organisation of 6 workshops at Ban Had, Ban Na, Nongteng and Namxouang about water quality management, fish propagation, broodstock management and fish nursing;
- organisation of 2 study tours, one from Pakse and Champasack to Namhoum (ADC farm) and one from Namxouang to different fish farms in Thailand;
- upgrading of fish hatcheries and teaching their use in the frame of six field training courses.

A specific element of the fish farming development of the project was the collaboration with a private company (Aquatic Development Co., ADC) that was established by Hungarian and Lao farmers. The objective of the work was the development of the conditions for the production and supply of high-quality tilapia fingerling for private farmers in the region. The fish seed farm that is located at Namhoum in Vientiane Municipality became a leading supplier of high-quality tilapia fingerling as a result of the project assistance and the Public Private Partnership.



Fish Farm, Namhoum



Workshop

DEVELOPMENT OF MEAT PROCESSING IN NAMXOUANG

This project component included the upgrading of the slaughterhouse at Namxuang in Vientiane Municipality. The Namxuang facility was built as a slaughterhouse in the frame of the 1st tied aid loan program and its main function was to slaughter and cold storage pig carcass.

The main objective of the upgrading work in the frame of the 2nd tied aid loan program was the development of meat processing capacity of the facility. During the upgrading work the following processing and packaging equipment were installed in the facility: TALSA mixer – for emulsified products (sausages, hot dogs, meatballs); vacuum packaging machine; industrial smokehouse; skin packaging machine (allows MAP gas packaging); blast freezer; meat grinder; cutting machine. Besides the technology development, the animal holding pen area has been expanded, hygienic conditions of the building improved, chiller and freezer rooms enlarged. Practical training for local staff was also provided in the frame of the project.

The upgrading work and the technical assistance resulted in smoother operation, allowing steady introduction of Standard Operating Procedures (SOP) in accordance to HACCP standards e.g. critical control point management, cleaning, personal hygiene, sanitation, potable water supply, preventive maintenance, storage and inventory control, vermin control and others. The Namxuang facility is the first modern slaughterhouse and meat processing plant in Laos that will serve as successful example for an entire food industry in Laos.



The slaughterhouse and meat processing plant in Namxuang. Development works indicated with colours:
Yellow – holding pens; Red – packaging room;
Blue – cold storage rooms



Hungarian butcher trains local staff how the pig carcass should be cut properly



The slaughterhouse and meat processing plant in Namxuang

DEVELOPMENT OF MARKET OUTLET IN VIENTIANE CAPITAL

Even if the direct development of market outlets was not a specific objective of the project, initial steps to facilitate the sales of the new products of Namxouang meat processing plant have made by our private partner Mr. Xayphone who established a meat shop in the downtown area of Vientiane following the value chain concept.

The cooling truck of "Lao Fresh Meat" in downtown Vientiane



XP Farms' cattle barn in Vientiane Capital



XP Farms' pig farm and tilapia fish ponds in Vientiane Capital

XP Farms' feed mill facility in Vientiane Capital with storage capacity of 2,000 tons



European Food Festival in Vientiane, Laos



XP Farms' feed silos in Vientiane Capital with storage capacity of 5,000 tons



INTERVIEW WITH MR. XAYPHONE PHOUTHAVONG OWNER AND MANAGER OF XP FARMS

Mr Xayphone, could you please share with us how you got into contact with Hungary and the tied aid loan program?

Mr. Xayphone: I first heard about the Hungarian project and about Vitafort company in 2013 when I participated in an official visit to Belarus with the President of Lao PDR. The idea of developing the food chain safety in Laos really impressed me, so I decided to visit Hungary. Soon after that, I joined the Lao Minister of Agriculture, Mr. Lien Thikeyo's delegation to Hungary and I personally talked with Dr. Laszlo Varadi, CEO of Vitafort Agro Asia company. This visit to Hungary convinced me that I must transfer this knowledge to Laos and make our country more successful utilizing the technology of the highly developed Hungarian agriculture.

What are the main activities of your company and how do those fit into the food chain safety approach?

Mr. Xayphone: My core activities are cattle and pig breeding, we raise nearly 200 cattle on our farms and we have an average output of 15.000 piglets per year. In Xiengkhouang province, we process maize in our own driers and produce coffee that we export to several countries including the US. We contracted 2.000 families for corn supply and more than 600 coffee producers. The last elements of the food chain are also strongly present in our portfolio: we operate a slaughterhouse in Namxuang, and retail shops and restaurants in Vientiane capital. We can substantial-

ly use the contribution of the Hungarian project in land cultivation and irrigation technology, meat processing know-how, cattle breeding and in many more areas.

What are your future plans for the improvement of your farm and in terms of cooperation with the Hungarian project?

Mr. Xayphone: When I launched my meat trading company, my wife and I named it "Lao Fresh Meat" as our main idea was to introduce a completely new approach to meat consumption in Laos. Our aim is to ensure the highest quality, safe food to the end-consumer using the unbroken cold chain which is still quite of a novelty in Laos. In terms of cooperation with Hungary, we will focus on three areas in the future: improving the genetics of our herd, importing more Hungarian agro technology to Laos, and working jointly on the marketing and sales of our products especially for Chinese and Vietnamese export markets.

Our dear colleague and friend Mr. Xayphone Phouthavong died suddenly in a tragic boat accident on 4th of April 2021. Vitafort Agro Asia is committed to continuing the cooperation with XP company to contribute to the realization of our friend's business plans and vision.



ESTABLISHMENT OF TWO LAO-HUNGARIAN JOINT VENTURE COMPANIES

A significant achievement of the 2nd Hungarian tied aid program was the establishment of two Lao-Hungarian joint venture companies that guarantee the sustainability of the results of the tied aid loan programs after their termination, and open new opportunities for the development of Lao-Hungarian cooperation in economy and trade.

AGRICULTURE PROCESSING DEVELOPMENT COMPANY (APD)

The main activity of APD is the operation of the feed mill in Nongteng and the supply of high-quality animal feed to farmers in the region. Specificity of the feed mill is the production of special feed for tilapia fingerling that can be manufactured only by using cutting edge technology.

AQUATIC DEVELOPMENT COMPANY (ADC)

The company was established by the Hungarian "Aranypony Fishfarm" that is a leading innovative company in Hungary. ADC operates the Namhoum fish farm in Vientiane Municipality and the company is becoming a leading supplier of high-quality tilapia fingerling in the region.



Besides commercial fish seed production, ADC is actively involved in training and demonstration activity for students and farmers and also in aquaculture development projects in various provinces in Laos.



INTERVIEW WITH MR. FERENC LEVAI GENERAL MANAGER OF AQUATIC DEVELOPMENT COMPANY (ADC)

Mr. Levai, could you please introduce yourself as well as your activities as General Manager of ADC Co.,Ltd. in Laos?

Mr. Levai: I was born in Hungary in 1976. I studied business and economics in the USA, then got a masters degree in aquaculture in Hungary. My family has a long tradition of fish farming, my father is the founder of Aranypony Fisheries Co., one of Hungary's leading aquaculture businesses. We established ADC in 2014 together with our Lao partner, with the intention of producing high quality tilapia fingerlings for the Lao market, therefore reduce the import dependency from other countries. As general manager of the company, I oversee the day to day production activities of the farm, including the daily egg collection and nursery. Moreover, I am responsible for the medium and long term production strategies as well as projects and activities not closely related to the daily operations. These include infrastructure developments, consultancy work for various NGO's as well as training and R&D activities.

How have the Hungarian tied aid loan program impacted ADC's development so far? How did you cooperate with the Hungarian project?

Mr. Levai: Both the 2nd and 3rd Hungarian tied aid loan projects have emphasized the importance of the value chain approach to the food and agriculture sector of the



Lao PDR. Fish being one of the primary sources of healthy protein in Laos, supporting the production of high quality fingerlings is in sync with the main mission of ADC. Therefore, the support received from the Hungarian project was very helpful in implementing and accelerating our medium and long term development goals. Supporting infrastructure development at the Namhoum fish breeding center was especially useful in improving production security, while the cooperation in training activities is an essential component in the further development of the entire fish value chain.

Tell us about the future plans and perspectives of ADC in Lao PDR.

Mr. Levai: During the last 5 years, we have become the largest tilapia fingerling supplier in the Vientiane Capital area. By doing so, we have improved the production security and increased the efficiency of a lot of local farmers. Moreover, we have reduced the import dependency of Lao

farmers from Thailand and Vietnam. However, there's much work left to do in the Northern and Southern parts of the country, where fingerling supply is still very much depended on questionable quality imports. The first priority is the Northern provinces of Oudomxay, Luang Prabang and Xay-

aboury, where the high prices and the unreliable supply is a serious limiting factor of commercial fish production. We are planning to develop a network of partner farms in the region, which will be able to supply the same high quality fish as ADC is doing in the Vientiane Capital area.



HUMAN RESOURCES DEVELOPMENT

Human resources development has been a central issue in the collaboration between Hungary and Laos for a long time. Numerous Lao agricultural professionals who are in leading positions in ministries and provincial authorities have been trained in Hungary. However, the lack of well-trained professionals in various areas of the agriculture and food sector is still a major bottleneck of the development. Therefore, Human Resources Development (HRD) is an important component of the 2nd Hungarian tied aid loan program, that is mainly linked to specific activities such as food chain safety management, laboratory operation, Information and Communication Technology (ICT), feed manufacturing, plant production, animal husbandry, aquaculture, and meat processing. In the frame of the project, various workshops, training courses, study tours have been organized mainly for local staff. About 15 skilled worker received post-graduate training through practical training and study tours in various subject areas. Training for trainers and technicians were also organised and number of participants of these courses was about 20 during the project period. In spite of the progress, HRD remains an important issue in the development of food chain safety and food security in Laos and Hungary should continue the support of HRD in the frame of various schemes. One of them is the “Stipendium Hungaricum” scholarship program that is available for 100 Lao students per year in Hungarian universities for BSc, MSc and PhD training. Further efforts are needed to increase the share of agricultural studies in the “Stipendium Hungaricum” program.



Practical training for agriculture machine operators

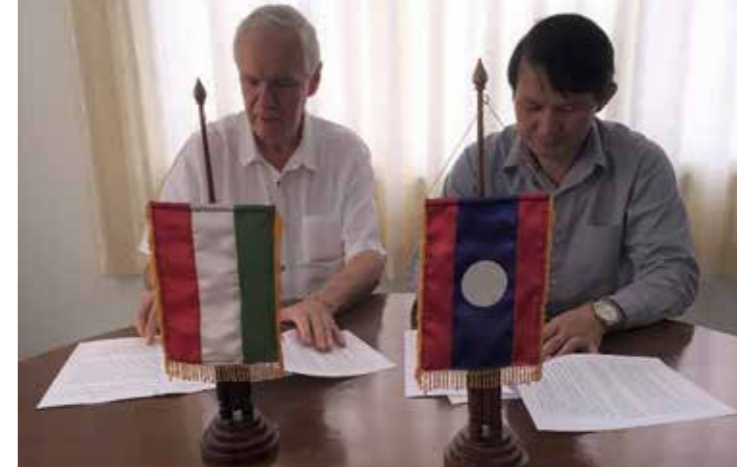


IT training is a new area in the development of food safety and food security

R&D COOPERATION

In the early years of the agricultural collaboration between Hungary and Laos, some sixty years ago, training of Lao professionals in Hungary and technical assistance of Hungarian experts and institutions in Laos were typical elements of the cooperation. However, these activities paved the way towards formalised R&D cooperation and S&T projects that contributed to the strengthening of mutual understanding and the need for the utilization of results and experiences jointly in the development of the food safety and food security in Laos. The great challenges in the sustainable use of natural resources for the supply of safe and nutritious food needs knowledge-based development everywhere in the world. Specific feature of the Hungarian-Lao agricultural collaboration is that R&D has always been involved in that. Even if economic collaboration became an important component of the agricultural partnership between the two countries, R&D collaboration remains essential to the project, aiming at the development of food safety and food security in Laos. The MoU between NAIK and NAFRI provides an excellent framework for specific R&D programs in the fields of soil management, crop cultivation, water management and irrigation, animal husbandry (especially cattle), aquaculture and fisheries, value chain development and marketing.

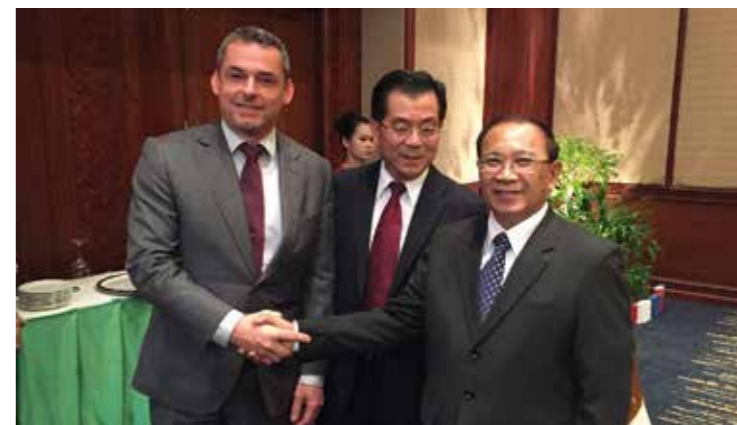
H.E. Lien Thikey minister of MAF with Prof. Csaba Gyuricza, Director General of NAIK



Representatives of HAKI and LARReC sign the MoU in aquaculture development that was the first in the R&D collaboration started in the 1980s



VAA-MAVIN-HAKI-RIA1 multilateral collaboration between Hungary, Laos and Vietnam in animal husbandry and aquaculture



LAO-HUNGARIAN STRATEGIC PARTNERSHIP AND LONG-LASTING FRIENDSHIP

The 2nd tied aid loan program was an integral part of the cooperation between Hungary and Laos in agriculture development and contributed to the improvement of food safety and food security in Laos. However, the program also contributed to the strengthening of human relations and friendship between people of the two countries. The high-level visits of Hungarian and Lao government and state leaders continued during the project period who visited farms and facilities that were developed in the frame of the project. The signing of the strategic partnership by the PMs of Hungary and Laos also took place during the implementation of the project. However, the frequent presence of Hungarian experts in Laos also offered excellent opportunities for meetings between Hungarian and Lao people and for cultural and social events. The activities of the two Friendship associations both in Hungary and in Laos have also been intensified during the project period. The project was a good example how traditional human relations and friendship combined with professional collaboration can lead to progress in the development of food safety and food security for the benefit of both partners.



Vitafort Agro Asia provided donation to the victims of the collapse of the dam in Attapeu Province during the project period



Hungarian President H.E. János Áder visited the fish farm of ADC during his official visit to the Lao PDR



President of the Lao National Assembly H.E. Mme Pany Yathotou visited a cattle farm, partner of Vitafort at Dabas during her official visit to Hungary



Celebration of Lao New Year in Budapest that is organised every year by the Hungarian-Lao Friendship Association



Celebration of Lao-Hungarian friendship

THE WAY FORWARD

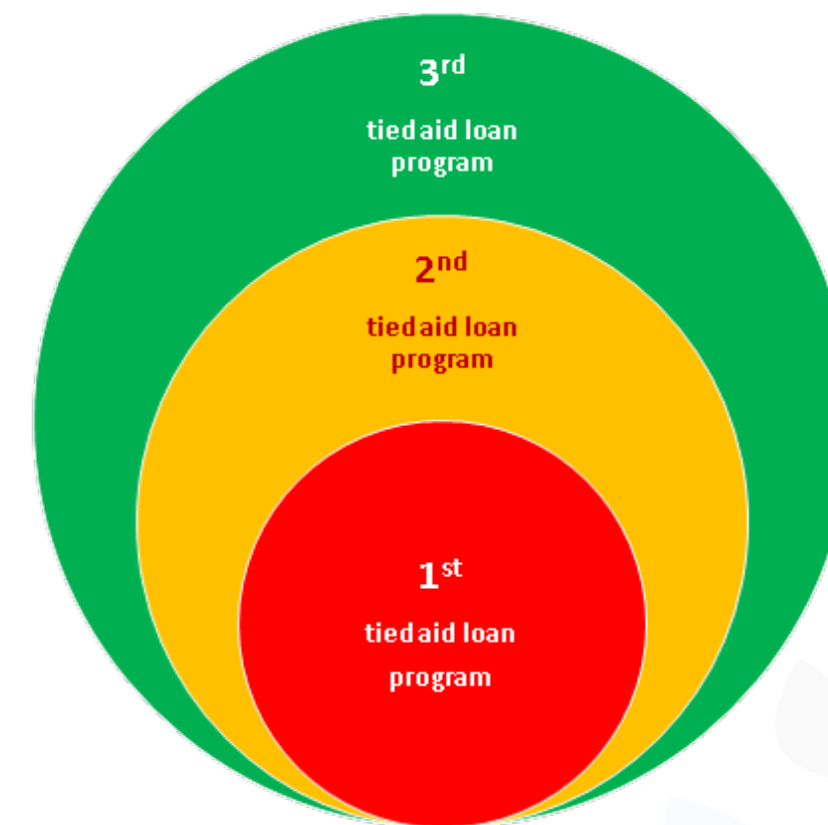
The main objective of the 2nd Hungarian tied aid loan program was to assist the development of food chain safety system through the creation of models along the meat and fish value chain. However, the establishment of an overall national food chain safety system needs further technical assistance, financial support, sectoral cooperation, and time. It is strongly believed that the project laid the foundation of the future developments in particular in the production of safe and high-quality meat and fish. The Hungarian government provides further assistance in the frame of the 3rd Hungarian tied aid loan program that is a follow up of the 2nd one and will contribute further to the development of food safety and food security along the value chain “from soil to table”. While the regional scope of the 2nd tied aid loan program was limited and activities were focussing on

the creation of functional model farms and facilities, the activities of the 3rd tied aid loan program will cover seven provinces and focuses on the dissemination of knowledge and technology in rural areas of the target provinces in close collaboration with PAFOs. The planned development work is in line with the National Agriculture Development Strategy and the National Green Growth Strategy. The three tied aid loan programs contribute to strengthening of economic and trade cooperation between the two countries and there are good signs that results of the programs will be sustainable after the termination of the programs. However, R&D cooperation will continue to assist business and economic cooperation and specific projects will remain important elements of the long-term and strategic cooperation between Hungary and the Lao PDR.

The 3rd tied aid loan program will improve food safety and food security in 7 provinces by providing assistance to more than 100 households.

In the frame of the 2nd tied aid loan program, 25 model farms and facilities have been created as resource bases of food safety and food security development.

In the frame of the 1st tied aid loan program modern facilities were built to provide high quality feed and seed as the basis of safe food production.



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